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DECEMBER, 1944



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BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A III—Physiology. Biochemistry. Anatomy.

DECEMBER, 1944.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Tooth replacement in Brewer's mole. W. R. Eadie (*Anat. Rec.*, 1944, 89, 357—359).—In 5-day-old moles no teeth are visible on the jaw surfaces but serial sections revealed the development of both temporary and permanent dentitions. The form and arrangement of these teeth are described. At 8—10 weeks old the permanent teeth were not fully erupted and some of the temporary teeth were still in place and visible in the jaws beside the permanent teeth. The temporary teeth are held in place by the gum membranes only and are possibly never functional. W. F. H.

Anatomy of reptilian heart. I. *Varanus monitor*. P. N. Mathur (*Proc. Indian Acad. Sci.*, 1944, 20, B, 1—26).—A detailed description of the heart of this saurian including a full survey of the literature on the structure of the reptilian heart. J. D. B.

Folds and creases of skin during childhood. E. Nassau (*Amer. J. Dis. Child.*, 1943, 66, 615—623).—The development and changes of these creases were studied. An abnormal pattern of the palm as an accompaniment of a congenital disease indicates a disturbance of intrauterine development; a normal pattern of the lines of the hand in a child suggests that owing to a defect or deficiency in the parental germ cells, a post-partum disturbance of development occurred. The pattern of the palm is involved only if the disease, or its anlage, can be traced back to an early stage of intrauterine development. The pattern of the hand is fixed *in utero* and is fully developed in the 6th month of pregnancy; it is not affected by diseases occurring during the later months of pregnancy or subsequently. All the changes are found in most patients more distinctly or even exclusively in the left hand. C. J. C. B.

Nature and occurrence of *cavum septi pellucidi*. I. Swenson (*Arch. Path.*, 1944, 37, 119—123).—The *cavum septi pellucidi* is a normal developmental structure produced by the lateral stretch of the corpus callosum. The *cavum* is larger and is found more frequently in children than in adults (54% of 50 unselected brains of infants and children and 42% of 50 unselected adult brains). No anatomical communication with the ventricular system could be demonstrated in normal brains. No ependymal or glial cells or choroid plexuses were found lining the *cavums* examined. The structure is only rarely responsible for clinical disturbances. C. J. C. B.

Roentgenological manifestations [and clinical symptoms] of rib abnormalities. H. A. Steiner (*Radiology*, 1943, 40, 175—178).—There were 59 cases with rib abnormalities in 38,105 roentgenograms showing ribs taken during a period of 12 years. Cervical ribs were present in 32, lumbar ribs in 17, bipartition or bifurcation in 5, synostosis in 5, tile-roof ribs in 4, rudimentary ribs in 5, and other abnormalities in 5 cases. E. M. J.

Simple method of X-ray pelvimetry. E. A. Gaber (*Amer. J. Obstet. Gynec.*, 1941, 41, 823—830). P. C. W.

Naegle pelvis. H. Thoms (*Amer. J. Obstet. Gynec.*, 1941, 41, 830—836).—Three cases are reported and discussed. P. C. W.

Comparative study of male and female pelves in children with consideration of aetiology of pelvic formation. D. G. Morton and C. T. Hayden (*Amer. J. Obstet. Gynec.*, 1941, 41, 485—495). P. C. W.

Variations of male sacrum; significance in caudal anaesthesia. G. S. Letterman and M. Trotter (*Surg. Gynec. Obstet.*, 1944, 78, 551—555).—In 553 male human sacra, 50% had hiatus canal sacralis reaching a level cephalad to the lower third of the body of the 4th sacral vertebra, 26% had deficiencies of the dorsal wall of the sacral canal permitting the passage of a needle, and in 4% the antero-posterior diameter of the sacral canal at the level of its hiatus was 2 mm. or less. P. C. W.

Suprascapular nerve block. H. M. Wertheim and E. A. Rovenstine (*Anesthesiology*, 1941, 2, 541—545).—Description of technique. G. P.

Regional anaesthesia for operations about neck and upper extremity. R. C. Adams (*Anesthesiology*, 1941, 2, 515—529).—Description of technique of deep and superficial cervical block, of the block of phrenic nerve, brachial plexus, of median, radial, and ulnar nerves. (Cf. A., 1944, III, 361.) G. P.

Regional anaesthetic procedures around vertebral column. T. H. Seldon (*Anesthesiology*, 1941, 2, 669—685).—Description of technique of single-dose and continuous spinal, of peridural and paravertebral block, of sympathetic block and splanchnic anaesthesias. G. P.

Repair of cranial defects by cast chip-bone grafts. J. M. Converse, C. D. Clarke, and H. Guidi (*J. Lab. clin. Med.*, 1944, 29, 546—559).—Chips of bone are taken at operation, cast together using blood clot, and fitted over the exposed defect. C. J. C. B.

Spina bifida and its associated skull defects. J. B. Hartley and C. W. F. Burnett (*Arch. Dis. Child.*, 1943, 118, 173—177).—Developmental anomalies of the vault bones of the foetal skull known as cranioleakia and craniofenestria have a frequent and little known association with spina bifida. C. J. C. B.

Arachnodactyly in four siblings, with pneumoencephalographic observations of two. H. D. Pasachoff, M. J. Madonick, and C. Drayer (*Amer. J. Dis. Child.*, 1944, 67, 201—204).—Air encephalography revealed internal hydrocephalus in one and some dilatation of the ventricular system in the other. The father and the paternal grandfather had elements of this disease and its transmission was through them. C. J. C. B.

Similar urogenital anomalies in identical twins. J. K. Lattimer (*Amer. J. Dis. Child.*, 1944, 67, 199—200).—A pair of 10-year-old twin boys with identical strictures of the urinary meatus are described. C. J. C. B.

Two cases of lower accessory lung in human subject. D. V. Davies and F. W. Gunz (*J. Path. Bact.*, 1944, 56, 417—427).—(5 photomicrographs.) C. J. C. B.

Acardius amorphous. M. D. Kapelman (*Amer. J. Obstet. Gynec.*, 1944, 47, 412—416).—A case is reported. P. C. W.

Ductus caroticus in pigeon. A. P. Mathew (*Current Sci.*, 1944, 13, 213—214).—Three cases of abnormal persistent ductus caroticus in the pigeon are recorded. J. D. B.

Probable case of foetal gigantism in bovine. S. J. Roberts (*Cornell Vet.*, 1943, 33, 370—371).—An emphysematous foetus weighing 145 lb. was removed by Caesarian section from a Holstein heifer weighing 850 lb. E. G. W.

Growth studies with Ayrshire cattle. I. Normal body weights and heights at shoulders for Ayrshire cattle. G. A. Bowling and D. N. Putnam (*J. Dairy Sci.*, 1943, 26, 47—52).—Tables and graphs of data collected from 407 cattle are given. N. J. B.

Hyperossification of long bones in rats produced by large doses of oestradiol benzoate.—See A., 1944, III, 735.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Functional structure of valve of foramen ovale and problem of circulation of blood through the foramen in higher mammals and man. V. N. Schedenov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 40, 372—374).—The presence of cardiac musculature in the valve is recorded and differences between the shape and size of the foramen in man and other mammals are described. The human foramen ovale is characterised by its large size and its round shape. The large size in the human is attributed to the relatively larger diameter of the human inferior vena cava which is in turn attributed to the relatively larger size of the human pelvis and inferior extremities and, possibly, to a greater return of blood from the human placenta. J. D. B.

Development of testis in ring-necked pheasant. C. M. Kirkpatrick and F. N. Andrews (*Anat. Rec.*, 1944, 89, 317—324).—Spermatogenesis is closely correlated with four testicular growth phases. Up to the 81st day after hatching there is an increase in wt., and seminiferous tubules are composed of spermatogonia and a few primary spermatocytes. From the 81st to the 144th day there is a further increase in wt. and the production of spermatozoa. Following this phase until the 236th day there is a gradual involution when tubules contain only spermatogonia and a few primary spermatocytes. 786

Final development to mature testis size with full spermatogenesis occurred at the 257th day approx. Full breeding condition of the testes was maintained until the 362nd day when the last autopsy was made. W. F. H.

Heterochrony in primordia of segmental organs. S. V. Emelianov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 30, 766—769).—A discussion of the problem of heterochrony in development with the conclusion that four factors are concerned in the determination of the time in ontogeny at which the primordium of a particular organ appears. The factors are (1) historical (phylogenetic); (2) functional; (3) correlative; and (4) the general "tempo" of differentiation. The influence of the time of appearance of the primordium of an organ on its definitive characters is also discussed. J. D. B.

Organiser fields of mesoderm in Amphibia. G. V. Loposchov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 30, 770—774).—An analysis of the distribution of the various inductive abilities of the different parts of the mesoderm in *Triton* and *Amblystoma*. J. D. B.

