

MAY, 1942.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Hypogastric artery in American whites and negroes. F. L. Ashley and B. J. Anson (*Amer. J. phys. Anthropol.*, 1941, 23, 381—395).—The variation in the hypogastric vessels is great and 9 major types and 49 subtypes are described. Less variation was found in the origin of the vesical and middle rectal arteries. No striking racial differences were noted. Negroes resemble the Poles and Japanese more closely than do the whites. W. F. H.

Relation of sciatic nerve to piriformis muscle in Chinese. P'an Ming-Tzu (*Amer. J. phys. Anthropol.*, 1941, 23, 375—380).—The report is made from a study of 140 limbs of northern Chinese, chiefly males. A text-book type and 4 types of variations are described. An undivided nerve below an undivided muscle occurred in approx. two thirds of all cases and in the majority this condition was bilateral. No difference in the distribution of normal and abnormal types as to side and sex was established. Racial similarities and differences between Chinese and Japanese and a few white races are noted. W. F. H.

Regeneration of bone tissue. A. G. Jeletzki (*J. Méd. Ukraine*, 1940, 10, 981—997). M. K.

Epiphyseal growth: normal sequence of events at epiphyseal plate. T. H. Ingalls (*Endocrinol.*, 1941, 29, 710—719).—A description of ossification in the rat's tibia, illustrated by X-ray and photomicrographs and a Ag-staining method for Ca-containing tissues. Ca is present in transverse as well as longitudinal septa. V. J. W.

Epiphyseal growth: effect of removal of adrenal and pituitary glands on epiphyses of growing rats. T. H. Ingalls and D. R. Hayes (*Endocrinol.*, 1941, 29, 720—724).—Removal of adrenals in rats causes failure of bone formation similar to, but more severe than, that known to follow hypophysectomy. (Photomicrographs.) V. J. W.

Effects of adrenal cortical substances and parathyroid extract on phosphatase content of rat femurs. H. L. Williams and E. M. Watson (*Endocrinol.*, 1941, 29, 250—257).—Phosphatase was determined by the method of Martland and Robison (*Physiol. Abs.*, 1929, 14, 485). Small repeated doses of parathyroid extract increased phosphatase of diaphyses without altering that of epiphyses. Adrenal cortical extract, corticosterone, and Kendall's E compound reduced phosphatase of both diaphyses and epiphyses, especially the latter. Deoxycorticosterone acetate increased phosphatase. V. J. W.

Effects of sex hormones, thyroxine, and thymus extract on phosphatase content of rat femurs. H. L. Williams and E. M. Watson (*Endocrinol.*, 1941, 29, 258—261).—Phosphatase content is increased by progesterone, testosterone, oestradiol, thymus extract, and thyroxine. The increase is specially marked in the epiphyses after administration of testosterone. V. J. W.

Factors influencing premature infant mortality. H. Abramson (*J. Pediat.*, 1941, 12, 545—561).—A crit. review. C. J. C. B.

Effect of pubertas præcox on age at which onset of walking occurs. W. Dennis (*Amer. J. Dis. Child.*, 1941, 61, 951—957).—From a review of 25 cases it was found that the range of ages at which walking began was 9—18 months (mean 13.6). These figures are the same as those for children of normal growth. C. J. C. B.

Ectodermal and mesodermal dysplasia with osseous involvement. H. N. Cole, J. R. Driver, H. K. Giggen, and G. Stroud (*Arch. Dermat. Syphilol.*, 1941, 44, 773—788).—A 26-year-old woman is described with disseminated atrophoderma of the chin, neck, and trunk and in linear arrangement on the arms and legs, accompanied by localised pigmentation and telangiectases. Microscopically, the areas showed partial or complete absence of sweat glands, oil glands, and hair papillae and dystrophy of some nails and teeth. Collagen and elastic tissue fibres were absent. She had a congenital absence of the 3rd toe and metatarsal bone of the left foot. There were also syndactyly of the last 2 fingers of the right hand and of the first 2 digits of the left foot. (2 photomicrographs.) C. J. C. B.

Oxycephaly and supernumerary teeth. M. Rushton (*Brit. Dent. J.*, 1941, 70, 370—371).—A case report. H. H. K.

Fetal abnormalities causing difficult labour. B. H. Sheares (*J. Obstet. Gynecol.*, 1941, 48, 354—376). P. C. W.

Diagnosis of dicephalic monster by antenatal X-ray examination. E. F. Hunter (*J. Obstet. Gynecol.*, 1941, 48, 251). P. C. W.

Pterygo-nuchal infantilism (Turner's syndrome). E. P. Sharpey-Schafer (*Lancet*, 1941, 241, 559—560).—A woman aged 21 showed webbed neck, infantilism, cubitus valgus, and pigmented moles. Tests for anterior pituitary deficiency were negative and autopsy showed normal pituitary, thyroid, and adrenal glands. The ovaries were destroyed by extensive tuberculosis and it is suggested the infantilism is due to a primary gonadal defect. C. A. K.

Uncomplicated interatrial septal defect (patent foramen primum). A. J. Steigman and H. M. Putnam (*Amer. J. Dis. Child.*, 1941, 62, 1041—1051).—Report of a case in which congestive heart failure and death occurred at 1 month of age. C. J. C. B.

Malformation of tragus. J. A. M. d'Alte and A. Moitas (*Bull. Soc. Portugaise Sci. Nat.*, 1940, 13, 85—89).—The abnormality was observed in a male aged 8 months. The left tragus was bifid, the inferior portion resembling the normal structure. A small fleshy eminence was present below the inferior portion. The frequency of this type of malformation in males is noted. W. F. H.

Morphological and pigment anomalies in flat fishes. A. N. Aboim (*Bull. Soc. Portugaise Sci. Nat.*, 1939, 13, 47—51).—The anomalies are described in the species *Solea vulgaris*, Quens., and *S. senegalensis*, Kaup. W. F. H.

Evolution of fleece of sheep. H. Goot (*Nature*, 1941, 148, 596—597).—The course of evolution has run from Plateau, through Saddle and Ravine, to Valley and Plain. A table is given of the relative abundance of the several fibre-types in different arrays. E. R. S.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Position of diencephalon in comparative and experimental embryology. F. E. Lehmann (*Schweiz. med. Wschr.*, 1941, 71, 379—380).—A review of the author's experiments on induction and organisers in the archencephalic and deuterecephalic region. A. S.

Sensory nerves and associated structures in skin of human foetuses of 8 to 14 weeks menstrual age correlated with functional capability. I. D. Hogg (*J. comp. Neurol.*, 1941, 75, 371—410).—The foetuses (which were ones used by D. Hooker in his studies on foetal responses) were stained with various Ag methods of which that of Bodian proved most satisfactory. The skin from reflexogenous zones received most attention but there are descriptions of the nerve fibres and endings in other parts of the body. Details of the histogenesis of the fibres and endings are recorded and the findings are correlated with the functional capability found before death. It is suggested that early excitation of the sensory nerves is probably dependent on deformation of the growing tips of the fibres by displacement of the surrounding tissue. J. D. B.

Embryology of *Squilla*. K. B. Nair (*Proc. Indian Acad. Sci.*, 1941, 14, B, 543—576).—The early development of *S. rapheidea* and *S. wood-masoni* has been worked out. The earliest oocyte exhibits a large central nucleus and prominent nucleolus. When extruded the first polar division is taking place and the spindle formed is small and situated at the periphery of the egg. Gastrulation takes place by immigration of cells from a blastoporal depression. The migrating cells give rise to the naupliar mesodermal somites and to yolk cells. The last to migrate form the mid-gut rudiment which grows by the addition of modified yolk cells. A folding of mid-gut epithelium forms the liver. The formation of naupliar and trunk mesoderm is described. The significance of the findings in tracing the affinities of the Stomatopoda is considered. W. F. H.

Development of *Arius jella* (Day). K. Chidambaram (*Proc. Indian Acad. Sci.*, 1941, 14, B, 502—508).—As soon as the eggs (diameter 10.5 mm.) are laid the male fertilises and transfers them to his mouth, the no. carried by one male varying from 30 to 40. Oral gestation lasts until the yolk sac disappears. At 80 hr. age the embryo is 7—7.5 mm. in length and pigment is found in the eyes; the vascular area covers two thirds of the yolk mass and blood vessels and red blood corpuscles have appeared. At 90 hr.

the three main divisions of the brain are clearly formed. Growth is gradual during the first 20 days; in the following 10 days it is rapid and the young hatch out about the 30th day. In the newly hatched larva all 3 pairs of barbels are well developed and the yolk sac is prominent. The main changes noted in later stages are growth in size, changes in colour, and diminution in the size of the yolk sac. The adult form is reached about 1 month after hatching.

W. F. H.

Buds induced by nerve cord implants in *Clymenella torquata*. L. P. Sayles (*Biol. Bull.*, 1940, 78, 298—311).—When pieces of various regions of nerve cord from an adult worm are implanted into a host anterior to the 10th segment head buds are produced, while posterior to the 12th, tail buds are formed. In general the host determines the type, and the implant the orientation, of the bud, but the part of the bud nearest to the implant may be influenced by the site of origin of the implant.

D. M. SA.

Buds induced by nerve cord implants in *Clymenella torquata*. L. P. Sayles (*Biol. Bull.*, 1940, 78, 375—387).—Implants from head ends of donors produce head buds if implanted into host segments 1—9, but implants from the tail ends produce buds which are mainly undifferentiated but show anal segments ventrally. Segmentation in buds is often indefinite.

D. M. SA.

Relative growth in individual. A. E. Needham (*Nature*, 1941, 148, 52—53).—From observations on *Carcinus moenas* (1) simple allometry applies to growth in the individual and is not merely a feature in the population; (2) there are two planes of simple allometry for frontal width/carapace, transition occurring at the 5th moult; (3) there are two phases for dentary margin/carapace, transition occurring at the 3rd moult; (4) the curve of relative growth between 2 particular dimensions shows variations in different individuals; (5) increase in body size after each ecdysis follows Brooks' law; (6) contrasted with body size the intermoult time increases very irregularly.

E. R. S.

Relative growth in individual. S. J. Folley and A. C. Bottomley (*Nature*, 1941, 148, 169).—Relative growth data on individuals are given in 3 papers referred to.

E. R. S.

Terminology of relative growth rates. J. S. Huxley, J. Needham, and I. M. Lerner (*Nature*, 1941, 148, 225).—Heterauxesis is the relation of the growth-rate of a part to that of the whole or another part of a developing organism. Allomorphosis is the relation of parts of organisms at some definite age to wholes or parts at some definite age but of different groups. Allometry is ontogenetic heterauxesis and phylogenetic allomorphosis.

E. R. S.

Genetic studies on neurogenous talipes clavus. A. Idelberger (*Abstr. Z. Psychiat.*, 1939, 112, 313—326).—In 2 families, talipes clavus developed in several individuals between the 2nd and 10th year, associated in each case with a slight or moderate intellectual defect.

H. L.

Syringomyelia and teratoma of spinal cord. W. Voss (*Z. ges. Neurol. Psychiat.*, 1938, 163, 289—298).—A case is reported indicating that dysraphia may sometimes be due to a developmental disturbance in early embryonic life, such as the growth of an intradural teratoma. [Dysraphia is imperfect closure of the primary neural tube resulting in cleft-formation of the central parts of the spinal cord with distension or incomplete closure of the spinal canal.]

H. L.

Double monsters in light of recent biological experiments regarding heredity. Contribution to the problem of determination of sex. B. Szendi (*J. Obstet. Gynaec.*, 1939, 46, 836—847).—Two thoracophagi are described. The union in each pair was by homologous organs parallel to their longitudinal axes. In one pair one member had normal though under-developed female genitalia while the other member had external male genitals with rudimentary uterus, tubes, and ovaries. The other pair were both female but there was absence of the right ovary, tube, and uterus in one member. The results are discussed and the monsters regarded as monozygotic. The pseudohermaphrodite is perhaps caused by the action of the persisting fuchsinophil cells in the adrenals.

P. C. W.

Nomenclature of fowl genetics. J. D. Smyth (*Nature*, 1941, 148, 781).—The use of symbols such as P^1 , P^2 , P^3 is recommended for genes, in place of symbols such as Br , which are ambiguous.

E. R. S.

Chromosome breakage and sterility in mouse. P. C. Koller and C. A. Auerbach (*Nature*, 1941, 148, 501—502).—Cytological analysis of interchange hybrids of 3 semisterile lines of mice, produced by Snell's X-ray technique (1933), shows that the different degree of sterility is determined by the frequency of multivalent association and by the type of orientation of the quadrivalent. Beside the segmental interchange present in all semisterile individuals, minor structural changes or mutations with a deleterious effect on fertility were brought about in the chromosomes by irradiation and handed on by chance segregation to some individuals of the next generation. X-Raying germinal cells in man involves the risk of inducing heritable sterility in the descendants owing to embryonic mortality of zygotes with an unbalanced chromosome complement.

E. R. S.

Relation between nutrition and exhibition of the gene Antennaeless (*Drosophila melanogaster*). C. Gordon and J. H. Sang (*Proc. Roy. Soc.*, 1941, B, 130, 185—201).—Even in the highly standardised conditions of a *Drosophila* culture medium the interaction between genetic and environmental agencies is very intricate. A variety of agencies likely to be related to the exhibition of Antennaeless were explored and the gene was found to be remarkably sensitive to small nutritional changes. Vitamin-B₂ effectively limited its exhibition. It is suggested that Antennaeless and other mutants with similar idiosyncrasies might be used as tests to shed light on the problems of insect nutrition.

W. F. H.

Sex-linked mutations of *Drosophila melanogaster* induced by neutron radiations from a cyclotron. II. Y. Nishina and D. Moriwaki (*Sci. Papers Inst. Phys. Chem. Res. Tokyo*, 1941, 38, 371—376; cf. A., 1940, III, 179).— F_2 cultures resulting from sex-linked lethals and containing no males were mated with wild males and the sex ratio was determined in the offspring. This showed that in about 40% of cases "grouping of mutations in one chromosome" occurred.

J. L. D.

Action of X-rays on cell. I. The chromosome variable. II. The external variable. H. B. Newcombe (*J. Genet.*, 1942, 43, 145—171, 237—248).—I. Tulip, hyacinth, and *Tradescantia* pollen grain cells exhibit a slight increase in the no. of new reunions and a considerable increase in the no. of fractures when X-rayed late in the nuclear cycle. Early or late splitting of the chromosomes is independent of the length of time available and the time required for the splitting is independent of the length of the nuclear cycle. In regard to arrangement, exchange is more likely to take place between two parts of an arm than between parts of opposite arms and likewise between parts of opposite arms than between parts of different chromosomes. The original proximity of chromosome parts thus influences which ends will reunite. Cell death resulted from loss of chromosome parts and not from breakage or mutation alone.

II. In *Tradescantia* pollen grain divisions one-break chromosome changes (fractures) vary as the square of the dose and two-break changes as the 1.5 power. All types of change increase with slightly higher power of dose, provided the duration and intensity are const., and the "intensity effect" applies equally to one- and two-break changes. It is concluded that irradiation not only breaks the chromosomes but also inhibits reunion of broken ends. The "inhibition effect" increases with the dose and is greatest when the dose is administered rapidly. The behaviour of "minute fragments" is discussed; in *Tradescantia* pollen tube divisions they include a large proportion of small rings.

W. F. H.

Calculation and precision of linkage values from tetrad analysis. K. Mather and G. H. Beale (*J. Genet.*, 1942, 43, 1—30).

W. F. H.

Effects of ionising radiations on chromosomes of *Tradescantia bracteata*. A comparison between neutrons and X-rays. J. M. Thoday (*J. Genet.*, 1942, 43, 189—210).—Neutrons produce qualitatively the same types of chromosome aberrations as X-rays but more of all types are produced per ionisation. The ratios of the dose of X-rays to the dose of neutrons required to produce equal nos. of aberrations are given. X-Rays and neutrons do not differ in their effects on the rejoining process. More than one ionisation is required to break a *Tradescantia* chromosome thread. The findings are ascribed to the greater no. of primary breaks and their different distribution.

W. F. H.

Homologous chromosome pairing: the physical problem. A. C. Fabergé (*J. Genet.*, 1942, 43, 121—144).—Calculations prove that a unit of homologous pairing functioning by Guyot-Bjerknes effect is possible within narrow quant. limits. Using the Guyot-Bjerknes effect (a hydrodynamical phenomenon) a physical hypothesis is put forward which explains homologous pairing and satisfies all the conditions imposed by known biological facts.

W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Stature and weight of children of United States. H. V. Meredith (*Amer. J. Dis. Child.*, 1941, 62, 909—932).—Between ages 9 and 14, boys living in the United States to-day, white and Negro, are 6—8% taller and 12—15% heavier than 50 years ago. White boys of the professional and major managerial classes are taller (5%) and heavier (6%) than those of the unskilled and semiskilled classes. Boys in the United States of various ethnic groups (roughly comparable for socioeconomic status, geographic environment, and decade of examination) do not differ in average stature by more than 2 in. The wts. fluctuate independently.

C. J. C. B.

Growth rate of Chinese. C. H. Wu and S. Soong (*Amer. J. Phys. Anthropol.*, 1941, 28, 357—373).—Over 40,000 cases embracing most of the available records in the literature on body measurements taken within the last decade were utilised in the study. Two spurts occur in the growth curve, one during late prenatal life and another during preadolescence. Body-wt. increases mainly during adolescence. The upper part of the body grows more slowly than the lower part as age advances, equilibrium being reached after adolescence. "Centimetre-wt." and the surface-stature index con-

stantly increase from birth to maturity but postnatal growth is due more to increase of mass and surface than of length. Statistically the data indicate the general tendency of growth in the race. Comparison with the growth curves of "Westerners" shows similarity in all fundamental characteristics, the only difference found being in the abs. vals. of body measurements. The smaller body size in Chinese may be explained in part by their hereditary constitution. The fact that the race has lived so long in an environment with poor nutrition and other conditions unfavourable to physical development suggests that the present population is not developed to the max. of its hereditary endowment. W. F. H.

Blood groups in India. E. W. E. Macfarlane and S. S. Sarkar (*Amer. J. phys. Anthropol.*, 1941, 28, 397—410).—Data were obtained from 2120 individuals from 12 aboriginal tribes. Paniyans and Oraons stand alone with high and low vals. for *p* respectively and only Paniyans and Chenchus have less of group *B* than of group *A*. Blood group data together with physical measurements indicate a relationship between the Paniyans, Kanikkars, and Chenchus of south India and the Málér of Bihar. Oraons show some similarity serologically with Kanikkars. There is great variation in blood group distribution in the different Málér villages. The Maria Gonds serologically resemble the Santals, Mundas, and related Bagdis. Bhils and Korkus have very high % of *B* and *AB*. There is an increase in the frequencies of *A* and *B* from the south northward and in *B* and *AB* from east to west across central India. It is suggested that there may have been two original racial stocks, one resembling the Paniyan or Málér, with little *B*, and the other resembling the Oraons with little *A* and plenty of *B*. W. F. H.

Artifacts in human and seal skulls from Kodiak island. A. Hrdlička (*Amer. J. phys. Anthropol.*, 1941, 28, 411—421).—Large bilateral and symmetrical defects in the roof of the orbits of a normal female Pre-Koniag skull are described. It is suggested that they are due to operative interference many years before death. A thin probably bony plate on each side served as a stopper against brain protrusion. An examination of many temporal bones of the seal revealed that the Pre-Koniags and also the Koniags opened the middle ear and removed the ossicles during the life of the animal. This practice is discussed in relation to seal hunting. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Cell contours in proximal tubule in cat and dog nephron. J. J. Foote and A. L. Grafflin (*Amer. J. Anat.*, 1942, 70, 1—20).—The transition between the segments in the cat and dog is abrupt. In both the cells of the first segment are markedly irregular in shape and interdigitate in marked degree. Cell contours are more complicated at the lumen and less so at the basement membrane and generally more irregular in the dog than in the cat. Cells towards the lumen in the second segment of both species are mostly rectilinear but this character is lost towards the basement membrane where the cells exhibit marked interdigitation. Fat distribution in the two segments is characteristic; in the cat the first segment is normally fat-laden and the terminal portion fat-free, whilst in the dog the reverse is the case. The characteristic cell types in the two species are entirely independent of the presence or absence of fat deposit. W. F. H.

Co-ordination of vertebrate melanophore responses. L. H. Waring (*Biol. Rev.*, 1942, 17, 120—150).—A review. J. D. B.

Heterochromatin in Triton. H. G. Callan (*Proc. Roy. Soc.*, 1942, B, 130, 324—335).—When subjected to low temp., certain segments of the chromosomes of *T. vulgaris*, *T. palmatus*, and *T. cristatus* are heterochromatic. At mitosis, these segments are undercharged, and at meiosis uncharged, with nucleic acid. These segments, which show the same type of allocyclic behaviour as do similar segments in *Paris*, *Trillium*, and *Fritillaria*, form Feulgen-positive chromocentres in all diffuse nuclei excepting pachytene, which is diffuse in *Triton*. The availability of nucleic acid at the stage when the chromosomes normally spiralise is shown to be a condition of that spiralisation. The diffuse pachytene without chromocentres is followed by meiosis with unspiralsed heterochromatin, whilst the diffuse resting nucleus with chromocentres is followed by mitosis with spiralsed heterochromatin. Heterochromatin is generally confined to those parts of chromosomes where chiasmata and crossing-over rarely occur. F. O. H.

Use of dark-field illumination for the study of stained blood films. P. H. Ralph (*Stain Tech.*, 1942, 17, 7—10).—Dark-field illumination gives a greater range of size, refractivity, and colour of structures some of which are invisible under light-field illumination. This facilitates detailed differentiation of cell types; a standard colour nomenclature should be used. E. E. H.

Staining invertebrate blood following Maximow's osmic acid fixation. E. Liebmann (*Stain Tech.*, 1942, 17, 31—32).—Wright's or Leishmann's stain can be used if acidulated (acetic) alcohol is used for differentiation. E. E. H.

Iron hæmatoxylin staining of salivary gland chromosomes of *Drosophila*. L. E. Griffin and A. M. McQuarrie (*Stain Tech.*, 1942, 17, 41—42).—Full details of a modification of Bauer's method are given. E. E. H.

Flagella staining of anaerobic bacilli. E. O'Toole (*Stain Tech.*, 1942, 17, 33—40).—Details are given of slight modifications in the application of Bailey's flagella stain. E. E. H.

Microchemical reaction for cellulose.—See A., 1942, II, 167.

V.—BLOOD AND LYMPH.

Unusual reticulocytosis in untreated pernicious anæmia. W. T. Cooke (*Brit. Med. J.*, 1941, II, 806—807).—A woman aged 30, with pernicious anæmia, showed a reticulocytosis of 33% before treatment. Liver extract restores the normal blood picture. C. A. K.

Quantitative treatment of pernicious anæmia. J. M. Askey (*J. Amer. Med. Assoc.*, 1941, 117, 907—910).—Studies in 19 cases of pernicious anæmia showed that massive initial injections of liver extract (150—400 U.S.P. hæmopoietic units) produced satisfactory clinical, hæmatological, and neurological responses which lasted for several months. It is suggested that a single massive dose should be given to stock the liver with hæmopoietic principle, with monthly maintenance injections to follow. C. A. K.

Macrocytic anæmia following gastro-enterostomy. N. S. Gordon and J. Japa (*Brit. Med. J.*, 1941, II, 769—770).—Two cases are reported. C. A. K.

Hyperchromic anæmia in an infant. L. Cole (*Lancet*, 1941, 241, 759—760).—A single injection of anahæmin produced complete clinical and hæmatological recovery in an infant of 3 weeks with hyperchromic anæmia. C. A. K.

Macrocytic anæmia in pregnant women on Gold Coast. B. A. S. Russell (*Lancet*, 1941, 241, 792—794).—100 severe cases of macrocytic anæmia in pregnant women on the Gold Coast are described. In both treated and untreated cases there is a tendency to premature labour with stillbirth or death of the infant in the 1st week of life. The maternal mortality is high in untreated cases. Liver treatment, preferably by injection of extract, was very successful and reduced the mortality rate to 5%. C. A. K.

Pseudo-polycythæmia. F. A. Bassen and H. A. Abel (*J. Mt. Sinai Hosp.*, 1940, 6, 322—326).—Report of 2 cases. E. M. J.

Acetylphenylhydrazine [pyrodin] anæmia. Mechanism of erythrocyte destruction and regeneration. W. O. Cruz (*Amer. J. med. Sci.*, 1941, 202, 781—797).—Administration of pyrodin produces similar destruction and regeneration of erythrocytes in normal, splenectomised, renal fistula dogs and those with severe hypochromic anæmia. In dogs or rabbits all red blood cells other than reticulocytes are damaged 24 hr. after injection of pyrodin, as shown by the presence of Heinz bodies in the cells and increased fragility. Damaged cells disappear progressively and completely from the blood stream in 12 days after beginning the poisoning, as shown by morphological examination, normal behaviour towards hypotonic salt solution, and disappearance of the turbidity of distilled water due to insolubility of Heinz bodies. The doses of pyrodin employed did not cause hæmolysis. Animals at different stages of the intoxication showed large amounts of Fe pigment and some erythrophagocytosis in the spleen, liver, and bone marrow. Regeneration begins 3—4 days following intoxication and is maintained for 10—15 days at a high rate, putting into circulation 0.3 million red cells per cu. mm. daily. The mean corpuscular vol. of reticulocytes was double that of adult erythrocytes. Dogs with severe microcytic, hypochromic anæmia could produce reticulocytes with normal mean corpuscular vol. containing normal amount of hæmoglobin during regeneration after pyrodin anæmia, but microcytosis returned after some time. If all erythrocytes leaving the bone marrow are reticulocytes, then pyrodin paralyses the maturation of reticulocytes to normal adult erythrocytes. C. J. C. B.

Anæmia of flexed-tailed mice (*Mus musculus*, L.). I. Static and dynamic hæmatology. H. Grüneberg (*J. Genet.*, 1942, 43, 45—68).—In the anæmia described the mean cell size is normal but the mean corpuscular hæmoglobin concn. is reduced (normocytic hypochromic). The pathological process is limited to the embryonic mode of hæmopoiesis which persists during the first 2 weeks after birth but ceases at the beginning of the 3rd week. Pathological cells survive in the circulation up to 6 weeks and with their disappearance the blood picture becomes normal. Cells of intermediate grades of abnormality are found during the transition period. The anæmia behaves as a straightforward recessive character and precedes the development of the tail anomalies in time. All flexed-tailed mice were anæmic at birth and it appears that both anæmia and tail flexures are due to a single gene rather than to the action of two closely linked genes. W. F. H.

Intra-group hæmolytic transfusion reaction due to *Rh* agglutinin as result of isoimmunisation in pregnancy. M. D. Mayer and P. Vogel (*J. Mt. Sinai Hosp.*, 1941, 8, 300—304).—Case report. E. M. J.

Pathogenesis of erythroblastosis foetalis: absence of Rh factor from saliva. P. Levine and E. M. Katzin (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 126—129).—Serum of a woman who had recently given birth to a child with erythroblastosis was anti-Rh, but when mixed with saliva and tested on Rh+ red cells, it gave the same result whether the saliva came from Rh+ or Rh- subjects, indicating that Rh factor, unlike A and B factors, is not secreted by the salivary glands. V. J. W.

Agglutinin-inhibiting substance in human serum. E. F. Aubert, K. E. Boorman, and B. E. Dodd (*J. Path. Bact.*, 1942, 54, 89—103).—The group-sp. substances A and B are present in both serum and plasma. This has been demonstrated by sp. inhibition of iso-agglutinins and by sp. iso-agglutinin production in guinea-pigs and human volunteers. The agglutinin content of serum and plasma is important as a potential neutraliser *in vivo* of the iso-agglutinins in transfused blood, plasma, or serum and as a neutraliser *in vitro* of these iso-agglutinins by suitable pooling of serum and plasma. C. J. C. B.

Reliable technique for diagnosis of ABo blood groups. G. L. Taylor, R. R. Race, A. M. Prior, and E. W. Ikin (*J. Path. Bact.*, 1942, 54, 81—87).—The cells are examined for agglutinogens and later the agglutinin content of the serum is determined; tests are made in tubes and no reaction is recorded as negative without a microscopical examination. C. J. C. B.

Sedimentation of washed red blood-cells. R. B. Whittington (*Phil. Mag.*, 1942, [viii], 33, 68—76).—The drag-coeffs. of human erythrocytes suspended in saline were calc. from observations on suspensions in which the proportion of erythrocytes was varied in order to give varying vals. of the effective viscosity, calc. by Hess' formula. By plotting logarithmically the drag-coeffs. against the Reynolds nos. a solution was obtained whereby the max. velocities of the erythrocytes were calc. These velocities were less than those obtained by Stoke's formula for spherical bodies, but with increased velocity the discrepancy became less, probably due to increased elastic deformation of the cells. F. S.

Effect of acetylsalicylic acid on sedimentation rate of erythrocytes in rheumatic fever. J. A. Lichty, jun., and S. P. Hooker (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 69—70).—In 7 patients with acute rheumatism the sedimentation rate rose to nearly the pre-treatment level when administration of acetylsalicylic acid was stopped. V. J. W.

Photo-electric method of determining hæmoglobin. D. K. Hill and A. C. Pincock (*Lancet*, 1941, 241, 754—755).—The hæmoglobin content can be accurately determined by a photo-electric method in which the absorption of the green light by the pigment is measured by means of a vac. photocell in conjunction with a Lindemann electrometer. Repeated determinations on samples of oxalated blood showed a standard error of 0.4%. C. A. K.

March hæmoglobinuria. D. R. Gilligan and H. L. Blumgart (*Medicine*, 1941, 20, 341—395).—A review and report of 3 new cases. E. M. J.

Significance of porphyrinuria in [anaemia of] lead poisoning. R. Kark and A. P. Meiklejohn (*J. clin. Invest.*, 1942, 21, 91—99).—Injection of solutions of hæmoglobin (7—8 g.) into 2 subjects with Pb poisoning, anaemia, and porphyrinuria was followed by a rise in plasma-bilirubin (resembling in degree and time the bilirubinæmia found in normal subjects under comparable conditions) and a transient increase in urinary urobilinogen excretion. There was no increase in excretion of coproporphyrin in urine or faeces. Anaemia of Pb poisoning is probably dys hæmatopoietic rather than hæmolytic in nature. C. J. C. B.

Acquired immunity to blood transfusion reactions. J. J. Wolfe and C. E. Das Gupta (*Brit. Med. J.*, 1941, II, 807—808).—In 12 cases immediate non-hæmolytic reactions occurred during blood transfusion (11 were group B). In all cases, after a delay of 3—22 hr., during which cross-agglutination was checked, the transfusion was completed without further reactions. It is suggested that the first transfusion produced desensitisation to an unknown antigen. C. A. K.

***In vivo* test of value of stored blood.** P. L. Mollison and I. M. Young (*Brit. Med. J.*, 1941, II, 797—800).—Studies on blood preserved with different solutions showed that *in vitro* tests of red cell changes, e.g., spontaneous hæmolysis, mechanical fragility, and osmotic fragility, bear little relation to time of survival *in vivo*. There is evidence that cells showing increased osmotic fragility *in vitro* are restored to normal after transfusion, or when mixed with fresh compatible plasma *in vitro* for 1 hr. C. A. K.

Human blood plasma and serum. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1941, 117, 934—935).—A review. C. A. K.

Flask for separating serum from blood. F. E. Holmes and B. Johnson (*Ind. Eng. Chem. Anal.*, 1942, 14, 62).—An outlet tube is fused in the base rim of an Erlenmeyer flask, and to the bottom of the flask are sealed, on the inside, a no. of glass pegs "guarding" the outlet. The clot which forms on keeping contracts around the

pegs, and clear serum free from cells or hæmoglobin is drawn from the outlet tube. J. D. R.

Concentrated red cell suspensions in anaemia. G. E. O. Williams and T. B. Davie (*Brit. Med. J.*, 1941, II, 641—644).—Red cell suspensions were prepared from citrated blood stored for 1 week. Plasma was removed and the conc. red cell suspension which remained contained 8.5 million red cells per cu. mm., 150% hæmoglobin (Haldane), 3000 white cells per cu. mm., and corpuscular vol. of 85%. Satisfactory clinical results of 77 transfusions in 61 patients are recorded in cases of post-hæmorrhagic anaemias, anaemias with severe infection, and pregnancy and dys hæmopoietic anaemias. Reactions occurred in 20% of cases, the high incidence being attributed to difficulties in getting sterile water owing to air raids. C. A. K.

Clotting and filtration of citrated plasma. M. Maizels (*Lancet*, 1941, 241, 722—726).—The amount of Ca required to clot mixtures of varying proportions of citrated plasma and serum was studied. 5 vols. of serum alone clot 1 vol. of plasma, and 60 mg. of Ca per 100 c.c. alone is effective, but together clotting may occur when 19 mg. of Ca per 100 c.c. is added to a mixture of 1 vol. of serum + 1.5 vol. of plasma. This economises the amount of serum used, and avoids what might be toxic concns. of Ca. Citrated plasma may also be clotted by dialysis against 2.75 vols. of saline containing 15 mg. of Ca per 100 c.c., but the loss of crystalloids and the problem of a sepsis may make this a difficult method to apply. In the absence of serum 0.34mm-Ca⁺⁺ per l. is required to clot plasma; in the presence of a small amount of serum 0.28mm-Ca⁺⁺ per l. is required, but larger amounts of serum do not produce a corresponding fall in the Ca needed. C. A. K.

Organisation of blood bank at Mount Sinai Hospital. N. Rosenthal, L. R. Wasserman, H. Abel, F. Bassen, and P. Vogel (*J. Mt. Sinai Hosp.*, 1941, 8, 210—231).—Observations and results from June, 1938, to June, 1940. E. M. J.

Use of chilled blood, blood plasma, and serum. T. H. Seldon and J. T. Priestley (*Minnesota Med.*, 1942, 25, 28—31).—A review. E. M. J.

Preparation of desiccated human plasma by mass production methods. J. M. Hill (*N.Y. Sta. J. Med.*, 1941, 41, 1537—1542).—A review. E. M. J.

Plasma therapy. D. N. Silverman and R. A. Katz (*New Orleans Med. J.*, 1941, 93, 178—182).—A review and report of 3 cases. E. M. J.

Effect of surface-tension depressants on certain serological systems. L. F. Holmes (*Yale J. Biol. Med.*, 1941, 14, 155—175).—Na oleate, Na ricinoleate, and 3 esters, Aerosol O.T., Aerosol O.S., and Na lauryl sulphate, inhibited the precipitin reactions of serum-proteins and bacteria with their antisera. Another ester, cetylpyridinium bromide, caused non-sp. pptn. of serum; octyl, hexyl, and butyl alcohols had no effect. Na lauryl sulphate inhibited by increasing the negative charge on the antigen whereas cetylpyridinium bromide decreased the charge, thus promoting instability. The latter ester ionises with its org. hydrophobic portion as cation whereas compounds increasing antigen stability ionise with their non-polar org. portion as anion. Therefore these surface-active agents acted by forming highly adsorbed ions and the alcohols were inactive because they do not ionise; their behaviour in immunological systems cannot be correlated with their probable action on interfacial tension. F. S.

Application of falling-drop method for specific gravity measurement to determination of serum-albumin. P. H. Barbour (*Yale J. Biol. Med.*, 1941, 14, 107—114).—Samples of only 1.0 c.c. are necessary and (NH₄)₂SO₄ for pptn. of globulin is the only reagent needed. Vals. differ from corresponding vals. by the Howe-Kjeldahl method by a standard deviation of ±0.32 g.-%. F. S.

Electrophoretic measurements on normal human plasma. D. H. Moore and J. Lynn (*J. Biol. Chem.*, 1941, 141, 819—825).—Electrophoretic data are given for 12 normal human plasmas, and previous data are summarised. A new, small, highly mobile component is reported; it occurs in the presence of barbiturate buffer and is probably an association complex. R. L. E.

Electrophoretic properties of serum-proteins. I. Normal horse pseudoglobulin G1. D. G. Sharp, G. R. Cooper, and H. Neurath (*J. Biol. Chem.*, 1942, 142, 203—216; cf. A., 1941, III, 532, 968).—Electrophoresis of a pseudoglobulin fraction of normal horse serum, pptd. by 1.1—1.36M-(NH₄)₂SO₄ at pH 6.4, is determined in the Tiselius apparatus with the Svensson optical system. The protein pseudoglobulin G1 migrates with a single boundary over the pH range 4.3—7.6, and the pH-mobility curve is closely related to that of the γ-globulin fraction isolated by Tiselius. The degree of reversible boundary spreading as expressed in terms of the heterogeneity const. *H* is large compared with that of serum-albumin. Vals. of *H* are independent of pH between 7.6 and 5.5, and decrease below 5.5. The electrophoretic pattern of the globulin reversibly denatured from 5M-urea is similar to that of native protein, but mobilities are higher on the acid side and lower on the alkaline side of the isoelectric point. The high degree of reversible

boundary spread shown by pseudoglobulin G1 as well as by the globulin components of whole horse serum may be due to a continuous gradation in the electrophoretic properties of the globulin mols. J. N. A.

Plasma-albumin, -globulin, and -fibrinogen in healthy individuals from birth to adulthood. V. Trevorror, M. Kaser, J. P. Patterson, and R. M. Hill (*J. Lab. clin. Med.*, 1942, 27, 471—485).—566 analyses of plasma-albumin, -globulin, and -fibrinogen were made on 547 healthy persons from birth to 39 years of age. The protein fractions were separated by salting-out with Na_2SO_4 and analysed by a micro-Kjeldahl procedure. The plasma-albumin concn. in persons over 3 years of age is higher in the winter than in the summer months. This seasonal variation does not appear in other fractions. In persons over 5 years of age, the plasma-fibrinogen is higher in females than in males. In normal persons the albumin, globulin, and fibrinogen vary independently. No correlation has been found between any of the protein concns. and the time elapsing after the ingestion of food. There is no correlation between any of the protein concns. and the height, wt., or body surface of the individuals. C. J. C. B.

Method for detecting in human serum protective bodies against hæmolytic streptococci. H. W. Diefendorf (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 56—60).—Serum of patients recovering from rheumatic or scarlet fever, administered to mice, increased the 50% mortality dose of hæmolytic streptococci. V. J. W.

Preservation of liquid complement serum. G. M. Richardson (*Lancet*, 1941, 241, 696—697).—The preservation of complement activity of hypertonic guinea-pig serum is best attained when the p_{H} is 6 (at room temp.) or 6.4 (at 0—3°); Na azide is the best disinfectant. The technique of prep. is described. C. A. K.

Hæmophilia-like disease in swine. A. G. Hogan, M. E. Muhrer, and R. Bogart (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 217—219).—The affected animals are said to be "closely related," and the condition to be due to an abnormal stability of the platelets. V. J. W.

Hæmorrhage control in *Eimeria tenella* infected chicks when protected by vitamin-K. F. M. Baldwin, O. B. Wiswell, and H. A. Jankiewicz (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 278—280).—Out of 10 chicks which received 6000 oöcysts 7 died. Out of another 10 of which received the same infection, with 317 Almquist units of vitamin-K on 4 succeeding days, 1 died. V. J. W.

Present status of vitamin-K therapy. S. S. Lichtman and J. H. Garlock (*J. Mt. Sinai Hosp.*, 1941, 8, 76—83). E. M. J.

Clinical usefulness of vitamin-K analogues. A. M. Snell (*J. Mt. Sinai Hosp.*, 1941, 8, 67—75).—A review. E. M. J.

Behaviour of plasma-prothrombin in pneumonia. L. M. Tocantins and W. A. Hause (*Amer. J. clin. Path.*, 1941, 11, 849—856).—In 31 patients hypoprothrombinemia was always present in pneumonia especially during the first stages of the disease, due probably to a disturbance in hepatic function; it may account for the delayed coagulability and the hæmorrhagic manifestations of pneumonia. Only 2 out of 6 hypoprothrombinæmic patients with pneumonia treated with a synthetic vitamin-K substitute responded. C. J. C. B.

Blood coagulation. W. H. Howell (*J. Amer. Med. Assoc.*, 1941, 117, 1059—1062).—A review. C. A. K.

Liberation of heparin by trypsin. M. Rocha e Silva and C. A. Dragstedt (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 152—155).—Intravenous injections of 1—2 mg. per kg. of trypsin into dogs, or 3—7 mg. per kg. into rabbits, causes incoagulability of the blood. This does not occur *in vitro* and is abolished by addition of protamine. V. J. W.

Use of heparin in vascular thrombosis. W. H. Gillentine (*New Orleans Med. J.*, 1941, 93, 169—173).—Case report. E. M. J.

Therapeutic problems in water balance [in surgery]. U. Maes and H. A. Davis (*New Orleans Med. J.*, 1941, 93, 207—211).—A review. E. M. J.

Clinical aspects of leukæmia. E. B. Reed (*Nebraska Sta. Med. J.*, 1941, 26, 429—433).—Report of 40 cases. E. M. J.

Acid-base balance of premature infants. W. S. Branning (*J. clin. Invest.*, 1942, 21, 101—104).—The plasma content of org. acids of 17 premature infants was 2—3 times as great as that of the full-term infant and the adult; this is not due to ketonic compounds. Premature infants excreted 2—5 times the normal adult amount of org. acid per kg. body-wt. per day. The org. acid and CO_2 contents of plasma of clinically acidotic (hyperpnæic) premature infants differ little from those of infants who are clinically thriving; the premature infant is thus always on the borderline of acidosis. C. J. C. B.

Analysis of divinyl ether in blood. W. L. Ruigh (*Ind. Eng. Chem. Anal.*, 1942, 14, 32—34).—Org. vapours are drawn in a stream of air, purified over hot CuO , over a catalyst of I_2O_5 supported on pumice at 200°. The org. material is oxidised quantitatively to CO_2 and H_2O , with stoichiometric liberation of I. The blood containing divinyl ether is aerated at 45° in the apparatus described

and the ether determined by titration of I released with 0.01N- $\text{Na}_2\text{S}_2\text{O}_3$. A correction factor of 100/95 is used. J. D. R.