Regeneration of ectoderm of gill primordia in axolotl. F. Murtasi and M. Sosnina (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 84—86).—The late tail-bud stage is a crit. period for regeneration of external gills in the axolotl. This period was investigated experimentally and compared with earlier and later stages, with the conclusion that the depressed regenerative capacity during the crit. period is due to the peculiar nature of the period itself and not to the influence of differently determined material substituting for the removed gill material. J. D. B.

Restitution of regenerative capacity of a region by grafts from other regions. M. I. Efimov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 406—408).—Experiments on axolotls demonstrate the rôle of grafts on wound surfaces in stimulating the regional tissues to regenerate. J. D. B.

Parts of regeneration territory of a forelimb necessary for its restitution. M. I. Efimov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1944, 42, 135—137).—Experiments on axolotls are recorded which show that the participation by the muscles of a regeneration territory is indispensable in the process of restitution of an extremity. J. D. B.

Ontogenesis of sex differences in susceptibility in *Drosophila melanogaster*. P. G. Svetlov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 395—397).—The sex difference (much greater in male) in susceptibility to various injurious factors arises during ontogeny but it is not due directly to the presence of the male set of chromosomes for it is not shown by larvæ. It is not, however, confined to the imaginal instar but can be traced back to earlier ontogenetic stages. It is concluded that the increased male susceptibility is a character which develops in association with sex differentiation. J. D. B.

Elimination of embryonic diapause in *Bombyx* by exposure to sublethal thermal doses. A. M. Emme (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 33, 427—428). J. D. B.

Growth of insect populations with successive generations. J. Davidson (*Austral. J. Exp. Biol.*, 1944, 22, 95—103).—Growth trends in natural populations of *Smynturus viridis*, L., and *Thrips imaginis*, Bagnall, are discussed in order to show the relation between growth in insect populations with incomplete overlapping generations and those species in which complete overlapping occurs. J. N. A.

III.—PHYSICAL ANTHROPOLOGY.

Physical development of negroes. IV. Onset of puberty. N. Michelson (*Amer. J. phys. Anthropol.*, 1944, [ii], 2, 151—166; cf. A., 1944, III, 449).—Negroes have a later onset of puberty than whites. In the north of the United States negroes mature earlier than in the south. In the West Indies puberty occurs later than in the south of the United States. The age at puberty is not a chronologically stable phenomenon, but is linked with the socio-economic status of the respective populations and shows similar vals. for whites of different origin as well as for negroes belonging to analogous income groups. The "economically privileged" mature earlier than the "underprivileged," irrespective of race or climate. W. F. H.

Physical type and mental character. Study of correlation between racial types and types of psychotic reaction. D. P. Gamble (*Amer. J. phys. Anthropol.*, 1944, [ii], 2, 195—220).—The high correlation between certain types of psychoses and certain racial types, together with factors of age and development, suggest that the constitutional aspect is of prime importance. W. F. H.

Distribution of A_1 - A_2 - B - O , M - N , and Rh blood factors among negroes in New York City. A. S. Weiner, R. B. Belkin, and E. B. Sonn (*Amer. J. phys. Anthropol.*, 1944, [ii], 2, 187—194).—Groups O and B are more frequent, while group A is less frequent, among negroes than whites. Sub-group A_2 is relatively more common among group A negroes than among A whites. No significant difference in the distribution of the M - N types among negroes and whites was observed. Disproportion between the races in the incidence of the Rh type was as high as 10 or 20 to 1. This finding suggests that

tests for Rh blood types might be used as an index of the purity of a negro population. W. F. H.

Absence of correlation in New Zealand between blood groups and dental decay, allergy, and certain character traits. E. Philipp (*Amer. J. phys. Anthropol.*, 1944, [ii], 2, 147—149).—No significant correlation between medical grading, dental decay, type of personality, and blood groups was found in a group of 1640 New Zealand soldiers. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Preimplantation changes in uterine mucosa of cat. A. B. Dawson and B. A. Kusters (*Amer. J. Anat.*, 1944, 75, 1—37).—The histology of the luteal phase (first and second week of preimplantation period) is described with special reference to the epithelium, uterine glands, glycogen deposition and release, occurrence of fat, and mitotic activity. During anestrus the epithelium is of a low columnar or cuboidal type and the uterus is normally quiescent. Increase in cell height and glandular activity occurs during proestrus. At oestrus there is marked hypertrophy of all elements. By the 4th day after mating there is basal deposition of glycogen and mitosis reaches a max. At the 7th day glycogen deposit reaches a max. Glycogen decreases in amount by the end of the second week and the glands enter on a secretory phase which persists in non-implantation areas after implantation. The period of growth of the corpus luteum coincides with the period of endometrial transformation preceding implantation. W. F. H.

Argentaffin cells of gastric mucosa of rat. A. B. Dawson (*Anat. Rec.*, 1944, 89, 287—294).—A high incidence of argentaffin cells is recorded in the gastric mucosa. In the pyloric glands these cells are often typically intraepithelial. In the fundal mucosa they are extrac epithelial or interstitial and their position appears to be the resultant of many factors and is not necessarily related to their place of origin. The discrepancy between the observations recorded and those of other workers is ascribed to the completeness of the impregnation of argentaffin cells by the Bodian protargol technique employed. W. F. H.

Microscopic examination of mammalian hairs, with special reference to cuticular scales. F. M. Duncan (*J. Roy. Microscop. Soc.*, 1943, 63, 85—88).—The hairs are cleaned in a 1:1 mixture of ethyl alcohol and ether and examined under the microscope, special attention being paid to the illumination. The prep. and use of suitable stops are described. When scales are difficult to observe on a dry slide, the hairs are gently bedded on a slide thinly coated with glycerol jelly, care being taken not to cover them completely. C. S. W.

Photomicrographic studies of keratin fibres. J. L. Stoves (*J. Roy. Microscop. Soc.*, 1943, 63, 89—90).—Photomicrographs of the hairs of the jackal, beaver, Russian kitfox, and ermine are given. C. S. W.

Volume relations of nucleus in Apodan spermatogenesis. B. R. Seshachar (*Proc. Indian Acad. Sci.*, 1943, 17, B, 138—142).—In several species of *Apoda* the vol. of the nucleus is reduced by 80—95% from the spermatid to fully formed sperm. The nuclear vol. of the fully formed sperm is nearly the same for all the species of *Apoda*. I. C.

Characteristics of growth *in vitro* of processes of sensory neurones. L. S. Sutulov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 30, 764—765).—A description of the behaviour of the processes of cells explanted from dorsal root ganglia of embryos and early post-natal stages of the rabbit. Branching of the processes and the formation of collaterals are recorded. J. D. R.

Growth and transformations of glial and ependymal cells of spinal cord *in vitro*. N. Chlopin (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 87—89).—An extension of work already reported (A., 1944, III, 5, 92) on the growth in tissue culture of neuroglia and ependyma. J. D. B.

***In vitro* behaviour of osteoclasts and problem of their origin.** A. V. Rumjantzev (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, 33, 429—432).—Parathyroid hormone causes the production of osteoclasts in bony tissues both *in vivo* and *in vitro*. Fragments of the femur of 12—16-day chick embryos were explanted in the plasma of a hen previously saturated with parathormone and the resulting cultures were studied for periods of up to 15 days. Study of the histogenetic changes in the cultures leads to the conclusion that the only source of osteoclasts is the osteogenetic mesenchyme, of which they represent sp. cellular differentiations. They are not derived from fibroblasts, osteoblasts, chondroblasts, histiocytes, or hæmocytoblasts. J. D. B.

X-Ray sensitivity changes in meiotic chromosomes and nucleic acid cycle. A. H. Sparrow (*Proc. Nat. Acad. Sci.*, 1944, 30, 147—153).—Using the no. of chromosome aberrations as a measure of sensitivity to X-rays, the relative effect of radiation on different stages of meiosis and on resting nuclei of *Trillium* was investigated. Sensitivity is low in early prophase and in resting nuclei. Pachytene is

twice as sensitive, metaphase six, and anaphase nine times as sensitive as early prophase. As the stages of high sensitivity also have a high content of deoxyribose-nucleic acid and stages of low sensitivity a low content it is concluded that radiosensitivity can be correlated with nucleic acid metabolism and that non-random breaks in heterochromatic regions may be associated with a difference in the amount of deoxyribose-nucleic acid in such regions as compared to the adjoining euchromatic chromatin. The relationship of tumour radiosensitivity to nucleic acid is also discussed. J. D. B.

Chromosome size in normal rat organs in relation to B vitamins, ribonucleic acid, and nuclear volume. J. J. Bieseke (*Cancer Res.*, 1944, 4, 529—539).—Chromosome sizes in normal rat organs vary with nuclear vol. but do not form a polymeric series because change in average vol. from one tissue to another is not by discontinuous doublings and because the diploid chromosome set in all the organs carries the same max. no. of 6 plasmosomes. The average chromosome vol. does not vary in accordance with cytoplasmic concn. of ribonucleic acid or with relative development of heterochromatin and plasmosomes. The size of the mitotic chromosome is not determined by the quantity of polynucleotides it carries. The average chromosome vol. is closely paralleled by the total concn. of B vitamins, with the exception of inositol. The average chromosome vol. in adult rat tissues decreases in the order: liver, kidney, adrenal, lung, small intestine, spleen. It is suggested that the difference in chromosome size from one normal cell type to another depends on the development of the euchromatin. The greater is the development of euchromatin the larger are the chromosomes and the greater is their synthesis of enzymes and hence the greater is the bound vitamin capacity of the organ. F. L. W.

Constitution of mitochondria and microsomes and distribution of nucleic acid in cytoplasm of leukæmic cell. A. Claude (*J. Exp. Med.*, 1944, 80, 19—29).—Rat leukæmic tumour cell mitochondria were isolated by centrifugation at relatively low speed. They contained N 11.5%, P 1.6%, and lipins 27%; 75—80% of the lipins are present as phospholipins; ribose-nucleic acid tests were positive. Microsomes were separated by centrifugation at 18,000 g. Their high P content is related to the marked basophilia of the cytoplasm of leukæmic cells. Ribose-nucleic acid occurs in the cytoplasm of leukæmic cells only in association with mitochondria and microsomes. A. S.

Specific reaction of phosphatide [of brain tissue]. G. Alsterberg (*Arkiv Zool.*, 1940, 32, A, No. 12, 13 pp.).—Brain tissue (cow) is extracted successively with aq. acetone and water (carnithine, fraction), acetone (cholesterol fraction), and ethanol, ether, methanol, and CHCl_3 (combined as third fraction), the residue being the dry-substance fraction. These fractions are tested for their reducing activity on CNI in presence of AgNO_3 , the amounts of CNI and Ag remaining in solution after incubation for 3 days at low temp. being determined. The third fraction has the greatest reducing power, that of the residue being smaller and that of the carnithine and cholesterol fractions negligible. The active reducing agents are the phosphatides, mainly by virtue of the colamine and choline amino-groups. Experimental observations on the probable mechanism of the reduction are discussed and the application of the reagent to histology is indicated. F. O. H.

Occurrence and physiology of phosphatides. G. Alsterberg (*Arkiv Zool.*, 1941, 33, B, No. 8, 8 pp.).—The author's histological method (preceding abstract) is applied to brain (cow) and other tissues and the results are discussed with reference to the distribution of cholesterol, lecithin, and cephalin. F. O. H.

Sudanophil fat in dog testis. L. Collery (*Proc. Roy. Irish Acad.*, 1944, 50, B, 15—22).—Specimens of normal testis from 20 dogs were Ag-impregnated and stained with Sudan IV (fixation and impregnation by Da Fano and Aoyama methods, embedding in gelatin, and cutting frozen sections) all within 48 hr. Sudanophil fat was present in Leydig cells, free among the interstitial cells, in the Sertoli cells, and in the residual cytoplasm of the spermatids, becoming free in the lumen of the tubes when this disintegrates. It is believed that the fat assumes a non-sudanophil form in the developing germ cells. Transformation of the Golgi remnant in the spermatid into sudanophil fat was not noted. The more active is the tubule the greater is the amount of fat in the spermatid level and the less the amount in the Sertoli cells and vice versa. P. C. W.

Cellophane strip method adapted for preparation and study of Marchi-treated serial sections. G. L. Rasmussen (*Anal. Rec.*, 1944, 89, 331—338).—The method described eliminates the placing of serial sections between paper strips or glass plates and the subsequent dehydrating steps prior to mounting. It also provides a direct and rapid means of tracing degenerated fibres. The method can be applied to other than Marchi-treated material. W. F. H.

Use of Mallory's phosphotungstic acid hæmatoxylin for staining intestinal protozoa. H. L. Ratcliffe and P. V. Parkins, (*J. Lab. clin. Med.*, 1944, 29, 534—535).—Fæcal smears are prepared in the usual way and fixed in Schaudinn's fluid for 1—24 hr. HgCl_2 is removed from the smears, which are washed in 70% alcohol to remove I, washed in water, stained in Mallory's phosphotungstic

acid hæmatoxylin for 20—30 min., washed in running water for 5 min. or until the smears become blue, and dehydrated slowly in 95% and abs. alcohol. Cytoplasm of the trophozoites of amœbæ and flagellates appear pale blue and the nuclei darker blue, but within the cysts, nuclei are much more clearly stained than usual, chiefly because the cytoplasm is lightly coloured. C. J. C. B.

New immersion oil ("Polyric"). J. E. McCartney (*J. Path. Bact.*, 1944, 56, 265—266).—1 part of polymethylstyrene is mixed with about 2 parts of castor oil to bring the mixture to n_D^{20} 1.515. Polyric oil is a neutral, clear, colourless fluid with a slight odour, not so thick as ordinary cedarwood immersion oil, but does not run when the microscope stage is inclined. In the cold it becomes slightly more viscous, but even after being kept in the refrigerator it shows no cloudiness and still remains fluid enough to use. It will not dry on the objective or on the slide, even after months. The oil is easily removed and is freely sol. in xylol. C. J. C. B.

V.—BLOOD AND LYMPH.

Effects of sulphonamide drugs on blood. R. R. Kracke (*Amer. J. clin. Path.*, 1944, 14, 191—199).—A review. C. J. C. B.

Rôle of diet in blood regeneration. A. Biester and J. M. Leichsenring, (*Univ. Minnesota, Agric. Exp. Stat. Tech. Bull.* 153, 1942, 34 pp.).—The effects of certain nutrients and foods on the recovery of dogs from hæmorrhagic anæmia were studied. The basic synthetic ration was modified by substituting the heat-stable factors of yeast or the alcohol-sol. factors of yeast for untreated yeast; by replacing the Fe^{III} citrate with Fe^{III} NH_4 citrate; and by adding ascorbic acid. In subsequent experiments a part of the synthetic diet was replaced by autoclaved wheat, beef heart, beef muscle, or beef liver; by raw liver; by thiamin and autoclaved liver; and by liver heated to various temp. Hæmoglobin production and red cell vol. regeneration were most satisfactory when autoclaved yeast was introduced into the ration immediately following a control based on synthetic diet, and were least satisfactory when autoclaved yeast or wheat was included in the diet. When some essential material from autoclaved liver was supplied, reserves built up during the control period became available. Mean cell diameter and mean corpuscular vol. vals. indicated a marked microcytosis at the beginning of each experimental period. Red cell diameter and mean corpuscular vol. varied in opposite directions in many of the tests. Diameter showed the greatest increase when the diet included raw liver or liver which had not been heated above 100° , and the greatest decrease in 2 series of experiments in which autoclaved liver was fed. The most striking increase in mean corpuscular vol. occurred when thiamin was added to the autoclaved liver diet. Thus the restoration of total red cell vol. and hæmoglobin is governed by a different set of factors from those which determine the return of red cell diameter or individual cell vol. to pre-hæmorrhagic levels. C. J. C. B.

Thyroid gland and hæmopoiesis.—See A., 1944, III, 728.

Relation of thiamin to blood regeneration.—See A., 1944, III, 782.

Changes in circulating blood in man following blood loss or transfusion of concentrated red cells. M. Dyson, G. Plaut, and J. Vaughan (*Quart. J. Exp. Physiol.*, 1944, 32, 255—267).—Observations on red cell count, hæmoglobin concn., mean corpuscular vol., serum-protein concn. and plasma vol. in a 2-hr. period following the removal of 540 c.c. of blood were made on 8 normal subjects and following the transfusion of conc. red cells on 8 anæmic subjects. Plasma dilution occurred in 7 out of 8 subjects after hæmorrhage; this was associated with an increase in mean corpuscular vol., suggesting the absorption of fluid by the red cells. There was no increase in serum-protein, but a fall in some cases. Blood loss may occur without change in hæmoglobin concn. The amount of fluid absorbed by the red cells must be taken into account when estimating the amount of fluid shifted from the tissues into the circulation. There are considerable individual variations in the response to bleeding or administration of conc. red cells. A. S.

Ligation of thoracic duct and post-hæmorrhagic plasma-protein level. CoTui, I. S. Barcham, and B. G. P. Shafriff (*Surg. Gynec. Obstet.*, 1944, 79, 37—40).—Following bleeding of 25% of the estimated blood vol. in dogs the level of plasma-protein was restored to normal within 24—48 hr. If the thoracic duct was ligated before the bleeding then the normal level was restored only after 8 days. The ligation had little effect on the fall in hæmatocrit val. produced by the bleeding. P. C. W.

Emergency transfusions of blood and blood derivatives. J. M. Vaughan (*J. Amer. Med. Assoc.*, 1943, 123, 1020—1025).—A review. C. A. K.

Viscose tubing for transfusions. H. Naftulin, A. M. Wolf, and S. O. Levinson (*J. Amer. Med. Assoc.*, 1943, 123, 321—324).—Viscose tubing is strong, pyrogen-free, impermeable to pyrogens and bacteria, and suitable for use on one occasion. Pyrogenic reactions occurred in 0.64% of 1137 transfusions. C. A. K.