Disappearance of radioactive phosphorus from heart blood of *Limulus polyphemus*. W. H. Cole and W. L. Nastuk (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 151—152).—0.1—0.2 ml. of 0.001M- Na_2HPO_4 was injected into the heart and blood concn. of P determined at intervals. In 10 individuals, log of concn. of active P in blood was inversely proportional to time. After 1 hr. 97.6% had disappeared from the blood. V. J. W.

Effect of radio-phosphorus on blood of monkeys. K. G. Scott and J. H. Lawrence (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 155—158).—Intraperitoneal injection of ^{32}P as phosphate caused decreases in red cell, lymphocyte, and granulocyte counts, the red cell effect being the least. 1.04 millicuries per lb. was fatal, but 0.76 was tolerated. V. J. W.

Effect of hyperthermia on vitamin-C in blood plasma. H. G. Rapaport (*J. Mt. Sinai Hosp.*, 1939, 6, 89—92). E. M. J.

Meat extractives and non-protein-nitrogen of blood. E. Mylon and M. C. Winternitz (*Yale J. Biol. Med.*, 1941, 14, 183—188).—When raw beef (650 g.) was fed to dogs the non-protein-N of the blood nearly doubled in 4—12 hr. and returned to normal within 24 hr. When the equiv. amount of boiled meat from which the extractives had been expressed was fed, the rise in non-protein-N was double that after raw feeding and returned to normal at 48 hr. If the extractives were added to the boiled expressed meat, the blood-non-protein-N behaved as after raw meat. It is suggested that utilisation (deamination or synthesis) of the protein cleavage products is better in the presence of the meat extractives. F. S.

[Blood]-non-protein-nitrogen in jaundice. K. A. Meyer, H. Popper, and F. Steigmann (*J. Amer. Med. Assoc.*, 1941, 117, 847—850).—A rise of blood-non-protein-N in a case of jaundice indicates increased severity of parenchymatous involvement. Studies of creatinine and urea clearances in such cases showed that this rise was due partly to diminished glomerular filtration but more to increased reabsorption of urea in the kidney tubules, and there was no evidence of increased breakdown of protein in the body. C. A. K.

Effect of castration and sex hormones on blood of rat. P. Steinglass, A. S. Gordon, and H. A. Charipper (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 169—177).—Red cell and hæmoglobin vals. are higher in males than females. Castration lowers them in males and raises them in females, but they are brought back to normal by injections of testosterone and oestradiol respectively. From the bone marrow it appears that androgens stimulate and oestrogens inhibit red cell formation. V. J. W.

Spectrum-analytical studies on magnesium content of blood in various diseases. E. Zimmer (*Spectrochim. Acta*, 1939, 1, 93—107).—The physiological and pharmacological functions of Mg are discussed; the chemical determination of blood-Mg and its therapeutic significance are reviewed. In the method described 0.1 c.c. of blood is diluted with 0.2 c.c. of 0.9% aq. NaCl containing a trace of NH_4 oxalate to inhibit coagulation; 0.1 c.c. of the liquid is applied to the lower arc electrode (anode), with 0.1 c.c. of 0.1% aq. AuCl_3 . The spectrum is then photographed with an intermittent arc. The intensities of the 2802 and 2795 Å. Mg lines are then compared photometrically with that of the 2676 Å. Au line. The apparatus is calibrated with aq. MgSO_4 (Mg 2—5 mg.-%). Blood-Mg vals. obtained directly from the spectrograms are high owing to interference by albumin; determinations with ashed blood show that these vals. must be multiplied by 0.53 to give true blood-Mg vals. correct to about 13%. Vals. of 3.4—5.7 mg.-% were found for 67 patients with various diseases. In cases of severe anæmia or cachexia in an advanced stage of disease vals. of less than 4 mg.-% were observed; otherwise no variation of therapeutic val. was detected. A. J. E. W.

Bis-p-aminobenzoyl-l-cystine [action on blood-sugar]. E. J. Fellows and R. W. Cunningham (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 410—411).—This compound has no hypoglycæmic action and does not affect glucose tolerance in rats. V. J. W.

Nature of blood-iodine. S. Silver (*J. Mt. Sinai Hosp.*, 1940, 7, 97—98). E. M. J.

Blood enzymes after ligation of all pancreatic ducts. H. L. Popper and H. H. Sorter (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 384—388).—Tying the pancreatic ducts in 2 dogs was followed by a rise in blood-amylase lasting not more than a few days and secondary rises at about 6 and 12 weeks, after which normal vals. were obtained. There was no increase of blood-lipase. V. J. W.

Relation of blood-lactic acid and -acetone bodies to uric acid in pre-eclampsia and eclampsia. N. K. Schaffer, S. B. Barker, W. H. Summerson, and H. J. Stander (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 237—240).—Average blood-uric acid in 7 cases of pre-eclampsia was 4.5 mg.-% as against 3 mg.-% in normal pregnancies. Blood-lactic acid and -ketone bodies were not significantly raised, so that the increased uric acid cannot be due to increased lactic acid as suggested by Quick (*Physiol. Abs.*, 1935, 20, 850). V. J. W.

Renin-like substance in blood after hæmorrhage. L. A. Sapirstein, E. Ogden, and F. D. Southard, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 505—508).—Dogs were bled by withdrawal of 2.8% of body-wt. 24 hr. later a blood sample caused slow contraction of an isolated segment of guinea-pig's ileum, indicating presence of renin, and after addition of normal dog serum, containing "activator" and so forming angiotonin, caused a rapid contraction. V. J. W.

Increase in blood-lipins of fasted mice. P. H. MacLachlan (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 411—412).—Fasting mice show increased blood-lipins, phospholipins reaching a max. on the 2nd day and total lipins on the 3rd. V. J. W.

VI.—VASCULAR SYSTEM.

Weight of normal heart in adult males. P. D. Rosahn (*Yale J. Biol. Med.*, 1941, **14**, 209—223).—In 187 males, aged 20 years and over, with no cardiovascular disease, dying from trauma or acute disease, the mean age was 44.1 years and the average heart wt. was 356 g. There was a slight positive correlation of 0.2670 between age and heart wt. Body wt. and heart wt. were positively and significantly correlated, the multiple correlation being 0.6287. The corresponding multiple regression equation was: estimated heart wt. in g. = age + 3 × (body wt. in kg.) + 100. F. S.

Rôle of auricles in ventricular filling of tortoise heart. S. W. Gray (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 131—132).—Cinematographic studies show that, just before their systole, the ventricles undergo a slight increase in size which is due to auricular systole and is abolished if the auricles are ligatured so as to leave a clear way for blood from sinus to ventricle but preventing it from entering the fundus of the auricle. The auricular effect is min. at 8 beats per min. V. J. W.

Röntgen kymography of heart. G. M. Tice (*J. Kansas Med. Soc.*, 1938, **39**, 198—201).—A review. E. M. J.

Coronary thrombosis 10 years later. E. F. Bland and P. D. White (*J. Amer. Med. Assoc.*, 1941, **117**, 1171—1173).—38 (19%) of 200 patients with coronary occlusion and acute myocardial infarction died within 4 weeks of the initial attack. Of the remaining 162 patients 31% have survived for 10 years. C. A. K.

Cardiac output in coronary occlusion studied by Wezler-Boeger physical method. A. Grishman and A. M. Master (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 207—210).—Output is calc. from pulse pressure, pulse wave velocity, aortic diameter, and natural frequency of aorta calc. from femoral pulse tracings. In 4 out of 5 cases of coronary occlusion in man, output fell to a min. between the 2nd and 3rd day, rising to a const. level by the 10th day. V. J. W.

Röntgen kymography in diagnosis of myocardial infarct. M. L. Sussman (*J. Mt. Sinai Hosp.*, 1939, **6**, 130—133).—Report of 2 cases. E. M. J.

Fluoroscopic diagnosis of myocardial infarction following coronary occlusion. A. M. Master (*J. Mt. Sinai Hosp.*, 1939, **6**, 18—24). E. M. J.

apomorphine in paroxysmal tachycardia. G. E. Finkle (*J. Kansas Med. Soc.*, 1939, **40**, 372—373).— $\frac{1}{32}$ — $\frac{1}{4}$ grain of apomorphine injected hypodermically reduced the pulse rate to normal within 20—25 minutes in 4 cases of paroxysmal tachycardia. The only side effects were short periods of nausea and vomiting. E. M. J.

Transient electrocardiographic changes in case of serum sickness due to tetanus antitoxin. T. T. Fox and C. R. Messeloff (*N.Y. Sta. J. Med.*, 1942, **42**, 152—154).—Case report. E. M. J.

Physiology and pharmacology of coronary circulation. A. M. Ginsberg and O. O. Stoland (*J. Kansas Med. Soc.*, 1938, **39**, 193—196).—A review. E. M. J.

Interstitial myocarditis following the clinical and experimental use of sulphonamide drugs. A. J. French and C. V. Weller (*Amer. J. Path.*, 1942, **18**, 109—117).—An interstitial myocarditis, rich in eosinophil cells, was found in the hearts of 126 patients to whom a sulphonamide drug had been given shortly before death. A similar eosinophilic interstitial myocarditis was produced in mice and rats by the daily intraperitoneal injection of neoprontosil, sulphaniilamide, Na sulphapyridine, and Na sulphathiazole in amounts computed to be less than the comparable human dosage. Eosinophilic infiltrations were seen also in the lungs, livers, and kidneys of the human cases and the experimental animals. (4 photomicrographs.) C. J. C. B.

Prognosis in acute myocardial infarction. F. F. Rosenbaum and S. A. Levine (*Arch. intern. Med.*, 1941, **68**, 913—944).—Factors in the prognosis of acute myocardial infarction are fully discussed from clinical studies in 208 cases. C. A. K.

Value of electrocardiogram in coronary thrombosis and its location. A. Lieberman, J. Chasnoff, and A. A. Goldbloom (*N.Y. Sta. J. Med.*, 1941, **41**, 2032—2036).—A review of 34 cases in which autopsy had revealed single or multiple cardiac infarcts showed that 8 of 16 cases of anterior and 7 of 9 cases of posterior infarct were correctly

diagnosed electrocardiographically but that the other cases, including 9 with both anterior and posterior infarcts, were diagnosed as left bundle branch, intraventricular, or complete heart block, or simply as non-sp. myocardial damage. With the help of clinical information, however, 31 were diagnosed as coronary thromboses. Comparison with 34 non-fatal cases of the same period showed the higher incidence of diabetes (10 to 3), low voltage (less than 5 mm.) e.c.g. (14 to 5), block type e.c.g. (11 to 1), and non-sp. type (7 to 3) in the group of fatal cases. E. M. J.

Records of ventricular fibrillation. B. L. Vosburgh (*N.Y. Sta. J. Med.*, 1941, **41**, 1865—1867).—Three e.c.g. showing ventricular fibrillation in a case of electric shock, taken within 10 min. of the accident, and in 2 cases of coronary occlusion taken immediately before death are presented. E. M. J.

Unusual P-wave in chest lead CF₂ following spontaneous pneumothorax. S. D. Burton and J. S. Mehlman (*J. Lab. clin. Med.*, 1942, **27**, 465—470).—A case is described with an unusual and deeply inverted P-wave of 14 mm. in lead CF₂. This P-wave was produced by cardiac displacement, resulting from a spontaneous pneumothorax which brought the right auricle into close apposition with the anterior chest wall. The contour of the P-wave was such as to suggest that the part of the auricle beneath the chest contained the pacemaker. As the pneumothorax was relieved, the large P-wave became diphasic, suggesting the apposition of other parts of the auricle to the anterior chest wall, and finally the P-wave returned to normal. C. J. C. B.

Congenital heart disease manifesting arrhythmia in utero. N. M. Fenichel and L. Kurzrok (*N.Y. Sta. J. Med.*, 1942, **42**, 151—152).—Arrhythmic foetal heart sounds were heard during the last month of pregnancy in a baby whose e.c.g. at the age of 5 days showed blocked auricular extrasystoles. A harsh systolic murmur and a palpable thrill were noticed after 2 months and enlargement of the heart after 9 months. E. M. J.

Control of anginal syndrome with low-carbohydrate diet. B. P. Sandler (*Med. Ann. Columbia*, 1941, **10**, 371—380).—The incidence and severity of anginal attacks was lessened and a lowering of the blood pressure observed in 15 cases given a low-carbohydrate diet (75—100 g. of carbohydrate, 100—150 g. of protein, 100—150 g. of fat) followed over periods of 1—5 years. E. M. J.

Venous pressure apparatus [and its clinical applications]. F. R. Johnson (*J. Kansas Med. Soc.*, 1939, **40**, 189—193).—A modified Moritz-Tabora apparatus was used; several readings could be obtained while the needle was in the vein. Normal values varied from 60 to 70 mm. saline. E. M. J.

Blood pressure reflexes in hysterical anaesthesia. J. V. Cable and F. H. Smirk (*Brit. Med. J.*, 1941, II, 874—875).—In a patient with hysterical anaesthesia, involving the left arm, application of cold and ischaemic muscular contractions in the affected limb produced rises of blood pressure. This test may be used to distinguish hysterical from organic anaesthesia. C. A. K.

Changes in brain volume during anaesthesia: effects of anoxia and hypercapnia. J. C. White, M. Verlot, B. Selverstone, and H. K. Beecher (*Arch. Surg.*, Chicago, 1942, **44**, 1—21).—Quant. methods of determining the vol. and the blood content of the brain in cats are described. If there is an adequate airway, pentobarbital Na causes neither swelling of brain tissue nor congestion of the cerebral vessels, and other causes no swelling of tissue and a slight increase of blood content, due to a vasodilator effect. Anoxia, produced by the breathing of low-O₂ mixtures, causes an increase in brain vol. A rise in CO₂ tension causes engorgement of the vessels. F. S.

Fœtal circulation and certain changes that take place after birth. A. E. Barclay, J. Barcroft, D. H. Barron, K. J. Franklin, and M. M. L. Prichard (*Amer. J. Anat.*, 1941, **69**, 383—406).—A study of the circulation through the heart of the sheep fœtus delivered by Caesarean section was made by X-ray cinematography and injections of radio-opaque substances into the blood stream. The superior caval inflow passes in its entirety to the right side of the heart and thence in part to the pulmonary arteries and in part, via the ductus arteriosus, to the descending aorta. Umbilical venous blood in the ductus venosus, together with venous blood from the hind limbs, goes mainly through the foramen ovale to the left atrium, and thence to the coronary and brachio-cephalic arteries and descending aorta. Neither side of the fœtal heart at term contains highly oxygenated blood but the left side has an advantage in this respect over the right. This is supported by the results of blood gas analyses on the same and on other species. Functional closure of the ductus arteriosus and of the foramen ovale occurs in a few min. after birth, if the cord is ligated and respiration is normal. Closure of the foramen ovale is more intimately connected with the onset of respiration than with ligation of the cord. W. F. H.

Sensitisation of blood vessels to acetylcholine by sympathetic denervation. H. Hoagland (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 326—330).—4 sympathetic ganglia, from the 6th lumbar downwards, were removed on one side in cats. 20—44 days later the corresponding limb showed increased vol. by plethysmograph as com-

pared with the opposite side, on injection of 0.3–2 μ g. of acetylcholine. It is important to remove at least 4 ganglia and to avoid injury to the chain of the opposite side. V. J. W.

Dependence of cold pressor reaction on peripheral sensation. J. D. Sullivan (*J. Amer. Med. Assoc.*, 1941, 117, 1090–1091).—A patient with old transverse section of the spinal cord showed a normal pressor response when his hands were immersed in ice water but no significant changes were seen when the feet were immersed. C. A. K.

Cold-pressor test. J. A. Reisinger (*Med. Ann. Columbia*, 1941, 10, 381–386).—The response of the blood pressure to immersion of one hand in water of 3–5° for 1 min. in the supine position was examined in 95 cases with a basal pressure of less than and 48 cases of more than 150/90, 24 of which were near the limit. A pressor effect was obtained in all but 2 patients who had postural hypotension. The incidence of hyperreaction was higher among the hypertensive group but the mean systolic rise was at 21–23 mm. Hg of the same order of magnitude in all groups. E. M. J.

Effects of interrupting and restoring circulation to lower extremities. D. Dauber, M. Landowne, L. N. Katz, and H. Weinberg (*J. Clin. Invest.*, 1942, 21, 47–56).—Cardiac acceleration preceded by a fall in blood pressure in the brachial artery followed release of occluding cuffs on the lower extremities in normal subjects. This was absent or reduced in patients with thromboangiitis obliterans. The fall in blood pressure was caused by the opening of a temporary low-resistance pathway for blood through the dilated vessels resulting from the previous occlusion; the cardiac acceleration may be reflexly initiated from end organs in the large vessels or in vessels or tissues of the limbs themselves. The time interval is too short to suggest a humoral explanation. C. J. C. B.

Congenital arteriovenous anastomosis. A. G. Watkins (*Brit. Med. J.*, 1941, II, 849–850).—Case report of a girl aged 8 years. C. A. K.

Effects of cold on skin [vessels] and underlying tissues. T. Lewis (*Brit. Med. J.*, 1941, II, 795–797, 837–839, 869–871).—Lectures on the effects of cold on the skin, including chilblains, trench foot, and frostbite. C. A. K.

Frostbite. R. Greene (*Lancet*, 1941, 241, 689–693).—A lecture. C. A. K.

Etiology and causative mechanism of arteriosclerosis and atherosclerosis. W. C. Hueper (*Medicine*, 1941, 20, 397–442).—A review. E. M. J.

Vitamin[B] treatment in Raynaud's disease. R. Spiegel (*J. Mt. Sinai Hosp.*, 1941, 8, 284–299).—Report of 21 cases. E. M. J.

Deposition of calcium in the hearts and kidneys of rats in relation to age, source of calcium, exercise, and diet. L. L. Barnes (*Amer. J. Path.*, 1942, 18, 41–45).—The incidence of calcification of the heart was an increasing function of the age at death. The auricles were more commonly affected than the ventricles and the region of the valves. Rats not allowed to become fat and forced to exercise showed a lower incidence of calcification of the heart than those on unlimited food intake and enforced exercise. In female rats receiving the same diet the highest incidence of calcification of the heart was found in a group in which breeding was delayed until middle life. Rats receiving a mineral supplement of $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$ showed an incidence of renal medullary calcification 3 times that shown by rats receiving a supplement of CaCO_3 . C. J. C. B.

Influence of ageing of population on incidence of cardiovascular disease and possible prophylactic measures. F. W. Niehaus (*Nebraska Sta. Med. J.*, 1941, 26, 348–351).—A review. E. M. J.

Distribution of intimal atheromatous lesions in arteries of rabbits on high-cholesterol diets. S. L. Wilens (*Amer. J. Path.*, 1942, 18, 63–73).—Portions of femoral and carotid arteries of 9 rabbits fed 1 g. of cholesterol daily were rendered immobile by being invested *in situ* by cylindrical Ag cuffs. The changes induced in the arterial walls were const. and consisted of adventitial thickening and fibrosis, medial thinning due to atrophy of smooth muscle, and condensation and fragmentation of elastic fibres. The intima remained thin and delicate. Cholesterol feeding usually led to selective localisation of lipins in the intima of the arteries at the region of the cuffs. The amount of lipins present could not be correlated with the degree of injury produced by the cuffs. It is suggested that the immobilised areas served as foci at which the movement of lipins in intimal spaces, impelled by pulsations of the vessel wall, was arrested. (6 photomicrographs.) C. J. C. B.

Applicability of experimental results to shock problem in man. C. J. Wiggers (*J. Amer. Med. Assoc.*, 1941, 117, 1143–1147).—A review. C. A. K.

Clinical physiology of shock. K. E. Hynes (*Northw. Med.*, 1942, 41, 7–10). E. M. J.

Mechanism of renal hypertension. E. Braun-Menendez, J. C. Fasciolo, B. A. Houssay, L. F. Leloir, and J. M. Muñoz (*Schweiz. med. Wschr.*, 1941, 71, 280–282).—The work of the Buenos Aires school is reviewed, with special emphasis on the properties of renin

and hypertensin. The amount of hypertensin formed *in vitro* and *in vivo* is proportional to the pseudoglobulin hypertensinogen; 10 c.c. of serum yield 1 unit of hypertensin, 20 c.c. of serum yield 2 units, in the presence of 1 c.c. of renin at 37° within 10 min. Increasing the optimum amount of renin (e.g., 10–20 times) does not augment the hypertensin yield. The amount of hypertensin formed is an index of the renin concn. in blood or in a solution; the hypertensinase is destroyed when renin is pptd. with 25% NaCl at p_{H} 2.0–2.5; in serum, it is destroyed by $2\text{M-H}_2\text{PO}_4$ at p_{H} 3.9 at 37° for 15 min., subsequent neutralisation with NaOH, and incubation at 37° at p_{H} 7.5–8.5. Serum-hypertensinogen can be determined by adding renin, incubation at 37° for 10 min., addition of 3 vols. of alcohol, filtration and vac. evaporation, and intravenous injection into chloralosed dogs of the residue in saline. Hypertensinogen is increased 48 hr. after double nephrectomy. Repeated injections of renin gradually diminish blood-hypertensinogen; subsequent injection of renin does not produce hypertension. 1 unit of hypertensin is equiv. to the injection of 1 c.c. of standard solution in a 10-kg. dog under chloralose anaesthesia, raising the arterial blood pressure by 20–30 mm. Hg. The hypertensive action increases as the square root of no. of injected hypertensin units; this relationship can be demonstrated in a nomogram; the pressor effect lasts 3–4 min., with 8–16 units 8 min.; there is no post-hypertensive hypotension. In man (1 unit per 10 kg. body-wt.), systolic and diastolic pressures are increased and there is reflex bradycardia, transient pallor, and hyperpnoea. Hypertensin has a direct vasoconstrictor effect and produces contraction of various smooth muscle organs. The effects are little potentiated by cocaine or pyrogallol, but strongly augmented by previous injection of veritol (0.05 mg. per kg.) or ephedonin (0.1 mg. per kg. body-wt.). The pressor effects of renin and hypertensin are unaffected by adrenalectomy and hypophysectomy; they are augmented by nephrectomy. A. S.

Experimental hypertension from section of moderator nerves: relation to presence of kidney tissue. C. B. Thomas (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 24–27).—Increase of blood pressure produced by section of carotid sinus and aortic depressor nerves was not less than normal in dogs from which both kidneys had been removed 24–48 hr. earlier. Either chloralose or ether was used as anaesthetic. V. J. W.

Inhibitory action of amine-oxidase and tyrosinase on vasoconstrictor effect of hypertensin. H. Croxatto and R. Croxatto (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 392–395).—"Hypertensin," made by incubating renin with ox-serum pseudoglobulins, is rapidly destroyed by extract of squid liver or of mushrooms, which contain amine-oxidase and tyrosinase respectively. V. J. W.

Effect of bilateral splanchnicectomy on renal blood flow in hypertension. A. Selzer and M. Friedman (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 429–431).—In 2 patients renal blood flow was not affected by the operation. Glomerular filtration decreased in one and was unchanged in the other. V. J. W.

Relation of arterial pulse pressure to arterio-venous oxygen difference, especially in hypertension. F. L. Apperly and M. K. Cary (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 492–495).—In normal and various pathological conditions the product of brachial blood pressure, pulse rate, and arterio-venous O_2 difference in the arm is a const. Therefore in hypertension the last val. is diminished, indicating that a larger vol. of blood flows through the arms and vaso-constriction is greater in the viscera. In hyperthyroidism there is increased O_2 consumption in the arm circulation. V. J. W.

Experimental hypertension and neuro-hypophysis. D. G. Sattler and W. R. Ingram (*Endocrinol.*, 1941, 29, 952–957).—Section of the supraoptico-hypophysial tract caused some decrease in blood pressure in 5 out of 8 dogs with renal ischaemic hypertension. V. J. W.

Comparison between destruction of angiotonin, hydroxytyramine, and tyramine by renal extracts. R. J. Bing, M. B. Zucker, and W. Perkins (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 372–375).—The substance in renal extracts which destroys angiotonin is not identical with that which destroys pressor amines because the former reaction occurs in absence of O_2 , and it is possible to prepare a fraction which destroys angiotonin but not hydroxytyramine. V. J. W.

Nature of clinical and experimental arterial hypertension. I. H. Page (*J. Mt. Sinai Hosp.*, 1941, 8, 3–25).—A lecture. E. M. J.

Effects of Roentgen irradiation on linear rate of flow in cutaneous lymphatics in man. J. N. Ané and G. E. Burch (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 471–473).—Rate of flow* determined by McMaster's method (*Physiol. Abs.*, 1937, 22, 297) was unaffected by small doses (220–450 r.) but reduced by larger ones (over 1000 r.). V. J. W.

VII.—RESPIRATION AND BLOOD GASES.

Method of obtaining gas samples of total inspired air. M. Eckman and A. L. Barach (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 346–348).—An aspiration bottle is connected with the inhalation mask,

and a vol. of gas equal to that of an ordinary inspiration is drawn into the bottle while the subject holds his breath. V. J. W.

Peripheral vascular responses to general anoxia. D. J. Abramson, H. Landt, and J. E. Benjamin (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 214—216).—Inhalation of an atm. of 10% O₂ and 90% N₂ caused an immediate decrease in blood flow in the hand, and a rather later increase in blood flow in forearm and leg. There was a rise in pulse and respiration rates and no change in blood pressure (cf. A., 1939, III, 562). V. J. W.

Role of adrenal cortex in [metabolic changes of] acute anoxia. R. A. Lewis, G. W. Thorn, G. F. Koepf, and S. S. Dorrance (*J. clin. Invest.*, 1942, **21**, 33—45).—Normal human subjects exposed to an O₂ tension of 98 mm. Hg for 5 hr. had an arterial O₂ saturation of 83%. There was no decrease in O₂ consumption but a consistent decrease in N excretion in the urine. Experimental animals exposed to low O₂ tensions for 5 hr. showed a depletion of liver-glycogen not associated with a fall in blood-glucose unless the anoxia was very severe. Exposure for 24 hr. was associated with a rise in blood-glucose and liver-glycogen (except in dogs), and an increase in the renal excretion of N (in all animals). Adrenalectomised animals succumbed when exposed to O₂ tensions that normal animals were able to withstand unless treated with the "carbohydrate-regulating" factor of the adrenal cortex; no increase in blood-glucose, liver-glycogen, or N excretion occurred. Control animals exposed to low O₂ tensions for 24 hr. showed a slight increase in urinary N and P excretion and a marked increase in Na, Cl, and P excretion whilst adrenalectomised animals showed a great increase in K excretion but no increase in N, P, Na, or Cl excretion. C. J. C. B.

Influence of age on survival of respiration, spinal reflexes, pupillary responses, and heart action [under oxygen deprivation]. W. A. Selle (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 417—419).—All these mechanisms survive much longer under O₂ deprivation in young than in adult animals. V. J. W.

Survival of infant and adult rats at high altitudes. H. C. Herrlich, J. F. Fazekas, and H. E. Himwich (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 446—447).—At 1½ days old, rats can survive a reduced air pressure corresponding to an altitude of 40,000 ft. at which adults die rapidly. V. J. W.

Influence of body size on gaseous nitrogen elimination during high oxygen breathing. A. Courmand, I. G. Yarmush, and R. L. Riley (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 280—284).—After 4 deep breaths of pure O₂ the subject continues to breathe pure O₂ for 7 min. during which N₂ exhaled is determined. This val. varies with body surface area and correlation consts. and equations are given. V. J. W.

Asphyxial resuscitation with inert gases. S. A. Thompson and G. I. Birnbaum (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 203—204).—Dogs were asphyxiated by either tracheal obstruction or inhalation of N₂, H₂, or N₂O to a stage of respiratory cessation and failing heart. They were then resuscitated, without O₂, by artificial respiration, manual or inflational, of the same gas that had caused asphyxia. Such resuscitation does not occur if both vagi have been cut. V. J. W.

Caisson disease. I. J. Thorne (*J. Amer. Med. Assoc.*, 1941, **117**, 585—588).—300 cases of caisson disease without fatality occurred during the building of the New York—Queens Midtown tunnel in 1938. There was very little serious disability, which was attributed to selection of healthy workers aged 20—40, to prompt recompression when the earliest symptoms appeared, to prophylactic inhalation of O₂—He mixtures to hasten N₂ release from tissues during decompression, and to rigid control of work and rest periods. The clinical syndrome is fully described. C. A. K.

Lung volume and pulmonary dynamics in Raynaud's disease. Effect of exposure to cold. M. D. Altschule, H. Linenthal, and N. Zamchek (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 503—505).—In 3 patients, 2 with normal lungs and 1 with pulmonary fibrosis, cooling of the legs by ice made no difference to lung vol. or any of its subdivisions. V. J. W.

Neonatal pneumothorax. W. P. Elkin (*Sth. Med. J.*, 1941, **34**, 929—933).—A review and report of 3 cases. E. M. J.

Pigment of anthracosis. F. A. Taylor (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 70—72).—Pigmented lung was treated with papain followed by NaOCl. The black pigment left contains a high % of ash and only 0.4—0.8% N, and is therefore coal dust and not endogenous. V. J. W.

VIII.—MUSCLE.

Electrolytes in *Phascolosoma* muscle. H. B. Steinbach (*Biol. Bull.*, 1940, **78**, 444—453).—An analysis shows that K concn. is higher and Na and Cl⁻ are lower in the muscle than in the medium. The balance of inorg. constituents is discussed. D. M. Sa.

Smooth muscle effects of carnosine. D. Slaughter, T. U. Johnson, and J. W. Gales (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 95—98).—Carnosine causes contraction of isolated intestine of the monkey, and prevents the usual relaxing effect of morphine on it. V. J. W.

Effects of castration and testosterone propionate on striated perineal musculature in rat. P. Wainman and G. C. Shipounoff (*Endocrinol.*, 1941, **29**, 975—978).—Castration caused marked decrease in size with narrowing of fibres in these muscles, which were brought back to normal by 0.2 mg. of testosterone propionate daily, which also caused hypertrophy of these muscles in normal rats, and in spayed females. V. J. W.

Vitamin-E and α -tocopherol therapy of neuromuscular and muscular disorders. R. N. DeJong (*Arch. Neurol. Psychiat.*, 1941, **46**, 1068—1075).— α -Tocopherol in doses up to 240 mg. daily produced no outstanding clinical response in cases of amyotrophic lateral sclerosis and progressive muscular atrophy with bulbar involvement. Sometimes a decrease in fibrillary tremors and subjective increase of muscular strength for a short period was noted. Toxic reactions, usually of the skin, occurred. W. M. H.

Treatment of fibrositis with vitamin-E. D. W. Ingham (*Med. Ann. Columbia*, 1941, **10**, 470—471).—Complete relief was obtained in 12 cases of generalised fibrositis after a 3—4 weeks' course of daily doses of 2—8 c.c. of wheat-germ oil (6 cases) or of three daily doses of 3 mg. of α -tocopherol acetate. E. M. J.

Ineffectiveness of thiamin hydrochloride in treating late weaning paralysis of vitamin-E-deficient rats. R. Terry (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 34—37).—Experiments of Holmes and Pigott (A., 1941, III, 852) are repeated and not confirmed. V. J. W.

Effect of quinine on metabolism in fasting dogs and patients with creatinuria. A. T. Milhorat, W. E. Bartels, and V. Toscani (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 540—543).—In fasting dogs and in 2 boys with muscular dystrophy administration of quinine by mouth caused on the following day a decrease in urinary N, P, and S, but no change in creatine and creatinine excretion. V. J. W.

IX.—NERVOUS SYSTEM.

Functional organisation of nervous system of *Enteropneusta*. T. H. Bullock (*Biol. Bull.*, 1940, **79**, 91—113).—The complex variations of the activities of the ciliature suggest nervous control. Glandular secretion and muscular activities have not been definitely correlated with the nervous system, which in these animals is a diffuse superficial network giving neuromuscular autonomy to small fragments. All nerve concns. including the collar nerve cord were found to be mere conduction paths and no ganglionic central nervous system was demonstrated. D. M. Sa.

Electrical rectification in single nerve fibres. R. Guttman and K. S. Cole (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 293—297).—Non-polarisable electrodes were placed on the giant nerve fibre of the squid, the nerve under one electrode being injured by KCl. P.d. up to 30 mv. was applied, and resistances determined to d.c. in each direction. The uninjured part of the nerve acts as a rectifier, allowing current to pass more easily outward than inward, so that when the positive electrode is on this region resistance increases with p.d. This property is abolished by cocaine or veratrine. V. J. W.

Electromyographic studies on recoordination of leg movements in poliomyelitis patients with transposed tendons. P. Weiss and P. F. Brown (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 284—287).—In patients in whom the biceps femoris tendon has been transplanted to the extensor side of the knee, electric changes could be noted in the muscle on extensor as well as flexor efforts by the 17th day. By the 128th day there was no electric change on making the flexor effort. Relapses may occur in states of fatigue or lack of attention. V. J. W.

Anaesthesia and e.m.f. of the nervous system. P. J. Harman (*Yale J. Biol. Med.*, 1941, **14**, 189—200).—In rats, the brain-cord or brain-sciatic e.m.f. rises as anaesthesia deepens and falls as it lightens. The brain is electropositive, in the external circuit, to both the cord and the sciatic nerve, regardless of the degree of anaesthesia. The gradient between cord and sciatic nerve is of variable polarity in different rats, relatively small, and impervious to the level of anaesthesia. The changes in voltage gradients following the lethal administration of ether or CHCl₃ are described. The changes in voltage associated with anaesthesia are localised in the cerebrum and are probably due to alterations in the ratio of oxidations and reductions in the affected neurones. F. S.

Innervation and "tonus" of striated muscle in man. P. F. A. Hoefler (*Arch. Neurol. Psychiat.*, 1941, **46**, 947—973).—The part of postural myotatic reflexes in the regulation of tone of skeletal muscle was investigated in normal and dyskinetic subjects. Action potentials of muscle were recorded with an ink writing oscillograph. Normally effortless standing shows little nervous regulation, intrinsic elastic properties of the muscle providing some of the control. Spasticity is an exaggeration of the normal stretch reflex; at rest spastic muscles show no impulses while rigid muscles show a continuous influx of impulses. In rigidity the tonic activity is not explicable in terms of postural segmental regulation although as in spastic muscles this is exaggerated. In cerebellar disturbances the

postural myotatic regulation is decreased or absent. In athetosis and dystonia no segmental tonic mechanism is found. Tonic states come from the simultaneous innervation of antagonists. W. M. H.

Changes in blood-urea following hypothalamic lesions. H. R. Miller, E. Krueger, J. M. Alper, and E. A. Spiegel (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 478—481).—Lesions of the anterior hypothalamic and pre-optic regions in cats caused an increase, sometimes 4-fold, in blood-urea. No other urinary constituent was affected and, in those animals which survived, blood-urea fell to normal after 23—108 days. V. J. W.

Melanin formation by deplanted fragments of thalamus in amphibian larvae. P. Weiss (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 343—346).—Portions of thalamus of *Amblystoma* larvae were implanted into the dorsal fin of others. The implanted region became deeply pigmented by melanin deposition and the local chromatophores were expanded. V. J. W.

Electro-encephalography. H. Davis (*J. Amer. Med. Assoc.*, 1941, **117**, 983—987).—A review. C. A. K.

Control of pain by subcutaneous injection of oxygen. J. H. Evans (*N.Y. Sta. J. Med.*, 1941, **41**, 1927—1933).—A review. E. M. J.

Regulation of skin temperature after lesions of spinal nerve roots. J. C. Hinsey, K. Hare, and R. A. Phillips (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 158—163).—In cats, section of posterior roots to the fore-limb does not make the pads cooler than those of the opposite side and they are sometimes warmer. In the case of the hind limb the pads may be cooler, warmer, or not affected, but in all cases differences between the two sides disappear after bilateral sympathectomy. V. J. W.

Effect of local application of sulphonamides on cerebral tissue. M. Taffel and W. J. German (*Yale J. Biol. Med.*, 1941, **14**, 139—142).—Crystals of sulphaniilamide, sulphapyridine, sulphathiazole, sulphaguanidine, and sulphadiazine produced a mild inflammatory foreign-body reaction when applied to the cerebral surface or to a denuded area of cerebral cortex in monkeys. The inflammatory response bore no relation to the respective solubilities of the drugs. The intrinsic cellular components of the brain were not injured. (4 photomicrographs.) F. S.

Temperature sensation in sympathectomy. Influence on sensibility to heat and cold and to certain types of pain. O. R. Hyndman and J. Wolkin (*Arch. Neurol. Psychiat.*, 1941, **46**, 1006—1016).—Sensation of high and low temp. is disturbed in sympathectomised areas. A cold object feels warmer and a hot object feels cooler to the sympathectomised hand than to its normal mate. When a sympathectomised zone of the skin is tested alone no alteration can be elicited in the sensibility to or the discrimination of touch, pain, and temp. as compared with these faculties on the normal side. Sympathectomy diminishes and almost abolishes the aching and stinging pain in the hand and foot on immersion in ice water. Likewise, after a period in a refrigerator, the subject may be able accurately to map the sympathectomised skin area by the sensation of relative warmth. W. M. H.

Convulsive phenomena produced by new method of remote excitation. F. A. Fender (*Arch. Neurol. Psychiat.*, 1941, **45**, 617—632).—In the free animal electrical stimulation of the brain is produced by an embedded secondary unit consisting of three circuits, each composed of a coil condenser and rectifier. The animal is kept within a cage which is the primary unit, providing an electromagnetic field with a frequency of 430 kc., self-modulated at 60 cycles. With this technique behaviour in the latent period of a convulsion and epileptic equiv. have been observed in dogs and ablation of both motor cortices shown to prevent convulsions. There is considerable variation in the refractory periods following convulsions. W. M. H.

Regulation of treatment of epilepsy by synchronised recording of respiration and brain waves. R. S. Schwab, A. Grunwald, and W. W. Sargant (*Arch. Neurol. Psychiat.*, 1941, **46**, 1017—1034).—The effect of drugs on epileptics may be quantitatively determined by study of the changes in the delta index on hyperventilation. The min. respiratory vol. is obtained from the basal metabolism machine used simultaneously with the electro-encephalograph. Thus the resistance of the subject to alkalosis induced by over-breathing is indicated. W. M. H.

Neurological aspects of spasticity and athetosis. T. J. Putnam (*N.Y. Sta. J. Med.*, 1941, **41**, 1822—1827).—A review. E. M. J.

Benzedrine sulphate in case of encephalitis lethargica. A. J. Revell (*J. Kansas Med. Soc.*, 1938, **39**, 505—506).—Benzedrine therapy was instituted 2 weeks after the onset of encephalitis lethargica following measles, when the patient, a 5-year-old girl, was completely paralysed and unable to swallow. 3 doses of 0.5 mg. were given daily until a fortnight later, when the improvement that had set in after 5 days was interrupted by attacks of clonic contractions which lasted for 6 days. Benzedrine therapy was then re-established and 5 days later the paralysis had almost completely disappeared. E. M. J.

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Bulgarian treatment of post-encephalitic Parkinsonism. H. Vollmer (*J. Mt. Sinai Hosp.*, 1939, **6**, 93—99). E. M. J.

Amyotrophic lateral sclerosis. Origin and extent of upper motor neurone lesion. C. Davison (*Arch. Neurol. Psychiat.*, 1941, **46**, 1039—1058).—The extent of the lesion in the upper motor neurone was studied in 42 cases of amyotrophic lateral sclerosis. In one third of the cases the disease originated in the giant pyramidal cells of Betz; in others it involved the pyramidal tracts in the pons, the medulla oblongata, and spinal cord. The degree of involvement of the Betz cells was not related to the duration of the illness. In half the cases other ventrolateral tracts of the spinal cord, e.g., spinohthalmic and spinocerebellar, were involved. In 36 the lesions were degenerative and in 6 inflammatory. W. M. H.

Multiple sclerosis problem in Baltimore City. L. C. Kolb, O. R. Langworthy, and M. Cakrtova (*Amer. J. Hyg.*, 1942, **35**, 1—14).—An analysis was made of 246 cases of multiple sclerosis in Baltimore from 1929 to 1939. Frequency is greater for males and in 80% of cases symptoms first appear at ages 20—40. The disease is unrelated to occupation, and occurred with equal frequency in local, foreign, and negro inhabitants. The monthly case rate was 13.0 per 100,000 population while over 11 years the incidence-prevalence rate was 17.8 per 100,000. Pregnancy, surgical intervention, febrile disease, intoxications, and trauma influence the disease. Expectation of death is greater than for the normal population. 75% of patients were incapacitated for work within a year. The disease is compared with poliomyelitis and post-encephalitis as a social-economic problem. B. C. H.

Inconstant sympathetic neural pathways: their relation to sympathetic denervation of upper extremity. H. D. Kirgis and A. Kuntz (*Arch. Surg., Chicago*, 1942, **44**, 95—102).—From anatomical data it is concluded that, in man, complete sympathetic denervation of the upper extremity by sympathetic ganglionectomy requires extirpation of the cervicothoracic and lower sympathetic trunk ganglia, including the 2nd and 3rd thoracic, in probably 40—50% of cases. In certain cases where the communicating ramus of the 8th cervical nerve includes preganglionic fibres, it may be necessary to remove the low middle cervical ganglion. (1 photomicrograph.) F. S.

Pathology of chasteek paralysis in foxes: counterpart of Werner's hæmorrhagic polioencephalitis of man. C. A. Evans, W. E. Carlson, and R. G. Green (*Amer. J. Path.*, 1942, **18**, 79—88).—Chasteek paralysis is an economically important, fatal, neurological disease of foxes which is caused by a 10% content, or more, of certain types of fresh whole fish in the ration. It can be prevented by adding large amounts of thiamin to the diet. The liver shows severe injury. In the brain, bilaterally symmetrical irregular dilatation and striking proliferation of small vessels, limited to certain nerve centres predominantly in the paraventricular region, are diagnostic. (5 photomicrographs.) C. J. C. B.