Cold autohaemagglutinins following atypical pneumonia producing acrocyanosis. F. C. Helwig and E. J. Freis (*J. Amer. Med. Assoc.* 1943, 123, 626—628).—Case report. C. A. K.

Reversibility of sensitisation of erythrocytes. G. M. Kalmanson and J. J. Bronfenbrenner (*J. Lab. clin. Med.*, 1944, 29, 684—686).—Red cells sensitised with an excess of amboceptor may be rendered completely resistant to complement, if the antibody is digested away by means of papain. These previously sensitised cells, after digestion by papain, can now be resensitised with a min. of amboceptor. C. J. C. B.

Haemoglobin content of blood of mice of the RIII and CBA strains.—See A., 1944, III, 748.

Mobilisation of iron in haemochromatosis with administration of various chemicals. H. R. Fishback (*J. Lab. clin. Med.*, 1944, 29, 742—744).— $\text{Na}_2\text{S}_2\text{O}_3$, NH_4Cl , and NaHCO_3 given over periods of 7 days did not mobilise Fe from stores in a case of haemochromatosis. C. J. C. B.

Survival of red cells labelled with radioactive iron and stored in citrate. J. F. Ross and M. A. Chapin (*J. Amer. Med. Assoc.*, 1943, 123, 827—829).—The survival *in vivo* of transfused red cells kept in citrate for varying times was studied by using donor red cells labelled with radioactive Fe. The survival of erythrocytes after transfusion varies inversely with the duration of storage. After 10 days' storage practically no red cells remain 24 hr. after transfusion. The Fe of destroyed transfused erythrocytes is rapidly and preferentially utilised for further synthesis of haemoglobin, suggesting that fresh haemoglobin is built up from fairly complex remnants of destroyed haemoglobin. C. A. K.

Separation and concentration of isohaemagglutinins from group-specific human plasma. L. Pillemer, J. L. Oncley, M. Melin, J. Elliott, and M. C. Hutchinson (*J. clin. Invest.*, 1944, 23, 550—553).—A sp., stable, and highly active isohaemagglutinating material was prepared as a by-product of the human serum-albumin programme for the forces. A concn. of isohaemagglutinating activity 16 times that in plasma was obtained. C. J. C. B.

Appraisal of isohaemagglutinin activity. E. L. DeGowin (*J. clin. Invest.*, 1944, 23, 554—556).—All 14 preps. containing isohaemagglutinins, conc. from pooled human plasma of appropriate blood group, but unselected for agglutinin titre, made by the method of Pillemer and co-workers (see preceding abstract), were found acceptable as grouping sera by a panel of consultants, working under the auspices of the Sub-committee on Blood Substitutes of the National Research Council. C. J. C. B.

Stabilising serum for blood typing. T. B. Ray and T. Nelson (*J. Lab. clin. Med.*, 1944, 29, 766).—A method of dehydrating grouping sera in Cellophane tubes before an electric fan is described. C. J. C. B.

Macroscopic determination of blood groups A and B. L. L. Swan (*J. Lab. clin. Med.*, 1944, 29, 763—765).—A simple method is described. C. J. C. B.

Serum that discloses the genotype of some Rh-positive people. R. R. Race and G. L. Taylor (*Nature*, 1943, 152, 300).—Serum obtained from the Rh-positive mother of an erythroblastotic baby, containing anti-Rh, failed to react with 20% of the bloods. These must be RhRh, and represent half the Rh-positive people (38% of the population). Rules concerning parentage in families with erythroblastosis fetalis are formulated. The existence of at least 3 allelomorphs (Rh_1 , Rh_2 , and rh) and probably a fourth (Rh_3) is necessary to explain known data. E. R. R.

Rh factor in intragroup blood transfusion reactions. B. C. Butler, D. N. Danforth, and J. Scudder (*Surg. Gynec. Obstet.*, 1944, 78, 610—617).—A severe reaction in a Rh-negative obstetric patient followed transfusion of 100 ml. of Rh-positive blood. Chill and fever, haemoglobinuria, jaundice, oliguria, and convulsions were the chief symptoms. The blood chemical changes are detailed and the literature is reviewed. P. C. W.

4-Hydroxycoumarins [as anticoagulants].—See A., 1944, II, 345.

Blood-prothrombin levels in newborn. C. P. Huber and J. P. Shrader (*Amer. J. Obstet. Gynec.*, 1941, 41, 566—574).—The physiological fall in prothrombin activity which reaches a max. 3 days after birth is prevented by the administration of 2-methyl-1:4-naphthoquinone to the newborn infants or to their mothers during labour. P. C. W.

Vitamin-K administered to mother as prophylaxis against haemorrhagic disease of new-born. A. C. Beck, E. S. Taylor, and R. F. Colburn (*Amer. J. Obstet. Gynec.*, 1941, 41, 765—773).—Prothrombin activity was 70% of normal in 100 children 1 day post-partum; there was a further fall on the 2nd day and normality was not regained until the 6th day. Administration of vitamin-K to the mothers of 100 other children (2 mg. of 2-methyl-1:4-naphthoquinone by mouth $\frac{1}{4}$ —44 hr. before delivery) prevented the fall. P. C. W.

Biological conversion of active non-quinones of vitamin-K into quinone form.—See A., 1944, III, 754.

Mechanism of action of vitamin-K and of its synthetic analogues.—See A., 1944, III, 754.

Action of oestrogens on haemophilia. R. Turpin, F. Boulière, and R. Sasser (*Compt. rend.*, 1943, 216, 751—752).—Injection of a solution of oestradiol benzoate in oil has a more marked effect in reducing the coagulation time of the blood than whole ovarian gland extract. Stilboestrol is still more effective and its effects are more prolonged. H. G. R.

Sources of blood platelets and their adhesiveness in experimental thrombocytosis. H. P. Wright (*J. Path. Bact.*, 1944, 56, 151—159).—In the intact rabbit the platelets increased after intravenous injection of solutions of both pyridine and adrenaline; the thrombocytosis produced by pyridine was accompanied by increased stickiness of the platelets, while that caused by adrenaline showed no such alteration. After splenectomy, the platelet count rose for 7—10 days and was accompanied by an increase in the stickiness. During this post-operative period pyridine evoked a response which was least marked when the no. and stickiness of the platelets were max. As the platelet count returned towards normal, the effect of pyridine again became pronounced. After splenectomy, adrenaline had no effect on the no. or stickiness of the platelets. It is suggested that adrenaline causes a rapid outpouring of mature platelets from depots in the spleen, while pyridine (like trauma) increases the output of new platelets from the bone marrow. C. J. C. B.

Methaemoglobinemia from 2-anilinoethanol. A. D. Bass, L. H. Frost, and W. T. Walter (*J. Amer. Med. Assoc.*, 1943, 123, 761—763).—2 cases of industrial exposure to β -anilinoethanol with methaemoglobinemia are described. The substance also produced cyanosis in dogs, but not in rabbits or mice. C. A. K.

Sickle-cell disease. R. G. Murphy, jun., and S. Shapiro (*Arch. intern. Med.*, 1944, 74, 28—35).—Sickling is a property inherent in the susceptible erythrocyte. It is encouraged by coagulation of the blood specimen. Erythrocytes sickle at various sp. thresholds as determined by the ratio of dissociated to combined haemoglobin. As the cells age the sickling threshold becomes lower. Sickling may depend on the level of available K in the cell. A single test revealed that the red blood cells from the patient were twice as permeable to radioactive K ion as were normal erythrocytes. C. J. C. B.

Sickle-cell anaemia in pregnancy. A. J. Kobak, P. J. Stein, and A. F. Daro (*Amer. J. Obstet. Gynec.*, 1941, 41, 811—821).—Six cases are reported and the literature is reviewed. P. C. W.

Chronic haemolytic anaemia with autoagglutination and hyperglobulinemia. R. R. Kracke and B. J. Hoffman (*Ann. int. Med.*, 1943, 19, 673—684).—A fatal case is reported of atypical anaemia with autoagglutinins and haemolysis and hyperglobulinemia with positive serological tests for syphilis. A. S.

Iron excretion and metabolism in man. R. A. McCance and E. M. Widdowson (*Nature*, 1943, 152, 326—327).—The case of a patient suffering from very severe haemolytic anaemia is quoted as supporting the view that Fe is not excreted by any of the organs of the body. The patient showed slight positive balance (0.4 mg. per day), and practically none of the 8 g. of Fe administered in the form of transfusions was excreted. E. R. R.

Bone marrow procedure for assay of liver extracts for anti-pernicious anaemia activity. C. M. Young and H. D. Bett (*J. Pharm. Exp. Ther.*, 1944, 81, 248—253).—Experiments of Pace and Fisher (*A.*, 1942, III, 632) were repeated and not confirmed. G. P.