Icterus of adult brain. E. K. Rutledge and K. T. Neuburger (*Amer. J. Path.*, 1942, **18**, 153—157).—Foci of cerebral softening containing bile pigment are described in a patient with carcinoma of the gallbladder and severe generalised jaundice. C. J. C. B.

Neuroblastoma, ganglioneuroma, and fibrosarcoma in stillborn fœtus. E. L. Potter and J. M. Parrish (*Amer. J. Path.*, 1942, **18**, 141—147).—A premature stillborn fœtus is described in which there was a generalised neoplasia involving all of the sympathetic ganglia, adrenal glands, and wall of the urinary bladder. Multiple tumour foci were present in the liver. The sympathetic and spinal nerves were hypertrophied. (4 photomicrographs.) C. J. C. B.

Demyelination: a clinico-pathological and experimental study. E. W. Hurst (*Med. J. Austral.*, 1941, **11**, 661—666).—In KCN and Na azide poisoning in monkeys, very severe anoxia led to major damage to the cerebral or cerebellar cortex, and less severe anoxia led to necrosis of the basal nuclei. Repeated small doses led to necrosis in the basal nuclei or white matter and demyelination in the white matter. Four cases of Schilder's disease and two cases of acute hæmorrhagic leucoencephalitis are reported, and there is a review with 42 references. F. S.

Deficiency syndrome and diffuse inflammation of central and peripheral nervous system. J. Marmor (*J. Mt. Sinai Hosp.*, 1939, **6**, 138—140).—Case report. E. M. J.

Demonstration of myelolytic substances in disseminated sclerosis. A. Weil and G. Heilbrunn (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 233—237).—Dioxan extract of urine of patients with disseminated sclerosis or post-encephalitic Parkinsonism has a destructive action on myelin sheaths of rat spinal cord *in vitro*. The substance is not present in neuro-syphilis or other central nervous diseases. V. J. W.

Action of vitamin-B₁₂ in paralysis agitans. C. L. Meller (*Minnesota Med.*, 1942, **25**, 22—24).—4 cases of postencephalitic and 6 cases of idiopathic paralysis agitans were given a course of subcutaneous injections of vitamin-B₁₂ while drugs of the atropine series were gradually withdrawn. 50 mg. were given daily for 10 days, 100 mg. for 3—4 days, and then 50 mg. on alternate days as a maintenance

dose, supplemented by 10 grains of brewers' yeast 3 times a day and cod-liver oil tablets. 3 of the postencephalitic cases reported subjective improvement, and there was objective improvement in 5 cases of the idiopathic group, insufficient, however, to permit a return to normal occupations.
E. M. J.

Prevention of sensory neurone degeneration in pig [from dietary deficiencies], with special reference to rôle of various liver fractions. M. M. Wintrobe, C. Mushatt, J. L. Miller, jun., L. C. Kolb, H. J. Stein, and H. Lisco (*J. clin. Invest.*, 1942, 21, 71—84).—Abnormal gait and degenerative changes in peripheral nerves, spinal ganglia, and posterior funiculi of the spinal cord developed in pigs deficient in factors other than thiamin, riboflavin, and nicotinic acid but did not occur when desiccated whole liver or brewers' yeast was fed. Wheat germ together with lucerne meal was not as effective in preventing degeneration as liver or yeast. The various fractions obtained during the manufacture of anti-pernicious anæmia liver extract were assayed for their val. in protecting the nervous system. The fraction used in the treatment of pernicious anæmia was the most effective of all those tested but relatively large amounts were required. The val. of the extract was not increased by parenteral administration. Growth was better when the anti-pernicious anæmia extract or the "press cake" fraction was given than when other fractions were used, but was not as satisfactory as whole dried liver or a mixture of all the fractions. Furthermore, convulsions and anæmia developed in pigs which were fed these fractions. All the animals used except those given yeast throughout the experiment received supplements of thiamin, riboflavin, and nicotinic acid in adequate amount and were given a diet of crude casein, sucrose, lard, and a salt mixture.
C. J. C. B.

Various forms of shock therapy in mental disorders. L. B. Kalinsky (*N.Y. Sta. J. Med.*, 1941, 41, 2210—2214).—A review.
E. M. J.

Use of metrazol in treatment of schizophrenia. R. M. Fellows and M. E. Hyde (*J. Kansas Med. Soc.*, 1938, 39, 244—250).—18 cases of recent schizophrenia were treated with 12—41 injections of metrazol. 6 improved sufficiently to be let out on parole, 8 showed moderate improvement but 2 of these relapsed completely, 4 cases had an excessive daily output of urine while on metrazol therapy; one excreted over 10 l. on each of 3 successive days.
E. J.

Pharmacological shock therapy in mental disease. G. H. Freeman, A. S. Nissen, and E. W. Miller (*Minnesota Med.*, 1942, 25, 31—35).—160 cases have been treated by insulin and 99 by metrazol shock. In both groups early cases reacted much more favourably than late. Under 6 months the failures were 15 out of 70, after 2 years 88 out of 112.
E. M. J.

Subconvulsive metrazol therapy. E. Eisner (*J. Kansas Med. Soc.*, 1939, 40, 463).—Only one of 20 patients consisting of 15 schizophrenics and 5 manic depressives improved after a course of metrazol injections in subconvulsive doses.
E. M. J.

Convulsive shock therapy in involuntional psychoses. G. W. Robinson, jun. (*J. Kansas Med. Soc.*, 1939, 40, 14—15).—8 of 10 cases treated by metrazol convulsions returned to their former occupations.
E. M. J.

Pathological variations in blood- and cerebrospinal fluid-pyruvic acid. E. Bueding, H. Wortis, M. Stern, and D. Esturonne (*J. clin. Invest.*, 1942, 21, 85—89; cf. A., 1940, III, 718).—Normal fasting pyruvic acid levels are reported in the blood (0.7—1.3 mg.-%) and c.s.f. (0.6—1.3 mg.-%) in cases of "chronic" peripheral neuropathy, chronic alcoholism without objective evidence of nutritional deficiency, various psychiatric and medical disorders, and certain cases of hyperpyrexia. Hyperpyruvæmia was found in cases of "acute" peripheral neuropathy and in about $\frac{2}{3}$ of the cases was associated with hyperpyrexia.
C. J. C. B.

X.—SENSE ORGANS.

Conjugate movements of eyes and visual perception. Higher visual functions in each homonymous field following complete section of corpus callosum.—See A., 1942, III, 212.

Ocular signs of sympathetic stimulation in taboparesis.—See A., 1942, III, 218.

Lesions of the superior olive and auditory function.—See A., 1942, III, 212.

Production of eye colour hormone in *Drosophila melanogaster*.—See A., 1942, III, 188.

Recent discoveries concerning sense organs. O. Lowenstein (*Proc. Roy. Soc. Glasgow*, 1940—41, 65, 15—16).—Abstract of a lecture.

Visual acuity and illumination in different spectral regions. S. Shlaer, E. L. Smith, and A. M. Chase (*J. Gen. Physiol.*, 1942, 25, 553—569).—The relation between visual acuity and illumination was measured for 3 subjects in red and blue light, of dominant λ 670 m μ . and 490 m μ . respectively. The incomplete circle (Landolt

ring) and a grating were used as test objects. The data for red light fall on single continuous curves, representing pure cone vision, whilst those for blue light fall on two curves, with a transition at about 0.03 photon. Vals. below this illumination represent pure rod vision; those immediately above, the co-operative activity of rods and cones, since they give higher visual acuity vals. than either. In blue light the rod data fall about 1.5 log units lower on the intensity axis than in white light, using the Landolt ring test object, and about 1.0 log unit lower using the grating. The pure rod and cone data, with both test objects, can be described precisely by two modified forms of the "stationary state" equation for the photoreceptor process, $KI = x^n/(a - x)^m$ (Hecht, 1937). The factors which limit max. visual acuity under various experimental conditions are considered.
D. M. S.

Visual disorientation with special reference to lesions of right cerebral hemisphere.—See A., 1942, III, 302.

Tissue-acetylcholine. IX. Diminution of acetylcholine of retina during functional disuse. H. C. Chang, L. T. Lee, and T. H. Li (*Chinese J. Physiol.*, 1941, 16, 373—377).—There was less acetylcholine, determined by means of toad's rectus muscle, in the blind-folded than in the open eye of dogs.
N. H.

Biochemistry of lens. VIII. Proof of presence of vitamin-C in crystalline lens. J. Bellows and L. Rosner (*Arch. Ophthalmol.*, 1936, 16, 248—251).—Vitamin-C oxidase is most active at pH 5.5—6. The reducing substance in the lens and aq. humour that is effective at pH 2 is entirely oxidised by the enzyme. CH. ABS. (6)

Effect of alcohol on vision. H. Newman and E. Fletcher (*Amer. J. med. Sci.*, 1941, 202, 723—731).—50 drivers were each given 7 visual tests before and after drinking an ounce of whisky per 30 lb. of body wt. The resultant blood-alcohol concns. were 58—218 mg.-%. In every case with a concn. over 115 mg.-% a change in at least one of the tests was found. The greatest no. of changes occurred in visual acuity, the smallest in field of vision. Although there was a definite tendency for those with the higher blood-alcohol concns. to show more changes, this was not so in every case.
C. J. C. B.

Vitamin-A. Relation of blood level and adaptation to dim light to diet. H. W. Josephs, M. Baber, and H. Conn (*Johns Hopkins Hosp. Bull.*, 1941, 68, 375—387).—In a large no. of children the vitamin-A, carotene, and total lipins of the serum as well as the adaptation to dim light have been studied. The wide spread of serum-A vals. make it impossible to say that a given val. is below normal, although for diagnostic purposes vals. below 0.35 unit of -A per c.c. of serum are abnormally low. Although carotene vals. were shifted downwards with increasingly poor diet, the shift in -A vals. and adaptation time was considerable except in the poorest dietary group. The relationship between serum-A and adaptation time does not support the hypothesis that adaptation time is necessarily influenced by the availability of -A as represented by the level in the serum.
T. F. D.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Present status of hormone therapy. M. Hoffmann (*Minnesota Med.*, 1942, 25, 19—22).
E. M. J.

Present status of commercial endocrine preparations. S. C. Freed (*J. Amer. Med. Assoc.*, 1941, 117, 1175—1182).—A review.
C. A. K.

Absorption rate of hormone-cholesterol pellets. M. B. Shimkin and J. White (*Endocrinol.*, 1941, 29, 1020—1025).—Hormones dissolved in melted cholesterol and implanted as pellets were absorbed more slowly and uniformly than when pure hormones were so implanted.
V. J. W.

Biological rôle of steroids and their bearing on clinical medicine. H. Sobotka (*J. Mt. Sinai Hosp.*, 1941, 8, 255—268).—A lecture.
E. M. J.

Colorimetric estimation of 17-ketosteroids in urine. R. W. Fraser, A. P. Forbes, F. Albright, H. Sulkowitch, and E. C. Reifstein (*J. clin. Endocrinol.*, 1941, 1, 234—256).—1500 17-ketosteroid assays were carried out in patients with endocrine and related disorders. Average excretion per 24 hr. in a small series of normals was: males 14 mg. (8—23 mg.) and females 9 mg. (5—14 mg.). The excretion was lowered by malnutrition, gastro-intestinal diseases, anæmia, infection, and particularly by liver disease. 5 female cases of Addison's disease gave zero assays and 3 male cases excreted approx. 3 mg. per 24 hr. 15 cases of panhypopituitarism gave negative (13 cases) or low excretion vals. and may be distinguished from cases of anorexia nervosa where the excretion is normal or low but not negative. Cases of pregnancy or acromegaly had normal or low excretion. Adreno-genital cases with adrenal tumours or hyperplasia had high excretion. Female cases of precocity due to probable hypothalamic lesions do not have increased excretion. 8 patients showing Cushing's syndrome had increased excretion though only 5 had adrenal tumours. The 17-ketosteroid excretion in hypothyroidism is very low. The excretion in male eunuchs

having negative follicle-stimulating hormone findings in the urine was lower than in those having positive assays, and differed in that they showed no rise in excretion following chorionic gonadotropin treatment, suggesting that the eunuchoidism is of pituitary origin with impaired adrenal-cortical function. About 50% of injected testosterone can be recovered in the urine. Injection of chorionic gonadotropin increases the excretion in panhypopituitarism but not in male castrates; it therefore stimulates testicular secretion but not that from the adrenal cortex. Deoxycorticosterone injection increases the excretion in cases of panhypopituitarism and female Addison's disease. P. C. W.

Influence of thyroid on iodide tolerance in rabbits. A. Lein (*Endocrinol.*, 1941, 29, 908—915).—After injection of 2—8 mg. of KI, rate of iodide disappearance from blood is approx. an exponential curve and is not modified by hypertrophy or absence of the thyroid. After injection of 0.075 mg. the tolerance curve reaches a plateau in 1—2 min. in rabbits with hyperplasia of thyroid, in 20—30 min. in thyroidectomised, and in 5—10 min. in control animals. V. J. W.

Calorigenic action of thyroglobulin with different thyroxine content. J. F. McClelland, W. C. Foster, and J. W. Cavett (*Endocrinol.*, 1941, 29, 927—930).—Effect on basal metabolic rate of feeding with thyroglobulin is proportional to its thyroxine and not to its I content. V. J. W.

Umbilical hernia of infantile myxœdema. W. A. Reilly (*J. clin. Endocrinol.*, 1941, 1, 532—535).—3 cases of infantile myxœdema are described in which umbilical hernias disappeared on thyroid treatment. P. C. W.

Chemical constitution of brain, kidneys, and heart of rats in experimental hypothyroidism. A. Weil (*Endocrinol.*, 1941, 29, 919—926).—Effects of thyroidectomy on wts. of various other organs are tabulated. In the anterior pituitary, if only 30% of the thyroid is left there is increase in size and no. of basophil cells. With less than 25% these degenerate. In brain, kidney, and heart thyroidectomy causes a slight increase in water content and a decrease in acetone-sol. lipins and phospholipins. V. J. W.

Influence of thyroidectomy on variability of neuromuscular activity in rat. E. B. Brody (*Endocrinol.*, 1941, 29, 916—918).—Day-to-day variability of activity, measured by rotating cage technique, is decreased by thyroidectomy. Total activity is decreased by either thyroidectomy or thyroxine injections. V. J. W.

Metabolism of iodine in Graves' disease. S. Hertz, A. Roberts, and W. T. Salter (*J. clin. Invest.*, 1942, 21, 25—29).—In 22 thyrotoxic patients and 2 normal persons, urinary excretion, thyroid uptake and retention, and chemical distribution of the thyroid-I were studied using radioactive I. The largest % uptakes in the thyroid were at low dosage levels of I. Pre-iodinisation decreased subsequent thyroid-I uptake. The hyperplastic thyroid of Graves' disease may take up 80% or more from a sufficiently small dose (2 mg.); urinary excretion accounts for most of the remainder. Analysis of the thyroid after operation for thyroxine-like and non-thyroxine-like fractions showed the labelled I to be increasingly in the former fraction as the time following administration increases. C. J. C. B.

Use of radioactive iodine in differential diagnosis of 2 types of Graves' disease. S. Hertz and A. Roberts (*J. clin. Invest.*, 1942, 21, 31—32).—The ophthalmopathic type of Graves' disease patient excretes more I from a 2-mg. (or less) test dose and takes up less in the thyroid than the classic Graves' disease patient. The urinary I excretion can be used as a diagnostic aid in distinguishing the 2 types of patients. C. J. C. B.

Psychic factors in recurrent Graves' disease. S. S. Bernstein (*J. Mt. Sinai Hosp.*, 1939, 6, 126—129).—Case report. E. M. J.

Bone-calcium during hyperthyroidism. V. A. Drill (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 448—450).—Adult rats which received 0.1 g. of dried thyroid per day for 25 days lost 25% of body wt. and 2.66% of Ca content of ash of the femur. V. J. W.

[Simultaneous] hyperthyroidism and diabetes. M. Margolin (*Nebraska Sta. Med. J.*, 1941, 26, 211—214).—A review. E. M. J.

Activated sterols in parathyroid insufficiency. F. C. Mclean (*J. Amer. Med. Assoc.*, 1941, 117, 609—619).—A review. C. A. K.

Case of hypoparathyroidism treated with dihydrotachysterol. H. F. Newman (*J. Mt. Sinai Hosp.*, 1940, 6, 327—332). E. M. J.

Treatment of diffuse scleroderma with dihydrotachysterol. W. M. Perez, L. J. Soffer, and S. Silbert (*J. Mt. Sinai Hosp.*, 1940, 6, 333—337).—Report of 2 cases. E. M. J.

Diseases of adrenal glands. I. Addison's disease. E. J. Kepler and D. M. Willson. II. Tumours of adrenal cortex and medulla. E. J. Kepler and F. R. Keating (*Arch. intern. Med.*, 1941, 68, 979—1009, 1010—1036).—Reviews. C. A. K.

Accelerated hair-growth in rat after adrenalectomy cannot be attributed to thyroid. E. O. Butcher (*Proc. Soc. Exp. Biol. Med.*,

1941, 48, 120—122).—Acceleration of hair-growth after adrenalectomy is as marked in thyroidectomised as in normal rats. V. J. W.

Speed of action of "slow adrenaline" (in oil). L. C. Bacon, M. Sticker, and R. W. Lamson (*J. Allergy*, 1941, 13, 48—54).—In 31 of 36 patients doses of 0.2—1.5 c.c. of adrenaline in oil gave relief in an average of 10 min. C. J. C. B.

Virilism in case of adrenal cortex carcinoma. A. J. Rettenmaier, M. S. Allen, and E. D. Liddy (*J. Kansas Med. Soc.*, 1941, 42, 471—474). E. M. J.

Unusual case of Addison's disease. F. W. Hall (*J. Kansas Med. Soc.*, 1939, 40, 289—291).—A man, aged 55, admitted for investigation with a 5-months' history of skin pigmentation and loss of 20 lb. in wt. suddenly became nauseated, vomited, complained of severe generalised aching, and had several rigors. The pulse rate rose from 96 to 156 and the blood pressure fell from 92/54 to 36/26 on the third day of the illness. Intravenous saline and adrenaline and intramuscular metrazol raised the blood pressure to 64/20 but the patient died the same day. Autopsy showed that both adrenal glands were extensively replaced by tuberculous caseous masses. E. M. J.

Renal function in patients with Addison's disease or adrenal insufficiency secondary to pituitary pan-hypofunction. J. H. Talbot, L. J. Pecora, R. S. Melville, and W. V. Consolazio (*J. clin. Invest.*, 1942, 21, 107—119).—The clinical tests for renal disease were normal in most patients. Rate of formation of glomerular filtrate and tubular reabsorptive capacity for glucose were abnormal. Renal plasma flow was affected less and tubular capacity for excreting diodrast least. The filtration fraction was depressed below normal. Administration of deoxycorticosterone acetate corr. partly, but only temporarily, these deficiencies; adrenal cortical extract had no action. Administration of deoxycorticosterone acetate to 2 normal persons was without effect on renal activity. C. J. C. B.

Replacement therapy in experimental adrenal cortical insufficiency with deoxycorticosterone acetate and sodium chloride. A. Grollman (*Endocrinol.*, 1941, 29, 862—865).—If deoxycorticosterone acetate is dissolved in alcohol and poured over the food, the alcohol being then evaporated, its effects are equal to those of intramuscular injection. Its effect is greatly enhanced by a diet rich in NaCl, although NaCl alone will not maintain the adrenalectomised rat indefinitely. V. J. W.

Biological assay of adrenal cortical activity. A. Grollman (*Endocrinol.*, 1941, 29, 855—861).—Gain in wt. of rats adrenalectomised at 30 days of age is a linear function of log dose of active cortical extract given. Assay can be completed in 7—10 days. V. J. W.

Assay of sodium-retaining substances [of adrenal cortex]. F. A. Hartman, L. A. Lewis, and J. S. Thatcher (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 60—64).—Na factor (A., 1940, III, 727) is assayed by comparison with deoxycorticosterone, 10 units being the amount which causes the same amount of Na retention as 0.7 mg. of deoxycorticosterone, retention produced being 35—65%. V. J. W.

Adrenocortical compounds in blood. W. Raab (*Arch. intern. Med.*, 1941, 68, 713—739).—Human blood contains adrenaline and sterols from the adrenal cortex. Muscular exercise had little effect on the level of adrenocortical compounds in normal subjects but produced a rise in patients with hypertension. Abnormally high vals. were found in cases of congestive heart failure and renal hypertension, especially if there was renal failure. Adrenocortical compounds favour the development of arteriosclerosis and thereby produce ischaemia of vasomotor centre, kidney, and myocardium. C. A. K.

Influence of traumatic shock on blood-sugar of adrenalectomised rats treated with adrenal cortical extract. H. Selye and C. Dosne (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 532—535).—Trauma causes hyperglycemia in intact but not in adrenalectomised rats. Cortical extracts raise to normal the blood-sugar of adrenalectomised rats but do not cause hyperglycemia in them or in intact controls, but when given to traumatised and adrenalectomised rats they do cause hyperglycemia and increase resistance to shock. V. J. W.

Handling of protamine zinc insulin. H. Pollack (*J. Mt. Sinai Hosp.*, 1940, 6, 342—345). E. M. J.

Practical application of protamine zinc insulin in treatment of diabetes mellitus. W. A. Stafne (*Minnesota Med.*, 1941, 24, 846—850). E. M. J.

Pancreas as organ of internal secretion. E. T. Waters and C. H. Best (*J. Amer. Med. Assoc.*, 1941, 117, 852—859).—A review. C. A. K.

Insulin allergy. J. Herzstein and H. Pollack (*J. Mt. Sinai Hosp.*, 1939, 6, 3—17).—Review and report of a case. E. M. J.

Rabbit method of insulin assay. A. H. Lacey (*Endocrinol.*, 1941, 29, 866—876).—Doses of sample are given on 3 different assumptions of potency and effects compared with that of a standard. When results are plotted potency is read directly, the slope of the curve and the fit of the observed points being measures of accuracy. V. J. W.

Endocrine function of surgically reduced pancreas. B. A. Houssay, V. G. Foglia, and F. S. Smyth (*J. Exp. Med.*, 1941, **74**, 283—295).—Pancreas reduced to 4—10 g. by partial resection will maintain normal blood-sugar levels in 10-kg. dogs for months. With 4 g. of pancreas, injection of glucose or of extract of anterior hypophysis strains the insulin-producing capacity of the reduced gland as shown by a longer hyperglycaemic curve and a smaller min. diabetogenic dose respectively. Using reduced pancreatic grafts, the time of recovery is inversely proportional to the wt. of the pancreatic transplant. A. C. F.

Gross and histological results of chronic insulin injection in five generations of rats. F. N. Low and H. W. Ferrill (*Endocrinol.*, 1941, **29**, 1027—1028).—No changes were produced by daily injections of 20—40 units per kg. V. J. W.

Metabolism in organic hyperinsulinism. J. W. Conn and E. S. Conn (*Arch. intern. Med.*, 1941, **68**, 876—892).—Carbohydrate metabolism was studied in a woman aged 59 with islet cell adenoma, before and after surgical removal of the tumours. Before operation, with normal carbohydrate intake, there was a great increase in combustion of carbohydrate, in both post-prandial and post-absorptive states. A low-carbohydrate diet depressed the rate of combustion of a test dose of glucose, but the rate was still much greater than normal; the post-absorptive rate of carbohydrate oxidation was also depressed on the same diet, but hypoglycaemia persisted owing to excessive inhibition of hepatic glycogenolysis. The above findings suggest continuous secretion of insulin in excess, and normal carbohydrate metabolism was restored after operation. C. A. K.

Blood-sugar in complete hypophysectomy. J. F. Hart and M. Magiday (*Arch. intern. Med.*, 1941, **68**, 893—897).—Complete hypophysectomy in a man aged 33 produced hypoglycaemia (fasting blood-sugar 34—80 mg.-%) without shock. Glucose-tolerance curves were variable with a tendency to delayed rise and plateau; other results of the operation included premature ageing, emaciation, high-pitched voice, and feminine distribution of hair. Some decalcification of the long bones was also noted 5 years after operation. C. A. K.

Effects of testosterone propionate on anterior pituitaries of old male rats. J. M. Wolfe (*Endocrinol.*, 1941, **29**, 969—974).—Daily injections of 1—2 mg. of testosterone propionate for 3 months in rats 18—21 months old caused an increase in eosinophil pituitary cells as compared with controls although the no. did not reach that found in young (3—6 months) rats. V. J. W.

Morphology of pituitary and thyroid glands in amphibian metamorphosis. S. A. d'Angelo (*Amer. J. Anat.*, 1941, **69**, 407—437).—In *Rana sylvatica*, *R. pipiens*, and *R. palustris* the individual lobes of the pituitary differ markedly in their gross morphology and in their finer structure. The lateral and intermediate lobes have a scanty blood vasculature, a simple cellular structure which stains uniformly, and are relatively static during metamorphosis. The anterior lobe has a rich blood supply, contains several cell types, and exhibits complex structural changes during metamorphosis. The thyroid gland displays a progressive secretory activity throughout metamorphosis. In early stages of development when growth is rapid and thyroid activity low, well differentiated acidophils compose most of the anterior lobe. As development proceeds basophils and acidophils increase in no. and in the later stages when the activity of the thyroid is at a max. the basophils reach their highest %. The thyroid becomes relatively inactive at the end of metamorphosis; acidophils then exhibit an increase in no. and basophils a corresponding decrease. It is considered that basophils of the anterior lobe are concerned in the elaboration and release of a thyrotropic factor during metamorphosis. W. F. H.

Augmentation of pituitary corticotrophic extracts and effect on adrenals, thymus, and preputial glands of rat. R. L. Noble and J. B. Collip (*Endocrinol.*, 1941, **29**, 934—942).—Dil. saline suspensions of pituitary augment corticotrophic effect of some pituitary extracts, promote growth, and cause hypertrophy of the thymus. Corticotrophic extracts also stimulate the preputial glands, and this effect is also augmented by the suspension. V. J. W.

"Growth" and diabetogenic action of anterior pituitary preparations. F. G. Young (*Brit. Med. J.*, 1941, II, 897—901).—When puppies are given injections of crude pituitary extract, in doses much larger than those required to produce diabetes in adult dogs, they show increased growth but no signs of diabetes (except in one animal which stopped growing when it became diabetic after 5 months). Pancreotropic non-diabetogenic pituitary extracts, when given to dogs rendered permanently diabetic by short treatment with diabetogenic pituitary extract, may produce transitory N retention and increase of body wt., or exacerbation of the diabetes with increased N loss and loss of wt. The gain in wt. produced by pancreotropic extracts is attributed to increase in pancreatic islet function, and the N retention results from the consequent increase of insulin secretion. These experimental findings are in accord with clinical observations showing excessive growth in diabetic children, and obesity as a forerunner of adult diabetes. C. A. K.

Implantation following mating in hypophysectomised rats injected with lactogenic hormone. E. Cutuly (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 315—318).—Implantation occurred in 10 out of 14 rats which were hypophysectomised 1—5 days after mating and received daily 1—3 mg. of lactogenic hormone containing 10—12.5 i.u. per mg. Of these 10, 2 went to term, and in 8 foetal resorption took place in 6—17 days. V. J. W.

Effect of thiols on reducing groups of lactogenic hormone. H. Fraenkel-Conrat (*J. Biol. Chem.*, 1942, **142**, 119—127).—Application to the reduced and unreduced hormone, before and after treatment with cysteine or thioglycolic acid, of Sullivan's reaction and tests with phosphotungstate, nitroprusside, $\text{Fe}(\text{CN})_6^{4-}$, and iodoacetamide show that the hormone contains 3% of cystine, that it does not reduce thiol reagents, and that, when hydrolysed, it yields no cysteine. Cystine in 0.5N-KOH is reduced by the hormone. Thiol compounds reduce dithio groups of the hormone to cysteine-thiol groups, produce groups which reduce phosphotungstate and $\text{Fe}(\text{CN})_6^{4-}$, in neutral solution, and probably form stable compounds with the hormone. Thioglycolic acid causes approx. twice as much reduction as does an equiv. amount of cysteine. W. McC.

Effect of thiol compounds on activity of lactogenic hormone. H. Fraenkel-Conrat, M. E. Simpson, and H. M. Evans (*J. Biol. Chem.*, 1942, **142**, 107—117; cf. A., 1940, III, 737).—The hormone is inactivated by more than 200 times its wt. of cysteine and is converted into a very insol. compound by smaller proportions, which thus cause apparent inactivation. If very dil. solutions are employed, no pptn. or inactivation occurs. The insol. compound, when brought into solution under conditions that prevent autoxidation, is as active as is the untreated hormone. Thioglycolic acid is approx. 50 times as effective as cysteine in inactivating the hormone, although approx. equimol. amounts of the two thiol compounds are required to cause pptn. W. McC.

Possible direct control of preputial glands of female rat by the pituitary, and indirect effects produced through adrenals and gonads by augmented pituitary extracts. R. L. Noble and J. B. Collip (*Endocrinol.*, 1941, **29**, 943—951).—Removal of thymus, uterus, adrenals, and ovaries does not affect the preputial glands, but they atrophy after hypophysectomy. Augmented (see above) pituitary extracts caused stimulation and hypertrophy of these glands, which was much less in absence of ovaries. After hypophysectomy the response of these glands in females to testosterone was much diminished, but was restored to normal by pituitary extract. Preputial stimulation is not necessarily associated with uterine hypertrophy, vaginal mucification, or in the male with secondary sex organ stimulation. V. J. W.

Synergism between pituitary extracts and chorionic gonadotropins. H. Gusman and M. A. Goldzieher (*Endocrinol.*, 1941, **29**, 931—933).—Independently ineffective doses of the 2 extracts caused in combination marked increases in uterine and ovarian wt. in immature rats. Replacement of pituitary extract by Collip's "sp. metabolic principle" gave identical results. V. J. W.

Release of luteinising hormone from anterior hypophysis by an acetylcholine-like substance from hypothalamic region. M. Taubenhau and S. Soskin (*Endocrinol.*, 1941, **29**, 958—964).—Local application of an acetylcholine—prostigmine mixture to the rat's pituitary causes pseudopregnancy. Previous application of atropine hinders the effect, and also prevents pseudopregnancy after electrical stimulation of the cervix. V. J. W.

Dioestrus and corpus luteum formation in persistent oestrous rats by luteinising hormone and antigonadotropic serum. H. N. Marvin and R. K. Meyer (*Endocrinol.*, 1941, **29**, 965—968).—In a strain of rats of which 5% showed persistent (10 days or more) oestrus, administration of purified luteinising hormone or of non-sp. antigonadotropic horse serum caused dioestrus and corpus luteum formation. If oestrogen was injected with the serum no corpus luteum formation occurred. V. J. W.

Response of intra-ocular prostatic implants in rabbit to gonadotropic hormone administration. B. Rosenberg, B. Krichesky, and J. A. Benjamin (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 263—265).—Daily injections of 100—500 i.u. of chorionic or hypophyseal gonadotropic hormone caused an increase in area of about 30% in such implants. This increase was followed by a decrease and later by a second increase after injections had been discontinued. A second series of injections of the same hormone caused only this second increase and not the first. V. J. W.

Specificity of fowl and mammalian antigonadotropic sera. H. S. Kupperman, C. H. Mellish, and W. H. McShan (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 79—83).—Rabbit serum rendered antigonadotropic for sheep pituitary extract was effective against mammalian but not against chicken pituitary extract, and vice versa. V. J. W.

Case of diabetes insipidus of inflammatory origin cured by X-ray therapy. E. A. Weinstein and C. L. Spingarn (*J. Mt. Sinai Hosp.*, 1940, **7**, 90—96). E. M. J.

Cytological and hormonal changes in posterior lobe of rat's pituitary after water deprivation and stalk section. R. C. Hickey, K. Hare, and R. S. Hare (*Anat. Rec.*, 1941, 81, 319—331).—There is a continuous decline in the potency of the posterior lobe from the 2nd to the 13th day of dehydration. No correlation was found between the intracellular osmiophilic droplet content and days of dehydration or antidiuretic potency. Following stalk section the pituitary had no antidiuretic effect, but the posterior lobe, although smaller than in normals, contained many intracellular osmiophilic droplets. A large amount of intracellular lipid material similar to that in normals was found in the posterior lobes of rats with permanent diabetes insipidus. It is concluded that there is no correlation between cytological changes in the posterior lobe and fluctuations in secretory activity. W. F. H.

Diurnal rhythm of melanophore hormone secretion in *Anolis* pituitary. H. Rahn and F. Rosendale (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 100—102).—This lizard, which is normally brown by day and green by night, shows the same rhythm when subjected to continuous light or darkness for 18 days. Rhythm is more marked in darkness. V. J. W.

XII.—REPRODUCTION.

Unusual temperature tolerance of an amphibian egg (*Hyla regilla*). A. M. Schechtman and J. Bolton (*Ecology*, 1941, 22, 409—410).—Eggs of *H. regilla* tolerated exposure to temp. of 30—35°. 2 hr. at 38° was not fatal to eggs in the "tail bud" and "tail fin" stages. L. G. G. W.

Production of double-yolked eggs in fowl. R. M. Conrad and D. C. Warren (*Poultry Sci.*, 1940, 19, 9—17).—65% of double-yolked eggs result from simultaneous development and ovulation of 2 ova. A further 25% are due to simultaneous ovulation of 2 ova which have developed in normal (1 day) sequence. A. G. P.

Relation of production and egg weight to age in white Leghorn fowls. T. B. Clark (*Poultry Sci.*, 1940, 19, 61—66).—The decline in egg production under uniform management averaged 19% each in year. Mean egg wts. increased in the 2nd year, remained const. in the 3rd, and declined gradually with age up to the 10th year. Length of life was unrelated to first-year egg production or to the % change in production from the 1st to the 2nd year. A. G. P.

Effect of air temperature on egg shell thickness in the fowl. D. C. Warren and R. L. Schnepel (*Poultry Sci.*, 1940, 19, 67—72).—High atm. temp. is associated with thinner shells, the effect being accentuated by high R.H. at higher temp. The blood-Ca of hens decreased in the same proportion as did shell thickness. Food consumption diminished by 26% when the temp. was raised from 15.5° to 35°. A. G. P.

Heritable differences in conformation of adult female fowl. R. G. Jaap and R. B. Thompson (*Poultry Sci.*, 1940, 19, 23—78).—Variations in body-wt., shank, depth, and keel are examined. A. G. P.

Sex identification of Jersey Black Giant, Jersey White Giant, and white Plymouth Rock chicks by down, shank, and beak colour. J. P. Quinn and C. W. Knox (*Poultry Sci.*, 1940, 19, 79—80).—The accuracy of sexing by these methods is examined. A. G. P.

Time of ovulation in cattle. J. E. Brewster and C. L. Cole (*J. Dairy Sci.*, 1941, 24, 111—115).—Ovulation, determined by rectal palpation of the ovaries, occurred within 1 day of the end of oestrus in 67 of 70 cases, the mean time for dairy cows being 15 hr. Heifers required 3 hr. less. No difference in the extent of ovulation between ovaries could be detected. J. G. D.

Multiple ova in follicles of young monkeys. R. S. Lloyd and B. B. Rubenstein (*Endocrinol.*, 1941, 29, 1008—1014).—One injection of 20 units or 3 injections of 10 units of pregnant mare serum extract in 4—6-month-old rhesus monkeys caused the presence of multiple ova (up to 7) in the Graafian follicles. V. J. W.

Abnormal sex anatomy of goat. R. T. Hill (*Endocrinol.*, 1941, 29, 1003—1007).—The goat was a normal female at birth, but at 5 months showed some male characters and behaviour. On laparotomy, testicular tissue with an epididymis was found at the tip of each uterine horn. V. J. W.

Functional uterine bleeding. H. B. Richardson. **Pathological uterine bleeding in experimental animals.** E. T. Engle. **Functional uterine bleeding.** R. Kurzrok. **Gynaecological and pathological aspects of functional uterine bleeding.** C. F. Fluhmann (*J. clin. Endocrinol.*, 1941, 1, 195—197, 197—199, 199—202, 202—205).—A therapeutic symposium. P. C. W.

Hormonal analysis of cyclic variations in vascular architecture of uterus of guinea-pig. P. Bacsich and G. M. Wyburn (*Trans. Roy. Soc. Edin.*, 1941, 60, 465—473).—Antimesometric hyperaemia of the uterus can be produced in spayed guinea-pigs by the injection of ovarian hormones; hyperaemia is more readily produced in the vagina than in the uterus. Most consistent results are obtained by preliminary priming by small doses of oestrin followed by larger doses. The closest approximation to the hyperaemic changes at a normal physiological heat period follows the combined administration

of oestrin and progesterone; oestrin treatment alone causes an exaggerated reaction. The administration of progesterone with the oestrin controls and tones down the exaggerated response. Progesterone alone produces no response. The experiments suggest that in the normal cycle both oestrin and progesterone are produced simultaneously for a short period. The characteristic vaginal smear follows oestrin administration. W. J. H.

Artificially induced heat in immature guinea-pigs. P. Bacsich and G. M. Wyburn (*Proc. Roy. Soc. Edin.*, 1942, 61, 188—196).—Sexually immature guinea-pigs were treated with oestrin and progesterone. The uteri enlarged and showed proliferation of the endometrium and glands but none of the uteri showed the normal antimesometric hyperaemia of the normal adult oestrous uterus. The absence of this hyperaemia denotes the inability of the immature uterus to respond maturely to hormonal stimulation. The results suggest that the failure to induce implantation in immature animals by hormonal treatment is due to an inadequate prep. of the uterus. W. J. H.

Changes in arteries of uterus in oöphorectomised rats. J. R. Kahn and T. C. Laipply (*Endocrinol.*, 1941, 29, 1017—1019).—In the atrophied uterus there was no arteriosclerosis of the arterial intima, but thickening of the media and adventitia. V. J. W.

Prolonged pregnancy in rats. F. Boe (*Acta Path. Microbiol. scand. Suppl.*, 1938, 36, 138 pp.; *Chem. Zentr.*, 1938, ii, 3941—3942).—An exhaustive study of the effects of gonadotropic hormone from mare's serum, prolactin from pregnancy urine, oestrogen, and progesterone on the duration of pregnancy, process of parturition, and condition of the mother and foetus. Special reference is made to the action of the hormones on the endocrine organs. A. J. E. W.

Non-effect of ovariectomy on twenty-fifth day of pregnancy in rhesus monkey. C. G. Hartman (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 221—223).—In these monkeys, gestation, parturition, uterine involution, lactation, and red sexual skin during lactation were normal. V. J. W.

Fertility of Japanese women. K. Yagi (*Japan. J. Obstet. Gynec.*, 1941, 24, No. 2, 32).—The records of 71,603 post-menopausal women were examined and fertility was found to decrease yearly after the age of 35. P. C. W.

Oestrogen, testosterone, and growth hormone in production of atypical epithelial growths in human cervical mucosa. A. Wollner (*J. clin. Endocrinol.*, 1941, 1, 228—233).—In a case of chronic endocervicitis administration of testosterone propionate (750 mg. in 6 weeks) decreased the glandular elements and produced an atypical epithelial proliferation near the external os suggestive of malignancy. In 2 castrate women simultaneous administration of oestrogen and testosterone produced atypical epithelial proliferation of the atrophic cervical mucosa; similar changes were produced by progesterone + growth hormone + oestrogen in 2 other cases. The addition of growth hormone accelerated the epithelial growth produced by oestrogen + testosterone in another castrate woman. P. C. W.

Endocrine therapy of functional meno-metrorrhagia and ovarian sterility. I. Cyclic injection of oestrogens and progesterone. II. Oral use of anhydrohydroxyprogesterone and oestrogens. E. C. Hamblen, W. K. Cuyler, C. J. Pattee, and G. J. Axelson (*J. clin. Endocrinol.*, 1941, 1, 211—220, 221—227).—51 patients were treated with progesterone or with progesterone + oestrogen in the latter part of the cycle or with the same treatments following preliminary oestrogen treatment. The endometria of 46 of the patients were of the oestrogenic type at the time of bleeding but during treatment there was bleeding from mixed progestational endometrium in 29% of the cycles studied. Of 28 patients who showed cyclic bleeding after treatment was stopped 10 had bleeding from progestational endometria and 4 have become pregnant. The results were best with oestrogen + progesterone therapy alone in the latter part of the cycle.

II. In this series of 36 cases oral administration of anhydrohydroxyprogesterone was substituted for injected progesterone and oral oestriol glucuronide for the simultaneously injected oestrogen. Preliminary oestrogen treatment was by injected oestradiol. The results were not so good and only 17% of patients investigated showed progestational endometria on biopsy following stopping treatment. P. C. W.

Clinical effect of stilbœstrol on postpartum activity of mammary glands. A. W. Diddle and W. C. Keettel (*J. clin. Endocrinol.*, 1941, 1, 494—495).—Stilbœstrol was given orally to 100 postpartum women. 10 mg. given daily for 5 days starting 24 hr. after delivery prevented breast engorgement; lactation was delayed but not entirely inhibited. Toxic symptoms were much less frequent than in non-pregnant women. P. C. W.

Effects of theelin on delayed implantation in pregnant lactating rat. R. H. Krehbiel (*Anat. Rec.*, 1941, 81, 381—392).—Subcutaneous injections of theelin during the pre-implantation period of the pregnant lactating animal produced the decidual reaction and implantation on the 6th day. Implantation sites thus produced

are resorbed and degenerative changes are described. Further administration of theelin during the post-implantation period failed to maintain the decidual growth. W. F. H.

Prolongation of oestrus by injection of suspensions of oestrogen crystals. R. K. Richards, H. C. Spruth, and M. K. Russell (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 400—403).—Duration of oestrus in castrated rats and mice was much greater after injections of aq. suspensions of oestrone or oestradiol than by injection of solutions in oil. V. J. W.

Effect of stilboestrol on lactogenic content of pituitary and mammary glands of female rats. A. A. Lewis and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 439—443).—10 daily subcutaneous injections of 3.2—200 µg. of stilboestrol in mature spayed rats caused increases in pituitary wt. and lactogen content, and secretion of milk or serous fluid from mammary glands. V. J. W.