Radio-phosphorus—satisfactory agent for treatment of polycythemia and associated manifestations. L. A. Erf and H. W. Jones (*Ann. int. Med.*, 1943, 19, 587—601).—Intravenous administration of 7—11 Mc. of ^{32}P in 11 patients suffering from polycythemia, none of whom had previously received treatment with Pb compounds or Roentgen spray, produced clinical and haematological remissions. The associated skin lesions (acne urticata polycythemia, chronic dermatitis herpetiformis) disappeared, indolent leg ulcers healed, the mean corpuscular vol. increased, and the abnormally prolonged coagulation time decreased. There was no jaundice and no increase in urinary urobilinogen excretion. A. S.

Effect of 1:2:5:6-dibenzanthracene on lymph nodes of rat. A. Lazintzki and D. L. Woodhouse (*J. Anat., London*, 1944, 78, 121—129).—1:2:5:6-Dibenzanthracene in the form of an aq. colloidal solution was injected, over a period of weeks, into pre-adult male rats of various strains. During the experiments the animals remained in good health and continued to grow. The lymph nodes of the animals treated were transformed into haemolymph nodes which macroscopically were red or brownish-red in colour. Microscopically the nodes showed widening of the lymph spaces, the presence of red corpuscles in the spaces, and increase in the no. of free macrophages. W. J. H.

Influence of pituitary adrenotropic hormone on lymphoid tissue in relation to serum-proteins. Influence of hormones on lymphoid tissue structure and function. Rôle of pituitary adrenotropic hormone in regulation of lymphocytes and other cellular elements of the blood.—See A., 1944, III, 733.

Differentiation of leucocytes in the counting chamber by propylene glycol-aqueous stains. T. G. Randolph (*Amer. J. clin. Path., Tech. Sect.*, 1944, 8, 48—52).—A propylene glycol-aq. stain (cf. A., 1943, III, 713) when used as a white blood cell diluting fluid permits an accurate quant. counting chamber differentiation of polymorphonuclear, eosinophilic, and mononuclear leucocytes. C. J. C. B.

Leucocyte count in labour. J. R. Wolff (*Amer. J. Obstet. Gynec.*, 1941, 41, 611—616).—A rise in the leucocyte count is recorded during labour and is greater in primiparae than in multiparae. The rise is correlated with uterine activity. P. C. W.

Leucocytosis as index of pyrogenicity in fluids for intravenous use. G. Young and F. A. H. Rice (*J. Lab. clin. Med.*, 1944, 29, 735—741).—Leucocytosis was the most sensitive criterion in the dog of the presence of pyrogenic substances in distilled water; it appeared in 3—6 hr. after intravenous administration and lasted for many hr. Neutrophilia, leucopenia, and hyperpyrexia are less sensitive indices. The least vol. of solution producing a positive response contained 0.056 µg. of N. The degree of leucocytosis was approx. proportional to the amount of pyrogen in the more dil. preps. C. J. C. B.

Inhibition of development of spontaneous leukæmia in mice by underfeeding.—See A., 1944, III, 746.

Anaphylaxis to serum-proteins in guinea-pig.—See A., 1944, III, 779.

Chemical, clinical, and immunological studies on products of human plasma fractionation. I. Characterisation of the protein fractions of human plasma. E. J. Cohn, J. L. Oncley, L. E. Strong, W. L. Hughes, jun., and S. H. Armstrong, jun. (*J. clin. Invest.*, 1944, 23, 417—431).—A general review and introduction to the 22 papers following. Six different components of human plasma were separated by electrophoretic methods. C. J. C. B.

Electrophoretic and ultracentrifugal studies of solutions of human serum-albumin and immune serum-globulins. J. W. Williams, M. L. Petermann, G. C. Colovos, M. B. Goodloe, J. L. Oncley, and S. H. Armstrong, jun. (*J. clin. Invest.*, 1944, 23, 433—436).—Serum-albumin solutions contain no fibrinogen, β - and γ -globulin. The electrophoretic analyses carried out on 162 preps. of plasma fractionated to increase the albumin and immune globulins indicate that the albumin is routinely conc. by this method of fractionation from 55% in plasma to 98.5%. The γ -globulin content of 35 preps. of immune globulin was increased from 11% in plasma to 87% and in most of the more recent preps., to over 95%, the main impurities being β -globulin and albumin. An average val. of very nearly 20% of fast-moving material, in large part γ -globulin, was observed in the ultracentrifuge, the amount of this material being quite uniform in nearly all preps. C. J. C. B.

Amino-acid composition of plasma-proteins. E. Brand, B. Kassell, and L. J. Saidel (*J. clin. Invest.*, 1944, 23, 437—444).—Amino-acid analyses were carried out on normal human serum-albumin, the human γ -globulins of importance in immunity, a fraction rich in β -globulin, and human fibrinogen and fibrin. Comparable analytical studies on the serum-albumin of cattle and the horse are included for comparison. Highly significant differences in the amino-acid distribution were noted, among them being the high % of hydroxy-amino-acids in the γ -globulins, the very low content of tryptophan in the albumins, and the absence of methionine in horse serum-albumin. C. J. C. B.

Thermal stability of human serum-albumin. G. Scatchard, S. T. Gibson, L. M. Woodruff, A. C. Batchelder, and A. Brown (*J. clin. Invest.*, 1944, 23, 445—453).—The pH of human serum-albumin for the armed forces must be 6.8 ± 0.2 to preserve stability within 10% of the max. The NaCl concn. now used is 0.3M. Although albumin solutions should be kept in the cold, this is not essential unless they are to be stored for a long time or are to be subjected later to temp. well above 38°. C. J. C. B.

Influence of non-polar anions on thermal stability of serum-albumin. G. A. Ballou, P. D. Boyer, J. M. Luck, and F. G. Lum (*J. clin. Invest.*, 1944, 23, 454—457).—The thermal stability of serum-albumin in 25% solution was studied at 50°, 57°, and cloud-point temp. The capillary-tube cloud-point technique for studying protein coagulation is described. Various non-polar anions enhance the thermal stability of human serum-albumin, the effect increasing with increase in length of the fatty acid anion. C. J. C. B.

Osmotic pressure of plasma and of serum-albumin. G. Scatchard, A. C. Batchelder, and A. Brown (*J. clin. Invest.*, 1944, 23, 458—464).—The osmotic pressures of plasma and of serum-albumin at 25° were measured over ranges of concn. and pH much wider than the physiological. By extrapolation the mol. wt. of albumin is 69,000 and for plasma 90,000. This corresponds to a mol. wt. of 170,000 for the 40% of the protein which is not albumin. The osmotic pressure-concn. ratios increase rapidly with increasing concn. The vol. of fluid held in the blood stream by each g. of albumin is about 18 c.c. but varies with the protein concn. of the plasma. Each g.

of albumin is equiv. to 1.2 g. of plasma-protein or 20 c.c. of the current Red Cross citrated, pooled plasma. C. J. C. B.

Treatment of shock with concentrated human serum-albumin. J. V. Warren, E. A. Stead, jun., A. J. Merrill, and E. S. Brannon (*J. clin. Invest.*, 1944, 23, 506—509).—A conc. solution of human serum-albumin was given to 6 patients with circulatory failure associated with a decrease in blood vol. In each case, there was clinical improvement without evidence of any undesirable side effects. The increase in plasma vol. was commensurate with the predicted osmotic effect of the albumin. Determinations of the arterial pressure, the aortic pressure, and the cardiac output all revealed the beneficial effects of the albumin. C. J. C. B.

Concentrations of certain antibodies in globulin fractions derived from human plasma. J. F. Enders (*J. clin. Invest.*, 1944, 23, 510—529).—The fractionation of normal human plasma collected by the American Red Cross yields a gross fraction comprised of α -, β -, and γ -globulins designated "fraction II + III," which contains a large proportion of the antibodies reacting with a variety of pathogenic bacteria and their products, viruses, and the iso-antigens of the human blood groups conc. 4—10 times. The normal human γ -globulins were further separated and conc. 15—30 times in fraction II. This was found on immunologic assay to contain antibodies reacting with diphtheria toxin, streptococcal erythrogenic toxin, influenza A virus, mumps virus, and the H antigen of *E. typhosa*. Antibody reacting with the O typhoid antigen was present only in low titre in fraction II but was recovered in large amounts in fraction III-1, another derivative of fraction II + III. Immunologic assay of the antibodies in 62 preps. of fraction II, derived from plasma collected in various sections of the U.S.A., revealed a general uniformity of potency. There has, however, been an increase in influenza A antibodies following a recent epidemic of the disease. The titre of the antibodies of fraction I after prolonged storage and exposure to moderately elevated temp. is not significantly reduced under the experimental conditions described. C. J. C. B.