Absorption of oestradiol and its esters from subcutaneously implanted tablets in guinea-pig. A. Lipschütz and L. Vargas, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 464—467).—Oestradiol is absorbed from implanted tablets 3 times as fast as from tablets of its 17-octoate but more slowly than from tablets of its dipropionate. V. J. W.

Duration of oestrus following intraperitoneal, oral, intrathoracic, subcutaneous, and intramuscular administrations of stilboestrol. F. E. Emery, C. S. Matthews, and E. L. Schwabe (*Endocrinol.*, 1941, **29**, 1028—1030).—1 mg. of stilboestrol was given to rats spayed 10 days previously. The resulting oestrus lasted 10—14 days, being shortest after intraperitoneal and longest after intramuscular administration. The other 3 routes gave equal and intermediate results. V. J. W.

Effect of stilboestrol on liver and body growth in rats. R. K. Richards and K. Kueter (*Endocrinol.*, 1941, **29**, 990—994).—5—10 mg. daily for 60 days failed to cause liver necrosis. Young rats receiving 2 mg. daily lost wt., but this effect could be prevented by administration of pituitary growth hormone. V. J. W.

Effect of inanition on responsiveness of mammary gland to oestrogen. J. J. Trentin and C. W. Turner (*Endocrinol.*, 1941, **29**, 984—989).—As food intake decreases, the dose of oestradiol benzoate causing min. duct growth in male mice is proportionately increased. V. J. W.

Effects of continuous injections of stilboestrol in normal and castrate adult [male] rats. J. A. Morrell and G. W. Hart (*Endocrinol.*, 1941, **29**, 995—1002; cf. A., 1942, III, 233).—1—250 µg. of stilboestrol or 5—250 µg. of pregnant mare's urine oestrogens was given daily to normal rats, and 500 µg. of the latter to castrates. The effects of both were the same, consisting in atrophy of testes, vesicles, and prostate in normals, and hypertrophy of fibrous and muscular tissue of vesicles and prostate in castrates. There was disappearance of basophil and castration cells in the pituitary, and destruction of walls of the acini of the thyroid. V. J. W.

Oestrogen assay by intrasplenic injection. A. Segaloff and W. O. Nelson (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 33—34).—The following doses of oestrogenic substances injected into the spleen of the rat were necessary to produce cornified smears in 50% of animals: α-oestradiol 50 µg., oestrone 70 µg., oestradiol benzoate 24 µg., and dipropionate 5 µg. V. J. W.

Bactericidal property of blood serum of male rabbits treated with urinary oestrogens. S. N. Tsao (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 38—41).—Daily injections of 40 rat units of urinary extracts (Frazier and Hu, A., 1941, III, 354) increased bactericidal power of their serum against *E. coli*, the increase being most apparent after 6 days and then declining, although it was still present after 300 days of treatment. V. J. W.

Effect of diethylstilboestrol dipropionate on mammary development and lactation. S. M. Walker and A. J. Stanley (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 50—53).—A castrate heifer which received 1.56 g. of this substance over 9 months, and 0.53 g. of testosterone propionate over the last 4½ months, began to yield milk, production gradually rising to 16 lb. a day after 230 days. Twice during this period oestrogen was again given for periods of 21 and 12 days, each causing a transient rise followed by a fall and a permanent rise in the production rate. Fat % was const. after the 1st 10 days. Confirmatory experiments were done on a sterile intact heifer and on rats. In all cases mammary growth and secretion is inhibited by too large doses. V. J. W.

Effects of oestrone on male rabbit mammary glands. G. Scharf and W. R. Lyons (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 86—89).—In rabbits receiving 30—960 i.u. daily of oestrone, 120 i.u. gave the largest gland growth. The higher doses caused cystic duct changes. If 1 i.u. of progesterone was added to each dose, 960 i.u. of oestrone caused no such cystic changes, but mammary development was almost equal to that of pregnancy. V. J. W.

Oestrogen intranasally in experimental poliomyelitis. E. W. Schultz (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 135—138).—Susceptibility to infection was not modified by intranasal injections of theelin which were sufficient to produce full response of the sexual skin in

macaques. There were no histological changes in the olfactory mucosa. V. J. W.

Assay of oestrogenic hormone in hæmophilic and normal male urine. C. L. Birch (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 167—168).—Extracts were assayed by vaginal smears of spayed rats. Differences between hæmophilic and control urines were not significant. V. J. W.

Mechanism of action of oestrogens on insulin content of rat's pancreas. H. L. Fraenkel-Conrat, V. V. Herring, M. E. Simpson, and H. M. Evans (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 333—337).—Implantation of oestrogen pellets increases the insulin content of the pancreas by an effect on the pituitary, because (1) pituitaries of such rats implanted in others increase their pancreatic insulin, whilst normal pituitaries do not, (2) the effect does not occur in hypophysectomised rats. V. J. W.

Atypical forms of climacteric phenomena and their treatment with follicular hormone. W. Baumgart (*Zentr. Gynäkol.*, 1938, **62**, 1694—1697; *Chem. Zentr.*, 1938, ii, 3943).—A report on two cases of ovarian deficiency of climacteric origin, accompanied by pruritus vulvæ, skin affections, and œdema, which were successfully treated with follicular hormone. A. J. E. W.

Relation between oestrogenic and gonadotropic hormones and climacteric symptoms. K. M. Murphy and C. F. Fluhmann (*Schweiz. Milchztg.*, 1938, **46**, 451—454; *Chem. Zentr.*, 1938, ii, 3943).—Oestrogenic substances generally occur in the blood of women after the onset of the climacteric; their quantity usually varies according to the normal menstrual cycle, but is sometimes const. The gonadotropic hormone content is increased to an extent corresponding with the intensity of vasomotor symptoms. A. J. E. W.

Recent advances in gynaecological hormone therapy. S. H. Geist and U. J. Salmon (*N.Y. Sta. J. Med.*, 1941, **41**, 2220—2227). E. M. J.

Physiological approach to endocrine treatment of menstrual disorders of puberty. L. A. Siegel (*N.Y. Sta. J. Med.*, 1941, **41**, 1558—1563).—A review. E. M. J.

Stilboestrol in treatment of menopause. S. Wimpfheimer and L. Portnoy (*N.Y. Sta. J. Med.*, 1941, **41**, 1554—1557).—1 mg. of stilboestrol daily was given to 30 patients with menopausal symptoms over 90 days. 90% had relief from flushes and sweats within 2 weeks and 37% from headache and vertigo. No effect was seen on psychic symptoms or on lassitude. 40% of cases complained of nausea during treatment. E. M. J.

Ovarian function and menstruation. B. Zondek (*J. Mt. Sinai Hosp.*, 1940, **6**, 308—318). E. M. J.

The oestrogens. R. T. Frank (*J. Mt. Sinai Hosp.*, 1941, **8**, 269—283).—A review. E. M. J.

Limitations of oestrogen therapy. W. O. Johnson (*Sth. Med. J.*, 1941, **34**, 1006—1009).—A review. E. M. J.

Preoperative use of amfetin (amniotic fluid concentrate) in peritonitis. F. J. Murray (*Nebraska Sta. Med. J.*, 1942, **27**, 65—67).—Case reports. E. M. J.

Effects of progesterone on male rabbit mammary glands. W. R. Lyons and D. A. McGinty (*Proc. Soc. Exp. Biol. Med.*, 1941, **48**, 83—86).—Male rabbits received 18 daily doses of 120 i.u. of oestrone + 0.25, 1, 4, or 8 i.u. of progesterone. Greatest mammary growth was shown by the 1 i.u. group; 4 or 8 i.u. had an inhibitory effect. V. J. W.

Hormone therapy and sex hormone excretion. I. Effect of progesterone and serum gonadotropin on excretion of oestrogens, androgens, and pregnanediol by women with normal and abnormal menstrual cycles. L. T. Samuels, N. Winther, and N. Yolton (*J. clin. Endocrinol.*, 1941, **1**, 485—493).—In normal women there are 2 peaks of oestrogen excretion. The first coincides with ovulation and the second with corpus luteum formation; it did not occur in 2 women with normal first peaks but who had deficient progesterone formation. Progesterone injection in one of these latter women sufficient to produce normal pregnanediol excretion did not relieve sterility; in the second woman it relieved premenstrual œdema. 2 women with oligomenorrhœa and irregular cycles excreted normal amounts of oestrogen and pregnanediol but double the normal amounts of androgen. Progesterone injections caused increased pregnanediol excretion but did not affect oestrogen or androgen excretion. Serum gonadotrophin injection increased oestrogen excretion but not pregnanediol excretion. P. C. W.

Oestrogen and progestin metabolism in pregnancy. I. Spontaneous and induced labour. O. W. Smith, G. V. Smith, and S. Schiller. **II. Endocrine imbalance of eclampsia and pre-eclampsia. III. Effect of hormone administration in pre-eclampsia.** G. V. Smith and O. W. Smith (*J. clin. Endocrinol.*, 1941, **1**, 461—469, 470—476, 477—484).—I. Urine analyses were made on 22 normal women during the last 10 weeks of pregnancy. Analyses of pregnanediol, oestrone, oestradiol, and œstriol together with the oestrogenic potency of urinary extracts after Zn hydrogenation give an index of the rate of

production, conversion, and destruction of the hormones. Production and conversion is max. at 8—24 days before labour; following this peak there is a change in steroid metabolism with oestrogen and progesterin withdrawal due to a gradually decreasing rate of production and conversion and some increase in destruction. Onset of true labour in 4 cases studied is characterised by decreased conversion and increased destruction of oestrogens. A patient who experienced false labour had no increased oestrogen destruction though there was a relative hormone deficiency. Uterine contractions result in rapid reduction of hormone production and conversion and increased destruction; the same changes were found in a patient in whom labour was induced by rupture of the membranes. The results are discussed.

II. Elevated serum chorionic gonadotrophin was found in 84 of 100 cases of pre-eclampsia and in 8 of 13 cases of premature delivery. The abnormal rise was detected 4—8 weeks before the clinical onset. Pregnanediol, oestriol, oestradiol, oestrone, and oestrogenic potency after hydrogenation were estimated in the urine during the last 3 months of pregnancy in 22 cases of pre-eclampsia and eclampsia and in 15 normals. Low or decreasing pregnanediol and oestriol, high or increasing % of oestrogenic activity due to oestradiol and of oestrogenic potency after hydrogenation with decreasing or absent oestrone were found in the toxæmic urines. There is therefore deficiency of progesterin and concomitant decrease in oestrogen with greater and more rapid destruction.

III. Treatment of 16 cases of pre-eclampsia was attempted with oestrogen + progesterone. The beneficial clinical and hormonal effects did not persist for as long as the treatment in the severe cases; in the mild cases and in 3 cases treated prophylactically the results were better. There is evidence that adrenal-cortical extract contains a factor capable of replacing progesterin in its effect on oestrogen conversion and inhibiting destruction. P. C. W.

Urinary excretion of pregnanediol glucuronidate in hypertensive disorders of pregnancy. C. Bachman, D. Leekley, and H. Hirschmann (*J. clin. Endocrinol.*, 1941, 1, 206—210).—Pregnanediol excretion was determined in 10 pregnant women. 3 had mild, uncomplicated chronic hypertensive disease, 3 had pre-eclampsia, and 4 had severe chronic hypertensive disease complicated during pregnancy by proteinuria. These last 7 women had subnormal pregnanediol excretion. The onset of decreased excretion was coincident with the onset of proteinuria and the two effects were continuously associated. The excretion in the uncomplicated hypertensive cases was normal. P. C. W.

Titrimetric determination of sodium pregnanediol glucuronidate in urine of pregnant women. W. M. Allen and E. Viergiver (*J. Biol. Chem.*, 1941, 141, 837—852).—The glucuronidate is extracted with butanol and the Pb-salt pptd. The glucuronidate is liberated by Na_2CO_3 , hydrolysed by acid, and the glucuronic acid determined by the Shaffer-Hartmann-Somogyi method. R. L. E.

Failure to find sodium pregnanediol glucuronidate in bull's urine. H. S. Strickler, M. E. Walton, and D. A. Wilson (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 37—38).—None of this substance could be demonstrated by Venning's method (*Physiol. Abs.*, 1937, 22, 1084) in urine from slaughtered bulls or steers. V. J. W.

Composition of milk of monkey (*M. mulatta*). G. van Wegenen, H. E. Himwich, and H. R. Catchpole (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 133—134).—Individual samples varied widely, but resembled human rather than cow milk in low protein and high sugar vals. V. J. W.

Hormonal regulation of lactation in goats. P. de Fremery (*Arch. néerl. Zool.*, 1938, 3, 48—57; *Chem. Zentr.*, 1938, ii, 3942).—After percutaneous administration of 10,000 units of oestradiol benzoate daily for 21 days the udders of young non-pregnant goats develop to the size of those in animals at an advanced stage of pregnancy. Injection of 5 units of prolactin daily for a further 5—6 days initiates secretion of normal milk, the quantity of which depends on the initial hormone dosage; lactation can be stopped by further injection of the hormone. Oestradiol benzoate produces no mammary growth in normal male goats, and only slight growth in castrated animals. A. J. E. W.

Factors involved in ejection of milk. F. Ely and W. E. Petersen (*J. Dairy Sci.*, 1941, 24, 211—223).—Denervation had no effect on the rate of ejection of milk, but fright and adrenaline injection resulted in cessation. Pitocin and pitressin injections resulted in more complete draining. The rate of ejection is controlled by a balance between adrenaline and oxytocin. J. G. D.

Technique for perfusing excised bovine mammary glands. W. E. Petersen, J. C. Shaw, and M. B. Visscher (*J. Dairy Sci.*, 1941, 24, 139—146).—A detailed description of the apparatus and technique is given. Defibrination or addition of chlorazol-fast pink, Na citrate, or heparin (the last is preferred) may be used to prevent clotting. J. G. D.

Effect of non-suckling and non-removal of milk on individual mammary glands in lactating mouse. W. L. Williams (*Yale J. Biol. Med.*, 1941, 14, 201—208).—Non-suckling of glands (effected by removal of the nipple) caused a greater diminution of secretory activity than did suckling without milk removal (effected by ligation

of part of the gland). 4 out of 16 ligated glands showed severe intraglandular stasis, inflammation, and necrosis, but in the majority secretion diminished to about parturitional level. The unsuckled glands showed little or no intraluminal congestion with retained secretion and diminished to a sub-parturitional level within 3—5 days of non-suckling. The stimulus of suckling is necessary for the release of secretory products by the alveolar cells. (8 photomicrographs.) F. S.

Hypertrophy of male breast. M. L. Lewin (*J. clin. Endocrinol.*, 1941, 1, 511—514).—A case is reported in which a mammary tumour resembling a fibro-adenoma of the female breast appeared 18 months after removal of one testis and X-irradiation of the other. There was complete aspermia. True gynecomastia caused in this case by decreased androgen/oestrogen ratio is distinguished from pseudo-gynecomastia. P. C. W.

Influence of environmental temperature on growth of mammary lobule-alveolar system. J. P. Mixner and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 443—445).—Spayed mice kept at 35° gave a smaller mammary growth response to progesterone and oestrone than those kept at 25°, but the response of the 2 groups to pituitary mammary growth factor was equal. V. J. W.

Uterine distension and lactation in rat. R. R. Greene (*Endocrinol.*, 1941, 29, 1026).—Experiments of Bradbury (A., 1942, III, 138) are repeated and confirmed. V. J. W.

Methyltestosterone. I. Androgenic effects and production of gynecomastia and oligospermia. II. Calorigenic activity. III. Effect on body weight and growth. E. P. McCullagh and H. R. Rossmiller (*J. clin. Endocrinol.*, 1941, 1, 496—502, 503—506, 507—510).—I. Methyltestosterone (25—300 mg. daily) given by mouth produces in male hypogonadism increased potency, growth of penis and prostate, and increased body- and face-hair. Ejaculate appears and the voice becomes lower in pitch. The demeanour becomes masculine and there is increased size of the skeletal musculature. Facial acne appears; energy and endurance are increased and oligospermia has been observed. Gynecomastia is produced in some cases.

II. 10 cases of male hypogonadism treated by daily oral administration of methyltestosterone showed an average rise in basal metabolic rate of 28%. The rate falls after stopping treatment. The rise was accompanied by a gain in body-wt. in all but one case. Pulse rate was slightly increased.

III. Methyltestosterone given orally to male cases of hypogonadism caused an increase in body-wt. A male dwarf (average height increase = 1 in. per year) previously treated with thyroid and various pituitary fractions without success grew at the rate of 3.9 in. per year when given 50—4000 mg. of methyltestosterone daily for 9 months. P. C. W.

Implantation of testosterone pellets. J. Eidelsberg and E. A. Ornstein (*J. Amer. Med. Assoc.*, 1941, 117, 1068—1074).—130 subcutaneous implantations of testosterone propionate pellets in hypogonadal males are reported. The effects lasted on the average about 4 months, giving a daily absorption of 2.5—3.0 mg. after implantation of two 150-mg. pellets. Studies on the wt. of pellets after varying intervals showed that absorption was most rapid in the first month. Satisfactory clinical results are described in 8 cases. C. A. K.

Effects of different types of ointment on percutaneous potency of androgens. R. R. Greene, E. Oppenheimer, M. W. Burrill, and D. Nelson (*Endocrinol.*, 1941, 29, 979—983).—3 ointments were used, one containing hydrogenated oil and alcohol and 2 others containing cholesterol. Methyltestosterone was most effective in all 3; in the cholesterol-containing samples testosterone was more effective than its propionate but in the first ointment their effects were equal. V. J. W.

Effect of androgen administration on pregnanediol excretion in cyclical women. U. J. Salmon, S. H. Geist, and A. A. Salmon (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 11—14).—Daily oral doses of 50—150 mg. of methyltestosterone, or subcutaneous doses of 50—100 mg., or implanted pellets, of testosterone propionate, abolished in normal women the usual excretion of Na pregnanediol glucuronidate provided that administration began early in the cycle. After the 9th day no effect was produced. V. J. W.

Presence of androgens in placenta. B. Cunningham and H. H. Kuhn (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 314—315).—1 i.u. of androgen was found colorimetrically in 60 g. of male and 69 g. of female placenta and by capon test in 227 g. of male and 371 g. of female. Only 2 birds were used in each determination. V. J. W.

Hormonal treatment in male sterility. N. Bell (*Med. Ann. Columbia*, 1941, 10, 468—469).—Sterility was treated successfully in 2 cases of low metabolic rate by thyroid extract, in 18 of 28 cases given anterior pituitary-like substance, 10 of 26 cases given gonadotropic factor, and 20 of 26 cases given a combined course of the last two. (No doses are given.) E. M. J.

Testosterone propionate in impotence. W. A. Reed and T. E. McMillan (*New Orleans Med. J.*, 1941, 93, 634—637).—Report of 8 cases. E. M. J.

Male hormone therapy. C. W. Dunn (*Penn. Med. J.*, 1942, 45, 362—369).—A review and report of 6 cases. E. M. J.

Clinical studies of thyro-gonadal correlates. I. Basal metabolic rates and endometrial responses. II. Basal metabolic rates and seminal findings. E. C. Hamblen, R. L. Pullen, and W. K. Cuyler (*J. clin. Endocrinol.*, 1941, 1, 523—527, 528—531).—I. 179 women with menstrual disturbances or sterility had endometrial biopsies performed at the onset of bleeding; an attempt was made to correlate the findings with basal metabolic rates. There was no evidence of association of the thyroid in the pituitary-gonad relations. In the women with rates below -15% the proportion who bled from progesterational endometria was higher than in those whose rates were normal.

II. 53 men had seminal examinations for presumed sterility and the results were compared with their basal metabolic rates. There was no evidence of any depressing effect of hypothyroidism on seminal function; those men with rates below -15% had slightly better seminal specimens than did those with normal rates. P. C. W.

Hypergenitalism in mongolian idiot. L. E. Bower, I. P. Bronstein, and A. F. Stein (*J. clin. Endocrinol.*, 1941, 1, 515—517).—A mongol with excessive genital development is described. P. C. W.

Histological character of undescended testicle after puberty. C. E. Rea (*Arch. Surg., Chicago*, 1942, 44, 27—34).—In 46 retained testicles from patients ranging from 15 to 73 years spermatogonia were observed in 17, primary spermatocytes in 13, secondary spermatocytes in 8, spermatids in 3, and spermatozoa in none. Spermatids were seen in undescended testes from men in the 3rd, 4th, and 7th decades. F. S.

Effect of glycolysis inhibitors and of certain substrates on metabolism and motility of human spermatozoa. J. Macleod (*Endocrinol.*, 1941, 29, 583—591).—Presence of $m/30,000$ — $m/10,000$ iodoacetate or of $m/296$ -NaF in suspensions of spermatozoa in a Warburg manometer inhibited glycolysis and motility. Spermatozoa in a glucose-free medium lost their motility in 2—6 hr. V. J. W.

Bone growth in long-term castrate rat. G. R. Pomesat and R. C. Coe (*Endocrinol.*, 1941, 29, 1015—1016).—In male rats castrated at 21 days, and killed at 1 year, the average length of all the long bones was 3.8% less than in normal controls. V. J. W.

Atrophy of germinal epithelium of rabbit's testis induced by X-rays. C. K. Hu and C. N. Frazier (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 44—48).—A total dosage of 2268 r., or 4.4 times the erythema skin dose, over 15 days caused complete atrophy of the germinal epithelium but no effect on interstitial cells or secondary sexual characters or behaviour. V. J. W.

Spermatogenesis of *Clibanarius olivaceus*, Henderson. C. K. Rathnavathy (*Proc. Indian Acad. Sci.*, 1941, 13, B, 379—421).—Spermatogonia and nutritive cells originate from the germinal epithelium of the testicular tubules. Primary and secondary spermatogonia contain chromatoid bodies, centrosome, Golgi elements, and mitochondria. The no. of spermatogonial chromosomes is 116. A primary spermatocyte is formed after the spermatogonial divisions. The no. of spermatocytic chromosomes is 58. The secondary spermatocyte division is equatorial. Golgi elements and mitochondria occur as scattered bodies in the cytoplasm of primary and secondary spermatocyte. The spermatid has a spherical granular nucleus; a centrosome, chromatoid body, mitochondrial granules, few Golgi elements, and a "yolk nucleus" are visible in the cytoplasm. The nucleus swells in a later spermatid; the mitochondrial granules fuse and form a large vesicle; the fused Golgi bodies form the acroblast which secretes the acrosomal vesicle; the yolk nucleus disappears. The acroblast grows and surrounds the vesicular nucleus. The nucleus becomes cup-shaped and the mitochondria settle inside the cup while the acrosome is fused with the nuclear cup. The centrosome goes to the mitochondrial vesicle and divides into a proximal centrosome which gives rise to the central body and carries the other centrosome to the distal end of the mitochondrial vesicle ("distal centrosome"). The central body grows beyond the distal centrosomal ring. A conical structure at the end of the sperm fits into the cavity of the centrosomal ring. The arms of the spermatozoon grow in the form of slender, radiating branches from the region surrounding the nuclear-acrosomal cup. The mature spermatozoon is spherical, with a cup-shaped nucleus to which the ring-like acrosome is attached along its rim, a globular mitochondrial vesicle, a spherical proximal and a distal ring-like centrosome with the central body between. A conical structure occupies the distal end of the sperm. The mature spermatozoa are passed down ducts where they get enveloped as spermatophores. Mature spermatozoa placed in dil. salt solutions "explode" and mitochondrial vesicle, inner tubule, and central body are extruded while the nuclear-acrosomal cup becomes spherical. A. S.

XIII.—DIGESTIVE SYSTEM.

Gastroenterology. C. M. Jones (*Arch. intern. Med.*, 1941, 68, 763—845).—A full review of recent literature. C. A. K.

Anorexia nervosa. Case report. H. W. Brosen (*J. clin. Endocrinol.*, 1941, 1, 269—271).—A female case with phases of chronic alcoholism and psychotic behaviour exhibited normal behaviour on each return to hospital. The psychological background is described. P. C. W.

Anorexia nervosa. Case report with autopsy findings. H. W. Brosen and C. Appelbach (*J. clin. Endocrinol.*, 1941, 1, 272—275).—A case is reported in which there were no pituitary abnormalities at autopsy. P. C. W.

Use of Toepfer's reagent in gastric analysis after test meals of milk, cream, or soya-bean biscuits. G. B. Lawson, J. R. Leonards, and A. D. Pratt (*J. Lab. clin. Med.*, 1941, 27, 111—112).—The presence of fat in a test meal prevents the ionisation of Toepfer's reagent and invalidates determination of gastric acidity. C. J. C. B.

Gastric secretion in dogs treated with histamine antagonist, thymoxyethyl-diethylamine. E. R. Loew and O. Chickering (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 65—68).—This drug, which antagonises the effect of histamine on muscle of guinea-pig uterus, ileum, and bronchioles, increases the vol. and acidity of gastric juice secreted by dogs with Heidenhain pouches in response to histamine injections. V. J. W.

Relation of gastric acidity to alveolar bone resorption. J. Brechner and W. D. Armstrong (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 98—100).—42 subjects found by X-ray to have some alveolar resorption had a gastric free acidity (after a test meal of 50 c.c. of 7% alcohol) about half that of a group of 37 controls. V. J. W.

Chemical changes of rumen ingesta with and without urea. M. I. Wegner, A. N. Booth, G. Bohstedt, and E. B. Hart (*J. Dairy Sci.*, 1941, 24, 51—56).—Addition of urea to the ration increased the protein and fibre in the rumen. Total N and fibre are higher in the rumen ingesta after feeding than in the ration. Utilisation of urea occurs within 4—6 hr. of feeding and there is some evidence of its conversion into protein. J. G. D.

Possible relationship between ductless glands secreting sex hormones and peptic ulcer. A. Winkelstein (*J. Mt. Sinai Hosp.*, 1940, 7, 29—31). E. M. J.

Comparison of Meulengracht and Sippy therapies in case of bleeding peptic ulcers. E. S. Emery (*Amer. J. digest. Dis.*, 1941, 8, 387—391).—36 patients were treated by the Meulengracht and 50 by the Sippy method. No significant differences were found in the mortality (5.5 and 8.0%), in the general clinical features, in the rate of blood regeneration, or in the time for cessation of hæmorrhage. N. F. M.

Gastroscopic and histologic studies of stomach with gastric and extra-gastric disease during life and at autopsy. W. A. Swalm and L. M. Morrison (*Amer. J. digest. Dis.*, 1941, 8, 391—397).—A histological study of 40 autopsy and gastroscopic biopsy specimens. Histological and gastroscopic diagnosis agreed in 52% of cases, mostly those diagnosed gastroscopically as severe gastritis. In the remainder ("normal" or "mild gastritis") this agreement was lacking. N. F. M.

Qualitative circulatory deficiencies observed in peptic ulcer. I. Chemical composition of the blood. H. E. Riggs, J. G. Reinhold, R. S. Boles, P. S. Shore, C. S. Chornock, and F. Meshkov (*Amer. J. digest. Dis.*, 1941, 8, 383—386).—52 patients with peptic ulcer were compared with 15 normal subjects. The total serum-protein, -albumin, and -ascorbic acid were significantly lower in the ulcer group. No significant differences were found in hæmoglobin, serum-globulin, -amylase, or hæmatocrit readings. N. F. M.

Effect of urine extracts on peptic ulcer. Experimental and clinical study. D. J. Sandweiss, M. H. Sugarman, M. H. F. Friedman, H. C. Saltzstein, and A. A. Farbman (*Amer. J. digest. Dis.*, 1941, 8, 371—382).—Dogs with experimental (Mann-Williamson) ulcers were benefited by subcutaneous injection of extracts from normal and pregnant female human urine. The benefit was due to stimulation of epithelial proliferation and not to inhibition of gastric secretion, which required larger doses than those employed. Encouraging results were recorded in a group of 63 patients with duodenal ulcer, when compared with a control group treated with diet and alkalis, again without evidence of lowered gastric acidity. The incidence of recurrences was, however, the same in the two groups. N. F. M.

Enterogastrone: development of present conceptions. J. P. Quigley (*Amer. J. digest. Dis.*, 1941, 8, 363—364).—A short historical review. N. F. M.

Present status of urogastrone. J. S. Gray (*Amer. J. digest. Dis.*, 1941, 8, 365—366).—A short review of the chemical and physiological properties of urogastrone. It is possibly distinct from enterogastrone, since its action is more on gastric secretion than on motility. Its chemical nature is undecided but it is not a protein. N. F. M.

Gastric secretory depressant in urine. M. H. F. Friedman and D. J. Sandweiss (*Amer. J. digest. Dis.*, 1941, 8, 366—371).—Experiments on dogs with Heidenhain pouches indicated that the depressant prepared from human and canine urine inhibited gastric secretion produced by histamine, insulin, or food. There was no effect on the

flow of urine, bile, or pancreatic juice. Excretion of the depressant continued for 3—4 weeks after total gastrectomy, but was reduced in the 4 hr. following removal of the small intestine. N. F. M.

Duodenal intubation. A. Fidler, J. Innes, and L. S. P. Davidson (*Brit. Med. J.*, 1941, II, 865—869).—The cellular content of bile was studied in man by duodenal intubation and collection of bile at operations on the gall-bladder. After duodenal administration of 30 c.c. of 33% $MgSO_4$, degenerating oval or cuboidal epithelial cells, simulating pus cells, are found in duodenal fluid, and are attributed to irritation of the duodenal mucosa by the salt. Bile recovered after peptone or olive oil administration contained very few such cells, which are therefore no indication of inflammation of the biliary tract. C. A. K.

Gastric mucosa of chronic alcoholic addicts. S. Gray and R. Schindler (*J. Amer. Med. Assoc.*, 1941, 117, 1005—1011).—100 men with chronic alcoholism were examined gastroscopically. On the average they had drunk 2.8 pints daily of 20—90% alcohol over 21 years; they were also mostly smokers and their teeth were usually in poor condition. The diet was deficient in many respects. In 55 cases the stomach was essentially normal; in the remainder superficial gastritis was seen in 30 and atrophic gastritis in 21 cases; mucosal hæmorrhages and erosions were also seen. 60% of the cases with moderate or severe gastritis had symptoms, e.g., abdominal distention, belching, and epigastric discomfort after meals, whereas only 7% of those with normal stomachs had such symptoms. There was no correlation observed between the incidence and severity of gastritis and the duration of alcoholism, the amount of alcohol drunk, the amount of smoking, dental infection, or vitamin deficiency. C. A. K.

Secretion of sulphonamide drugs in gastric juice. M. Cooke, H. W. Davenport, and L. S. Goodman (*Yale J. Biol. Med.*, 1941, 14, 13—28).—In dogs with large isolated stomach pouches the mean concn. ratio (concn. in gastric juice/concn. in blood) of sulphathiazole was 2.6, of sulphapyridine 3.2. Sulphathiazole, sulphadiazine, and acetylsulphanilamide had concn. ratios of 0.16, 0.28, 0.30, respectively. These ratios were independent of the secretagogue used (histamine, carbamylcholine, or food), and of the free acid, total acid, neutral Cl, and org. constituents of the gastric juice. The concn. ratios varied directly with the blood concn. (except for the sulphathiazole) and inversely with the rate of gastric secretion. The results suggest that the concn. of these drugs in secretions depends not on the laws of diffusion but on the particular drug and secretory cells concerned. F. S.

Pathological changes in nutritional gastritis in rats. B. N. Berg (*Amer. J. Path.*, 1942, 18, 49—55).—In nutritional gastritis, the antrum and rumen may be involved separately or together. The antrum shows changes more often than the rumen; the fundus remains relatively free of lesions. In the antrum there are ulcerations in areas of epithelial hyperplasia that undergo spontaneous healing. Recurrent necrosis and hæmorrhage develop in healing defects and lead to chronic changes. (6 photomicrographs.) C. J. C. B.

Hair ball [in stomach]. T. J. Summey and F. F. Borzell (*Penn. Med. J.*, 1941, 45, 142—143).—Case report. E. M. J.

Recent advances in physiology of alimentary tract. A. C. Ivy (*Amer. J. digest. Dis.*, 1941, 8, 361—363).—A lecture dealing principally with gastro-intestinal hormones. N. F. M.

Internal secretions of gastrointestinal tract. A. C. Ivy (*J. Amer. Med. Assoc.*, 1941, 117, 1013—1017).—A review. C. A. K.

Secretin of Bayliss and Starling. E. Hammarsten (*J. Mt. Sinai Hosp.*, 1939, 6, 59—67).—A lecture. E. M. J.

Vitamin-B deficiency and small intestine. T. T. Mackie, R. Golden, M. J. Lepore and R. Golden (*J. Amer. Med. Assoc.*, 1941, 117, 910—923).—A symposium. Vitamin-B deficiency in man may produce changes in motility and tone and alteration of mucosal pattern as shown by X-rays. Thiamin, riboflavin, and nicotinic acid have no effect, but -B complex, in liver or yeast, often restores the normal picture; parenteral injection may, however, be necessary. C. A. K.

Is galacturonic acid absorbed by small and large intestine? S. C. Werch and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1941, 48, 9—11).—Over 90% of galacturonic acid, swallowed as isotonic solution, was recovered from intestine of 2 human subjects and 3 dogs with fistulæ of the ileum and 1 dog with fistulæ of the colon. Isolated loops of ileum and colon in 6 anaesthetised dogs gave similar results. V. J. W.

Use of low intestinal intubation by Miller-Abbot tube in intestinal obstruction. J. B. Fisher (*J. Kansas Med. Soc.*, 1939, 40, 57—64).—A review and report of 3 cases. E. M. J.

Use of deproteinated pancreatic tissue extract [depropanex] in ureteral catheterisation. H. E. Neptune (*J. Kansas Med. Soc.*, 1941, 42, 474—475).—Ureteric spasms making catheterisation impossible were relieved in 4 cases by the intramuscular injection of depropanex, a deproteinated saline extract of pancreatic tissue, free from insulin, histamine, and acetylcholine. In 2 of these cases

ureteric calculi which had been present for 2 weeks in one and for years in the other case were passed in the urine. E. M. J.

Physiological behaviour of human appendix and problem of appendicitis: reaction of appendix to drugs. C. Dennis (*Arch. Surg.*, Chicago, 1941, 43, 1021—1060).—The studies were made on excised surviving appendices in the water-bath at 37° and on appendices *in situ* made available by appendicostomy. The abs. resistance to flow of fluid through the lumen of the normal appendix was identical with the normal intraluminal tension and was usually 15—30 cm. water pressure, while that in the cæcum was 2—5 cm. At such pressures the luminal vol. was less than 0.05 c.c. Adrenaline relaxed the appendical musculature. Amphetamine stimulated the appendix; morphine had a variable effect. The behaviour of the appendix after administration of a variety of other drugs was found similar to that known for the ileum. F. S.

Distention of congenital megacolon at high altitudes. L. H. Collins (*J. Amer. Med. Assoc.*, 1941, 117, 1012—1013).—A man of 23 with Hirschsprung's disease had considerable abdominal distention with dyspnoea and precordial pain when in an aeroplane at 10,000—14,000 ft. The symptoms were relieved on descent. C. A. K.

Protoporphyrin-IX from fæces of rats. M. O. Schultze (*J. Biol. Chem.*, 1942, 142, 89—96).—The fæces of healthy rats on a milk or solid diet and also those of anæmic, Fe- or Cu-deficient rats yield protoporphyrin-IX (identified as dimethyl ester and by conversion into mesoporphyrin-IX dimethyl ester by adding ascorbic acid and glacial acetic acid, boiling for 45 sec. with HI, and re-esterifying). W. McC.

Appearance of pollen in stool. E. L. MacQuiddy (*J. Allergy*, 1941, 13, 41—45).—It was necessary to ingest 75 mg. of pollen before pollen grains in the stool could be recognised. (3 photomicrographs.) C. J. C. B.

XIV.—LIVER AND BILE.

Vitamin-K response and liver function. R. Kark and A. W. Souter (*Lancet*, 1941, 241, 693—696).—The response to injection of vitamin-K was observed in 57 cases of liver disease with hypoprothrombinæmia. If a patient with jaundice shows a rise of blood-prothrombin to normal in 24—48 hr. after -K therapy the liver cells are normal. Varying degrees of improvement in the blood-prothrombin indicate differences in degree of hepatic failure; if -K produces no effect in a patient with prothrombin level of 30—35% normal the prognosis is very serious and fresh blood or plasma transfusions are the only effective agents. C. A. K.

Effect of visible light on liver function.—See A., 1942, III, 341.

Effect of eclamptic blood on kidney and liver of rabbit.—See A., 1942, III, 313.

Purification of liver anti-pernicious anæmia factor.—See A., 1942, III, 288.

Factor of stasis in gallstone formation. D. A. Brusilovskaja (*J. Méd. Ukraine*, 1940, 10, 827—834).—Surgically induced biliary stasis in dogs, rabbits, chickens, turtles, lizards, frogs, and fish leads to gallstone formation in a few days. M. K.

Determination of carbonyl compounds in bile preparations. A. E. Light (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 42—43).—The prep. in aq. Na_2CO_3 is treated with a known excess of NH_4OH , HCl, heated at 80° for 2 hr., acidified (acetic acid), and aq. NH_3 and diacetylmonoxime are added. The dimethylglyoxime, formed quantitatively from the excess of NH_4OH , is determined gravimetrically with Ni acetate. J. D. R.

XV.—KIDNEY AND URINE.

Unilateral absence of kidney and secondary nephritic organs in a male guinea-pig. E. Binder (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 179—181).—At autopsy, a male guinea-pig (400 g. wt.) was found to have no left kidney and there was pronounced hypertrophy of the right kidney. There were no signs of damage or necrosis. The adrenal gland was in its normal place, but it was lentacular and lay against the dorsal wall of the general cavity. The renal artery, ureter, vas deferens with epididymis, and seminal vesicle were also absent. J. N. A.

Excretion of glucose by the rabbit kidney. III. Influence of urethane, insulin, and adrenaline on the kidney threshold for glucose. T. W. T. Dillon and S. Feric (*Proc. Roy. Irish Acad.*, 1941, 47, B, 179—204; cf. A., 1935, 1268).—The normal glucose threshold in the rabbit's kidney is attained when the glucose concn. in the blood-plasma reaches approx. 120 mg.-%. This val. is independent of urine vol. When the glucose content of the plasma increases sharply, the val. increases to approx. 180 mg.-%. Administration of insulin decreases the val. to approx. 90 mg.-% whilst that of urethane increases it to 200—400 mg.-% and that of adrenaline increases it to 300—500 mg.-%. W. McC.

Effect of X-irradiation on renal function.—See A., 1942, III, 339.

Conversion of citrulline into arginine in kidney.—See A., 1942, III, 331.

Nephrectomy in unilateral renal disease with hypertension.—See A., 1942, III, 297.

Gum acacia in nephrotic syndrome.—See A., 1942, III, 290.

Effect of eclamptic blood on kidney and liver of rabbit.—See A., 1942, III, 313.

Urinary tract in sulphonamide therapy.—See A., 1942, III, 336.

Significance of urinary mercury. I. Occupational mercury exposure. II. Mercury absorption from mercury-bearing dental fillings and antiseptics. E. D. Storlazzi and H. B. Elkins (*J. Ind. Hyg.*, 1941, 23, 459—465).—The urine was oxidised by conc. HCl and $KClO_3$, and the Hg collected by Stock's method of electrodeposition. Workers engaged in the manufacture of felt hat bodies had urinary Hg varying in different processes from 0.05 to 0.96 mg. per l. (group averages). Hg in the air was determined by a detector of the lamp-shade type (General Electric), and checked by condensation with solid CO_2 and chemical determination. The ratio urinary Hg (mg. per l.) to atm. Hg (mg. per 10 cu.m.) was 0.2—0.3; this ratio would represent the proportion of Hg absorbed if all the excreted Hg is in the urine, and if inhalation is the chief source of Hg. Hg was found in the urine of persons with recent amalgam dental fillings, and of those who had recently had a mercurial antiseptic applied to the skin, but the amounts were small. E. M. K.

Detection of thyrotropin in urine.—See A., 1942, III, 309.

Significance of isolation of histamine from urine in toxæmia of regnancy.—See A., 1942, III, 313.

Rate of excretion of urinary androgens after administration of testosterone by various routes.—See A., 1942, III, 315.

Determination of oestrogenic hormones in urine.—See A., 1942, III, 311.

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

"Laws" of biological growth. P. B. Medawar (*Nature*, 1941, 148, 772—774).—"Laws" of growth, each describing a general trend, are summarised and discussed briefly. L. S. T.

Scleroma and constitution. V. P. Jaroslavski (*J. Méd. Ukraine*, 1940, 10, 1305—1309). M. K.

Function of active mesenchyme in scleroma patients. V. P. Jaroslavski (*J. Méd. Ukraine*, 1940, 10, 1311—1316).—Active mesenchyme was inhibited in most scleroma patients; it is stimulated by doses of antireticular cytotoxic serum. M. K.

Monocytosis as sign of function of active mesenchyme in scleroma patients. E. D. Deinega-Kishaeva (*J. Méd. Ukraine*, 1940, 10, 1317—1321).—Blood monocyte count was normal in 31 of 38 scleroma patients, though the active mesenchyme was inhibited. Small doses of cytotoxic antireticular serum produce a monocyte reaction in most scleroma patients; this coincides with increase of cytolytic power of patients' serum. M. K.

Antireticular cytotoxic serum in treatment of scleroma. V. P. Jaroslavski (*J. Méd. Ukraine*, 1940, 10, 1323—1328).—Beneficial effect in 26 of 40 cases is reported. M. K.

Flavin content of adipose tissue. G. Quagliariello (*Schweiz. Med. Wschr.*, 1941, 71, 334).—The flavin content of subcutaneous adipose tissues of ox, dog, and pig was determined by the method of Charit and Chaustov (modified). The average content is 0.44 μ g. per g. of fresh tissue and 1.82 μ g. per g. of fat-free subcutaneous adipose tissue. I. C.

Sulphur content of animal tissues. N. B. Medvedeva (*J. Méd. Ukraine*, 1940, 10, 793—804).—Thyroid gland of rabbits contains the largest amount of S, followed by ovary, adrenal medulla, and spleen. In old animals the greatest amount S is found in the ovaries; S content of heart, medulla, skin, liver, intestine, kidney, salivary gland, and testis is unaffected by age; in pancreas, brain, and lung it increases with age. M. K.

Shell and mechanism of its closure in Indian pond terrapin, *Lissemys punctata punctata* (Bonaterre). S. I. Hasan (*Proc. Indian Acad. Sci.*, 1941, B, 14, 235—249). M. K.

Oils from fresh-water fish. II, III. Carp, tench. J. Hadáček (*Časopis Českoslov. Lék.*, 1938, 18, 21—29, 87—90).—II. The following const. are given for the mixtures of fatty acids obtained from oils of carp and tench respectively: acid val. 187.1, 191.8, mean mol. wt. 299.8, 292.6; for the triglycerides, mean mol. wt. 875.01, 878.31, sap. val. 192.3, 191.6, and for diglycerides, mean mol. wt. 614.03, 616.23 and sap. val. 182.7, 182.1. In the oil of carp myristic (in small quantity), palmitic, stearic, linoleic, oleic, and probably linolenic acid are identified. From the oil of tench palmitic, stearic, and linolenic acid are isolated. Both oils yield highly unsaturated acids (4 or 5 double linkings).

III. Free and combined sterol are isolated from the unsaponifiable

components of the oils of carp and tench, 0.92% total and 0.47% free sterol for carp and 0.52% total and 0.30% free sterol for tench oil. The presence of vitamin-A is proved. Hydrocarbons are present in too small quantities to investigate. F. R.

Body size and milk production. M. Kleiber and S. W. Mead (*J. Dairy Sci.*, 1941, 24, 127—134).—Analysis of various data shows that the power of production is proportional to the metabolic rate or (body-wt.)². Large and small cows have equal relative ability for lactation if their lactation rate per (body-wt.)² is the same. For 42 Jersey cows this was 139 and for 24 Friesians 125 kg.-cal. milk energy per kg.² J. G. D.

Correlation between fat percentage and yield of milk, milk fat, and milk energy. W. L. Gaines (*J. Dairy Sci.*, 1941, 24, 159—164).—The formula previously given (A., 1941, III, 367) has been confirmed. J. G. D.

Factors affecting composition of milk.—See B., 1942, III, 107.

Changes taking place in sea-water during storage.—See A., 1942, I, 160.

XVII.—TUMOURS.

Production of cancer by some new chemical compounds. Factors affecting the latent period of tumour production. J. T. Bradbury, W. E. Bachmann, and M. G. Lewisohn (*Cancer Res.*, 1941, 1, 685—694).—9:10-Dimethyl-1:2-benzanthracene induced malignant tumours as early as 32 days after the first dermal application. Owing to the high toxicity of this compound the % of tumours was small. This compound is very susceptible to photo-oxidation and if unprotected from light loses its carcinogenic potency. *meso*-Dihydrocholanthrene had a latent period of 3.6 months on injection. Skin painting induced no neoplastic changes but caused adenomas of the lungs. *meso*-Dihydro-1:2:5:6-dibenzanthracene and 3-methyl-*meso*-dihydrocholanthrene are carcinogenic on subcutaneous injection. 9:10-Dimethyl-5-*n*-propyl-1:2-benzanthracene, 4 and 5-methylcholanthrene are carcinogenic, as are also 2 carcinogenic glycolic compounds, viz., the ethyl esters of 3-methylcholanthrene-*meso*- α -*endo*succinoylglycine and 1:2:5:6-dibenzanthracene-*meso*- α -*endo*succinoylglycine. The latent period of these esters is approx. the same as that of their respective parent hydrocarbons. Acetone accelerated the action of some carcinogens when applied to the skin. F. L. W.

Comparative carcinogenicity of some cholanthrene derivatives. L. W. Law and M. Lewisohn (*Cancer Res.*, 1941, 1, 695—698; cf. preceding abstract).—The carcinogenic actions of cholanthrene, *meso*-dihydrocholanthrene, 3-methyl-*meso*-dihydrocholanthrene, and 3-, 4-, and 5-methylcholanthrene are compared. 3 and 4-Methylcholanthrene have the same potency as cholanthrene in inducing subcutaneous tumours. 5-Methylcholanthrene is less potent both as regards incidence of tumours and length of latent period. The two dihydro-derivatives do not differ significantly from the parent compounds. 3- and 4-Methylcholanthrene are more potent in inducing lung carcinomas than cholanthrene, whilst 5-methylcholanthrene is less potent. Hydrogenation of the cholanthrene or 3-methylcholanthrene mol. results in a significant increase in carcinogenicity in regard to lung carcinoma induction. F. L. W.

Induction of tumours in rats by carcinogens in various lipins. H. A. Davenport, J. L. Savage, M. J. Dirstine, and F. B. Queen (*Cancer Res.*, 1941, 1, 821—824).—Methylcholanthrene and 9:10-dimethyl-1:2-benzanthracene induced malignant growths in 80—297 days in rats when the carcinogens were dissolved in rat fat, linseed oil, lard, lanoline, or spermaceti. Of the 71 tumours induced in 85 rats, all were sarcomas except 3 adenocarcinomas of the mammary gland. The dosage of 8 mg. of carcinogen per rat in 0.4 c.c. of lipin was too large and conc. to show any effects either of the homologous fat or other lipin on induction time or incidence of tumour formation. The average induction time for 50 methylcholanthrene tumours was 146.6 days whilst that for 21 dimethylbenzanthracene tumours was 136.1 days. No tumours occurred at the site of injection of lipins alone. F. L. W.

Carcinogenesis in the mouse's skin by the infrequent application at long intervals of methylcholanthrene. W. Cramer and R. E. Stowell (*Cancer Res.*, 1941, 1, 849—852).—Three series of mice of the Swiss strain were painted with 0.6% solution of methylcholanthrene. The intervals between applications of the carcinogen were 2 weeks, 3 weeks, and 1 month, respectively. Approx. 0.1 mg. was applied at each painting. Using this protracted technique the effective carcinogenic dose is smaller than that found for thrice-weekly paintings. The effective dose becomes increasingly smaller as the interval between each successive application is prolonged. It is suggested that carcinogens have a short toxic effect on epithelial cells lasting for several days and inhibiting mitotic activity. Subsequent epithelial proliferation is produced by substances formed in the skin and referred to as "proliferin." F. L. W.

Genetic analysis of induction of tumours by methylcholanthrene. III. Local and remote induction of carcinoma of mammary gland. L. C. Strong and W. L. Williams (*Cancer Res.*, 1941, 1, 886—890).

cf. A., 1942, III, 147).—Of 800 mice of the *NH* descent injected with 1 mg. of methylcholanthrene dissolved in 0.1 c.c. of sesame oil at 60 days of age, 45 showed carcinoma of the mammary gland. These carcinomas all occurred in female mice. Hyperplasia of mammary tissue and squamous metaplasias of mammary tumours were also found. These types of mammary tissue response occurred separately and in combination with other types of tumour, such as spindle-celled sarcoma, carcinoma of the skin, and rhabdomyosarcoma. *NH* mice show a high resistance to spontaneous tumours of mammary origin. F. L. W.

Induction of adenocarcinoma of pyloric stomach in mice by methylcholanthrene. H. C. Stewart and E. Lorenz (*J. Nat. Cancer Inst.*, 1941, 2, 193—196).—0.03—0.05 c.c. of a suspension of methylcholanthrene in horse serum saturated with cholesterol was injected into the wall of the pyloric chamber of the stomach in male C_5H mice. Of an unstated no. of mice so treated 4 developed tumours. E. B.

Effect of carcinogens on small organisms. III. Cell division rate and population levels of methylcholanthrene-adapted paramecia. R. R. Spencer and M. B. Melroy (*J. Nat. Cancer Inst.*, 1941, 2, 185—191).—The adapted organisms continue dividing longer and survive longer than untreated controls and the increased viability is present after growing for 10 generations in normal conditions. Stimulation of growth with amino-acids or pantothenate is greater with the adapted organisms. Colchicine and testosterone propionate have less inhibitory action on the growth of adapted organisms. E. B.

Possible carcinogenic effect of anthracene and chrysene and their compounds. II. Subcutaneous injection in rats. J. A. Pollia (*J. Ind. Hyg.*, 1941, 23, 449—451; cf. A., 1939, III, 779).—Green anthracene and blue chrysene water-colours and blue chrysene oil-colour were used, 0.5 mg. of the paint in 0.5 c.c. of solvent being injected at weekly intervals. None of the compounds caused tumour growth, but the mortality suggested some toxic action for the chrysene oil-colour and anthracene water-colour. E. M. K.

Mechanism of action of carcinogenic substances. L. T. Larionov (*Cancer Res.*, 1941, 1, 860—868).—Determinations of the ratios of partly oxidised substances excreted in the urine, the oxidation-reduction potentials of the blood, and the O_2 consumption of slices of organs were made on mice painted with benzpyrene. Local effects on oxidation processes were tested in tissue slices and in skin to which the hydrocarbons had been applied. The oxidation processes were not disturbed during the period of papilloma formation, but were altered after the appearance of carcinomas. The inclusion of benzpyrene and dibenzanthracene in the medium of tissue cultures of mouse fibroblasts induced changes in the morphological, biochemical, and proliferative characteristics of the cells. Traumatization of the nervous system by section of the sciatic nerve and treatment of the central end with formalin or croton oil affected the incidence of induced carcinoma in mice. F. L. W.

Blastomogenic substances in human body. H. E. Kleinenberg, S. A. Neufach, and L. M. Schabad (*Cancer Res.*, 1941, 1, 853—859; cf. A., 1941, III, 111).—Injections of the unsaponifiable fraction of benzene extracts obtained from the liver of patients who had died of cancer induced tumours in mice in some cases. 27 mice of unknown origin and 23 of the *R.V.* strain were used. 8 tumours were obtained of which 4 were malignant and 1 occurred at the site of injection. The total no. of tumours exceeded by 2—2.5 times the incidence of spontaneous tumours in the *R.V.* strain. Mice of the *R.V.* strain injected with extracts obtained from the lungs of persons dying from malignant tumours developed tumours of some kind in 54.3% of cases. 13.8% of the tumours were malignant. 1 tumour occurred at the site of injection. Tumours were twice as frequent after injection of extracts of lungs of cancerous patients as after injection of non-cancerous extracts. The results show that extracts obtained from an organ devoid of tumorous tissue possess a blastomogenic effect. F. L. W.

Mechanism of carcinogenesis. Significance of cocarcinogenic action and related phenomena. I. Berenblum (*Cancer Res.*, 1941, 1, 807—814; cf. A., 1941, III, 277).—No cocarcinogenic action was observed when croton resin was applied to the skin of mice and benzpyrene injected at a distance. Simultaneous injection of croton resin did not augment the carcinogenic action of benzpyrene on the subcutaneous tissues. Considerable augmentation of carcinogenic effect was obtained when croton resin was applied to the skin concurrently with a dil. solution of benzpyrene but none was observed with conc. solutions of carcinogens irrespective of their potencies. Preliminary treatment with croton resin for 26 weeks did not influence the response of mouse skin to subsequent applications of benzpyrene. Croton resin applied to the skin subsequent to a limited period of benzpyrene treatment increased tumour development. Croton resin applied to established papillomas facilitated conversion to malignancy. It is suggested that there are three phases of carcinogenesis, viz., "precarcinogenic action" (development of the pre-neoplastic phase), "epicarcinogenic action" (conversion to wart phase), and "metacarcinogenic action" (malignant

transformation of warts). The carcinogenic hydrocarbons possess all three actions; croton resin possesses only the 2nd and 3rd. F. L. W.

Quantitative induction of tumours in mice with ultra-violet light. H. F. Blum, J. S. Kirby-Smith, and H. G. Grady (*J. Nat. Cancer Inst.*, 1941, 2, 259—268).—Mice were exposed to the light of a Hg arc under carefully controlled conditions while the radiant energy was measured with a photo-cell. Irradiation produced tumours of the ear in all mice of strain *A*. With relatively low doses (under 2×10^9 ergs) the time taken for tumour induction increases with decrease in the dose. The occurrence of tumours depends on the total energy of radiation rather than intensity. E. B.

Pathology of tumours of external ear in mice induced by ultra-violet radiation. H. G. Grady, H. F. Blum, and J. S. Kirby-Smith (*J. Nat. Cancer Inst.*, 1941, 2, 269—276).—The tumours are mostly fibrosarcomata although these may be combined with squamous carcinomata. Squamous carcinomata occasionally occur alone. In one case a metastasis was found in a cervical lymph node. (7 microphotographs.) E. B.

Diet and hepatic tumour formation. J. A. Miller, D. L. Miner, H. P. Rusch, and C. A. Baumann (*Cancer Res.*, 1941, 1, 699—708).—Liver tumours were induced in rats by feeding butter-yellow (*p*-dimethylaminoazobenzene) in controlled diets for 4 months followed by dye-free diet for 2 months more. The livers were inspected by laparotomy at 4 and 6 months. 90—100% of liver tumours were obtained in 4 months on diets containing 10—12% of casein. 18—40% of casein partly protected against liver tumours. Equiv. protection resulted when liver, yeast, and egg formed 12—13% of the total protein. 31—51% of dried brewer's yeast gave only partial protection. Whole dried beef liver at a 10% level in a 10% casein diet or at 20% level as the sole source of protein gave nearly complete protection at four and six months. In a 10—12% casein diet 1.2—2% of a water-sol., alcohol-insol. fraction of whole liver gave nearly complete protection at 4 months, but protection was incomplete at 6 months. Xanthine, cystine, inositol, and choline offered no protection against the dye. Food consumption of young rats receiving butter-yellow was reduced 21%; growth rate was reduced 54%. The dye itself reduced growth *per se* as well as through a decreased food intake. Results with 34 diets indicated that (a) nutritionally adequate diets offered at least partial protection against hepatoma formation, (b) the protective supplements were usually rich in both protein and vitamin-B complex, particularly riboflavin, (c) the non-protective diets were deficient in at least one of these factors. F. L. W.

Hepatomas in mice induced with carbon tetrachloride. J. E. Edwards (*J. Nat. Cancer Inst.*, 1941, 2, 197—199).— C_2H and strain *A* mice were fed 0.1 c.c. of a 40% solution of CCl_4 in olive oil, 2 or 3 times per week. 88% of the C_2H mice and 100% of the strain *A* mice developed hepatomas. E. B.

Hepatic changes and subcutaneous and pulmonary tumours induced by subcutaneous injection of 3:4:5:6-dibenzcarbazole. H. B. Andervont and J. E. Edwards (*J. Nat. Cancer Inst.*, 1941, 2, 139—149).—Injections of 0.2 mg. of 3:4:5:6-dibenzcarbazole in oil or lard into mice of strains *A*, C_5H , and *C* induced sarcomata and hepatic changes. Pulmonary tumours were induced in strain *A* mice. The females were more susceptible to hepatic changes than were males. E. B.

Pathological changes, with special reference to pigmentation and classification of hepatic tumours in rats fed *p*-dimethylaminoazobenzene (butter-yellow). J. E. Edwards and J. White (*J. Nat. Cancer Inst.*, 1941, 2, 157—183).—Of 106 rats fed on a butter-yellow diet 66 developed liver tumours and metastasis occurred in 20%. The tumours were either hepatomas, varying in differentiation, or adenocarcinomas. The tumours are derived from parenchymal cells. No glycogen or pigment occurred in the tumour cells. (26 photomicrographs.) E. B.

Failure to induce sarcoma in rats with wheat-germ oil preparations. A. M. Brues, B. B. Marble, and B. Riegel (*Cancer Res.*, 1941, 1, 815—817).—32 Wistar and 32 Slonakar Albino rats were fed 2.5—4.7 c.c. daily of four wheat-germ oils, including medicinal oil and ether-extracted oil. These preps. were given for several months. No malignant tumours were found. F. L. W.

Effect of carcinogenic hydrocarbons and related compounds on the autoxidation of oils. H. F. Deutsch, D. L. Miner, and H. P. Rusch (*Cancer Res.*, 1941, 1, 818—820; cf. A., 1942, III, 35).—Carcinogenic hydrocarbons and related compounds cause a marked inhibition of catalysed phospholipin oxidation whereas the effect on autoxidation of oils (corn oil, cod-liver oil, lard-cod liver oil) is variable and depends on a variety of factors. Quinol inhibits both types of reaction. Ascorbic acid catalyses the oxidation of phospholipins but curtails the autoxidation of oils. It is doubtful whether the observed effects have any influence on the mechanism of cancer formation. F. L. W.

Failure of choleic acids of carcinogenic hydrocarbons to alter permeability of marine eggs and of mammalian erythrocytes. B. Lucké, A. K. Parpart, and R. A. Ricca (*Cancer Res.*, 1941, 1, 709—

713).—Egg cells of *Arbacia* and of *Chaetopterus*, and erythrocytes of mouse and ox, were exposed to choleic acid compounds of 20-methylcholanthrene, 1:2:5:6-dibenzanthracene, 10-methyl-1:2-benzanthracene, 1:2-benzanthracene, phenanthrene, and acenaphthene. No effect on the permeability was found either with the choleic acids of the carcinogenic hydrocarbons or with those of the non-carcinogens. The carcinogens, however, induced disturbances of cell cleavage in *Arbacia* eggs. F. L. W.

Survey of compounds which have been tested for carcinogenic activity. J. L. Hartwell (*Bull. Federal Security Agency, U.S. Publ. Health Service*, 1941, 371 pp.).—This bulletin represents a survey of the field of chemical carcinogenesis in the higher animals: the action of carcinogens on isolated tissues, tissue cultures, plants, protozoa, and bacteria is not considered. The literature is covered to 1939, and the compilation also includes experiments with 153 compounds from the unpublished work of Dr. M. J. Shear and Dr. H. L. Stewart of the National Cancer Institute. The results of the testing of 61 of these compounds are newly reported, while 45 are new to the whole cancer literature. Altogether the work comprises data referring to 696 chemical substances: of these, 169 are reported to be carcinogenic, apart from 23 observed as causing papillomas only. After an introductory discussion, the bulletin takes the form of a tabular review on the following classification (figures in parentheses show the no. of entries for each category): A. Inorganic substances (35); B. Organic compounds: I, Aliphatic (36); II, Polycyclic [dicyclic (26), tricyclic (47), tetracyclic (152), pentacyclic (114), hexacyclic and higher (25)]; III, Azo-compounds (39); IV, Steroids (86); V, Heterocyclic (59); VI, Unclassified (77). Within this arrangement, compounds are individually numbered and then grouped according to prototypes and alphabetically. The tables give structural formulae, literature references, particulars of species, strain, sex, and no. of animals used, prep., dosage, and route of administration of compounds, nature and sites of tumours induced, with details of duration of experiment and survival rates, and other remarks. The above conditions show the wide range of information necessary in order to assess the carcinogenic activity of a given compound. The author draws attention to the incompleteness of the data for many of the compounds listed, and urges the more systematic investigation of compounds already studied in a preliminary fashion, and for the filling of large gaps among substances which it would seem desirable to test. The review is completed by a bibliography (over 1200 references), and separate indexes to compounds, routes of application, vehicles, animal species, and tumour-sites. A. H.

Inhibition of [tumour] growth by chemical compounds. G. M. Badger, L. A. Elson, A. Haddow, C. L. Hewett, and A. M. Robinson (*Proc. Roy. Soc.*, 1942, B, 130, 255–299).—In an investigation of the growth-inhibitory activity (on implants of Walker carcinoma 256 in rats) of carcinogenic compounds, over 200 compounds were tested, including 5-, 10-, and 9:10-substituted benzantracenes, dimethyl derivatives of anthracene, nitrogenous analogues of 1:2-benzanthracene, benzphenothiazines and dibenzphenothiazines, compounds related to 3:4-benzphenanthrene, dibenzfluorenes, dibenzcarbazoles, dibenzpyrenes, azonaphthalenes and related products, naphthylamines and naphthaquinones, arsenonaphthalenes, derivatives of triphenylethylene, and diphenyl derivatives of indene, β -naphthindole, and β -naphthofuran. A striking degree of correspondence was often shown by the inhibitory and carcinogenic activity of closely related compounds (e.g., 5-alkylbenzantracenes; dibenzfluorenes; dibenzphenanthrenes; 2:2'-azonaphthalene, 2:2'-diamino-1:1'-dinaphthyl, and 3:4:5:6-dibenzcarbazole), whilst no inhibitory activity occurred with carcinogenic 10- and 9:10-substituted benzantracenes. On the other hand, inhibitory activity was observed in a few compounds (e.g., 1:2'-azonaphthalene) that are not carcinogenic and in certain synthetic oestrogenic substances that are not carcinogenic in the usual sense but are associated with the induction of individual types of tumours under special conditions. The relationship between mol. structure and inhibitory activity depends in general on an optimal degree of mol. complexity and on certain more sp. requirements: the results obtained with triphenylethylene derivatives, however, suggest that activity may be shown by compounds diverging widely from the polycyclic structure and possessing only a skeletal resemblance. Diminution of inhibitory effect with increased substituent size was shown in the 5-alkylbenzantracenes tested, although the same relationship does not necessarily obtain for other positions. The influence of the nature of the substituent group is exemplified in the contrast between 10-methyl-, 10-amino-, and 10-cyano- (inhibitory) and 10-isopropyl-1:2-benzanthracene (inactive). Solubilisation of an active compound frequently appeared to entail decrease in activity. The experiments provide further support for the view that the inhibitory effect is independent of non-sp. toxicity; other aspects of the mode of production of inhibitory effects are discussed. F. O. H.

Effect of foster nursing and its relation to development of mammary carcinoma in the mouse. W. S. Murray (*Cancer Res.*, 1941, 1, 790–792).—In a review of previous work an attempt was made to separate and evaluate the parts which chromosomal and extra-

chromosomal influences play in the development of mammary carcinoma in mice. Data from 2230 animals show that the ratios in which mammary tumours occur in inbred strains and experimental crosses may be explained on the basis of the strength of the milk stimulus which the mice receive and the resistance of the physiological systems produced by these matings to various concns. of the milk stimulus. F. L. W.

Foster nursing and genetic susceptibility for tumours of breast in mice. J. J. Bittner (*Cancer Res.*, 1941, 1, 793–794; cf. A., 1941, III, 369).—In crosses between cancerous females (strain A mice) and males of a non-cancerous line (Ax) of the same strain the incidence of mammary carcinoma is the same in the hybrids as in the controls. Foster nursing does not alter the inherited susceptibility for breast cancer in mice. F. L. W.

Note on the transfer of the strain C₃H milk influence through successive generations of strain C mice. H. B. Andervont (*J. Nat. Cancer Inst.*, 1941, 2, 307–308).—The influence was transferred through two generations of strain C mice. E. B.

Relationship between susceptibility to induced pulmonary tumour and certain known genes in mice. W. E. Heston (*J. Nat. Cancer Inst.*, 1941, 2, 127–132).—Crosses between strains A and U were injected with methylcholanthrene. Susceptibility to induced tumours was not associated with waltzing or waved-1 genes. It was associated with chromosomes carrying shaker-2, waved-2, and flexed-tail genes. E. B.

Effect of testosterone propionate on mammary tumours in mice of the C₃H strain. E. E. Jones (*Cancer Res.*, 1941, 1, 787–789).—C₃H female mice were injected with oil solutions of testosterone propionate (1.0 mg. weekly) subcutaneously from the 2nd to 12th month of life. None developed tumours during the period of treatment. Three (25%) of those living to cancer age developed tumours of the mammary gland at an average age of 20 months. Eighteen controls (47%) developed tumours at an average age of 12 months. The incidence and age at appearance of tumours in females of normal breeding history are not influenced by testosterone in these amounts. Testosterone does not inhibit growth of mammary gland tumours once they have reached macroscopic size. F. L. W.

Abnormalities of breeding behaviour in rats of the albany (A-S) strain. M. V. Danzi, E. Burack, and A. W. Wright (*Cancer Res.*, 1941, 1, 795–798).—There is a high rate of infanticide in rats of the A-S strain (a strain susceptible to spontaneous mammary tumours). A-S females with and without tumours have an unusual tendency to kill their young, but the tumour-bearers show this tendency to a greater degree. F. L. W.

Comparison of α -zone of adrenal cortex in two inbred strains of mice. W. Daughaday (*Cancer Res.*, 1941, 1, 833–835).—The α -zone of the DBA mice persists for over 200 days and its regression is accompanied by vacuolisation, whilst the α -zone of the C57 black mice undergoes complete regression by 100 days without vacuolisation. The α -zones of male and female mice castrated before puberty resemble those of virgin females of the same strain. The α -zone of the hybrid of the DBA and the C57 black strains resembles the DBA parent. Hybrids having a C57 black mother seem to show a larger α -zone than those having a DBA mother. F. L. W.

Xanthine-oxidase (dehydrogenase) activity in livers of mice of cancer-susceptible and cancer-resistant strains. F. H. J. Figgie and L. C. Strong (*Cancer Res.*, 1941, 1, 779–784).—Xanthine-oxidase activity was determined quantitatively in dialysed liver extracts of 21 C₃H cancer-susceptible and 22 JK cancer-resistant mice. C₃H livers averaged 0.81 and JK livers 1.63 xanthine-oxidase activity units per g. of liver. The reduction times of methylene-blue were 33 min. and 16 min. respectively. Possible correlation between xanthine-oxidase activity and cancer-susceptibility is discussed. F. L. W.

Comparative proteinase and peptidase activities of rat hepatoma and normal and regenerating rat liver. M. E. Mavor, G. B. Mider, J. M. Johnson, and J. W. Thompson (*J. Nat. Cancer Inst.*, 1941, 2, 277–282).—A transplanted rat hepatoma (No. 31) contained 17–19.5% of dry matter whilst normal and regenerating liver contained 29–30.5%. The proteinase activity of hepatoma (as tested on haemoglobin hydrolysis) was higher than in normal and regenerating liver. *dl*-Leucylglycine was more rapidly hydrolysed by hepatoma but *dl*-glutamylglycine was less rapidly hydrolysed by hepatoma than by normal rat liver. E. B.

Liver-catalase activity of tumour-bearing rats and effect of extirpation of tumours. J. P. Greenstein, W. V. Jenrette, and J. White (*J. Nat. Cancer Inst.*, 1941, 2, 283–291).—The catalase activity of livers of rats bearing large Jensen sarcomata or hepatomata No. 31 was only $\frac{1}{10}$ that of normal or regenerating liver. Removal of the tumour caused the liver-catalase to increase to the normal val. in 24–48 hr. The thymonucleopolymerase of the spleens of tumour-bearing rats was the same as that of normal rats. E. B.

Relative enzymic activity of certain mouse tumours and normal control tissues. J. P. Greenstein, W. V. Jenrette, G. B. Mider, and H. B. Andervont (*J. Nat. Cancer Inst.*, 1941, 2, 293–299).—Trans-

planted hepatic tumours contain about the same amount of amylase and xanthine dehydrogenase as normal liver tissue. Transplanted liver tumours, spontaneous mammary tumours, hyperplastic mammary tissue, transplanted lymphoma, lymph nodes, and bone marrow all contain less catalase than normal liver. The liver-catalase was reduced in mice with hepatic tumours, spontaneous mammary tumours, lymphomas, hæmangiomas, or sarcomas.

E. B.

Composition of nucleoprotein fraction of normal liver and transplanted hepatic tumour in rat. J. P. Greenstein, W. V. Jenrette, and J. White (*J. Nat. Cancer Inst.*, 1941, 2, 305—306).—Analysis of the nucleoproteins from the two tissues shows little difference in composition.

E. B.

Carcinogenic action of follicular hormones. R. Thibaut (*Publ. Dept. Med. Exp. Chile*, 1941, No. 7, 27 pp.).—Subcutaneous injection of oestradiol, oestrone, oestriol, and equilenin in 119 castrated female guinea-pigs on which autopsies were carried out after periods of 21—120 days shows a considerable variation in the velocity of absorption, oestrone being absorbed more slowly than the others. All these oestrogens produce in 30—50 days abundant and repeated metrorrhagias of long duration, while to varying extents they give rise to extragenital tumours which are not limited to the abdominal cavity, but extend also to the thoracic cavity, chiefly the cardiac surface, stomach, spleen, mesenteries, intestines, diaphragm, kidneys, and liver. Tumours begin to appear at 21 days. The extent to which tumours are induced by oestriol and equilenin is much less than that due to equal or smaller quantities of oestradiol or oestrone.

F. R. G.

Testosterone and progesterone in mammary carcinoma. A. A. Looser (*Lancet*, 1941, 241, 698—700).—In 10 mice, of a strain with a high incidence of mammary cancer, subcutaneous implantation of testosterone propionate every 3—5 weeks was followed by death from cancer in 4, as compared with 9 deaths out of 12 controls. In 3 of 6 women with breast cancer no recurrence took place in 5 years after implantation of testosterone propionate or progesterone. The other 3 cases, with recurrences at the time of implantation, died.

C. A. K.

Transplantation of leukaemia arising in hybrid mice. A. Kirschbaum and L. C. Strong (*Cancer Res.*, 1941, 1, 785—786).—Leukaemic cells arising in hybrids between the high-leukaemia *F* strain and low-leukaemia *CBA* strain are transplantable in a manner similar to that found for mammary cancer and normal splenic tissue of hybrid mice. Leukaemic cells of *F*₁ hybrids grow in neither parent stock but in all *F*₁ hybrids. Leukaemic cells of *F*₂ hybrids grow in neither parent stock. Leukaemic cells from a small % of backcross mice grow in the parent stock to which the *F*₁ hybrid parent has been backcrossed.

F. L. W.

Identification of cells from induced and spontaneous leucoses of Dilute Brown mice. M. R. Lewis and G. B. Mider (*J. Nat. Cancer Inst.*, 1941, 2, 115—122).—The cells were observed in tissue culture. In leucoses induced by methylcholanthrene the locomotion of the cells resembled that of bone marrow myeloblasts. The cells of spontaneous leucoses generally resembled large lymphocytes and lymphoblasts of normal lymph nodes.

E. B.

Intrapulmonary transplantation of the adenomatous gastric lesion of strain I mice. H. B. Andervont and M. B. Shimkin (*J. Nat. Cancer Inst.*, 1941, 2, 151—155).—Hyperplastic mucosa was dissected from strain I mice, dispersed, and injected intravenously into other mice. The tissue grew in 75% of strain I mice and also in 50% of strain I cross mice but in less than 5% of other mice.

E. B.

Spontaneous regression of myelomas and of their metastatic growths. M. R. Lewis and G. B. Mider (*J. Nat. Cancer Inst.*, 1941, 2, 123—125).—Three tumours which arose in Dilute Brown mice grew and killed such mice when transplanted into mice of that strain. When grafted into Bagg albino mice the tumours grew well but subsequently regressed and the hosts recovered.

E. B.

Effect of heredity on susceptibility of rats to implants of an induced sarcoma. J. L. Orbison, H. A. Davenport, F. B. Queen, D. D. Spicer, and R. M. Galt (*Cancer Res.*, 1941, 1, 891—895).—A group of rats of heterogeneous origin was separated into two strains, one of rats of heterogeneous origin was separated into two strains, one susceptible and the other resistant to a fibro-sarcoma originally induced by methylcholanthrene. Resistant and susceptible types were present in the original group of rats and tended to breed true after simple selection on the basis of litter response to implants of the tumour.

F. L. W.

Influence of sex of mice on acquired resistance to a transplantable sarcoma. L. Gross (*Cancer Res.*, 1941, 1, 880—882; cf. A., 1942, III, 151).—Male and female mice, in which tumours produced by intradermal inoculation of sarcoma S37 disappeared spontaneously, were re-inoculated intradermally or intraperitoneally with the same tumour. Practically all females were resistant to re-inoculation, whereas one fourth of the males developed tumours.

F. L. W.

Genetic resistance to a transmissible sarcoma in fowl. R. K. Cole (*Cancer Res.*, 1941, 1, 714—720).—By using a progeny test as a method of selecting breeders two lines of white Leghorns were

differentiated, one resistant and one susceptible to the Jungherr sarcoma. 2676 chicks were used, of which 64.2% were susceptible to tumour inoculation. After four generations 77.2% of the chicks in the susceptible line developed tumours following inoculation, whilst after three generations 12.5% of the chicks of the resistant line were susceptible. The difference in resistance between the two selected lines increased with each succeeding generation. Susceptibility was not influenced by sex or by age of the host.

F. L. W.

Immunological specificity of material sedimentable at high speed present in normal and tumour tissues. J. Furth and E. A. Kabat (*J. Exp. Med.*, 1941, 74, 247—256).—Heavy materials, carriers of Forssman antigen and of Wassermann hapten, are sedimented at high speed from all normal and neoplastic tissues. These materials exhibit species-, organ-, and individual specificity and produce antibodies demonstrable by absorption tests. Heavy materials from chicken sarcoma and chicken spleen could not be distinguished by complement fixation tests.

A. C. F.

Neutralisation of agent causing leucosis and sarcoma of fowls by rabbit antisera. E. A. Kabat and J. Furth (*J. Exp. Med.*, 1941, 74, 257—261).—Neutralising antibodies, unrelated to complement-fixing antibodies, against fowl tumour agents can be produced in rabbits by injection of heavy materials obtained by sedimentation from chicken tumour. Similar sediments from normal chicken spleen produce no neutralising antibodies.

A. C. F.

Metabolism of chicken tumours. D. Burk, H. Sprince, J. M. Spangler, E. A. Kabat, J. Furth, and A. Claude (*J. Nat. Cancer Inst.*, 1941, 2, 201—240).—The aerobic and anaerobic glycolysis ($Q_{1A}^{O_2}$ and $Q_{1A}^{N_2}$), respiration, and CO_2 production were determined on methylcholanthrene-induced tumour 16 and chicken tumours nos. 1, 2, 11, 12, and 13. The glycolysis was determined manometrically but checked by determinations of the lactic acid formed. The tumours had $Q_{1A}^{O_2}$ between 6 and 11 and $Q_{1A}^{N_2}$ 9—22. The R.Q. varied from 0.67 to 0.91. The microscopic appearance of the tumours used was studied and the possible effect of the presence of non-malignant cells considered. The possible effects of variation in temp., in the dry wt. of the tissue, and details of technique are discussed. A few experiments on the effect of X-rays showed that radiation with 20,000 r. had no immediate effect on metabolism although such irradiated tissue would not grow on transplantation. Chicken tumour 11 could remove very little added lactate under either anaerobic or aerobic conditions.

E. B.

Roentgen irradiation of papilloma virus (Shope). II. Effect of X-rays on papilloma virus in vitro. J. T. Syverton, G. P. Berry, and S. L. Warren (*J. Exp. Med.*, 1941, 74, 223—234).—Greater amounts of Roentgen irradiation are required to inactivate *in vitro* cell suspensions of papilloma virus (Shope) than other infective agents. The amounts are thousands of times greater than those required to eradicate permanently papillomas induced by the virus in domestic rabbits. Large doses of Roentgen radiation reduce the titre of the virus and decrease its effectivity.

A. C. F.

Serological studies in relation to tumour causation. J. G. Kidd (*J. Bact.*, 1940, 39, 349—364).—A lecture.

A. G. P.

Action of yeast extract on transplanted and spontaneous malignant tumours in mice. R. Lewisohn, C. Leuchtenberger, R. Leuchtenberger, D. Laszlo, and K. Bloch (*Cancer Res.*, 1941, 1, 799—806; cf. A., 1941, III, 590, 888).—Fractions of yeast extract active in causing regression of spontaneous adenocarcinoma of the mouse were obtained. The active principle is water-sol. and comparatively thermostable at neutral pH. It is not protein, not affected by HNO_3 , nor pptd. by high concn. of ethyl alcohol. The active material is pptd. by Pb acetate and $AgNO_3$. Active preps. are obtained by pptn. with Ba and ethyl alcohol, and also by phosphotungstic acid. The active material is adsorbed by fuller's earth and by norite but not by permutit. It is not removed by elution. None of the known B vitamins appears to be responsible for the activity. Extracts were tested on four different malignant mouse tumours. Three were spontaneous mammary adenocarcinomas and one the highly malignant transplanted carcinoma 2163. With all these tumours 30% complete disappearance was produced.

F. L. W.

Isotopic constitution of potassium in animal tumours and muscle from tumour-bearing animals. A. Lasnitzki and A. K. Brewer (*Cancer Res.*, 1941, 1, 776—778).—The isotopic constitution of K in the ash of Jensen rat sarcoma and mouse sarcoma S37 was determined by the mass spectrograph. Compared with mineral K there is a slight increase of the isotopic ratio $^{39}K/^{41}K$, i.e., a decrease in the % of ^{41}K . In muscle from normal animals the isotopic ratio is the same as that of mineral K. In tumour-bearing animals a deviation is found similar to that found with tumour tissue.

F. L. W.

Influence of heptaldehyde on pregnancy in rats. C. Carruthers and R. E. Stowell (*Cancer Res.*, 1941, 1, 724—728).—Heptaldehyde dissolved in lard, in lard containing 1% or 0.1% of methyl salicylate, and in acetone containing 0.1% of methyl salicylate can induce resorption of rat embryos when injected intraperitoneally for 7—20 days after insemination. Heptaldehyde by stomach tube was ineffective. Rats may be conditioned to the toxic effect of intraperitoneal in-

jections of heptaldehyde by treatment with small doses which are gradually increased. The reproductive system of the rat is not impaired by heptaldehyde since rats after resorptions had subsequent normal gestations. In rats undergoing resorption of embryos, the placental sign occurred three days earlier, was more profuse, and was the best indication of the onset of resorptive changes. Histologically the resorptions are not characteristic of vitamin-A or -E deficiency. F. L. W.

Artificial benignancy of neoplasm. VI. Oxidative behaviour of tumours, artificially benign tumours, and homologous normal tissues. F. N. Craig, A. M. Bassett, and W. T. Salter (*Cancer Res.*, 1941, 1, 869—879).—The activity of the cytochrome in homologous normal and malignant mouse tissue was measured by addition of succinate and *p*-phenylenediamine to surviving tissues. In connective tissue, liver, and muscle the malignant but not the normal form showed low cytochrome system % response. In a few cases this procedure was applied to mammary tissue (human and murine), to human leucocytes (healthy and leukæmic), to a human lymph-node, and to nodules of the human skin. Leucocytes in human leukæmia show the same response to *p*-phenylenediamine as do normal leucocytes. Examination of the Shope virus during transition from the benign to the malignant form showed an abrupt loss of cytochrome system response before histological evidence of frank malignancy was present. It is suggested that the method described might be a useful adjunct to routine morphological study. F. L. W.

Programme for research on the biology of human cancer. C. C. Little (*J. Nat. Cancer Inst.*, 1941, 2, 133—137).—Discussion with five suggested problems. E. B.

Relationship of twins, teratomas, and ovarian dermoids. H. W. Edmonds and J. W. Hawkins (*Cancer Res.*, 1941, 1, 896—899).—The incidence of twinning, whether measured by the % of family with twins or by the ratio of twin births to total births, is similar and consistently high in families of patients with ovarian dermoids, of patients with childhood teratomas, and of patients with twin pregnancies, higher in each instance than in random control groups. This evidence supports a theory of similarity in pathogenesis of teratomatous tumours and of twins, probably involving common factors of heredity. F. L. W.

Incidence of carcinoma of lung. B. Halpert (*Cancer Res.*, 1941, 1, 900).—74 carcinomas of the lung occurred in 2781 necropsies on persons over 1 year old. Carcinoma of the lung was more than one half as frequent as carcinoma of the stomach and more frequent than carcinoma of the biliary system and carcinoma of the pancreas together. The data support the view that carcinoma of the lung is becoming the second, if not the first, most common malignant neoplasm in the male. F. L. W.

Prevention of cancer of vulva. F. J. Taussig (*Cancer Res.*, 1941, 1, 901—904).—161 cases of cancer of the vulva are analysed and discussed from the points of view of aetiology and prevention. The chief conditions of aetiological importance are urethral caruncle, senile warts, abscess of Bartholin's gland, syphilis, and leukoplakia. F. L. W.

Primary carcinoma of lung; pneumonectomy.—See A., 1942, III, 207.

Histological changes following ovariectomy in mice.—See A., 1942, III, 232.

Granulosa-cell tumour of ovary.—See A., 1942, III, 232.

Carcinoma of islets of Langerhans.—See A., 1942, III, 230.

Forms of growth in gliomas and their practical significance.—See A., 1942, III, 218.

Angioarchitecture of gliomata.—See A., 1942, III, 219.

Uncommon pore-formation in case of cerebral tumour.—See A., 1942, III, 218.

Third ventricle tumours.—See A., 1942, III, 303.

Tumour of pituitary stalk.—See A., 1942, III, 308.

XVIII.—NUTRITION AND VITAMINS.

Simple time-weight relationship observed in well-nourished rats. L. Zucker and T. F. Zucker (*J. Gen. Physiol.*, 1942, 25, 445—463).—An equation expressing the relationship between age and live wt. in well-nourished rats from the time of weaning onwards is given. The properties of the equation, including its relationship to the law of relative growth, are discussed. W. McC.

Nutritive value of bread. M. D. Wright (*Brit. Med. J.*, 1941, II, 689—692).—The growth rate of young rats was observed on feeding with white flour of 75% extraction fortified with aneurin (0.2 g. per 280-lb. sack) or with national wheatmeal of 85% extraction. There was no significant difference between the 2 groups in the above experiment or when the rats were given mixed diets + white bread or mixed diet + wheatmeal bread. These results differ from those described by Chick (A., 1941, III, 234). C. A. K.

Effect of restricted feed intake on egg weight, egg production, and body-weight [of chicken]. B. W. Heywang (*Poultry Sci.*, 1940, 19, 29—34).—Restriction of food intake to 75 and 87.5% of the *ad lib.* consumption of Leghorn pullets decreased the total no. of eggs produced but did not affect the average size of eggs or the body-wt. of the fowls. A. G. P.