Use of concentrated normal human serum- γ -globulin (human immune serum-globulin) in prophylaxis and treatment of measles. J. Stokes, jun., E. P. Maris, and S. S. Gellis (*J. clin. Invest.*, 1944, 23, 531—535).—The serum- γ -globulin, separated and conc. by chemical fractionation of normal human blood, was used in studies on measles prophylaxis. With strict criteria of age, time of exposure, and amount of globulin, curves demonstrating the % of no measles of two age groups over a range of dosage were developed. The striking val. of fraction II of human globulin for protection against and attenuation of measles was evident. For size of dosage and ease of injection, γ -globulin fraction II surpasses other types of human immune bodies. In treatment dosages ranged from 5 to 35 c.c. and ages from 10 months to 34 years. Of 30 individuals injected after the rash had started, there was modification of the disease in 13. Of 31 individuals injected when Koplik spots were present, but no rash, the disease was modified in 24. In 2 of these individuals no rash developed. C. J. C. B.

Use of concentrated normal human serum- γ -globulin (human immune serum-globulin) in prevention and attenuation of measles. C. W. Ordman, C. G. Jennings, jun., and C. A. Janeway (*J. clin. Invest.*, 1944, 23, 541—549).—Human serum- γ -globulin (fraction II), separated and conc. by chemical fractionation of normal human blood, is a satisfactory prophylactic against measles. A controlled group of cases with exposure within the family gave a rate of 71% protection, 27% modification, and only 2% failure, among 62 inoculated children. Of 46 uninoculated controls, only 7% failed to contract measles, while 4% got mild measles, and 89% developed measles of average severity. In children, an intramuscular dose of 0.1 c.c. per lb. of body wt. within the first 5 days after exposure gave complete protection in most cases, with the present methods of prep. In order to produce attenuation of the disease, $\frac{1}{2}$ this dose should be administered during the first 5 days after exposure. After this, somewhat larger doses may be necessary. No significant untoward reactions were observed in any of the inoculated cases. C. J. C. B.

Clinical use of concentrated human serum-albumin in shock, and comparison with whole blood and with rapid saline infusion. A. Courmand, R. P. Noble, E. S. Breed, H. D. Lauson, E. De F. Baldwin, G. B. Pinchot, and D. W. Richards, jun. (*J. clin. Invest.*, 1944, 23, 491—505).—In patients who were not actively bleeding, or losing plasma into burned tissues or peritoneum, the albumin was well retained in the blood. In 9 cases (including 3 burns), an average of 62 g. of albumin was given and an average of 43 g. retained. The albumin remained in the circulating blood for at least 6 hr. when there was no continued blood or plasma loss at the site of injury. Albumin therapy was effective in producing recovery from shock. It increased right auricular pressure, arterial pressure, and cardiac output. Compared with treatment by whole blood transfusion, albumin therapy brought about a relatively larger cardiac output during recovery from shock. In cases of shock due to skeletal trauma or to hæmorrhage, where hæmodilution is regularly found, this increased cardiac output is a compensatory effect, since the

tissues can receive adequate O_2 only by more rapid circulation of the diminished amount of hæmoglobin in the blood. The persistence of acute anæmia in many cases, after albumin therapy, suggests that whole blood should be given subsequently, when available.

C. J. C. B.

Concentrated human serum-albumin. C. A. Janeway, S. T. Gibson, L. M. Woodruff, J. T. Heyl, O. T. Bailey, and L. R. Newhouser (*J. clin. Invest.*, 1944, 23, 465—489).—For use in shock, the standard Army and Navy package contains 25 g. of albumin in 100 c.c. of diluent, and is equiv. to 500 c.c. of citrated plasma is osmotic effect. When injected, it draws fluid rapidly into the circulation and has been successfully used in civilian hospitals to restore blood vol. in 91 cases of shock due to trauma, hæmorrhage, operations, and burns. Properly processed albumin does not produce reactions. Pyrogenic reactions were encountered in trials of certain lots, which were therefore rejected until the albumin was reprocessed to a satisfactory state. No evidence of sensitisation to either native or heated albumin (50° for varying periods) was found. Neither clinical nor pathologic evidence of damage from repeated albumin injections was observed, except in one case in which pulmonary oedema was attributed to overdosage (650 g. of albumin containing 1 : 10,000 merthiolate in 6 days). In a few hypoproteinæmic patients albumin did not appear in the urine after injection unless there was proteinuria, nor was its injection followed by an increase in urinary non-protein-N in hypoproteinæmic patients, indicating assimilation, since only a small portion of the injected albumin could be accounted for in the circulation. Very large amounts given in doses of 25 g. daily were needed to produce an appreciable rise of serum-albumin concn. in patients with chronic hypoproteinæmia. In cirrhosis of the liver, albumin raised the serum-albumin level but did not produce lasting benefit. In nephrotic patients, the injected albumin was largely excreted in the urine as protein; diuresis did not regularly result from albumin treatment but occurred coincidentally in 2 cases.

C. J. C. B.

Use of fibrin foam as hæmostatic agent in neurosurgery: clinical and pathological studies. O. T. Bailey and F. D. Ingraham (*J. clin. Invest.*, 1944, 23, 591—596).—Fibrin foam was tested under a variety of experimental conditions in monkeys. The tissue reactions were min. in all animals, including those in which the foam was implanted in conjunction with sulphadiazine and penicillin. The foam was used in 170 neurosurgical patients, under varying conditions. Its rapid hæmostatic action shortened many operations. In some instances, it has made successful operation possible when other hæmostatic agents would have been inadequate.

C. J. C. B.

Fibrin clots, fibrin films, and fibrinogen plastics. J. D. Ferry and P. R. Morrison (*J. clin. Invest.*, 1944, 23, 566—572).—Fibrin films and fibrinogen plastics are structural materials derived from the proteins of human plasma involved in the natural coagulation process. They may be prepared in a wide variety of shapes, sizes, and mechanical properties. In the latter characteristics, which depend largely on the proportion of protein present in the solid mass, the films and plastics may simulate different natural anatomical structures. It is possible to modify their resistance to proteolytic enzymes and their rates of absorption in living tissues.

C. J. C. B.

Absorption rates of fibrin films in tissue. P. R. Morrison and M. Singer (*J. clin. Invest.*, 1944, 23, 573—575).—The rates of absorption of fibrin films in tissue were measured. Persistence times ranging from less than 5 days for untreated fibrin film to more than 80 days for fully treated films were observed. For films of extended persistence time, an encapsulation occurs between 10 and 30 days after implantation. The choice of material for surgical use should be guided by the persistence time desired for each sp. application.

C. J. C. B.

Use of fibrinogen and thrombin in the surface treatment of burns. C. v. Z. Hawn, E. A. Bering, jun., O. T. Bailey, and S. H. Armstrong, jun. (*J. clin. Invest.*, 1944, 23, 580—585).—Observations of surgically denuded areas of animals and burns on humans show that human fibrinogen and thrombin mixtures have no deleterious effect on normal processes of repair. The use of preformed fibrin films, prepared from the proteins involved in the natural coagulation mechanism, is described in a small series of second- and third-degree burns. It is suggested that such films, particularly in the form of roll bandages, might prove a highly expedient fibrinogen-thrombin dressing for burns in the field, owing to simplicity and speed of application, and to lack of bulk for transportation.

C. J. C. B.

Development of fibrin foam as a hæmostatic agent and for use in conjunction with human thrombin. E. A. Bering, jun. (*J. clin. Invest.*, 1944, 23, 586—589).—A fibrous protein matrix of a wide range of mechanical and biological properties was prepared from the human plasma-proteins involved in the natural coagulation mechanism. This matrix is designed to combine the function of an absorbable tampon with thrombin activity for use in those instances of hæmorrhages where conventional surgical methods of hæmostasis are not entirely satisfactory. Fibrin foam for use with thrombin solution is the first of these to be available for wide-spread clinical use.

C. J. C. B.

Fibrin films in neurosurgery, with special reference to their use in the repair of dural defects and in the prevention of meningocerebral adhesions. O. T. Bailey and F. D. Ingraham (*J. clin. Invest.*, 1944, 23, 597—600).—Fibrin films were tested as a protective layer for central nervous system in a series of monkeys and patients. These materials were very satisfactory for the repair of dural defects and the prevention of adhesions between damaged nervous tissue and adjacent structures.

C. J. C. B.

Effects of feeding possible blood substitutes on serum-protein regeneration and weight recovery in hypoproteinæmic rat. P. R. Cannon, E. M. Humphrey, R. W. Wissler, and L. E. Frazier (*J. clin. Invest.*, 1944, 23, 601—606).—The efficiency of the protein is evaluated by its capacity to increase the concn. of serum-proteins and to produce a gain in wt. within a 7-day period in the hypoproteinæmic rat. This method of assay permits a separation of biologically adequate and inadequate proteins and gives information about differences of quality. A protein is considered to be good when the concn. of serum-proteins is significantly increased and is high in relation to the quantity of protein ingested. According to these criteria, bovine serum- γ -globulin is highly efficient, especially with respect to serum-protein regeneration. In fact, it practically equals dehydrated beef, the best protein so far tested. Cryst. bovine serum-albumin, although a fairly adequate protein, is less effective, and maize-germ protein compares favourably with both dehydrated beef and bovine serum- γ -globulin. In contrast, the incomplete proteins, gelatin and isinglass, possess no ability in either respect.