Nature of effective supplements for soya-bean oil meal in rations for production of hatching eggs. J. B. Christiansen, J. G. Halpin, and E. B. Hart (*Poultry Sci.*, 1940, 19, 55—60).—The hatchability of pullet eggs produced on a diet containing soya-bean oil meal as sole protein supplement was increased by addition of crude casein to the diet but improved considerably when flavin-containing materials (yeast, whey, dried skim milk) were added. Diminished hatchability caused by soya-bean meal occurred mainly during the winter months and was completely eliminated by feeding riboflavin or Mn. A. G. P.

Goitrogenicity of soya-bean. H. S. Wilgus, jun., F. X. Gassner, A. R. Patton, and R. G. Gustavson (*J. Nutrition*, 1941, 22, 43—52).—The goitrogenic action of soya-bean oil meal on chicks and rats and its partial prevention by heat and by I (Sharpless *et al.*, A., 1940, III, 47) are confirmed. The goitrogenic principle is not extracted by CHCl₃, acetone, alcohol, or ether; it has no detrimental action on chicks or rats other than on the thyroid, in which it produces intense hyperplastic and hypertrophic changes. A. G. P.

Growth of turkeys. I. Influence of strain, sex, and ration. V. S. Asmundson and I. M. Lerner (*Poultry Sci.*, 1940, 19, 49—54).—The protein level of the ration markedly affects the growth of the turkey body as a whole, and notably muscle, bone, and gonad development. Differences between sexes are apparent in rate of growth, and in relative development of bone and muscle in relation to the increase in gross body-wt. Differences between strains were small but significant. Closer correlation exists between growth of the pectoralis major and that of the underlying keel than with that of the leg bones. Muscle growth was more closely related to the body-wt. than was that of the bones. A. G. P.

Direct use of leaf protein in human nutrition.—See B., 1942, III, 81.

Utilisation of food proteins. J. C. McGowan (*Chem. and Ind.*, 1942, 150).—Certain amino-acids and simple peptides may act as co-enzymes in proteolytic digestion, thus accounting for the increased digestibility of mixed proteins compared with that of the individual components. H. G. R.

Effect of hydrolysis on nutritive value of casein. E. L. R. Stokstad (*Poultry Sci.*, 1940, 19, 42—48).—Enzyme-digested casein (47—79% hydrolysis) was inferior to whole casein when fed to chicks at protein levels of 5—30% of the ration. The effect is not attributable to differences in food consumption or to partial deficiency of amino-acids. Addition of digested casein to a ration already containing adequate amounts of whole casein depressed the growth rate of chicks. A. G. P.

Digestibility of yeast.—See B., 1942, III, 82.

Nutritive properties of steam-rendered lard and hydrogenated cottonseed oil. R. Hoagland and G. G. Snider (*J. Nutrition*, 1941, 22, 65—76).—The lard and hydrogenated cottonseed oil have similar growth-promoting properties when fed to rats at the rate of 5% of the diet. When larger proportions were given the lard proved superior. Both fats produced max. growth at levels of 30% and min. growth at 5% of the diet. The efficiency of utilisation was min. at the 5% level in both cases but each was utilised with approx. equal efficiency at all levels between 15 and 54%. The digestibility of lard exceeded that of the cottonseed oil at all intake levels, average vals. being 96.4 and 92.9% respectively. A. G. P.

Effect of dietary factors on development of rancidity in fat of rats. A. Overman (*J. Biol. Chem.*, 1941, 142, 441—444).—Fat from thin rats resists rancidity longer than fat from fat rats. Ascorbic acid, but not quinol, in the diet increases the resistance. A. Li.

Food fats.—See B., 1942, III, 108.

Dependence of foetal growth and storage of calcium and phosphorus on the parathyroid function and diet of pregnant rats. M. Bodansky and V. B. Duff (*J. Nutrition*, 1941, 22, 25—41).—In normal rats growth and storage of Ca and P of the foetus are not greatly affected by the maternal intake of Ca and P, except that an excessive intake of Ca (e.g., a diet containing Ca 1.225% and Ca/P ratio = 5:1) impairs bone deposition in the embryo. Normal growth and calcification of the foetus depends on the parathyroid function of the mother. Lack of parathyroid secretion during pregnancy disturbs the mineral metabolism of both mother and foetus. On a rachitogenic diet parathyroidectomised and normal rats produced young of similar composition. Administration of viosterol to parathyroidectomised rats increased serum-Ca, improved foetal growth, and increased foetal storage of Ca and P. Al acetate in the diet of pregnant parathyroidectomised rats depressed serum-inorg. P, increased -Ca, and increased foetal growth and storage of Ca and P. Foetal development and storage of Ca and P depend on the main-

tenance of suitable blood-Ca and -P on the maternal and on the foetal side of the placenta. A. G. P.

Effect of dietary calcium and phosphorus on assimilation of dietary fluorine. M. Lawrenz and H. H. Mitchell (*J. Nutrition*, 1941, **22**, 91—101).—An increase in the Ca content (0.23 to 0.73%) with const. P content in rat diets (Ca : P = 0.44 and 1.40 respectively) resulted in a heavier dry-fat-free skeleton containing higher % of ash, Ca, and P; F retention at dietary levels of 9, 12, and 32 p.p.m. was diminished, especially in teeth and soft tissue. An increase in dietary P (0.14 to 0.71%) with const. Ca content (0.71%) stimulated the appetite and produced heavier skeletons without appreciable effect on total F retention. Ca probably impairs the assimilation of F. A. G. P.

Severe calcium deficiency in growing rats. III. Serum-calcium of individual animals during development of calcium deficiency. D. M. Greenberg and W. D. Miller (*J. Nutrition*, 1941, **22**, 1—6; cf. A., 1941, III, 372).—Severe Ca deficiency in rats resulted in a steady decline in serum-Ca to approx. 6 mg. per 100 c.c. Serum-protein was unchanged. A. G. P.

Magnesium balance in infants. C. F. Shukers, E. M. Knott, and F. W. Schlutz (*J. Nutrition*, 1941, **22**, 53—64).—A small positive Mg balance is maintained in infants of 2—6 months by diets containing 10—20 mg. of Mg per kg. body-wt. daily. Retention increases with dietary supplies exceeding 20 mg. per kg. daily. No relationship was apparent between Mg and Ca retentions, between faecal P and faecal Mg or Mg retention, or between the vitamin-D status and Mg retention. Mg was somewhat higher when honey than when maize syrup formed the source of dietary carbohydrate. A. G. P.

Vitamins and minerals in animal nutrition. Müller-Lenz and G. von Wendt (*Z. Vitaminforsch.*, 1941, **11**, 372—376).—The effects of domestication, climatic changes, and natural and sophisticated diets on the development and condition of domesticated animals and on their ability to synthesise vitamins and hormones are discussed. Attention is drawn to the relationships between the actions of vitamins, hormones, and minerals. W. McC.

Vitamin-A. I. Factors in vitamin-A production. H. N. Brocklesby and N. I. Rogers. **II. Preparation of vitamin-A alcohol for adsorption.** L. A. Swain. **III. Preparation of vitamin-A oils from dogfish livers.** B. E. Bailey. **IV. Fluorescent analysis of vitamin-A.** H. N. Brocklesby and N. I. Rogers (*Progr. Rept. Fisheries Res. Bd. Canada*, 1941, No. 50, 4—8, 8—10, 10—12, 12—13).—I. In dogfish livers, the oil from that part of the liver nearest to the connecting ducts and gall bladder yields an appreciably higher vitamin-A potency than does oil from other parts of the liver. In ling, cod, and halibut livers, the oil having the highest -A content is located in the tips of the liver lobes. Evidence is given that not all the -A in fish tissues is associated with the oil; hence some of the commercial methods of recovery are not efficient. A lipoxidase, present in fish tissue, is capable of destroying -A by oxidation at room temp. This enzyme can cause serious losses in -A if fish livers are allowed to remain, unprocessed, for long periods.

II. An -A concentrate can be obtained from fish oils that are impaired by their odour and colour. The oil is saponified to convert -A ester into the -A alcohol and the latter is extracted by a solvent and selectively adsorbed. A 5-fold concn. of the -A has been effected.

III. Chemical coagulation of the protein of minced dogfish livers causes the liberation of a fraction of the oil without freeing an equiv. proportion of the -A, thus leaving the remaining oil proportionately richer in -A.

IV. The method of determining -A, based on the titration of a solution of the vitamin-containing oil in CHCl_3 with a solution of picric acid in CHCl_3 in filtered ultra-violet light, is modified by using benzene in place of CHCl_3 and maleic anhydride in place of picric acid. This modified method is especially suitable for oils containing below 10 i.u. of -A per mg.: for oils with higher -A vals., further modifications have been made including the use of a fine dispersion of the oil in an aq. medium. R. G. W.

Determination of carotene in plants. K. Svanhof and H. Dam (*Z. Vitaminforsch.*, 1941, **11**, 361—372).—The procedure of Glaving and Heegard (*Z. Unters. Lebensm.*, 1940) and that of the Danish Ministry of Agriculture yield trustworthy results only when inactive material is removed by supplementary chromatographic adsorption on Al_2O_3 and a correction is applied to allow for losses involved in adsorption. A modification of the procedure of Willstätter and Stoll, applicable to dried plant products, is described. W. McC.

Relation of vitamin-A and -D to erosion of cervix of uterus.—See A., 1942, III, 312.

Vitamin-B complex deficiency as a cause of retrobulbar neuritis and peripheral neuritis in a chronic alcoholic and pipe smoker.—See A., 1942, III, 304.

Carbohydrate metabolism in aneurin deficiency. H. A. Harper (*J. Biol. Chem.*, 1942, **142**, 239—248).—Subacute aneurin deficiency retards absorption of glucose from the intestine, and formation and breakdown of liver-glycogen. In the liver conversion into glycogen of $l(+)$ Na lactate and pyruvate given by mouth is unaffected.

Glucose fed to normal and aneurin-deficient rats reduces ketonuria induced by fasting following a high-fat diet. R. L. E.

Persistent beri-beri symptoms from deficiency of vitamin-B₁. G. Amantea and V. Famiani (*Schweiz. Med. Wschr.*, 1941, **71**, 335—336).—Pigeons and cocks were fed with milled rice until the appearance of beri-beri symptoms and then kept fasting for 2—3 days. Treatment with yeast relieved all symptoms in 2—3 months. In a few animals only paralysis of muscles of the wings was found to be irreversible. I. C.

Existence and nature of bond between pyrophosphoric ester of aneurin and apoenzyme. L. De Caro and P. Fornaroli (*Schweiz. Med. Wschr.*, 1941, **71**, 336—337).—Muscle juice is dialysed against buffer solutions of different p_H . The max. quantity of cocarboxylase (determined by the thiochrome method) dialyses at p_H 4.2—6.1. It is claimed that in muscle cocarboxylase is combined with a protein (enzyme) as a salt. I. C.

Avian thiamin deficiency. III. Characteristic symptoms and their pathogenesis. R. L. Swank and O. A. Bessey (*J. Nutrition*, 1941, **22**, 77—89).—Highly purified thiamin-free diets caused, in young pigeons, acute deficiency symptoms characterised by opisthotonus. With small inadequate amounts of thiamin in the diet ataxia and leg weakness and, in many cases, cardiac failure developed. Intramuscular administration of thiamin promptly relieved opisthotonus and mild cardiac failure but recovery from leg weakness was slow even when other factors in the vitamin-B complex were given. Severe cardiac failure often did not respond to treatment. The thiamin requirement of pigeons varied with the food intake. Paralysis is a characteristic symptom of thiamin deficiency and the assumption of another hypothetical causal factor (-B₄) is unnecessary. A. G. P.

Accuracy of spectrophotometric determination of vitamin-B₁. K. H. Coward. **Analysis of variance of the results.** J. O. Irwin (*Quart. J. Pharm.*, 1941, **14**, 329—334, 334—336).—A statistical analysis of the results of spectrophotometric determination of four different solutions of vitamin-B₁ in five different laboratories. The various sources of error are discussed. J. N. A.

Determination of vitamin-B₁ by yeast fermentation method. Improvements related to use of sulphite cleavage and a new fermentometer. A. S. Schultz, L. Atkin, and C. N. Frey (*Ind. Eng. Chem. [Anal.]*, 1942, **14**, 35—41).—The fermentation activity of thiamin chloride is destroyed by heating at p_H 5—6 at 100° for 30 min. with Na_2SO_3 , whereas known interfering substances are not affected. The fermentation activity of yeasts in the presence of the test material is determined by fermentation of glucose and measurement of CO_2 evolved in a standard time, and the determination repeated after destruction of thiamin with Na_2SO_3 . The difference in the activity as measured by CO_2 evolution before and after Na_2SO_3 treatment is proportional to thiamin. The method has been successfully applied to a variety of materials such as wheat, yeast, bread, liver, milk, orange juice, etc., and recovery of added thiamin is quant. The fermentometer is described. J. D. R.

Determination of thiamin in urine.—See A., 1942, III, 321.

Cytophysiological investigations on vitamin-B₂ (lactoflavin), and its derivatives, lumiflavin and lumichrome. W. H. Schopfer (*Arch. Sci. phys. nat.*, 1941, [v], **23**, Suppl., 130—134).—When the epidermis of bulbs of *Allium* is treated for a few min. with a solution of lactoflavin (20 mg.-%) the cellulose membrane fluoresces strongly, and after treatment for 2—4 days the cell contents exhibit an intense yellowish-green fluorescence. The nucleus, which is attached to the membrane, is not fluorescent, and during vacuole contraction the poles are not or only very slightly fluorescent, whilst the vacuole is strongly fluorescent. Plasmolysis with KNO_3 intensifies the fluorescence, but with KCNS the cytoplasm does not fluoresce. When the epidermis which has accumulated lactoflavin in the dark is placed in running water and strongly illuminated the vacuole fluoresces blue due to photolysis of lactoflavin to lumichrome, and the fluorescence is accentuated by plasmolysis. After prolonged irradiation with ultra-violet light on the non-plasmolysed epidermis, the fluorescence decreases rapidly in intensity and cytological disturbances occur. When cells treated with lactoflavin and plasmolysed by KCNS or KNO_3 are irradiated intravacuole cryst. deposits are rapidly formed. If irradiation is continued for 5—10 min. the cells of the central zone become necrotic and disorganised and contain the same deposit. These phenomena are not observed in absence of lactoflavin and it is concluded that lactoflavin passes across the cytoplasmic layers of the mesoplasm and tonoplasm and accumulates in the vacuole. Similar behaviour is observed with leucoflavin and to a smaller extent with lumiflavin and 9- β -dihydroxypropylisalloxazine, whilst treatment of the epidermis with lumichrome causes a strong blue fluorescence of the cytoplasmic poles of the cells, which is intensified after plasmolysis with KNO_3 . J. N. A.

Riboflavin deficiency in dog. H. R. Street, G. R. Cowgill, and H. M. Zimmerman (*J. Nutrition*, 1941, **22**, 7—24; cf. A., 1939, III, 766).—Prolonged deficiency of riboflavin in dogs leads to neurological abnormalities as shown by clumsiness at exercise and loss of deep

reflexes of the limbs and to myelin degeneration of peripheral nerves and posterior column of the spinal cord. Administration of crystalline riboflavin largely prevented the nervous disturbance. Increased fat content of liver cells is probably a result of inanition rather than a specific effect of riboflavin deficiency. Opacity of the cornea in dogs is probably an effect of deprivation of riboflavin. A. G. P.

Effect of vitamin-B₂ deficiency on pregnancy.—See A., 1942, III, 313.

Utilisation of nicotinic acid and related pyridine compounds by the Proteus group of organisms.—See A., 1942, III, 348.

Chemical determination of nicotinic acid content of flour and bread.—See B., 1942, III, 106.

Experimental deficiency of vitamin-B₃; inter-relationship of vitamins. M. Mitolo (*Schweiz. Med. Wschr.*, 1941, 71, 337—339).—Four rats were fed on a diet lacking pyridoxine. In only one animal the typical symptoms of acrotyc dermatitis appeared. In all animals growth was stopped or impaired. Two other groups, each of 4 rats, were fed on a diet lacking pyridoxine and containing respectively an excess of vitamin-B₁ and -B₂. In these rats only minor cutaneous symptoms appeared, but never typical dermatitis. Growth is less impaired in animals fed with an excess of -B₂. I. C.

Metabolism of vitamin-B₆. J. V. Scudi, R. P. Buhs, and D. B. Hood (*J. Biol. Chem.*, 1942, 142, 323—328).—Ingested vitamin-B₆ is excreted in men and dogs, but not in rats, in a conjugated form (probably glucuronide or ethereal sulphate) involving the 3-hydroxyl group of -B₆. A second, conjugated excretion product occurred in the urine of men and dogs and, to a smaller extent and unconjugated, in rat's urine. This metabolite, in which the 4-hydroxymethyl group of -B₆ is altered, is determined by means of the indophenol reaction in borate buffer. With dogs, -B₆ is also excreted unchanged.

F. O. H.

Adaptation of Scudi colorimetric method for pyridoxine [vitamin-B₆]. O. D. Bird, J. M. Vandenberg, and A. D. Emmett (*J. Biol. Chem.*, 1942, 142, 317—322; cf. A., 1941, III, 685).—Vitamin-B₆ is adsorbed from a citrate-PO₄'''-buffer (pH 3) extract of the sample by "superfiltral" and subsequently eluted by butyl alcohol containing the chloroimide reagent, veronal buffer being added to bring the pH to 7.8—8.0. The presence of 500 µg. of aneurin, riboflavin, nicotinic acid, or Na pantothenate or of 5 mg. of ascorbic acid does not interfere. Solutions containing 20 µg. of -B₆ per c.c. are not significantly changed in potency by autoclaving for 45 min. at pH 9.7.

F. O. H.

Antibiotin factor from egg white. D. W. Woolley and L. G. Longsworth (*J. Biol. Chem.*, 1942, 142, 285—290).—The prep. of a concentrate 15,000 times as active as egg white is described. The protein resembles avidin of Eakin *et al.* (cf. A., 1941, III, 897) in activity and in other properties.

R. L. E.

Frequency of vitamin-C deficiency in Bukarest school children. M. D. Mezincesco (*Z. Vitaminforsch.*, 1941, 11, 376—385).—The blood-ascorbic acid of children of the poorer classes shows a seasonal variation. Max. vals., slowly attained, occur in the period July—Oct. and min. vals., rapidly attained, in the period Feb.—May. The nature of the diet accounts for the fact that in the period of min. vals. 90% of the children are deficient (blood-ascorbic acid less than 0.8 mg.-%) and 25% of them seriously deficient (blood-ascorbic acid less than 0.4 mg.-%) in vitamin-C. The deficiency is less in children aged 11—15 than in those aged 7—10.

W. McC.

Effect of hydrogen peroxide, vitamin-C, and glutathione on mouse cancer and tissue respiration.—See A., 1942, III, 325.

Complex formation by ascorbic acid with formaldehyde. P. V. Krishnamurthy (*J. Indian Chem. Soc.*, 1941, 18, 383—386).—Determination of ascorbic acid by 2 : 6-dichlorophenol-indophenol or by I, and of formaldehyde by I, shows that a complex is immediately formed when the two are mixed in water, but excess of formaldehyde does not use up the whole of the ascorbic acid. Complex formation is max. at pH 5.3 and min. at pH 6.5.

A. Li.

Extraction of ascorbic acid from plant tissues. W. B. Davis (*Ind. Eng. Chem.*, 1942, 34, 217—218).—For titrimetric determination, plant material is extracted in a Blender of which the cutting knives are covered with the extracting solvent, usually a mixture containing 3% of trichloroacetic acid and 2% of HPO₃. The method equals manual grinding in efficiency and takes less time. Recovery of added ascorbic acid is satisfactory.

I. A. P.

Concentration of ascorbic acid and phosphatases in secretions of male genital tract.—See A., 1924, III, 315.

Calcium appetite of parathyroidectomised rats (rôle of vitamin-D).—See A., 1942, III, 306.

Mode of action of vitamin-E. A. Hottinger (*Z. Vitaminforsch.*, 1941, 11, 310—340).—In children, orally administered vitamin-E greatly diminishes urinary excretion of creatine. This occurs also when the excretion is increased by consumption of glycine but not when it is increased by that of creatine. In adults, administration of -E usually decreases basal metabolic rate and the sp. dynamic action of glycine. It also increases the blood-sugar level attained

when glucose is consumed and the rate at which the high level is reached. Administration of -E + glycine to children suffering from progressive muscular dystrophy does not effect cure or increase ability to utilise orally administered creatine. W. McC.

Action of vitamin-K on bleeding time in thrombocytopenia. Treatment of hæmorrhagic disease in new-born with vitamin-K.—See A., 1942, III, 292.

Condensation of allylic alcohols with hydroxyquinones.—See A., 1942, II, 149.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Insensible perspiration and basal metabolism in old age. I. V. Basilevitch (*J. Méd. Ukraine*, 1940, 10, 1275—1282).—Insensible perspiration is greatly diminished in old subjects (aged 90—110); it varies from 9 to 25 g. hourly; basal metabolism is decreased to 20—30 cal. per sq. in. hourly.

M. K.

Influence of temperature on animal oxidation. J. M. O'Connor and D. K. O'Donovan (*Proc. Roy. Irish Acad.*, 1941, 47, B, 251—264; cf. A., 1940, III, 56).—The CO₂ produced during determinations of O₂ consumption by the frog affects the consumption but slightly and only when the temp. is relatively high (above approx. 14°), the results obtained when the determinations are made without permitting CO₂ to accumulate confirming the previously given explanation of the effect of temp. on the consumption. Determinations of N excretion show that the effect of temp. on protein metabolism follows a course expressed by an Arrhenius equation, a very large proportion of the total O₂ consumed at temp. near 0° being employed for protein degradation. Increase in O₂ consumption and accompanying increase in fat combustion, but no increase in carbohydrate consumption, occur at approx. 16° (m.p. of palmitic acid in unimol. layer). At temp. above the expansion point of the acid in unimol. layer, the increased O₂ consumed is employed for carbohydrate and fat combustion. The properties of unimol. layers of fatty acids (palmitic, stearic) explain the course of O₂ consumption by reptiles and mammals at temp. above those tolerated by the frog, a probable consequence of these properties being regulation of body-temp. in mammals.

W. McC.

Utilisation of cysteine and cystine by rat liver with production of hydrogen sulphide. C. V. Smythe (*J. Biol. Chem.*, 1941, 142, 387—400).—Comparative vals. for the anaerobic production of H₂S from cysteine by rat, dog, human, ox, rabbit, pig, and guinea-pig livers, and rat kidney, muscle, and brain are 100, 60, 50, 18, 5, 3, 1, 1, less than 1, and 0, respectively. The active agent can be extracted by 0.9% aq. NaCl, is not removed by dialysis, is pptd. by saturated (NH₄)₂SO₄, alcohol, or acetone, and is inhibited by KCN. Extracts are most active at pH 7.4—7.8, but lose their activity slowly at 0°, rapidly at 60°. With rat liver extract for 2 hr., anaerobic H₂S production is equiv. to approx. 50% of the cysteine added, and accounts for 68% of the cysteine consumed (excluding that converted into cystine). Pyruvic acid and NH₃ are also produced, and a little S and alanine (equiv. to 1—26% of the H₂S), but no serine, and it is concluded that aminoacrylic acid is the chief primary product. Cystine with liver extracts gives less H₂S, more S, and similar amounts of pyruvic acid and NH₃. The decomp. of cystine is unaffected by the presence of air, while cysteine yields less H₂S, but as much of the other products. Serine and threonine with rat liver yield no keto-acid. The physiological significance of these reactions is discussed. Small amounts of S are determined by measuring the H₂S produced by the reaction with cysteine or thioglycollic acid.

A. Li.

Fat metabolism after liver injury.—See A., 1942, III, 318.

Carbohydrate metabolism in old age. R. T. Bogdanovitch (*J. Méd. Ukraine*, 1940, 10, 1283—1292).—The average fasting blood-sugar was 80—110 mg.-%. Blood-glycogen was markedly raised. The blood-sugar increased slowly after administration of 50 g. of glucose; max. vals. after 60—90 min. not exceeding 180—200 mg.-% were followed by a gradual decrease to initial vals. after 2—2½ hr.

M. K.

Effect of visible light on carbohydrate metabolism of malignant tissue.—See A., 1942, III, 325.

Hypophysis-diencephalon system and carbohydrate metabolism.—See A., 1942, III, 310.

Glycogen formation from glucose in presence of radioactive carbon dioxide. B. Vennesland, A. K. Solomon, J. M. Buchanan, and A. B. Hastings (*J. Biol. Chem.*, 1942, 142, 379—386).—Following injection of radioactive HCO₃' and feeding of glucose to fasted rats, the liver-glycogen formed contains ¹⁴C corresponding with 13% of the glycogen-C. The muscle-glycogen contained a small amount of ¹⁴C. Similar experiments with rabbit liver slices gave less significant results.

F. O. H.

Effect of large doses of insulin on metabolism of brain tissue.—See A., 1942, III, 302.

Rôle of excessive carbohydrate intake in aetiology of diabetic coma. I. A. Mirsky, A. N. Franzblau, N. Nelson, and W. E. Nelson (*J. clin. Endocrinol.*, 1941, 1, 307—313).—8 diabetic patients were investigated and maintained on the min. dose of insulin to prevent the appearance of the conditions preceding coma. Increase in the carbohydrate intake to the max. quantity the patient was able to eat (550—1300 g. per day) did not increase the excretion of ketonic compounds. Deprivation of insulin was the most important factor in the development of acidosis. The ingestion of large amounts of carbohydrate in the absence of exogenous insulin did not aggravate the clinical status and in some cases alleviated it. P. C. W.

Blood-sugar and carbon dioxide-combining power of the plasma in relation to ketosis in dairy cattle. J. F. Sykes, C. W. Duncan, and C. F. Huffman (*J. Dairy Sci.*, 1941, 24, 193—197).—Many cattle give a positive urine test for ketosis in the absence of other clinical symptoms. Ketosis is more prevalent in winter and tends to disappear when the cattle are turned to summer pasture. Blood-sugar and CO₂-combining power were normal in this type of ketosis. When blood-ketones exceeded 6 mg.-%, blood-sugar fell. Injection of glucose decreased ketosis so that the cause is insufficient carbohydrate for complete fat oxidation. Consistent variations in CO₂-combining power were not found, so that oxidosis is not an invariable accompaniment of ketosis. J. G. D.

Fixation of carbon dioxide by pigeon liver in the dissimilation of pyruvic acid.—See A., 1942, III, 318.

Metabolism of lactic acid containing radioactive carbon in the α - or β -position. B. Vennesland, A. K. Solomon, J. M. Buchanan, R. D. Cramer, and A. B. Hastings (*J. Biol. Chem.*, 1942, 142, 371—377).—With rats fed on lactate containing ¹⁴C in the α - and β -position, the CO₂ expired contained approx. 10% of the ¹⁴C; 21% of the lactate feed was converted into liver-glycogen and contained 3.2% of the ¹⁴C. The results support the mechanism of glycogen formation previously described (A., 1941, III, 783). F. O. H.

Changes in mineral metabolism in old age. I. V. Basilevitch and L. I. Pravdina (*J. Méd. Ukraine*, 1940, 10, 1267—1274).—No disturbances of mineral metabolism were found in healthy subjects aged 90—110. M. K.

Absorption and distribution of radiophosphorus in blood of patients with polycythaemia. Excretion and therapeutic effect.—See A., 1942, III, 287.

Effect of low-calcium diet and calciferol on calcium and phosphorus metabolism.—See A., 1942, III, 330.

Relation of thyroid and pituitary to iodine metabolism.—See A., 1942, III, 309.

Nicotinic acid metabolism. III. Metabolism and synthesis of nicotinic acid in rat. J. W. Huff and W. A. Perlzweig [with R. Forth and F. Spilman] (*J. Biol. Chem.*, 1941, 142, 401—416).—Nicotinic acid given to adult rats on a protein diet is excreted partly unchanged, but chiefly (83%) as trigonelline, with small amounts of nicotinic acid and amide. Of trigonelline given orally, 20—40% is excreted unchanged. Nicotinic acid is excreted partly unchanged and partly as nicotinic acid and trigonelline, and nicotinamide chiefly as trigonelline (30% in 24 hr.). On a protein-free diet containing 7 μ g. of nicotinic acid, rats excrete daily 25—75 μ g. of nicotinic acid derivatives in the urine and 40—90 μ g. in the faeces. Addition to this diet, or parenteral administration, of caseinogen, glycine, *D*- β -amino-*n*-valeric acid, or choline increases the urinary but not the faecal excretion of nicotinic acid. NH₄ lactate given intraperitoneally has the same effect. Hence nicotinic acid is synthesised in the tissues, apart from bacterial synthesis in the gut. Of continued large doses of nicotinic acid, 62% is found in the urine, and only small amounts in the faeces or stored in the body. A. Li.

XX.—PHARMACOLOGY AND TOXICOLOGY.

2-Sulphanilamidothiazole.—See A., 1942, II, 152.

Sulphonamido-derivatives of pyrimidines.—See A., 1942, II, 151.

Preparation of substituted sulphonamides.—See A., 1942, II, 138.

Determination of chemotherapeutic activity. P. H. Greay (*Canad. J. Res.*, 1942, 20, B, 5—16).—Details are given of the technique used in testing substituted sulphonamides. Although certain of those examined exhibit considerable *in-vitro* activity, none of them possesses, *in vivo*, chemotherapeutic properties equal to those of sulphapyridine or sulphathiazole. H. W.

Action of sulphanilamide derivatives in experimental streptococcal and pneumococcal infections in mice. II. K. Ganapathi and R. S. Rao (*Proc. Indian Acad. Sci.*, 1941, 14, B, 427—436).—36 sulphanilamide derivatives were tested on mice infected with β -haemolytic streptococci and type I pneumococci. The activity of derivatives substituted in the N⁴-amino-group depends on the liberation of sulphanilamide or amido compounds *in vivo*. 2-N¹-Sulphanilamido-thiazole, 4-methylthiazole, and 4-methylpyrimidine are particularly effective against pneumococcus. R. L. E.

Sulphadiazine. I. Chemotherapy of experimental haemolytic streptococcal, pneumococcal, and staphylococcal infections in mice. P. H. Long, E. A. Bliss, and E. Ott. II. Clinical use of sulphadiazine in therapy of bacterial infections, other than pneumonia. G. I. Trevett, R. A. Nelson, and P. H. Long. III. Use of sulphadiazine in treatment of pneumococcal pneumonia. F. T. Billing, jun., and W. B. Wood, jun. (*John Hopkins Hosp. Bull.*, 1941, 69, 297—302, 303—313; 314—326).—I. Sulphadiazine controls experimental haemolytic streptococcal, staphylococcal, and pneumococcal infections in mice.

II. Sulphadiazine is effective in the treatment of haemolytic streptococcal infections. It is the best available drug for the treatment of chronic bacterial infections which require long-continued therapy, as it is well tolerated. It offers promise of being effective in the treatment of acute meningococcal and staphylococcal infections.

III. Sulphadiazine is as effective in pneumococcal infections as sulphapyridine and sulphathiazole and possesses certain pharmacological properties which at present make it the drug of choice in these cases. T. F. D.

Treatment of *Br. abortus* infection in guinea-pigs with M. & B. 693. F. W. Priestley (*Vet. Rec.*, 1940, 52, 3—5).—Repeated daily doses of sulphapyridine bordering on the toxic limit produced some cures; the dose was 2 mg. per g. body-wt. for 10 days, followed by half this dose for a further 10 days. A second series of animals was given 0.5 mg. per g. body-wt. every 6 hr. for 5 days; there was no marked difference from the controls when the animals were killed 23 days later. E. G. W.

Common sulphonamides. D. G. Ardley (*Lancet*, 1941, 241, 625—628).—A review of nomenclature, structure, and uses of the common sulphonamides. C. A. K.

Present position of chemotherapy. T. Anderson (*Glasgow Med. J.*, 1941, 135, 1—13).—A scheme of the dosage and indications for the various sulphonamides and results in various conditions. G. H. B.

100 consecutive cases of acute lobar pneumonia treated with sulphapyridine. W. R. Snodgrass and J. L. Markson (*Glasgow Med. J.*, 1941, 136, 169—179).—Statistics of mortality and morbidity. G. H. B.

Sulphapyridine dosage in childhood pneumonia. S. L. Ellenberg and H. S. Altman (*Arch. Pediat.*, 1941, 53, 649—656).—Sulphapyridine is effective in a lower dosage (0.1 g. per kg. body-wt.) for lobar pneumonia in children over the age of 2; bronchopneumonia, particularly streptococcal, needs higher dosage (0.2 g. per kg. body-wt.). The incidence of empyema is decreased in sulphapyridine-treated cases. C. J. C. B.

Sulphonamides in pneumococcal meningitis. W. T. Cooke (*Lancet*, 1941, 241, 510—512).—Sulphapyridine was given to 14 cases of pneumococcal meningitis with 1 survival. The prognosis is worst in patients under 2 years or over 50. C. A. K.

Pneumococcal meningitis; recovery after sulphathiazole. S. J. Howard (*Lancet*, 1941, 241, 512).—Case report. C. A. K.

Meningococcus meningitis in Ottawa, 1940—41 [use of sulphonamides]. W. T. Shirreff, L. N. Pearlman, T. A. Lomer, and D. Croll (*Canad. Publ. Health J.*, 1941, 32, 551—558).—Mortality and morbidity statistics of meningococcus meningitis demonstrate a sharp fall in mortality since sulphonamides have been used. Mortality in 25 hospital cases was 12%. Treatment consisted almost exclusively of chemotherapy and serum therapy, using multivalent antimeningococcus serum. C. G. W.

Treatment of subacute bacterial endocarditis with sulphonamide, sulphapyridine, and sulphathiazole; review of previously reported cured cases with report of 15 treated cases. H. E. Heyer and F. K. Hick (*Ann. int. Med.*, 1941, 15, 291—303).—One patient suffering from subacute bacterial endocarditis received 65.3 g. of sulphonamide and was cured; 34 blood cultures in the course of 2 years were negative; in another case 17 g. of sulphathiazole caused a remission after 30 g. of sulphonamide had been unsuccessful. 13 patients died within 1 month to 2 years. All cases showed a marked decrease in body temp., particularly after treatment with sulphapyridine. In these 13 patients, chemotherapy did not produce sterile blood cultures. (B.) A. S.

Sulphathiazole in staphylococcal lung infections. G. Melton (*Lancet*, 1941, 241, 522—523).—4 patients with staphylococcal lung infections were successfully treated with sulphathiazole, after 3 of them had failed to respond to sulphapyridine. C. A. K.

Sulphapyridine in filariasis. K. V. Earle (*Lancet*, 1941, 241, 667—668).—In 3 cases sulphapyridine was ineffective against filariasis itself although modifying secondary infections. C. A. K.

Sulphathiazole as antimalarial. L. Schwartz, W. Furst, and H. F. Flippin (*Amer. J. Hyg.*, 1941, 34, C, 160—162).—9 patients under treatment for syphilitic meningo-encephalitis with artificially induced tertian malaria were given sulphathiazole (total dosage 25—50 g.). In 4 patients the peripheral circulation was cleared of

plasmodia. Relapses occurred in the remaining 5 patients 12—20 days after cessation of drug therapy. Sulphathiazole acts more slowly than quinine. B. C. H.

Neosphenamine and sulphapyridine in cutaneous anthrax. I. M. Davidson (*Brit. Med. J.*, 1941, II, 725—726).—Successful case report. C. A. K.

Local treatment of pyogenic cutaneous infections with sulphathiazole in an emulsion base. D. M. Pillsbury, V. S. Wammock, C. S. Livingood, and A. C. Nichols (*Amer. J. med. Sci.*, 1941, 202, 808—821).—Sulphathiazole in an oil-in-water emulsion vehicle is effective in treatment of infections of the skin, including staphylococcal or streptococcal impetigo, infectious eczematoid dermatitis, Beckhardt's follicular impetigo, and superficial ecthyma. A vanishing type stearate base was less effective than the emulsion type base. Grease bases proved inefficient. C. J. C. B.

Sulphaguanidine in treatment of proctitis due to lymphogranuloma venereum. O. Canizares and G. E. Morris (*Arch. Dermat. Syphilol.*, 1941, 44, 873—877).—Sulphaguanidine (24 g. daily) was used successfully for treatment in 6 cases. C. J. C. B.

Effect of sulphanilamide and its derivatives on fungi. G. M. Lewis and M. E. Hopper (*Arch. Dermat. Syphilol.*, 1941, 44, 1101—1103).—Sulphanilamide and 5 derivatives were tested as fungistatic agents against 2 species of fungi. No inhibiting effect on the growth of *M. albicans* was observed. There was some fungistasis of *T. gypsum* with all the compounds, and complete retardation of growth for 3 weeks with sulphanilamide 1%. C. J. C. B.

Late tularæmic septicæmia; recovery following administration of sulphonamides. L. M. May (*Ann. int. Med.*, 1941, 15, 320—323).—A patient with a blood titre for *B. tularensis* of 1 : 1280 was cured by intravenous and oral administration of prontosil and prontosil.

Treatment of tularæmia with acriflavine. F. L. Loria (*Amer. J. med. Sci.*, 1941, 202, 803—808).—Acriflavine intravenously (100 mg. in saline) helped in the treatment of 3 cases. C. J. C. B.

Athlete's foot: method for testing water-soluble and water-miscible fungicides used in preventing its spread. E. G. Klarmann, V. A. Shternov, and S. M. Costigan (*Soap*, 1941, 17, No. 12, 129, 131, 147).—The fungicidal activity of water-miscible preps. (intended for prophylactic purposes or for application to inanimate objects) is evaluated by measuring their toxicity at 20° towards *Trichophyton rosaceum*. The technique for the prep. of a stock culture (suspension) of a strain of this fungus which has a uniform resistance to phenol is detailed together with the method of testing the fungicide solution; a standard for fungicidal activity on the basis of this method is proposed by the Disinfectant Scientific Commee. of the (U.S.) Nat. Assoc. of Insecticide & Disinfectant Manufs. The phenol-resistance of *Epidermophyton interdigitale* and of *E. gypsum* has also been determined. E. L.

Sulphur soap in scabies. D. L. Carter (*Brit. Med. J.*, 1941, II, 401—403).—A new effective method of applying S in scabies is described. It is preferable to benzyl benzoate. C. A. K.

Benzyl benzoate emulsion in scabies. I. F. Mackenzie (*Brit. Med. J.*, 1941, II, 403—405).—Benzyl benzoate is simpler and more rapid than S ointment in the treatment of scabies. C. A. K.

Slow-acting acetylcholine—acetylcholine succinate. E. Frommel and A. Bischler (*Schweiz. med. Wschr.*, 1941, 71, 372—373).—Acetylcholine succinate is easily sol. in water or alcohol but is very unstable; the salt is lipid-sol. Intramuscular, intravenous, or subcutaneous administrations of acetylcholine succinate has the same effect on the systemic or retinal blood pressure of anaesthetised or non-anaesthetised rabbits as equimol. concns. of acetylcholine hydrochloride. The onset of its hypotensive effect is not delayed, and the action is not prolonged. A. S.

Effect of nicotine on adrenaline production and blood-sugar level in dogs. F. Watanabe (*Tohoku J. Exp. Med.*, 1935, 27, 335—347).—Nicotine (0.5 mg. per kg.) had little effect. With doses of 0.75 and 1.0 mg., adrenaline secretion was stimulated for 10—20 min.; blood-sugar reached ~0.16 mg.-%. Bilateral splanchnicotomy did not affect the results. Ch. Abs. (ef)

Papaverine hydrochloride and ventricular fibrillation. E. Lindner and L. N. Katz (*Amer. J. Physiol.*, 1941, 133, 155—160).—The antifibrillation effect of papaverine hydrochloride was investigated in anaesthetised (nembuto or ether) dogs with open thorax, artificially ventilated; ventricular fibrillation was induced by faradic stimulation. Papaverine, in addition to being a powerful coronary vasodilator, considerably reduces the ease with which ventricular fibrillation can be induced. In its presence, vigorous continuous manual massage of the heart restores a regular rhythm to fibrillating ventricles. M. W. G.

Effects of intraventricular injections [of potassium salts and other agents]. L. Stern (*Schweiz. med. Wschr.*, 1941, 71, 367—368).—In a no. of species intraventricular injection of small doses of various K salts (several mg. of K) or of acetylcholine produces marked signs of sympathetic stimulation (cardiac and vascular

effects resulting in increased arterial blood pressure); injection of K salts into the systemic circulation produces parasympathetic effects. Intraventricular injection of Ca has parasympathetic, systemic injection sympathetic effects; similar results were obtained with thyroxine or intraventricular grafts of thyroid tissue. A. S.

Histamine in treatment of atopic dermatoses. L. M. Smith (*Arch. Dermat. Syphilol.*, 1941, 44, 883—890).—Treatment by intradermal, subcutaneous, or intravenous injections of histamine solution (usually 0.1—0.3 c.c. of 1 in 2000) was beneficial in all of 11 patients with chronic urticaria. In atopic dermatitis, histamine is useless. The intravenous administration of histamine by the slow drip method is safe. In some cases of urticaria intradermal afforded more relief than subcutaneous injections. After prolonged treatment with histamine by the intradermal or subcutaneous route little change was noted in the cutaneous sensitivity to histamine, as shown by the wheal response to intradermal injection. C. J. C. B.

Camphor derivatives.—See A., 1942, II, 178.

cycloPropane anaesthesia. R. B. Gould (*Lancet*, 1941, 241, 449—452).—A review. C. A. K.

Continuous administration of ethyl chloride. U. M. Westell (*Lancet*, 1941, 241, 666).—Satisfactory anaesthesia was produced in 51 patients who were given N₂O + O₂ + ethyl chloride continuously for 10—70 min. C. A. K.