C. J. C. B.

Acidosis and alkalosis in obstetrics and gynaecology. W. T. Pride, J. R. Reinberger, and D. T. Holland (*Amer. J. Obstet. Gynec.*, 1941, 41, 412—416).—The CO_2 -combining power of the blood decreases during prolonged labour and returns to normal after parturition. In some cases this acidosis may be due to light feeding and is relieved by intravenous glucose. More often the condition is probably caused by the accumulation of lactic acid due to muscular activity. Dogs injected with lactic acid solutions developed hæmoglobinuria, respiratory disturbance, and occasional vomiting and death. Anæsthesia also reduced the CO_2 -combining power of the blood in dogs. Alkalosis may be corr. in dogs by intravenous injection of 1% lactic acid and acidosis by 2% $NaHCO_3$. Acidosis and alkalosis in obstetric patients may be similarly treated. Intravenous glucose and $NaHCO_3$ injections given together are fatal in dogs and man.

P. C. W.

Clinical significance of plasma-vitamin-A level. H. Popper and F. Steigmann (*J. Amer. Med. Assoc.*, 1943, 123, 1108—1114).—In 27 normal controls the plasma-vitamin-A level was 46 $\mu g.$ per 100 c.c. (mean), and the carotenoid level was 81 $\mu g.-%$ (mean). In severe hepatitis the -A level was 2.5 $\mu g.-%$ and the carotenoid level was 51 $\mu g.-%$, other diseases with liver damage showing intermediate vals. In pneumonia the -A level was 15 $\mu g.-%$ and the carotenoid level was 39 $\mu g.-%$, and in anæmia, gastrointestinal carcinoma, and other severe illnesses the vals. were often reduced. In renal disease both vals. may rise, e.g., -A to 82 $\mu g.-%$ and carotenoid to 101 $\mu g.-%$.

C. A. K.

Chromatographic investigation of β -carotene content of serum of newborn infant. H. Hoch (*Biochem. J.*, 1944, 38, 304—308).—The amounts of total carotenoids and β -carotene were determined in maternal and foetal serum at parturition. Total carotenoids in foetal serum varied from 8 to 29 $\mu g.$ per 100 c.c., and the proportion of β -carotene in the total was markedly lower in foetal serum in all cases than it was in maternal serum. The ratio of % of β -carotene in total foetal to the % of β -carotene in total maternal carotenoids was 0.53 : 0.72 in 7 and 0.40 : 0.37 in 2 cases. There is no significant variation in % of β -carotene in total carotenoids in maternal serum near term. (See also C., 1945, Part I.)

J. N. A.

Serum-tocopherol [relation to muscular dystrophy]. A. S. Minot and H. E. Frank (*Amer. J. Dis. Child.*, 1944, 87, 371—375).—Prolonged medication with liberal amounts of various vitamin-E preps. did not improve the clinical condition or decrease the creatinuria in 8 children with pseudohypertrophic muscular dystrophy. Serum-tocopherol was 0.73—1.28 mg.-% in untreated patients with muscular dystrophy, compared with 0.64—1.12 mg.-% for controls. After administration of -E to patients with dystrophy there was a prompt rise in serum-tocopherol level. The administration of supplemental -E to patients with muscular dystrophy is useless.

C. J. C. B.

Composition of human blood at Curitiba. N. Loureva (*Rev. Brasil. Quím.*, 1944, 17, 338, 341).—Blood at Curitiba (Brazil), altitude 900 m., contains Cl 0.370, Fe 0.054, K 0.190, Na 0.220, Ca 0.012, S 0.025, P 0.0042, Mg 0.0022, protein 18.000, lipins 0.750, carbohydrates 0.100, org. acids 0.0165, and other org. compounds 0.2561%.

F. R. G.

Blood level of adrenaline and related substances in various experimental and clinical conditions. W. Raab (*Exp. Med. and Surg.*, 1943, 1, 402—412).—The blood level of adrenaline and related pyrocatechol compounds in man increased after injection of adrenaline and insulin, physical exercise, and during tobacco smoking; a decrease was found after ingestion of glucose. High blood levels were

found in patients suffering from Cushing's disease, hypertrichosis, hyperinsulinism, and in 3 out of 12 diabetics; low levels were found in hypothyroidism and in 1 case of Simmonds' disease; normal vals. were obtained in pregnancy, hyperthyroidism, and obesity.

A. S.

Adenosine compounds and phosphates in blood of shocked rabbits. H. B. Stoner and H. N. Green (*J. Path. Bact.*, 1944, 56, 343—354).—Both in gravity "shock" and in shock following ischaemia of the hind limbs in the rabbit there is a significant rise in the blood of substances having an adenosine-like action on the guinea-pig heart. In both conditions there is a considerable increase in the blood-inorg. $\text{PO}_4^{'''}$. There is also a tendency for the blood- $\text{P}_2\text{O}_7^{'''}$ to rise, but the figures are too variable for satisfactory analysis. The possibility that these changes indicate an abs. increase in the adenosine triphosphate content of the blood following on tissue anoxia is considered.

C. J. C. B.

Cardiotoxic substances in blood and heart muscle in uræmia. W. Raab (*J. Lab. clin. Med.*, 1944, 29, 715—734).—Blood and heart muscle of anæmic patients contain excessive amounts of pyrocatechol compounds, probably of adreno-sympathetic origin. Their concn. was related to the presence of e.c.g. changes indicative of anoxia and signs of cardiac failure. The sera of uræmic patients had sp. toxic effects on the isolated frog heart and the intact rabbit heart. Similar effects were produced by certain pyrocatechol compounds and partly also by phenols.

C. J. C. B.

VI.—VASCULAR SYSTEM.

Fœtal electrocardiography and stethography. M. Dressler and S. N. Moskowitz (*Amer. J. Obstet. Gynec.*, 1941, 41, 775—791).—40 pregnant women were studied. The fœtal heart sounds were heard in all; the fœtal e.c.g. was obtained in 80%. The fœtal second sound in usually louder than the first and diastole longer than systole though they may be equal in tachycardia. E.c.g. with negative waves indicate a vertex presentation, those with positive waves a breech presentation.

P. C. W.

Heart beat of avian embryos. A. L. Romanoff (*Anat. Rec.*, 1944, 89, 313—316).—Changes in the rate of the heart beat of the developing embryo are almost identical in all species of gallinaceous birds studied (chicken, pheasant, and quail). During the first third of the developmental period the rate of the heart beat increases rapidly to approx. 220 beats per min. Then it falls slowly until near hatching time, when it is approx. 200 beats per min.

W. F. H.

Drug actions in spontaneously beating turtle ventricle indicating lack of innervation. E. P. Hiatt and W. E. Garrey (*Amer. J. Physiol.*, 1943, 138, 758—762).—Isolated turtle ventricle strips beat well in oxygenated saline solution with equiv. molar concns. of K and Ca containing less K than in turtle serum. Acetylcholine and eserine or pilocarpine do not inhibit impulse initiation or contractility; adrenaline and ephedrine increase the contractility. These effects were much less marked than on the turtle's auricle or the frog's ventricle. A small excess of K with little effect on the auricle or frog's ventricle abolishes the beat of fresh turtle ventricle strips. Ca excess increases auricular and ventricular contractions.

A. S.

Relationship of cardiac disturbances to endocrine system. J. R. Miller (*Quart. Bull. North-west. Univ. Med. Sch.*, 1944, 18, 12—21).—A review.

A. S.

Cardiac and blood-pressure effects of pitocin (oxytocin) in man.—See A., 1944, III, 733.

Skin temperatures of extremities of persons with induced deficiencies of thiamin, riboflavin, and other components of the vitamin-B complex.—See A., 1944, III, 751.

Structure and permeability of blood capillaries. J. F. Danielli and A. Stock (*Biol. Rev.*, 1944, 19, 81—93).—A review.

J. D. B.

Modification of radiosensitivity of embryonic cells. J. P. Goodrich (*Radiology*, 1943, 40, 179—187).—Eggs of the grasshopper, *Melanoplus differentialis*, were irradiated at 130 kv. peak, 5 ma., 2 mm. cardboard filtration, 26 cm. target distance, and a dose rate of 182 r. per min. Controls were kept at 25° throughout, some were irradiated while at temp. of 1—3°, some after being placed in a CaCl_2 desiccator for 13 hr. causing an average loss of 11—14% of their water content; both groups were then allowed to develop at 25° on moist filter-paper. Low temp. decreased the sensitivity before the third day of pre-diapause development and increased it during the remainder of the pre-diapause and for the first two days of the post-diapause. Dehydration caused an increase in sensitivity before the 5th day of pre-diapause development and a decrease during the remainder of pre-diapause and on the second day of post-diapause. Possible mechanisms for the production of these effects are discussed.

E. M. J.

Coronary disease associated with short PR interval and prolonged QRS. S. A. Leader (*J. Lab. clin. Med.*, 1944, 29, 673—679).—A case of short PR and prolonged QRS is described, first recorded over 7 years previously. The same rhythm was maintained, though the

patient developed severe coronary disease, except for transitory return to a normal pattern during an attack of severe precordial pain.