Sacral anaesthesia in obstetrics. W. H. Poole (*J. Obstet. Gynec.*, 1941, 48, 84—98).—Novocaine did not give so long an anaesthesia as reported by American workers. Percaine (25—45 ml. of a 1% solution in normal saline) provided satisfactory anaesthesia lasting 4 hr. Uterine contractions decrease or disappear for ½ hr. following the injection but then reappear. 10 failures in 32 cases are attributed to too early administration, faulty injection, or unsuitable cases. P. C. W.

Analgesia and anaesthesia in obstetrics. H. R. Griffith and J. R. Goodall (*J. Obstet. Gynec.*, 1941, 48, 323—233).—Discussion and recommendations. P. C. W.

5-2-Thienyl-5-ethylbarbituric acid.—See A., 1942, II, 153.

Acid amides as hypnotics. IV. Barbituric acids.—See A., 1942, II, 150.

Effect of phenobarbital on normal and impaired glucose tolerance. J. A. Rosenkrantz and M. Bruger (*Amer. J. med. Sci.*, 1941, 201, 815—819).—Phenobarbital exerts no sp. effect on normal glucose tolerance but increases it in patients with impaired sugar tolerance. C. J. C. B.

[Changes in serum-choline-esterase after luminal in epilepsy.] F. Schütz (*Nature*, 1941, 148, 725).—Prolonged administration of luminal reduces serum-choline-esterase activity to 10—20% of that before treatment. There is no change *in vitro* with 2.5 mg. of luminal per ml. This is a counter-adaptation, the drug reducing the activity of the cholinergic system, and the demand for choline-esterase, which slowly decreases. Min. frequency of fits in epileptics is observed initially in the treatment when serum-choline-esterase activity is still normal. If, after several months, treatment is withheld, the frequency of fits rises higher than before treatment, while serum-choline-esterase activity is still low; subsequently, the frequency falls and serum-choline-esterase activity rises to normal. Choline-esterase should have a therapeutic effect on frequency of epileptic fits. E. R. S.

Effects of α - α -ethyl-*n*-butyryl- ϵ -pentamethylenebiuret and related agents on the excised uterus and uterus *in situ*. S. Y. Pan and C. S. Lu (*Chinese J. Physiol.*, 1941, 16, 311—316).—The biuret (A, 1940, II, 300) was 3 and 10 times less effective than Na dilatant and Na pentobarbital, respectively, in causing relaxation of strips of uterine muscle from non-pregnant rabbits and pregnant women. The biuret had no effect, the other substances an occasional effect, on the uterus *in situ* of the anaesthetised rabbit. N. H.

Raspberry leaf extract: inhibitor of uterine action. B. Whitehouse (*Brit. Med. J.*, 1941, II, 370—371).—An extract of raspberry leaves given by mouth inhibited the uterus in two women during the first week of the puerperium; intrauterine pressure records showed depression of spontaneous contractions and antagonism towards pituitrin. C. A. K.

Lead citrate complex ion and its rôle in physiology and therapy of lead poisoning. S. S. Kety (*J. Biol. Chem.*, 1942, 142, 181—192).—The citrate ion forms a sol. complex ion (Pb citrate) with Pb; lactate, acetate, and ascorbate ions also form such complexes which dissociate much more readily. The stoichiometric dissociation const., K_s , of the Pb-citrate complex ion is determined for ionic strengths from 0.615 to 0.020 and at p_H vals. from 6.95 to 7.45 at 25°. At the ionic strength of blood (0.160) and in the physiological p_H range the val. pK_s for the Pb-citrate ion is 5.74—0.008. An approx. val. of 6.50 is obtained for the negative log of the thermodynamic dissociation const. for the complex ion. Probably the normal blood-citrate forms a physiological mechanism for removal

of Pb from the body, and it is suggested that administration of citrates may be a safe and effective therapy in cases of plumbism.

J. N. A.

Lead poisoning in heifers. W. Robb and D. Campbell (*Vet. Rec.*, 1940, 52, 39—41).—A record of Pb poisoning in a group of 8 heifers, 5 of which died. The source of Pb was a fence painted a month previously and the strip of grass adjoining it which was heavily contaminated with paint, together with several contaminated rags. Results of the analyses of stomach contents and contaminated materials are given. The 3 animals which recovered were blind for a fortnight.

E. G. W.

Absorption of externally applied ammoniated mercury. O. S. Gibbs, R. Shank, H. Pond, and G. H. Hansmann (*Arch. Dermat. Syphilol.*, 1941, 44, 862—872).—Human excreta normally contain 20 µg. of Hg per day. All foods examined contained Hg except fresh vegetables, eggs, and a specimen of biscuits. The const. ingestion of small amounts of Hg is not toxic. 1 part in 3800 of the Hg applied to the skin as 10% ammoniated Hg ointment appears in the excreta. With 2% ammoniated Hg ointment only traces appear. The application, even continued, of such ointments to the unbroken skin is not likely to cause general poisoning, if oral ingestion is prevented.

C. J. C. B.

Treatment of lupus erythematosus with bismarsen. R. S. Weiss, A. H. Conrad, A. H. Conrad, jun., and R. O. Pfaff (*Arch. Dermat. Syphilol.*, 1941, 44, 1009—1029).—14 of 28 patients treated with bismarsen (0.05—0.2 g. twice weekly intravenously) made an apparent recovery. The lesions disappeared completely, often leaving atrophy, but no active inflammatory process could be observed when they were last examined. 12 patients showed improvement. With the exception of the 1 case of purpura, no blood dyscrasia was encountered and local reactions were slight. Nitritoid reactions may occur.

C. J. C. B.

Control of "blackhead" in turkeys. K. D. Downham (*Vet. Rec.*, 1940, 52, 120—122).—Treatment consists of arsenphenamine digluconate given intravenously or intramuscularly and moving the birds to clean ground not previously used by poultry. A good diet, including abundant green food, raises the resistance of turkeys to "blackhead" and other diseases associated with artificial rearing.

E. G. W.

Massive arsenotherapy by continuous intravenous drip method. J. A. Kolmer and A. M. Rule (*Arch. Dermat. Syphilol.*, 1941, 44, 1055—1059).—Syphilitic rabbits tolerated well the intravenous administration of neoarsphenamine and mapharsen by the continuous intravenous drip method in the doses employed for treatment purposes. Single doses by the syringe method were more rapidly effective than comparable total dosage by the drip method on *S. pallida* in testicular lesions. The min. curative doses of both compounds by the 2 methods of administration were the same (0.02 g. of neoarsphenamine and 0.005 g. of mapharsen per kg. of body wt.).

C. J. C. B.

Iontophoresis of copper sulphate in cases of proved mycotic infection. A. M. Greenwood and E. M. Rockwood (*Arch. Dermat. Syphilol.*, 1941, 44, 800—803).—CuSO₄ introduced into the skin by iontophoresis was not fungicidal or fungistatic for *T. gypsum*, *T. purpureum*, or *E. inguinale*.

C. J. C. B.

Sodium iodide in treatment of bovine actinobacillosis. L. G. Anderson (*Vet. Rec.*, 1940, 52, 166).—1 oz. of NaI in 12 oz. of water given intravenously and repeated after 8 days is recommended; 8 of 10 animals treated in this way recovered.

E. G. W.

Effects of carbon disulphide on blood corpuscles. H. Brieger (*J. Ind. Hyg.*, 1941, 23, 388—396).—Rabbits, to which CS₂ was administered by intravenous, intramuscular, or subcutaneous injection, developed the typical symptoms of acute poisoning. Dogs exposed daily to CS₂ vapour developed nervous symptoms. Neither dogs nor rabbits showed altered erythrocytes, anaemia, haemolysis, or spectroscopic changes in the haemoglobin. There was a high degree of haemosiderosis in the spleen and liver; acute poisoning caused a slight increase in the neutrophil cell count.

E. M. K.

Experimental chronic carbon disulphide poisoning in dogs. F. H. Lewey [and collaborators] (*J. Ind. Hyg.*, 1941, 23, 415—436).—8 dogs were exposed for 8 hr. daily for 10—15 weeks to an atm. containing 1.25 mg. of CS₂ per l. At the end of each exposure, the blood concn. of CS₂ was almost 5 times that of the air, and the animals were drowsy and ataxic. Signs of chronic poisoning began to appear after 2 weeks; malaise, personality changes, and rough fur were the earliest, followed at 4 weeks by ataxia, tremor, and electrical hyperexcitability of some muscles. Later there were loss of muscular power and paralysis, usually spastic at onset, becoming flaccid in some dogs. Pupillary and corneal reflexes were diminished, and some dogs showed changes suggesting myocardial derangement. A high-fat diet caused the earliest deaths. Pathological changes were observed in the nerve cells of cerebral cortex, putamen, and caudate nucleus; the no. of spinal anterior horn cells was slightly diminished and axons in brachial and sciatic plexuses were diseased.

E. M. K.

Toxicology of dichlorodiethyl sulphide. T. Gordonoff (*Schweiz. med. Wschr.*, 1941, 71, 446—448).—Dichlorodiethylsulphide, the oxidation product of mustard gas, is far less toxic than its mother substance. A 1% solution in olive oil produces only slight conjunctivitis for 24 hr. in rabbits. No local effects were observed after 48 hr. percutaneous application in man. Intracutaneous injection in the horse has no effect. Oxidation detoxicates mustard gas.

A. S.

Fatal poisoning with sodium nitroprusside. P. Lazarus-Barlow and G. M. Norman (*Brit. Med. J.*, 1941, II, 407).—2 fatal cases with autopsy reports are described.

C. A. K.

Poisoning with chlorinated hydrocarbons. R. Isenschmid (*Schweiz. Arch. Neurol. Psychiat.*, 1939, 44, 288—294).—A review. H. L.

Toxicity of fructose cyanohydrin; general observations on cyanide poisoning. A. N. Worden (*Vet. Rec.*, 1940, 52, 857—865).—Fructose cyanohydrin, sometimes formed in fumigation of foodstuffs by HCN, was highly toxic for the rabbit and dog, and the toxicity was proportional to its HCN equiv. Repeated administration of sublethal doses was without ill effect. The author consumed 8 daily doses of 0.2 g. of fructose cyanohydrin (equiv. to 18 mg. of HCN per dose) without ill effect. The findings are discussed in relation to alleged HCN poisoning in cattle after feeding linseed cake.

E. G. W.

Bracken poisoning. J. F. Craig and G. O. Davies (*Vet. Rec.*, 1940, 52, 499).—Losses among young calves on a farm during 1937 and 1938 are attributed to eating bracken used for bedding. The post mortem findings are described.

E. G. W.

Ammonia fumigation for coccidial disinfection. C. Horton-Smith, E. L. Taylor, and E. E. Turtle (*Vet. Rec.*, 1940, 52, 829—832).—1% solution of 0.880 NH₃ killed 100% of coccidial oöcysts within 24 hr., a 5% solution within 2 hr., and a 10% solution within 45 min. NaOH solutions of corresponding p_H were less effective. The action of NH₃ is attributed to the NH₄ ion. NH₃ gas used as a fumigant in a concn. of 25.0 mg./l. killed 100% of oöcysts within 1 hr., 7.7 mg. per l. within 3 hr.

E. G. W.

Phenothiazine—a remarkably efficient anthelmintic. E. L. Taylor and K. M. Sanderson (*Vet. Rec.*, 1940, 52, 635—647).—30—40 g. of phenothiazine was 100% effective against adult strongyloid parasites in the large intestine of the horse (150 animals). Observations on 300—400 sheep, 70—80 goats, and 12 cattle showed the drug to be very effective against stomach worms causing parasitic gastritis in ruminants. In these species it was less effective against parasites in the small intestine. There was no effect on *Fasciola*, *Moniezia*, or *Anoplocephala*. Doses of 20—30 g. might be more effective in sheep and goats than the 10 g. used in these experiments. Cattle do not tolerate the drug so well as sheep or horses. Phenothiazine is effective for ascarids in the horse, is uncertain in the pig, and without effect in the dog. Sheep and goats can withstand 400 g.; horses up to 17 times the anthelmintic dose. Repeated small doses are more toxic than occasional larger doses.

E. G. W.

Anthelmintic action of phenothiazine. G. Lapage (*Vet. Rec.*, 1940, 52, 648—657).—In lambs and ewes phenothiazine was more effective against nematode parasites in the intestines than CuSO₄ or CuSO₄ + nicotine. 0.1 g. per lb. body wt. caused a fall in the egg count which was more marked than with the other anthelmintics, and this lowered count was maintained. There was no toxicity. A similar result was obtained in a goat given 0.15 g. per lb. body-wt. 80—125 g. of phenothiazine produced no toxic effects in 6-months-old calves. Passage of red-coloured urine and bronzing of the mucous membranes were seen in all the sheep, horses, and calves treated; loss of appetite and listlessness are signs that the dose should not be increased, nor repeated until a considerable interval has elapsed. In horses given 0.1 g. of phenothiazine per lb. body-wt. the strongyle egg count dropped as low as 0 and did not rise for some weeks although the animals were at grass. Phenothiazine should be given to young pigs with great care; doses of 0.5 g. per lb. body-wt. were not toxic to mature pigs.

E. G. W.

Comparative tests on treatment of lambs with phenothiazine and with copper sulphate and nicotine sulphate. A. D. McEwen (*Vet. Rec.*, 1940, 52, 657—658).—Comparative tests on 5 flocks of lambs indicated that phenothiazine is a more effective anthelmintic than CuSO₄ + nicotine sulphate.

E. G. W.

Phenothiazine as anthelmintic in horses. T. Graham, D. O. Morgan, and J. E. N. Sloane (*Vet. Rec.*, 1940, 52, 660—663).—20—100 g. of phenothiazine were given to 95 horses; the min. effective dose was 30 g., corresponding to 1 g. per 33 lb. body-wt. The lowered egg count and improvement in general condition produced by the drug suggest that periodic dosing might with advantage be used in horses to control strongyle infestation. No serious ill effects of the drug were observed.

E. G. W.

Treatment of equine strongylosis by phenothiazine. R. H. Knowles and A. V. Franklin (*Vet. Rec.*, 1940, 52, 663—664).—A single dose of 60—100 g. of phenothiazine given to 3 horses was effective against strongyles, resulting in a fall in the faecal egg count and expulsion of adult parasites. No ill effects were observed.

E. G. W.

Phenothiazine in ascarid infestation in dogs. R. F. Montgomerie (*Vet. Rec.*, 1940, 52, 665).—Phenothiazine in doses varying from 6 to 12 g. was without effect on ascaris infestation in 8 puppies; there were no toxic effects. E. G. W.

Phenothiazine in parasitic gastritis. W. T. Rowlands (*Vet. Rec.*, 1940, 52, 658—660).—Phenothiazine was a very effective anthelmintic in sheep when given in doses of 20 g. or more; 60 g. was given to a 50-lb. lamb without ill effects. E. G. W.

Toxicity of phenothiazine. D. Hubble (*Lancet*, 1941, 241, 600—601).—Phenothiazine was effective against threadworms in 30 cases, but anaemia was produced in 3 cases and details are also given of 2 cases in which toxic hepatitis developed. C. A. K.

Chemical changes of methyl bromide in animal body in relation to its physiological effects. D. D. Irish, E. M. Adams, H. C. Spencer, and V. K. Rowe (*J. Ind. Hyg.*, 1941, 23, 408—411).—Rabbits exposed to the vapours of methyl bromide in high concn. showed lung irritation; in threshold concns., functional nervous responses were observed from which the animals recovered if the exposure was stopped. Repeated exposure increased blood-Br', but administration of inorg. Br' produced a greater rise without comparable symptoms. Rabbits exposed to methyl alcohol vapour in concn. greater than that obtained by hydrolysis of an intoxicating concn. of methyl bromide developed no symptoms. Administration of methyl alcohol with inorg. Br' was also ineffective. Hence, the effects of methyl bromide are due to its reaction with the tissues. E. M. K.

T.N.T. jaundice. R. M. Evans (*Lancet*, 1941, 241, 552—554).—7 cases of T.N.T. jaundice occurred in workers at an ordnance filling factory. 2 of the patients died, one with acute yellow atrophy of the liver, the other with aplastic anaemia. The importance of prophylaxis is emphasised. C. A. K.

Improved Webster test for T.N.T. derivative in urine. J. Ingham (*Lancet*, 1941, 241, 554—555). C. A. K.

Applications of the spectrograph to toxicological investigation. C. W. Rankin (*J. Opt. Soc. Amer.*, 1941, 31, 644—647).—The detection of As, Pb, Ba, P, Hg, and the alkaloids in samples of org. matter is described. O. D. S.

Treatment of chronic pemphigus by serum taken from bullae. S. W. Smith (*Brit. J. Dermatol. Syph.*, 1939, 51, 213—214).—Serum from bullae was treated with phenol for 24 hr. and repeatedly injected intramuscularly in a case of chronic pemphigus. The eruptions disappeared completely. A. S.

Sulphonated oil as detergent. C. G. Lane and I. H. Blank (*Arch. Dermat. Syphilol.*, 1941, 44, 999—1004).—45% of 183 patients had cutaneous changes for which soap is considered an irritant, and 22% had had previous subjective symptoms of the skin associated with the use of soap; 75% of the latter subjects tolerated the oil satisfactorily. Less than 10% of the 183 patients complained of any burning, stinging, itching, or erythema; 21% said the use of the oil made their skin drier, and 33% said oilier. More or less generalised, dry, scaling or lichenous lesions, especially in the older age groups, are made drier, and the use of the oil is not advisable in such cases. Only 1 patient showed hypersensitivity to the oil. C. J. C. B.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Chemical temperature regulation. A. Hemingway and S. R. Hathaway (*Amer. J. Physiol.*, 1941, 134, 596—602).—O₂ consumption and CO₂ production of 3 trained dogs were measured while the animals were slowly cooled in an electrically shielded metabolism chamber. The onset of shivering was noted by electrical, mechanical, and visual methods. In the electrical method the action currents were picked up by small skin electrodes placed over shivering muscles. On cooling before shivering started there was an increase of metabolic rate of 7% over basal. During the 1st 20 min. of shivering the increase was 30%. A non-shivering component of chemical temp. regulation thus exists but is without practical significance in protection against exposure to cold. M. W. G.

Phenyl mercuric oleate. Skin irritant properties. C. P. McCord, S. F. Meek, and T. A. Neal (*J. Ind. Hyg.*, 1941, 23, 466—469).—Phenyl Hg oleate, which is used as wood preservative, was dissolved in 10% paraffin oil and 90% kerosene, and applied to the skin as a patch test. Inflammation and vesication resulted in 6 hr. or less with a concn. of 0.5%; 5 out of 9 subjects reacted to 0.2% in 24 hr., but there were no reactions to 0.1%. A concn. of 0.5% painted on the skin gave a positive reaction in some subjects. Kerosene alone gave a positive patch test, but the reaction was mild. Rabbits were more susceptible than man to this substance. E. M. K.

T.N.T. health hazard. H. M. Roberts (*Brit. Med. J.*, 1941, II, 647—649).—Means of avoiding and recognising T.N.T. poisoning in munition workers are described. C. A. K.

Cerebral and psychopathological symptoms in industrial poisoning with inorganic substances. Industrial poisons and nervous system.—See A., 1942, III, 301.

XXII.—RADIATIONS.

Clinical experience of X-irradiation of hypophysis.—See A., 1942, III, 308.

X-Ray therapy for closure of epiphyses.—See A., 1942, III, 281.

Production of proliferation-promoting factors by the ultra-violet irradiation of algæ. C. Giersch and E. S. Cook (*Nature*, 1941, 148, 754).—Quant. experiments with *Hormidium floccidum* show that, when injured by irradiation with ultra-violet light, algæ release into the intercellular fluids substances that stimulate proliferation of the algæ. L. S. T.

Stimulation of cells by intense flashes of ultra-violet light. E. N. Harvey (*J. Gen. Physiol.*, 1942, 25, 431—444).—A sudden intense flash of ultra-violet light frequently kills unicellular organisms. The flash often causes contraction of single muscle fibres but has no visible effect on medullated nerves or whole muscles. Protoplasmic rotation of *Nitella fragilis* and *Eloдея canadensis*, movement of *Amaba proteus*, oscillatory movement of *Oscillatoria*, and ciliary movement in many species are reversibly or irreversibly arrested by the flash, a local or propagated action potential being set up in *N. fragilis*. Contraction is caused in *Vorticella*, *Epistylis*, and *Stentor coerules* by the flash, which also diminishes the intensity of luminescence in *Achromobacter fisheri* and *A. harveyi*. W. McC.

Effect of ultra-violet rays on follicular hormone.—See A., 1942, III, 312.

Influence of ultra-violet rays on blood groups.—See A., 1942, III, 290.

Counteraction by white light of retarding and inhibitory effects of strong ultra-violet light on *Fucus* eggs. D. M. Whitaker (*J. Gen. Physiol.*, 1942, 25, 391—397; cf. A., 1941, III, 385).—The development of rhizoids in eggs of *Fucus furcatus* is greatly retarded and inhibited by irradiation, 8 hr. after fertilisation, with strong (2—5 × 10⁴ ergs per sq. mm.) ultra-violet light. Partial recovery from these effects is produced by irradiation with white light during ultra-violet irradiation. Less pronounced recovery is produced if irradiation with white light follows that with ultra-violet light. W. McC.

Effect of visible light on carbohydrate metabolism of malignant tissue. X-Irradiation of lymph glands in sarcomatous rabbits. Effects of ultra-short waves on rabbit sarcoma.—See A., 1942, III, 325.

Effect of visible light on liver of rabbit treated with carbon tetrachloride.—See A., 1942, III, 319.

Protection from radiation and measurements of radiation protection. R. Jaeger and K. G. Zimmer (*Physikal. Z.*, 1941, 42, 25—35).—A review dealing with possible harmful effects of ionising radiations (excluding ultra-violet light), determination of "indifference doses," use of ionisation and photographic methods for measurement of radiation intensity, and the use and efficiency of various protective materials. Typical data are given for the daily dose received by workers exposed to different types of radiation. A. J. E. W.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Application of topology to asymmetric organisation of protoplasm. G. F. Gause (*Bull. Math. Biophysics*, 1941, 3, 127—128).—Phenomena of steric configuration in complex substances participating in fundamental metabolic processes can be considered from the viewpoint of topological generalisation. F. O. H.

Statistical distribution of impedance elements in biological systems. A. M. Weinberg and A. S. Householder (*Bull. Math. Biophysics*, 1941, 3, 129—135).—The interpretation of electrical impedance measurements on systems of non-uniform elements (e.g., nerve bundles, cell suspensions) from the impedance characteristics of the individuals and their impedance distribution is treated by a Stieltjes' integral equation. F. O. H.

Derivation and biological implications of the general membrane equilibrium equation. M. F. Morales and N. W. Shock (*Bull. Math. Biophysics*, 1941, 3, 153—160).—A basic equation for sub-systems separated by a semipermeable membrane is derived and from it are developed expressions for the transfer of solvent attending solute changes. These expressions are applied to biological systems involving transfer of solvent. F. O. H.

Structure and electrical behaviour of collodion membranes.—See A., 1942, I, 171.

Electrophoresis of rabbit papilloma virus protein.—See A., 1942, III, 354.

Denaturation of proteins and its apparent reversal. I. Horse serum-albumin. II. Horse serum-pseudoglobulin. H. Neurath,

G. R. Cooper, and J. O. Erickson (*J. Biol. Chem.*, 1942, **142**, 249—263, 265—276).—I. Denaturation of horse serum-albumin by urea or guanidine hydrochloride greatly increases the relative viscosity and decreases the diffusion const. proportionately. The mol. wt. is unchanged. On subsequent dialysis the albumin separates into a sol. reversibly denatured and a less sol. irreversibly denatured fraction. The degree of irreversible denaturation increases with concn. of urea up to 6M., and with guanidine hydrochloride up to 2M. The sol. fraction has the same mol. wt. as the original protein but is more sol. in Na_2SO_4 solution and differs in electrophoretic mobility and behaviour on crystallisation.

II. Pseudoglobulin can be denatured by urea with an increase in mol. asymmetry and a decrease in diffusion const., the mol. wt. being unchanged. 2M-Guanidine hydrochloride causes aggregation of the mols., but in 3M. solution they are split up. Dialysis of the denatured protein yields sol. reversible and insol. irreversible fractions. The irreversible fraction is similar to but not identical with the original pseudoglobulin. The irreversible fraction resembles egglobulin.

R. L. E.

Denaturation of proteins and its apparent reversal. III.—See A., 1942, I, 173.

Radioactivity of potassium from human sources. W. O. Fenn, W. F. Bale, and L. J. Mullins (*J. Gen. Physiol.*, 1942, **25**, 345—353).—Examination of ash from corpses shows that the ^{40}K content of the human body is 1—2% less than that of commercial K compounds. Possible causes of this difference are discussed.

W. McC.

Solubility of carbon disulphide vapour in body fluids and tissues. R. W. McKee (*J. Ind. Hyg.*, 1941, **23**, 484—489).—The fluid or tissue (suspended in saline) was equilibrated with an air- CS_2 mixture at 37° for a suitable period, and the dissolved CS_2 determined; a double tonometer was used to permit complete separation of liquid and gaseous phases. Solubility coeffs. were determined for water, saline, urine, whole blood, blood plasma, red cells, bile, brain, liver, and kidney; for each fluid or tissue similar solubility ratios were obtained for all CS_2 concns., but this ratio varied with the lipid content of the material. *In vivo* blood and urine coeffs. corresponded well with the tonometer determinations.

E. M. K.

Chemical and physical investigation of germicidal aerosols. S. R. Finn and E. O. Powell (*J. Hygiene*, 1941, **41**, 473—488; cf. B., 1942, III, 61).—The rates of evaporation of smoke particles produced by the sudden heating of Peru balsam were determined by observation in the ultramicroscope, radii being calc. from the rate of fall. Various fractions of the balsam, obtained by distillation under reduced pressure, were examined in the same way. There was much variation in the properties of the individual particles of these smokes and also in those of incense and smouldering cardboard. The radii of very small particles were calc. by observation of the Brownian movement, and where alternative calculation from the Stokes-Cunningham relation was possible the results showed good agreement. The evaporation rates of aerosols of benzoic acid, vanillin, benzyl benzoate and cinnamate, and cinnamic acid increase in the order given. The germicidal activity of smokes is due to their less volatile constituents and to the smaller particles.

D. D.

Extinction of fluorescence by ascorbic acid.—See A., 1942, I, 164.

XXIV.—ENZYMES.

Origin, fate, and significance of serum enzymes.—See A., 1942, III, 292.

Lactic dehydrogenase of yeast. S. J. Bach, M. Dixon, and L. G. Zerfas (*Nature*, 1942, **149**, 48—49).—The extraction and concn. of yeast lactic dehydrogenase from Delft baker's yeast is described. The purified enzyme is very unstable; stability is increased by addition of lactate or of $(\text{NH}_4)_2\text{SO}_4$ in high concn. It no longer reacts with cytochrome-*c*, although its methylene-blue reducing power is high. Spectroscopic data suggest that it is identical with cytochrome-*b*₂ (see below); it may, however, be an intermediary acting between the enzyme and methylene-blue or other H acceptor. Assuming identity, the turnover no. is calc. as 3100, by coincidence identical with that of muscle lactic dehydrogenase. Q_{MB} of the pure enzyme would be 30,000—100,000, according to the mol. wt. assumed.

A. A. E.

Mechanism of hydrogen transport in animal tissues. IV. Succinoxidase system.—See A., 1942, III, 318.

Amide synthesis in plants. I. Succinoxidase system in plants. M. Damodaran and T. R. Venkatesan (*Proc. Indian Acad. Sci.*, 1941, **13**, B, 345—359; cf. A., 1940, III, 866).—When 2-days-old seedlings of *Phaseolus mungo*, freed from testa, were ground with cold 0.1N- Na_2HPO_4 , the extract ($p\text{H}$ 6.4—6.5) contained all the succinoxidase of the seedlings. The ice-cold extract was treated with 2—3% acetic acid to give $p\text{H}$ 4.7 and the enzyme was pptd. When suspended in aq. Na_2HPO_4 at $p\text{H}$ 6.8—6.9 the ppt. oxidised succinate rapidly. The enzyme can be preserved at 0° for about 7 days, but is rapidly inactivated at 30°. The optimum activity occurs at $p\text{H}$ 6.6—6.9 (max. 6.8) with a concn. of 0.04N-succinate. 0.001N-

Cyanide, 0.0005N-oxalacetic acid, and 0.0005N-persulphate inhibited the enzyme almost completely; 0.01N-malonate or -pyrophosphate decreased its activity considerably; AsO_3''' and F' had scarcely any effect in low concns. Cytochrome-*c* facilitated the action of the enzyme but had less effect than on succinoxidase derived from ox, sheep, or rat heart muscle. The yield of fumaric acid was about 60% of the theoretical. By inhibiting the oxidase component with 0.005N-KCN and measuring the O_2 uptake in the presence of 0.001N-methylene blue, it was found that the oxidase activity of the system was much greater than the dehydrogenase activity. Succinoxidase was also found in a variety of young seedlings and in the ripening pods of several Leguminosae, but not in the leaves or shoots of mature plants. The succinoxidase system in plants is analogous to that in muscle.

J. L. D.

Unsaturated fat oxidase: specificity, occurrence, and induced oxidations. H. H. Strain (*J. Amer. Chem. Soc.*, 1941, **63**, 3542).—The fat oxidase from soya bean (detected also in 11, but not in 7 other, seeds) oxidises directly only $\text{CH}_3\text{CH}[\text{CH}_2]\text{CO}$, *e.g.*, oleic, ricinoleic, linoleic, and linolenic acids and their esters, but not oleyl alcohol, elaidic or erucic acid. Induced oxidations are influenced by many factors. That of carotenoids is slower in highly (Et linolenate) than in slightly unsaturated compounds (olive oil). That of chlorophylls-*a* and -*b* gives colourless compounds. That of *p*- but not of *o*- or *m*-phenylenediamine gives a blue pigment. That of ascorbic acid is slow. In all cases heat or absence of fats prevents the induced oxidation. Quinol, pyrogallol, or pyrocatechol, but not phloroglucinol or resorcinol, prevents oxidation of the fats. *p*-Phenylenediamine does not oxidise in presence of phloroglucinol or resorcinol. All the polyphenols prevent formation of the blue pigment from *p*-phenylenediamine and fat peroxides.

R. S. C.

Factors influencing the pyrocatechol-oxidase activity and inactivation of tyrosinase. Effect of gelatin and of pyrocatechol concentration. W. H. Miller and C. R. Dawson (*J. Amer. Chem. Soc.*, 1941, **63**, 3368—3374).—The effect of gelatin on the pyrocatechol-oxidase activity of high-pyrocatechol-oxidase or high-cresolase tyrosinase or an intermediate type varies with the amount of pyrocatechol, with the type of tyrosinase, and with the degree to which reaction has already proceeded. Addition of gelatin during determination of this activity is thus inadvisable. The action of gelatin is to reactivate inactivated enzyme. The activity is approx. the same at $p\text{H}$ 5.5 and 7.1, but at $p\text{H}$ 7.1 side-reactions occur to a greater extent. Results with the intermediate type of tyrosinase are less concordant than those with either well-defined type.

R. S. C.

Measurement of tyrosinase pyrocatechol-oxidase activity. W. H. Miller and C. R. Dawson (*J. Amer. Chem. Soc.*, 1941, **63**, 3375—3382).—Pyrocatechol-oxidase activity is best determined by adding pyrocatechol to tyrosinase-ascorbic acid at $p\text{H}$ 5.5 and noting the time required for the *o*-benzoquinone produced to reduce all the ascorbic acid. This is determined by continuously adding drops (apparatus described) to $\text{KI-H}_2\text{SO}_4$ -pyrogallol-starch, whence I is liberated as soon as free benzoquinone is present. Conditions are chosen so that the end-point is reached after approx. 60 sec., but may also be determined from graphs etc. The relation between these times and activity differs for high-pyrocatechol-oxidase and high-cresolase tyrosinase, owing to the differing rates of inactivation. It is necessary first to determine the amount of substrate giving max. activity and to carry out the determination of time with this amount ("chronometric method"). Precautions needed and effects of varying conditions are noted.

R. S. C.

Cytochrome-*c* peroxidase. II. Peroxidase-hydrogen peroxide complex. R. Abrams, A. M. Altschul, and T. R. Hogness (*J. Biol. Chem.*, 1942, **142**, 303—316; cf. A., 1941, III, 225).—A new method of prep. yields a product 3 times as active as that previously described. It has a strong absorption band at 410 $\mu\mu$, which is proportional to activity, and weak bands at 500 and 620 $\mu\mu$. The complex with H_2O_2 has bands at 420, 530, and 560 $\mu\mu$. Activity is not related to Cu content. Each mol. of enzyme contains 1 mol. of hamin and combines with 1 mol. of H_2O_2 . The max. mol. wt. is 60,000.

R. L. E.

Soluble cytochrome component from yeast. S. J. Bach, M. Dixon, and D. Keilin (*Nature*, 1942, **149**, 21).—A new cytochrome (b_2), very sol. in H_2O , has been obtained during the purification and concn. of yeast lactic dehydrogenase. The amount present in yeast is too small for its detection by direct spectroscopic observation of the cells, but the spectrum becomes visible on removal of other coloured substances and concn. The α band is at 5570 Å., and the unsymmetrical β band has its peak at 5300 Å. (see above).

A. A. E.

Carboxylase and cocarboxylase of barley.—See A., 1942, III, 360.

Activity of carbonic anhydrase in red blood corpuscles.—See A., 1942, III, 287.

Mechanism of enzymic hydrolysis of oils and fats. I. Cleavage of fatty acid residues from natural oils by Ricinus lipase. Y. Inouye and G. Shintani (*J. Agric. Chem. Soc. Japan*, 1941, **17**, 559—565).—During enzymic hydrolysis of coconut oil, the higher fatty acids are more readily liberated from the glycerides than are the lower

fatty acids, whilst with cottonseed oil, the saturated are more readily liberated than the unsaturated acids.

J. N. A.

Significance of serum-lipase in obstetrics and gynaecology.—See A., 1942, III, 292.

Secretinase in blood serum.—See A., 1942, III, 317.

Action of hippuricase on ring-substituted derivatives of hippuric acid. S. Ellis and B. S. Walker (*J. Biol. Chem.*, 1942, **142**, 291—297).—With takadiastase as a source of hippuricase, hydrolysis of *m*-substituted hippuric acid is faster and that of *o*-derivatives slower than that of hippuric acid. *o*-Substitution probably inhibits breaking of the enzyme-substrate linkage rather than its formation. The glycine is the active unit in forming this linkage. Various amides, anilides, sulphonylglycines, and creatine are not hydrolysed by the enzyme.

R. L. E.

Second phase of rennet coagulation. N. J. Berridge (*Nature*, 1942, **149**, 194—195).—The second phase (pptn. of insol. Ca paracaseinate, following enzymic alteration of a protective constituent of the casein) is probably not a simple pptn. of an insol. salt, but is a denaturation (unfolding and relinking of polypeptide chains) or partial denaturation of the casein which has been rendered heat-sensitive by the enzyme. This view is supported by the observed relation between temp. and clotting time, and by the sensitiveness of the reaction to [Ca⁺⁺].

A. A. E.

Ribonuclease and thymonucleodepolymerase. J. P. Greenstein and W. V. Jenrette (*J. Nat. Cancer Inst.*, 1941, **2**, 301—303).—Cryst. ribonuclease does not depolymerise thymonucleic acid. Extracts of the germs of Lima bean, sunflower, wheat, maize, and pumpkin all contained about the same amount of thymonucleodepolymerase. Extracts of ox pancreas and to a smaller extent calf thymus also contain the depolymerase.

E. B.

Reversible inactivation of tobacco mosaic virus by crystalline ribonuclease. H. S. Loring (*J. Gen. Physiol.*, 1942, **25**, 497—505).—Reversible inactivation of the virus by cryst. ribonuclease occurs very rapidly, no progressive hydrolysis of the virus taking place. If salts are absent, an inactive, fibrous, cryst. ribonuclease-virus complex is produced. The complex, which contains approx. 14% of ribonuclease, is insol. in water but dissolves if a trace of acid, alkali, or PO₄^{'''} buffer (pH 7) is added. Inactivation is probably due, at least in part, to combination of the enzyme with the virus. If the product of inactivation is subjected to repeated high-speed centrifuging, dissociation of the complex occurs and the activity is completely restored. The nucleic acid in the virus is not affected by ribonuclease and probably constitutes an integral part of the virus mol.

W. McC.

d-Peptidase in serum [in carcinoma in man].—See A., 1942, III, 325.

Polarographic proof of proteolysis with fermenting enzyme reactions. A. M. Kotljář and V. Podroužek (*Časopis Českoslov. Lék.*, 1938, **18**, 123—128).—Samples of blood serum filtered in the Tisen apparatus through membranes "impermeable to proteins" are treated with fibrin prepared from the blood of a normal man and with an equal amount of carcinomatous fibrin. Filtered samples, after incubation at 37°, show by the Brdička protein test that a small amount of protein passes through, and are submitted to polarographic analysis and current-voltage curves are recorded. The carcinomatous fibrin, where proteolysis takes place, gives an appreciable "double wave" on the current-voltage curve, whereas the effect is only slight with normal fibrin. Proteolysis occurs in both cases, but the effects differ according to the height of the "double wave," which indicates the degree of proteolysis, the method giving an exact way of proving proteolysis between serum filtrates and substrates.

F. R.

Enzymes. Amylase from Kaseru (*Scirpus grossus*, Linn.). J. P. Shukla (*J. Indian Chem. Soc.*, 1941, **18**, 407—410).—Juice from *S. grossus* contains amylase which has optimum activity at 50—55° and pH 5.8—6.2.

F. R. G.

Activity of yeast invertase as a function of oxidation-reduction potential. I. W. Sizer (*J. Gen. Physiol.*, 1942, **25**, 399—409).—The activity of the commercial or purified enzyme from various sources is const. at E_h between -270 and +600 mv. but decreases rapidly above +600 mv. and disappears at +1000 mv. Strong oxidising agents irreversibly inactivate the enzyme, the substrate remaining unaffected. Their action is due to oxidation-reduction potential and not to their toxicity. Possibly denaturation or interaction with amino-acid residues of the enzyme occurs.

W. McC.

Crystalline muscle phosphorylase. A. A. Green, G. T. Cori, and C. F. Cori (*J. Biol. Chem.*, 1941, **142**, 447—448).—A phosphorylase is obtained as a cryst. adenylic acid complex from aq. extracts of rabbit skeletal muscle by dialysis, removal of globulins at pH 6, pptn. with (NH₄)₂SO₄ in 1% aq. glycerophosphate, and dialysis.

A. Li.

Starch phosphorylase of potato. D. E. Green and P. K. Stumpf (*J. Biol. Chem.*, 1942, **142**, 355—366).—Fractional pptn. of potato juice with (NH₄)₂SO₄ effected a purification of ×370 (on the wt. of potato) in the phosphorylase. Adenylic acid is not a component of the system, whilst catalytic amounts of starch, dextrin, or glycogen

are necessary for starch formation from glucose 1-phosphate. Starch is the most effective catalyst; pure maltose is inactive (cf. Hanes, A., 1940, III, 448, 826). Cu and phloridzin, which inhibit the muscle enzyme, have little or no effect on potato phosphorylase. AgNO₃ (0.0001M) is inhibitory. The starch produced by the enzyme does not act as a catalyst for its own formation. The initial step in starch formation is possibly the transference of PO₄^{'''} from glucose 1-phosphate to the catalyst.

F. O. H.

Phosphatase of liver cells in normal rats and rats fed on a diet containing aminoazotoluene.—See A., 1942, III, 318.

Concentration of ascorbic acid and phosphatases in secretions of male genital tract.—See A., 1942, III, 315.

β-Form of the Cori ester (d-glucopyranose 1-phosphate).—See A., 1942, II, 165.

Co-enzyme I content of rat tissues in experimental hyperthyroidism.—See A., 1942, III, 305.

Synthesis of co-enzyme R by certain *Rhizobia* and by *Azotobacter chroococcum*.—See A., 1942, III, 345.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Radioactive carbon as an indicator of carbon dioxide utilisation.
VIII. Rôle of carbon dioxide in cellular metabolism. C. B. van Niel, S. Ruben, S. F. Carson, M. D. Kamen, and J. W. Foster (*Proc. Nat. Acad. Sci.*, 1942, **28**, 8—15).—A review of the effects of CO₂ on growth and metabolism, particularly those reactions which take place in absence of light. The general occurrence of a CO₂ fixation mechanism by means of which oxaloacetic acid, and hence fumaric and succinic acids, is synthesised from CO₂ and pyruvic acid is emphasised. It is suggested that other cases of CO₂ reduction are variants of a reversed decarboxylation and that light only serves to cause a photodecomp. of H₂O, thus providing a source of reducing substances.

H. G. R.

Red yeast. I. *Sporobolomyces* nov. sp. (1) Morphology and physiology. I. Yamasaki and S. Morisita (*J. Agric. Chem. Soc. Japan*, 1941, **17**, 547—552).—The yeast belongs to the genus *Sporobolomyces*, Kluver and van Niel, the so called "image-former yeast," but it is not identical with any known species.

J. N. A.

Neutralisation of sulphonamide inhibition of yeast growth by p-aminobenzoic acid. M. Landy and D. M. Dicken (*Nature*, 1942, **149**, 244).—Inhibition of yeast growth caused by sulphanilamide, sulphapyridine, sulphaguanidine, or sulphathiazole is neutralised by p-aminobenzoic acid. Either this substance or its biologically active equiv. is synthesised by yeast. p-Aminobenzoic acid may be Fildes' "essential metabolite."

A. A. E.

Anti-bacterial substances from moulds. IV. Spinulosin and fumigatin, metabolic products of *Penicillium spinulosum*, Thom, and *Aspergillus fumigatus*, Fresenius. A. E. Oxford and H. Raistrick (*Chem. and Ind.*, 1942, 128—129; cf. A., 1942, III, 267).—Spinulosin (3:6-dihydroxy-4-methoxy-2:5-toluquinone) is relatively only a weak antibacterial agent, whilst fumigatin (3-hydroxy-4-methoxy-2:5-toluquinone) has a strong antibacterial action, particularly against *V. cholerae*, *B. anthracis*, and certain strains of *Staph. aureus*. With fumigatin, the limiting dilutions for complete inhibition of growth after two days for the above organisms are 1:100,000, 1:33,000, and 1:33,000—50,000, respectively.

J. N. A.

Sea-water, source of inorganic catalysts for growth of a micro-organism. W. H. Schopfer and H. Utiger (*Arch. Sci. phys. nat.*, 1941, [v], **23**, Suppl., 135—137).—A medium containing sea-water from Treve, glucose (2), asparagine (1), MgSO₄ (0.5), and KH₂PO₄ (1.5%), together with 0.1—0.2 μg. of pyrimidine and thiazole per 20 c.c., is very favourable for growth of *Phycomyces blakesleeanus*. The pyrimidine and thiazole replace aneurin and function as growth factors, and in their absence the sea-water is without effect, whilst in absence of sea-water the medium supports only poor growth.

J. N. A.

Guanidine and factor Z₁, growth substances for *Phycomyces*. W. J. Robbins and F. Kavanagh (*Proc. Nat. Acad. Sci.*, 1942, **28**, 4—8).—Prep. of factor Z₁ (A., 1940, III, 797) from potato tubers is described. It is stable to HNO₃, heating with saturated aq. Ba(OH)₂, and in 4N-H₂SO₄ at 115° for 24 hr. but is destroyed by Br and H₂O₂. It migrates to the cathode in electro-dialysis of solutions at pH 5 and is still adsorbed on C and eluted by ammoniacal acetone. Guanine, the only substance tested to exhibit factor Z₁ activity, is not identical with the factor. Yeast-nucleic acid is slightly active and acid-hydrolysed nucleic acid has an effect equiv. to its guanine content.

H. G. R.

Relation between nitrogen metabolism and duration of the larval stage of the death-watch beetle (*Xestobium rufovillosum*, de G.) reared in wood decayed by fungi.—See A., 1942, III, 425.

Dermatophyte problem. R. Biltris (*Arch. int. Méd. exp.*, 1939, 14, 201—248).—The successive culture of a sample of dermatophyte from the white mouse (strain R.B.S.; cf. *Ann. Inst. Pasteur*, 1929, 43, 281) since 1929 is described and the effects of qual. changes in the peptone and amino-acid content of the culture medium are investigated. The sample is still active on inoculation and is identifiable. It has not been possible to preserve the sample indefinitely on culture media of definite chemical composition. The classic form of the theory of the plurality of trichophytic species is not confirmed.

P. C. W.

"Klino-kinesis" of paramecium. W. B. Yapp (*Nature*, 1941, 148, 754).—A discussion of the appropriateness of applying this term to the avoiding reactions of paramecium.

L. S. T.

Toxic effects of certain bacterial metabolic products on soil protozoa. B. N. Singh (*Nature*, 1942, 149, 168).—Pigment extracted from *Serratia marcescens*, *Chromobacterium violaceum*, and a red pigmented bacterium, when mixed with edible bacterial suspensions on an agar plating, appears to prevent amoebae from eating the food. Non-pigmented strains of *S. marcescens* are slowly destroyed by amoebae. The toxicity of metabolic products of *B. pyocyaneum* towards soil protozoa is greater than that of pure pyocyanine. The toxicity of a Chamberland filtrate of an aq. solution of the crude CHCl_3 extract of pyocyanine is increased by autoclaving. A fluorescent pigment obtained by growing *B. pyocyaneum* in liquid media is also toxic to soil protozoa.

A. A. E.

Bacteriostatic values of certain acridine derivatives. H. Berry (*Quart. J. Pharm.*, 1941, 14, 363—367).—The bacteriostatic activity of 4-amino-, 3:6-diamino-, 2-amino-8-ureido-, 4-, 3-, and 2-chloro-8-amino-, 1-, 2-, and 4-chloro-7-amino-, 9-chloro-2-amino-, 7-chloro-3-amino-, 3-hydroxy-, 3:7- and 3:9-dihydroxy-, 3:7-diamino-5:5-dimethyl- (and -diphenyl)-5:10-dihydro-acridine, and 3-amino-5:5-dimethyl- (and -diphenyl)-5:10-dihydroacridinimide towards *Strep. pyogenes*, *Staph. pyogenes*, *B. coli*, and *Pseudomonas pyocyanea* is determined. None of the compounds has a pronounced activity, and all are inactive towards *Pseudomonas*. An intact acridine nucleus is necessary for bacteriostatic activity.

J. N. A.

Germicidal activity of organic compounds. H. L. Cole, C. C. Prouty, and E. R. Meserve (*J. Amer. Chem. Soc.*, 1941, 63, 3523—3524).—4-Bromo-2-, 2-butyl-1-, 4-bromo-2-propionyl-, and 2-aceto-1-naphthol, and 2-propionyl-1- and 2-propyl-1-naphthyl ethyl ethers are inactive against *Escherichia coli*, *B. subtilis*, *Staph. aureus*, and *Eberthella typhi*. 2-Propionyl-1-naphthol is effective only against *E. typhi*. 2-Ethyl-1-naphthol and 4:6-diethylresorcinol are effective against all and 2-propyl-1-naphthol against all except *E. coli*.

R. S. C.

Treatment of bedclothes with dust-laying oils. M. van den Ende and J. C. Thomas (*Lancet*, 1941, 241, 755—759).—Technical "white oils" like paraffinum liquidum leve B.P. are effective dust-layers for bedclothes and can be made into stable oil-in-water emulsions which facilitate application for use. The emulsifying agents have a bactericidal action. Experiments in 2 cases of haemolytic streptococcus infections showed no liberation of organisms from the treated bedclothes. The oils are not carcinogenic.

C. A. K.

Killing germs with ultra-violet [light].—See B., 1942, III, 88.

Phenol-resistant and phenol-decomposing soil micro-organisms. P. Vigier (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 138—143).—Gram-positive, non-liquefying, rod-like bacteria, Gram-positive, non-liquefying diplococcus bacteria, and a strongly Gram-positive, non-liquefying, yeast-like fungus isolated from soil can be grown on liquefying, either an agar or liquid phenolic medium. The fungus is phenol-trophic, and can utilise and grow on phenol as sole source of C. The two species of bacteria are phenol-resistant; they tolerate, but cannot utilise, phenol. In presence of the fungus, phenol is transformed into other substances which are assimilated by the bacteria.

J. N. A.

Growth studies of *Rhizobium japonicum*. J. B. Wilson and W. W. Umbreit (*Proc. Soil Sci. Soc. Amer.* [1940], 1941, 5, 262—263).—The most satisfactory medium for growth of soya-bean nodule bacteria included an acid hydrolysate of mesquite gum as a source of arabinose, supplemented with yeast extract, kraut juice, and minerals.

S. and F. (m)

Mechanism of biological nitrogen fixation. VIII. Carbon monoxide as inhibitor for nitrogen fixation by red clover. C. J. Lind and P. W. Wilson (*J. Amer. Chem. Soc.*, 1941, 63, 3511—3514; cf. *A.*, 1941, III, 926).—Measurement of the rate and amount of fixation of N_2 by inoculated red clover shows the fixation to be inhibited by 0.01% of CO and almost stopped by 0.05%. Inhibition of the assimilation of NH_4NO_3 by uninoculated plants is observed only at higher [CO]. Inhibition of fixation of N_2 is reversible and non-competitive.

R. S. C.

[Utilisation of] xylan.—See A., 1942, III, 332.

***Acetobacter turbidans*; new species of acetic acid-producing bacterium.** A. J. C. Cosbie, J. Tošić, and T. K. Walker (*J. Inst. Brew.*, 1942, 48, 82—86).—The morphological, cultural, and physiological characters of *A. turbidans* n. sp. are described. The organism,

which was isolated from a turbid beer (cf. B., 1942, III, 50), is aerobic, Gram-negative, and hop- and alcohol-tolerant; in beer it produces a permanent turbidity which is more extensive at 13° than in the optimum growth zone of 25—32°. Acetic acid is produced in beer by oxidation of alcohol. The organism is considered to be a dangerous potential producer of beer deterioration.

I. A. P.

Formation of acetic acid from carbon dioxide and hydrogen by means of anaerobic bacilli.—See B., 1942, III, 105.

Green pigment from *Candida stellatoidea* and *C. albicans*. C. P. Jones and R. L. Peck (*J. Bact.*, 1940, 39, 605—608).—The pigment is produced more profusely by *C. stellatoidea* than by *C. albicans*. It appears to be a weak and unstable acid with "indicator" properties (blue-green in acid and yellow in alkaline solution).

A. G. P.

Detection of acetylmethylcarbinol in bacterial cultures. C. G. Batty-Smith (*J. Hygiene*, 1941, 41, 521—529).—O'Meara's method and Barritt's method for the Voges-Proskauer reaction were compared with 602 cultures. The latter gave 4% more positives than the former. The further use of methyl-red cultures for O'Meara's method was satisfactory. There is no reason to doubt the accuracy of Barritt's method and the reality of M.R. +, V.P. + strains is supported.

D. D.

Further observations on the longevity of spores of *B. anthracis*. G. S. Graham-Smith (*J. Hygiene*, 1941, 41, 496).—Spores of *B. anthracis* stored for 34 years and protected from light failed to grow in nutrient agar. Spores had previously been found to grow after dry storage for a max. of 22 years unprotected from light.

D. D.

Papillary variation in coliform bacteria. F. H. Stewart (*J. Hygiene*, 1941, 41, 497—508).—The isolation of pure lines of *B. coli-mutabile* was effected by careful plating. Variation from non-lactose to lactose fermenters takes place only on lactose media. *B. coli-mutabile* G1 was isolated from the faeces of a mental patient and gave red, white, yellow, and unpigmented variants.

D. D.

Modified Eijkman method applied to pure coliform cultures obtained from waters in Singapore. G. E. Boizot (*J. Hygiene*, 1941, 41, 566—569).—Incubation at 44° is much less sp. for faecal *B. coli* in tropical than in temperate climates. It offers advantages as an enrichment method and may be of assistance in analysis if due attention is paid to confirmatory tests.

D. D.

Utilisation of amino-acids and of glucose by *Clostridium botulinum*. C. E. Clifton (*J. Bact.*, 1940, 39, 485—497; cf. *A.*, 1939, III, 1011).—Types A and B of *C. botulinum* utilise amino-acids primarily by means of the "Stickland reaction" (A., 1934, 1406). Glucose is fermented directly yielding, principally, alcohol and CO_2 .

A. G. P.

Combined active and passive immunisation against diphtheria. A. W. Downie, A. T. Glenny, H. J. Parish, W. Smith, and G. S. Wilson (*Brit. Med. J.*, 1941, II, 717—723).—Antitoxin response to diphtheria immunisation was studied in 300 normal medical and farm training students. Positive Schick test reactors were given 0.1 c.c. of alum-pptd. toxoid and some were given 350—500 units of diphtheria antitoxin at the same time. (Former group = A, latter group = A + P.) All students were given 0.3 c.c. of the toxoid 4 weeks later, and 8 weeks after this a final Schick test was done. The serum antitoxin vals., done at the beginning, after 4 weeks, and usually 12 weeks after the first injection, showed a more rapid increase in group A than in A + P, but by 12 weeks after the 2nd injection the differences were not striking. The Schick-conversion rate was over 90% in both groups by 8—12 weeks after the 2nd injection, but the differences were not statistically significant. Thus the final degree of immunity is the same in groups A and A + P.

C. A. K.

Combined active and passive immunisation against diphtheria. F. Fulton, J. Taylor, A. Q. Wells, and G. S. Wilson (*Brit. Med. J.*, 1941, II, 759—761).—The successful use of combined active and passive immunisation against diphtheria, + detection and segregation of carriers, is reported from studies in 7 epidemics in schools. The outbreaks were brought under immediate control.

C. A. K.

Purification and crystallisation of diphtheria antitoxin. J. H. Northrop (*J. Gen. Physiol.*, 1942, 25, 465—485).—When diphtheria toxin-antitoxin complex is digested with trypsin and the product is fractionally pptd. with $(\text{NH}_4)_2\text{SO}_4$, material that is shown to be homogeneous by electrophoresis and ultracentrifuging but does not have const. solubility is obtained. A small amount of more sol. cryst. material of const. solubility is also obtained. The cryst. material is a pure protein having mol. wt. 90,500 and sedimentation const. 5.7 \times 10⁻¹³. It is very unstable and readily becomes less sol. and non-crystallisable. The pptn. range of the purified antitoxin with purified toxin is much wider than that with crude preps.

W. McC.

Sedimentation and electrophoresis of purified diphtheria antitoxin. A. Rothen (*J. Gen. Physiol.*, 1942, 25, 487—496).—The sedimentation const., 6.9 \times 10⁻¹³, of purified diphtheria antitoxin obtained from horse plasma without enzymic treatment is the same as that of the globulin fraction obtained in a similar way from healthy horse plasma. The sedimentation const., diffusion const., and mol. wt. of

purified antitoxin obtained by tryptic digestion of the toxin-antitoxin complex are 5.5×10^{-13} , 5.76×10^{-7} , and approx. 90,000, respectively. The isoelectric point of the purified antitoxin is approx. p_H 7.0. Immune plasma contains an increased proportion of γ -globulin consisting of antitoxin of varying degrees of activity or of antitoxin + inert protein. W. McC.

Survival of *Spirochaeta pallida* in preserved tissue. S. L. Velter and E. J. Gleiberman (*J. Méd. Ukraine*, 1940, 10, 863—873).—*Sp. pallida* decrease in no. in rabbit tissue kept at 2—4°. After 24 hr. most become immobile; after 4 days they lose their virulence; on the 5th day they disappear. Wassermann reaction is positive in rabbits infected with the syphilitic tissue preserved for 1—4 days, negative if the time was longer. Preservation for 5 days is sufficient to prevent inoculation of syphilis through transplantation of tissue. M. K.

Anaerobic streptococci. I. Certain biochemical and immunological properties. M. L. Stone (*J. Bact.*, 1940, 39, 559—582).—Studies of 26 strains of anaerobic streptococci isolated from parturient and post-abortif women are described. Three groups of organisms may be distinguished by their ability or otherwise to grow in 10 or 40% bile media. In general the organisms produced little acid from glucose, the final p_H exceeding 6.0 in 75% of the cultures. Trehalose and sorbitol were unattacked by any strain but 75% of these hydrolysed Na hippurate. Whole heat-killed organisms were antigenic in rabbits but the precipitins produced were not entirely sp. Anaerobic streptococci contain at least two different antigenic substances. Relationships between these and hæmolytic streptococci of groups A, B, and C are discussed. A. G. P.

Potency of nascent streptococcus bacteriophage B. A. C. Evans (*J. Bact.*, 1940, 39, 597—604).—The phages examined show enhanced potency in the nascent stage. A. G. P.

Experiments with Borawskaja's gold sol. H. Schubert (*Z. Immunitätsforsch.*, 1939, 96, 267—274).—A slightly modified prep. of Borawskaja's Au sol was used. It has a moderate sensitivity and will keep for 6 weeks. In 640 cases tested for syphilis the results were highly sp. G. W.

Epidemiological investigation of rural typhoid with the aid of the Vi agglutination test. C. P. Eliot and W. R. Cameron (*Amer. J. Publ. Health*, 1941, 31, 599—604).—Examination of the blood serum of suspected carriers or contacts for Vi agglutination is very useful in narrowing down the search for carriers. 8 of 100 suspected carriers showed Vi agglutinins and 4 of these proved to be carriers by isolation of the typhoid bacilli from stool cultures. C. J. C. B.

Intradermal immunisation in typhoid fever. D. W. van Gelder and S. Fisher (*Amer. J. Dis. Child.*, 1941, 62, 933—938).—Vaccination by the intradermal route in 295 children produced as high an H agglutinin titre as that obtained by the subcutaneous route in 285 children; the increase in the O agglutinin titre, however, was less. For intradermal administration 3 doses of 0.05 c.c. (50,000,000 bacilli), 0.1 c.c. (100,000,000 bacilli), and 0.15 c.c. (150,000,000 bacilli) of typhoid vaccine for subjects weighing 120 lb. or over (with corresponding reduction in dosage for those weighing less) were the most satisfactory, since reactions were minimal and there was no significant reduction in the agglutinin response. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Value of molybdenum for lettuce. W. E. Brenchley and K. Warrington (*Nature*, 1942, 149, 196).—Mo (1 in 10^7) as Na_2MoO_4 in the nutrient solution produces larger plants which are deeper green and more resistant to disease. Preliminary experiments suggest that Mo protects against B deficiency in the early stages of growth. A. A. E.

Growth responses of Biloxi soya beans to variation in relative concentrations of phosphate and nitrate in the nutrient solution. C. L. Hamner (*Bot. Gaz.*, 1940, 101, 637—649).—Effects of variations in relative and abs. concn. of K, N, P, Ca, and Mg in nutrient media on the growth of soya beans and on the occurrence of deficiency symptoms are examined. High [K] favoured vegetative growth even when the [Ca] and [Mg] were small. In small concns. P was toxic to seedlings if the N supply was deficient: approx. 1 part of NO_3^- counteracted the toxicity of 2 parts of PO_4^{3-} . Older plants are less sensitive to P toxicity, probably by reason of N accumulations within the plant. A. G. P.

Interaction of higher plants and soil micro-organisms. III. Effect of by-products of plant growth on activity of fungi and actinomycetes. M. I. Timonin (*Soil Sci.*, 1941, 52, 395—413; cf. A., 1941, III, 61).—In the rhizosphere of resistant flax varieties the incidence of *Alternaria*, *Cephalosporium*, *Fusarium*, *Helminthosporium*, and *Verticillium* was diminished and that of *Mucor*, *Cladosporium*, *Penicillium*, and *Trichoderma* increased by comparison with that in the rhizosphere of susceptible varieties, the difference being more marked in the drier soils. Root excretions of plants grown aseptically in culture solutions penetrated collodion membranes and stimulated cultures of organisms in a manner similar to that observed in the rhizosphere of plants. Plant culture solutions, after growth

in them of susceptible flax varieties, stimulated growth of *Fusarium* and *Helminthosporium* more and that of *Trichoderma* less than did the solution after growth of resistant varieties. The active agent concerned is HCN, the direct action of which on cultures of the micro-organisms is examined. A. G. P.

Biochemical nitrogen fixation. I. Evidence for limited oxygen supply within the nodule. F. E. Allison, C. A. Ludwig, S. R. Hoover, and F. W. Minor (*Bot. Gaz.*, 1940, 101, 513—549).—Rates of respiration of detached legume nodules and of small legume and non-legume roots in nutrient solutions in air were almost identical (Q_{O_2} about 2.2). The R.Q. of small legume and non-legume roots (slightly below 1) was significantly lower than that of nodules; large roots showed vals. considerably exceeding 1 due to slow O_2 penetration. Respiration rates per unit dry matter of nodules in O_2 were more than double those in air. Vals. for small roots were not greatly affected by the additional O_2 . Small roots are more deficient in available carbohydrate than are nodules, the increased Q_{O_2} due to addition of glucose being 40 and 12—14%, respectively. In air, respiration rates per unit of N in legume and non-legume roots were 3—4 times those of nodules; in O_2 , vals. for roots were double those for nodules. Nodules consist of plant cells largely filled with comparatively inactive bacteria; the latter oxidise only a small proportion of the total carbohydrate synthesised by the plant. A. G. P.

Ascorbic acid system in barley. W. O. James and J. M. Cragg (*Nature*, 1941, 148, 726—727).—Barley tissues contain a reducing system that reduces methylene-blue readily. Manometric methods showed the presence of an active ascorbic oxidase, sol. in diluted barley sap or PO_4^{3-} buffer at p_H 6, and inhibited completely by 0.001M-cyanide. Addition of 0.01—0.05M-lactic acid increased O_2 consumption, although in barley sap without addition of ascorbic acid it had no effect. Titration with 2:6-dichlorophenol-indophenol showed that the lactic acid maintained the ascorbic acid in the reduced form. Glycollic and tartaric acids behaved similarly, but less vigorously. Succinic and pyruvic acids were inactive, and malic acid behaved irregularly. L. S. T.

Effect of temperature on phaeophytin formation in leaf organs. II, III. M. Stern (*Kl. Mitt. Ver. Wasser-, Boden-, Lufthyg.*, 1938, 14, 39—53; *Chem. Zentr.*, 1938, ii, 3940—3941; cf. A., 1936, 1164).—Moist heat is most effective in promoting formation of phaeophytin; decreasing amounts occur in leaves and pine needles subjected to air-drying, refrigeration, and dry heating, respectively. Many plants form phaeophytin without the action of acid waste gases. Various pine species give results contrary to those reported previously (*loc. cit.*). A. J. E. W.

Calcium as a factor in seed germination.—See B., 1942, III, 66.

Quantum efficiency of photosynthesis. E. C. C. Baly (*Nature*, 1942, 149, 218—219).—The assumption that the whole of the light energy absorbed is utilised in promoting photo-assimilation is unjustified. Hence Warburg and Negelein's calculations of the quantum efficiency appear invalid. A. A. E.

Effect of naphthylacetic acid and naphthylacetamide or nitrogenous and carbohydrate constituents of bean plants. J. W. Mitchell (*Bot. Gaz.*, 1940, 101, 688—699).—Differences in the effects of naphthylacetic acid and of its amide on the distribution and total contents of N and carbohydrates in plant organs are established. Application of the growth-substances to plant stems resulted in chemical changes corresponding with growth responses occurring above and below the point of application. Tumours produced by the acid consisted largely of meristematic cells and contained more N (especially water-sol. N) than did corresponding areas of untreated stems. Increased cambial activity and secondary thickening following application of the amide were associated with a relatively small increase in N content of which only a small fraction was in water-sol. forms. The total N content of whole plants was not greatly affected by either treatment. Plants treated with the acid or amide showed diminution in % of sugar, starch, and dextrins in roots, hypocotyls, and first internodes, and restricted transport of carbohydrates from leaves, the effect generally being to produce carbohydrate deficiency in those regions in which growth was stimulated by the treatment. A. G. P.

Interrelations in effects of boron and indolylacetic acid on plant growth. F. M. Eaton (*Bot. Gaz.*, 1940, 101, 700—705).—In cotton plants indolylacetic acid to some extent replaces B as an essential factor in the growth of root, stem, leaf vein and other leaf blade tissues. B is probably essential to the formation of auxin in plants. A. G. P.

Avena coleoptile assay of ether extracts of nodules and roots of bean, soya bean, and pea. G. K. K. Link and V. Eggers (*Bot. Gaz.*, 1940, 101, 650—657).—Ether extracts of bean and pea nodules were more effective than denodulated roots in causing curvature of *Avena* coleoptiles. Extracts of roots grown in sterile sand were still less active. Dilution with agar increased the activity of extracts. Extracts of bean roots and nodules contained a substance which behaved like auxin-*a* on acid hydrolysis and also a fraction which was

active after alkaline hydrolysis. Nodules yielded more of both active materials than did roots. A. G. P.

Light-stability of auxin in *Avena* coleoptiles. W. S. Stewart and F. W. Went (*Bot. Gaz.*, 1940, 101, 706—714).—Exposure of plants to sunlight or electric light causes inactivation of approx. 20% of their total auxin content. Free-moving auxin within the plant is unaffected. Auxin, after extraction from plants by ether, is stable to light. Inactivation of auxin does not occur through transformation into the lactone form, but probably takes place only in presence of a third substance (possibly a carotenoid) when auxin is in combination with other cell constituents. A. G. P.

Significance of plant hormones for plant life.—See B., 1942, III, 66.

Leucophytic strain of *Hormidium* produced from culture in presence of colchicine. R. de Siebenthal (*Arch. Sci. phys. nat.*, 1941, [v], 23, Suppl., 187—192).—When *Hormidium* is grown in glucose-Detmer medium containing 0.01% of colchicine the plant slowly loses its colour and after several months becomes quite white. Subcultures in a fresh medium in absence of colchicine give a totally white race which is characterised by large bulb-shaped cells and chlorosis of the plastids. In presence of colchicine the morphological appear more rapidly than the physiological anomalies. The standard medium containing inorg. N permits normal growth of the chlorophyll strain, but is unfavourable for development of the leucophytic strain in presence of either org. or inorg. C. Addition of org. N to the medium restores the ability to form the leucophytic strain. J. N. A.

Relation between nitrogen metabolism and duration of the larval stage of the death-watch beetle (*Xestobium rufivillosum*, de G.) reared in wood decayed by fungi. W. G. Campbell (*Biochem. J.*, 1941, 35, 1200—1208).—The N content of oak sapwood increases (by 10% when the wt. of wood is halved) during decay by *Phellinus cryptarum*, Karst. N determinations show that *X. rufivillosum* growing in the decayed wood retains at least 95% of the N available in the wood it digests, the frass being unchanged wood. The rate of N intake determines the duration of the larval stage. A. Li.

Determination of death in the larvæ of the potato root eelworm. A. E. W. Boyd (*Nature*, 1941, 148, 782—783).—Larvæ of *Heterodera schachtii* frequently lie still for long periods, not reacting with motion to a stimulus, but able to penetrate potato rootlets. Dead larvæ may be distinguished by staining with 0.025% I in 1% KI, when they absorb the I within 20 min.; living larvæ required several hr. The I penetrates through the mouth, which is stained first. E. R. S.

XXVII.—PLANT CONSTITUENTS.

Some aspects of algal chemistry. I. M. Heilbron (*J.C.S.*, 1942, 79—89).—Hugo Müller lecture. A review confined to the lipid constituents, especially the carotenoids and sterols, of algae. The relationships between the pigments and the botanical classification and sexual reproduction are discussed. H. G. R.

Extraction of mushrooms by various solvents for fats. J. Hadaček (*Časopis Českoslov. Lék.*, 1938, 18, 221—224).—The presence of Na, K, Mg, Ca, traces of Zn, and a large quantity of Al is shown in mushrooms (*Cantharellus cibarius*, Fr.), which contain 80—83% of water, 8.41% of ash on dry wt., and 1.68% of ash on original material. Extraction with light petroleum gives 3.5%, with dichloroethylene 2%, with ether 4%, with alcohol 4.2%, and with pyridine 15.4% of extracts for which the acid val., sap. val., I val., etc. are given. F. R.

Oil of ash kernels. E. Bureš and K. Bednář (*Časopis Českoslov. Lék.*, 1938, 18, 107—113).—The oil extracted from the seeds of ash (18.0-923, acid val., 4.8, sap. val. 167, I val. 131.7) gives a mixture of acids containing 7% of unsaturated including oleic, linoleic, and linolenic acids and 93% of saturated acids including equal amounts of palmitic and stearic acids. The oil contains 2% of unsaponifiable matter. F. R.

Oil from apple seeds. Z. Hokrová (*Časopis Českoslov. Lék.*, 1938, 18, 137—141; cf. A., 1939, III, 280).—The light yellow oil obtained from apple seeds by extraction with light petroleum (d 0.9097, acid val. 24, sap. val. 178, I val. 104), containing 8.4% of glycerol, gives a mixture of fatty acids (acid val. 178, I val. 115, mol. wt. 314, triglycerides mol. wt. 981) which contain palmitic, oleic, and (mainly) linoleic acid with a small quantity of acids of m.p. 57°. The unsaponifiable portion of the oil yields a sterol (I val. 35.3; mol. wt. 158), a hydrocarbon (I val. 77.2; mol. wt. 303), resinous materials, and a Ca salt of an unidentified org. acid. The oil extracted with CHCl_3 shows different const. except the I val. F. R.

Presence of an insecticidal principle in the bark of Southern prickly ash. F. B. LaForge, H. L. Haller, and W. N. Sullivan (*J. Amer. Chem. Soc.*, 1942, 64, 187).—The bark of *Zanthoxylum clava-*

herculis, L., contains, besides asarinin, a semi-solid substance, toxic to housefly, extracted from hydrocarbon solution by 90% acetic acid. R. S. C.

Isolation of a physiologically active tetrahydrocannabinol from *Cannabis sativa* resin.—See A., 1942, II, 179.

Poison ivy plant and its oleoresin.—See A., 1942, III, 357.

Lignin etc.—See A., 1942, II, 143, 158.

Proteins in tobacco. Barnstein and Mohr's methods. I—III. I. Vlădescu and I. Zaporojanu (*Bul. Cult. Ferm. Tutunului*, 1936, 25, 244—265; 1937, 26, 64—83; 1938, 27, 186—198; *Chem. Zentr.*, 1937, ii, 1281—1282, 2762; 1938, ii, 3871).—I. When applied to tobacco Barnstein's method gives higher protein content vals. than Mohr's method. The ratio (r %) of the two vals. is 94—99 in seeds, 70—84 in fermented tobaccos, 95—99 in the leaf at the commencement of vegetation, 82—87 in the ripening leaf, and 85—89 and 94—96 in the organs of propagation during bud formation and drying of the seeds, respectively. The ratio of protein-N by either method to total N increases with the quality of the tobacco.

II. During growth r in the stem (85—98) passes through two max. and two min.; the min. occur at inflorescence and during drying of the capsules. In the root r (91—94) is greatest at the beginning and end of vegetation. The distribution of protein-N in the leaves and its relation to the total N content is further discussed.

III. N compounds which cause the r variation accumulate in the leaves during ripening and fading; they are of the polypeptide or purine type, and their accumulation is closely related to protein metabolism in the plant. A. J. E. W.

Amino-acids of cottonseed globulin.—See A., 1942, III, 358.

Identity of red pigment in the roots of *Tripterygium wilfordii* and *Celastrus scandens*. M. S. Schechter and H. L. Haller (*J. Amer. Chem. Soc.*, 1942, 64, 182—183).—Tripterine (Chou et al., A., 1936, 1572) from *T. wilfordii* is identical with celastrol (Gisvold, A., 1939, II, 484; 1940, II, 138; 1941, II, 18). It has absorption max. at 420 and ~333 $\mu\mu$. and may be a *peri*-hydroxy-*o*-naphthaquinone derivative. R. S. C.

New alkaloid from perennial ryegrass.—See A., 1942, II, 182.

***Solanum* alkaloids.**—See A., 1942, II, 157.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Permanent labels for microscope slides. B. Sahni (*Current Sci.*, 1941, 10, 485—486).—The ravages of insects, fungi, etc. on the labels of microscope slides in tropical countries can be avoided by using a thin solution of "cellulose" in amyl acetate as a paint. Alternatively the slide itself may be ground, marked with a lead pencil, and covered with a coverslip and Canada balsam. P. G. M.

Mounting medium for microscopic work. K. N. Kaul, B. Mukerji, and R. N. Chopra (*Current Sci.*, 1941, 10, 486—488).—A mixture of resin from turpentine and dammar resin in benzene or xylene is a satisfactory substitute for Canada balsam, with the added advantage that slides do not turn yellow, whilst the medium has almost the same refractive index as slide glass. P. G. M.

Rubber casts of medical subjects. V. Wooland, C. Towson, and C. D. Clarke (*J. Lab. clin. Med.*, 1941, 26, 1981—1988).—The technique of making rubber casts is described in detail. (26 illustrations.) C. J. C. B.

Water-colour drawings for screen projection. F. Schultz (*J. Lab. clin. Med.*, 1941, 27, 271—273). C. J. C. B.

Pressure Seitz filter for laboratory use. E. E. Hays (*J. Lab. clin. Med.*, 1941, 27, 79—80). C. J. C. B.

Perfect perfusion apparatus for cold-blooded animals. S. Nambu (*Japan. J. Obstet. Gynec.*, 1941, 24, No. 2, 2—5).—An apparatus is described which allows easy changes in temp., perfusion fluid, pulse rate and pressure, and aeration. P. C. W.

Combined epilation needle and forceps handle. H. C. Goldberg (*Arch. Dermat. Syphilol.*, 1941, 44, 1104—1105). C. J. C. B.

Location of foreign bodies by radio-frequency probe. F. T. Farmer and S. B. Osborn (*Lancet*, 1941, 241, 517—518).—Description of apparatus and technique. C. A. K.

Tube for centrifuging 16 specimens in a 4-place centrifuge.—See A., 1942, I, 188.

Automatic quadruple pipetting machine for rapid and accurate delivery of measured small amounts of fluid.—See A., 1942, I, 187.

Attachment for pipettes for precise transfer of dangerous fluids.—See A., 1942, I, 187.

Specific gravity apparatus.—See A., 1942, I, 188.

Recording colour of opaque objects.—See A., 1942, I, 185.

Determination of water in animals and plants. P. F. Holt and H. J. Callow (*Nature*, 1941, 148, 755—756; cf. A., 1942, III, 360).

—The Dean-Stark apparatus has been modified so as to avoid adherence of drops of water to the condenser column. Benzene is used in place of xylene. The method is restricted to samples from which 5–10 c.c. of water can be obtained. It has been applied to mouse tumours. L. S. T.

Determination of water in animals and plants. L. G. G. Warne (*Nature*, 1941, 148, 756).—When toluene is substituted for xylol in the procedure described by Lowndes (A., 1942, III, 360), decomp. and charring are much reduced, and are inappreciable with sugar-containing substances such as jam, honey, fruit extracts, and confectionery. The method gives results comparable with those obtained by drying in a vac., or by oven drying after addition of alcohol, and higher than those obtained by oven drying at 105–110°. L. S. T.

Rapid determination of water in animals and plants. A. G. Lowndes (*Nature*, 1942, 149, 79; cf. A., 1942, III, 360).—It is conceivable that bound water may be removed by distillation with toluene or xylene. Drying in vac. or in an oven does not remove the bound water. A. A. E.

Determination of moisture [in biological material]. R. S. Vincent and A. Simons (*Nature*, 1942, 149, 170; cf. above).—While the vessel containing the specimen is being evacuated it is cooled with solid CO₂; water is then removed at const. temp. and measured by observing the v.p., and the total quantity determined by graphical extrapolation. Oxidation is avoided, and samples weighing less than 30 mg. can be examined. A. A. E.

Determination of gas content of tissue. P. F. Scholander (*J. Biol. Chem.*, 1941, 142, 427–430).—A syringe and press are described suitable for determining the CO₂, O₂, or N₂ content, or the O₂ capacity, of tissue. A. Li.

Conductometric determination of ammonia. Application to nitrogen distribution studies.—See A., 1942, I, 182.

Nessler's solution.—See A., 1942, I, 182.

Determination of nitrate-nitrogen [in soil extracts etc.] with a photo-electric colorimeter. T. O. Berge (*Soil Sci.*, 1941, 52, 185–191).—The Evelyn photo-electric colorimeter is adapted for determining NO₃ in soil extracts, bacterial cultures, etc. by the phenoldisulphonic acid method. Interference by turbidity or extraneous colouring matter is eliminated. A. G. P.

Choline content of biological fluids. E. Eagle (*J. Lab. clin. Med.*, 1941, 27, 103–107).—A modification of Ambo and Aoki's (*Trans. Jap. Path. Soc.*, 1931, 21, 171) chemical method for the determination of choline in small amounts of biological fluids is described in detail. Control studies were made to show choline recovery from standard alcoholic choline chloride solutions, from solutions of known choline Hg chloride content, and from biological fluids to which known amounts of choline were added. The choline content of 220 samples of various biological fluids is tabulated. C. J. C. B.

Micro-determination of arginine. Determination of adenine. Test for methionine.—See A., 1942, II, 160.

Peptone [determination] in protein hydrolysates and amino-acid mixtures. K. S. Kemmerer and G. P. Heil (*J. Lab. clin. Med.*, 1941, 27, 260–263).—Pptn. with tannic acid in peptone determinations results in the pptn. of 21% of the N of a mixture of cryst. amino-acids, 23% of the N of an acid-hydrolysed protein, 27% of the N of an enzymic digest of protein, and 74% of the N of bacto-peptone. The method is not sp. for peptone. C. J. C. B.

Reactivity of porphyrindin in presence of denatured proteins.—See A., 1942, II, 184.

New method of fractionation of proteins by electrophoresis convection.—See A., 1942, II, 158.

Determination of ethyl alcohol for medicolegal purposes. F. L. Kozelka and C. H. Hine (*Ind. Eng. Chem. [Anal.]*, 1941, 13, 905–907).—The fluid (blood, urine; 2–5 c.c.) is treated with Na tungstate to ppt. protein and steam-distilled, the vapour passing through a trap containing HgO–NaOH to remove aldehydes or ketones. The alcoholic distillate is oxidised with a known excess of H₂CrO₄, the excess being back-titrated with KI–Na₂S₂O₃. Added alcohol (2–5 mg.) is recovered in 98–101% yield, even in presence of acetone or formaldehyde (5–20 mg. of either or both). The method can therefore be used to determine ethyl alcohol in the blood or urine of diabetics (acetone present) or patients receiving methenamine (formaldehyde present). J. D. R.

Perchlorate method for determining concentration of alcohol in expired air as medicolegal test.—See A., 1942, III, 336.

Colorimetric determination of inulin in blood and urine. A. S. Alving, J. Flox, I. Pitesky, and B. F. Miller (*J. Lab. clin. Med.*, 1941, 27, 115–118).—Using the method of Alving, Rubin, and Miller (A., 1939, III, 540) in analysing inulin solutions of concns. greater than 0.01 mg. per c.c., a small amount of blue ppt. is

occasionally formed in the colorimeter tube. Ordinarily the error introduced by this ppt. is small, but the formation of the ppt. can be prevented by the proper dilution of samples before analysis. Whenever possible the unknown solution should be diluted to give a reading between 30 and 70 on the galvanometer scale of the Evelyn photo-electric colorimeter. C. J. C. B.

Microchemical reaction for cellulose.—See A., 1942, II, 167.

Determination of cytochrome-c. V. R. Potter and K. P. DuBois (*J. Biol. Chem.*, 1941, 142, 417–426).—Cytochrome-c is determined in small quantities of tissue by extraction at p_H 3.5, pptn. with trichloroacetic acid, and spectrophotometric measurement of the change in extinction when oxidised and reduced by sp. enzymes. Results obtained with rat tissues and chick embryo are given. A. Li.

Colorimetric determination of phenothiazine.—See A., 1942, II, 184.

Colorimetric determination of diodrast and iodine in blood and urine. J. Flox, I. Pitesky, and A. S. Alving (*J. Biol. Chem.*, 1942, 142, 147–157).—I (not less than 1 mg.-%) in diodrast, neopax, or as I' is directly determined in urine or plasma by deproteinisation with CdSO₄, conversion of I or I' into IO₃' with Br, removal of excess of Br with phenol, liberation of I and intensification of colour by addition of large excess of KI, and measurement of the colour with a photo-electric colorimeter. I in hippuran and skiodan is not converted into IO₃' by Br. Iodeikon is not found in the filtrate when CdSO₄ is used as protein precipitant and isoideikon cannot be determined by the method used for diodrast. W. McC.

Photo-electric micro-determination of (A) iodate and iodine. J. Sendroy, jun., and A. S. Alving. (B) Chloride in biological fluids. J. Sendroy, jun. (J. Biol. Chem., 1942, 142, 159–170, 171–173).—(A) The photo-electric micro-determination of IO₃' and I' (cf. A., 1939, III, 1114) is simplified and made more convenient by increasing the sensitivity of the yellow colour readings to a point approximating to that of blue colour readings in very dil. solution. This is effected by the use of several selective filters which are efficient at the lower λ in the visible or near ultra-violet portion of the spectrum. The sensitivity is still further increased by addition of not more than 1% of KI or ethyl alcohol sufficient to make a final concn. of 40%. A simple modification of Evelyn's photo-electric colorimeter, increasing the range of its readings to the near ultra-violet, is described.

(B) Owing to the methods of increasing the sensitivity of yellow colour determinations described above, yellow instead of blue colour readings are taken in the previously described methods (cf. A., 1937, III, 448; 1939, III, 1114). J. N. A.

Electrophotometric micro-determination of phosphorus in lipin extracts. W. M. Sperry (*Ind. Eng. Chem. [Anal.]*, 1942, 14, 88).—The lipin is oxidised with HClO₄, diluted with water, and treated with (NH₄)₆Mo₇O₂₄ and a mixture of aminonaphtholsulphonic acid and Na₂SO₃. The colour produced is read in a photo-electric colorimeter and indicates P content. J. D. R.

Determination of arsenic in biological material. Photometric method. D. M. Hubbard (*Ind. Eng. Chem. [Anal.]*, 1941, 13, 915–918).—The sample is ashed by heating with H₂SO₄–HNO₃–HClO₄, the As in the residue is converted into AsCl₃ by distillation with HCl–HBr–N₂H₄, and the distillate oxidised (HNO₃) to H₂AsO₄. This is treated with (NH₄)₆Mo₇O₂₄–N₂H₄–H₂SO₄ and the developed colour measured spectrophotometrically. Special apparatus for the ashing and distillation are described. An accuracy of 1% is obtained. J. D. R.

Determination of cobalt in animal tissues. K. J. McNaught (*Analyst*, 1942, 67, 97–98).—The method previously described (A., 1939, III, 344) is modified, neutralisation with alkali hydroxide being omitted, *inter alia*. J. N. A.

Spectrophotometric determination of iron. I. Use of thioacetate acid. R. A. Koenig and C. R. Johnson (*J. Biol. Chem.*, 1942, 142, 233–238).—An accurate spectrophotometric method for determining Fe based on the transmittance of solutions of Fe^{III} thioacetate in presence of aq. NH₃ is described. The method can be used for determination of Fe in foods, beverages, urine, faeces, and pharmaceuticals. J. N. A.

Dropping mercury electrode for lead analysis. E. C. Barnes and H. W. Speicher (*J. Ind. Hyg.*, 1941, 23, 397–407).—Varying voltages are applied to a growing drop of Hg in a solution of the metal to be determined. Pb was determined by analysis of the voltage-current curve obtained. The solution must be free from O₂, its temp. must be const., and the p_H adjusted according to the acid used. Samples of Pb fume were analysed with good accuracy. The time required is short in comparison with other methods. E. M. K.

Dithizone method for determination of lead: mechanical shaker for separatory funnels.—See A., 1942, I, 188.

Photometric determination of minute amounts of mercury.—See A., 1942, I, 154.

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