C. J. C. B.

Exercise test in digitalis block. F. M. Groedel (*Exp. Med. and Surg.*, 1943, 1, 380—385).—In 2 patients treated with digitalis, exercise transformed a prolonged auriculo-ventricular conduction time into complete block and Wenckebach's periodicity, respectively. In cases of prolonged conduction time due to rheumatic fever or arteriosclerosis exercise did not have these effects. The symptom disappeared after cessation of digitalis treatment.

A. S.

Recovery from subacute bacterial endocarditis following ligation of patent ductus arteriosus. A. S. W. Touroff (*J. Mt. Sinai Hosp.*, 1944, 10, 729—730).—Report of a case in a 51-year-old man in whom the disease recurred after an attack 12½ years before. *Strep. viridans* was cultured from the blood but 40 min. after ligation of a patent ductus arteriosus blood cultures became sterile and the patient has remained symptomless for 9 months.

E. M. J.

Vertigo and related conditions. M. Eliaser, jun. (*J. Lab. clin. Med.*, 1944, 29, 680—683).—The occurrence of vertigo, giddiness, lightheadedness, and syncope as manifestations of cerebral anoxia resulting from cerebral arteriosclerosis is described. In the case reported an elastic collar to produce partial jugular occlusion was very beneficial.

C. J. C. B.

Thromboangiitis obliterans in women. F. A. LeFevre and J. Burns (*Cleveland Clin. Quart.*, 1944, 11, 49—52).—2 of 77 cases of thromboangiitis obliterans occurred in women; these are reported.

A. S.

Multiple aneurysms of indeterminate origin. S. S. Bernstein (*J. Mt. Sinai Hosp.*, 1944, 10, 730—737).—Report of a case of a 45-year-old man with successive aneurysms of the tibial, popliteal, and innominate arteries the two first of which were cured by obliterative aneurysmorrhaphy. Biopsy of the ulnar artery showed focal medial calcification and arteriosclerosis.

E. M. J.

Diagnosis and treatment of embolism and thrombosis of popliteal artery. J. C. Doane (*Ann. int. Med.*, 1943, 19, 634—641).—11 cases of occlusion of the popliteal artery are reported. Intravenous administration of heparin and papaverine hydrochloride was beneficial.

A. S.

Thrombosis and embolism of abdominal aorta. I. Greenfield (*Ann. int. Med.*, 1943, 19, 656—668).—5 out of 3991 autopsies showed thrombosis or embolism of the abdominal aorta.

A. S.

Skin circulation in shock. J. R. DiPalma (*J. Amer. Med. Assoc.*, 1943, 123, 684—693).—The skin circulation was studied in shocked patients by observations of skin temp., colour, the red line response, reactive hyperæmia following pressure by a weighted rubber ring, and capillary sensitivity to varying pressure at different speeds, producing vasodilatation against a background of vasoconstriction. The blood flow through the skin is slowed in shock.

C. A. K.

Pectin solutions in treatment of shock. K. A. Meyer, D. D. Kozoll, H. Popper, and F. Steigmann (*Surg. Gynec. Obstet.*, 1944, 78, 327—332).—Favourable report of the results in 60 cases.

P. C. W.

Use of pectin and other agents to prevent shock. L. Figueroa and F. J. Lavieri (*Surg. Gynec. Obstet.*, 1944, 78, 700—605).—Pectin (1% solution) is retained in the circulation better than solutions of crystalloids, and prevents the onset of shock in experimental animals for a longer time than isotonic saline or glucose solutions. It sustains the blood pressure in patients after hæmorrhage or during operations. The fall of blood pressure in dogs whose intestines were massaged for 60 min. was delayed by infusing 500 ml. of 1% pectin, 250 ml. of pectin + 250 ml. of saline, or 250 ml. of serum, longer than when 500 ml. of saline were infused.

P. C. W.

Hæmorrhagic shock. Relative effects of saline, washed red cells, and heparinized plasma in dogs. F. W. McKee, C. F. Laycock, T. G. Martens, and R. J. Nicholl (*Surg. Gynec. Obstet.*, 1944, 78, 508—514).—Washed red cells suspended in physiological saline are more effective than the other two fluids in combating the effects of hæmorrhage in dogs.

P. C. W.

Dynamics of shock and clinical implications. V. H. Moon (*Int. Abst. Surg.*, July, 1944, 1—10).—Review and discussion.

P. C. W.

Analysis of factors associated with post-toxæmic hypertension. L. C. Chesley, W. H. Somers, H. R. Gorenberg, and J. A. McGeary (*Amer. J. Obstet. Gynec.*, 1941, 41, 751—764).—An analysis of the blood pressure, kidney function, and general condition was made in 466 patients 4—5 years after they had shown non-convulsive toxæmia of pregnancy. Hypertension was present in 53%, proteinuria in 6%, and subnormal kidney function in 7%. The incidence of recurrent toxæmia in second or later pregnancies was 46%, suggesting that the factors for subsequent hypertension are the same as those responsible for recurrence of toxæmia.

P. C. W.

Disparity in blood pressures in both arms in normals and hypertensives. B. Amsterdam and A. L. Amsterdam (*N.Y. Sta. J. Med.*, 1943, 43, 2294—2300).—612 females and 388 males with apparently normal cardiovascular systems and 178 females and 94

males with blood pressures of over 150 mm. Hg were investigated. Ages ranged from 16 to 75. Systolic blood pressures were equal in both arms in 23.6% of normals and 10.7% of hypertensives; the right predominated in 70 and 84.4 and the left in 6.4 and 4.9%, respectively. The vals. for diastolic pressure were 26.5 and 15.6% equal, 65 and 81.9% right and 8.5 and 2.5% left predominance. The degree of systolic disparity in normals with right predominance was 55% of up to 10 mm. (average 6 mm.), 32.5% of 10—20 mm. (average 14.6 mm.), and 12% of 20—30 mm. (average 24 mm.); diastolic disparity was up to 10 mm. in 86% and 10—20 mm. in 14%. In hypertensives the systolic disparities in cases with right-sided predominance were 10—20 mm. in 39.5, 20—30 mm. in 35.6, 30—40 mm. in 16, and 40—50 mm. in 8—9%. Average systolic disparity varied from 16 mm. in the group of 150—170 mm. to 42.6 mm. in that with pressures of 230 mm. and over. Diastolic pressure in hypertensives was equal in 15.6%, the right side predominated in 81.9% and the left in 2.5%; 67% showed less than 10 mm. disparity. Right-sided systolic predominance was also seen in all of 12 left-handed individuals. The significance of the anatomy and dynamics of the aortic arch and its branches in relation to the phenomenon is discussed.

E. M. J.

Splanchnicectomy in malignant hypertension. H. Dolger (*J. Mt. Sinai Hosp.*, 1944, 10, 741—742).—Report of a case of a 40-year-old female physician in whom bilateral splanchnicectomy was performed in 2 stages, the left dissection being carried lower across the diaphragm to include the semilunar ganglion. The blood pressure of 220 mm. Hg systolic and 120 mm. diastolic fell to extremely low levels immediately after each operation but finally settled at 180/110. Previous albuminuria and symptoms of depression, anxiety, and agitation disappeared and the patient has been able to undertake arduous medical work for 2½ years.

E. M. J.

VII.—RESPIRATION AND BLOOD GASES.

Physiology of the lung. O. A. Trowell (*Nature*, 1943, 152, 153—154).

E. R. R.

Simple methods of artificial respiration. R. M. Waters (*J. Amer. Med. Assoc.*, 1943, 123, 559—561).—Report on behalf of the Council in Physical Therapy.

C. A. K.

Relief of acute pleuritic pain by intercostal nerve block. H. J. Price (*J. Amer. Med. Assoc.*, 1953, 123, 628—629).—14 cases are reported.

C. A. K.

Pulmonary changes in rabbits produced by bilateral vagotomy. R. H. D. Short (*J. Path. Bact.*, 1944, 56, 355—363).—Pulmonary oedema following vagotomy in rabbits is inconst. and rarely severe when precautions are taken to prevent inhalation of regurgitated stomach contents. The mortality rate and macroscopic appearances of the lungs can be reproduced by simple tracheotomy with intact vagi. The appearances are those of slow asphyxia due to the accumulation of tracheal and bronchial secretions below the cannula. The presence of a normal larynx reduces mortality by providing an efficient expiratory mechanism for removing these secretions and thus preventing their accumulation. (4 photomicrographs.)

C. J. C. B.

Asthma produced by *Ascaris* infestation. K. V. Earle (*Trans. R. Soc. trop. Med. Hyg.*, 1944, 37, 451—452).—A case report and review.

C. J. C. B.

Inhalation of adrenaline in glycerin in asthma.—See A., 1944, III, 730.

Relative effect of analgesia and anaesthesia in production of asphyxia neonatorum. H. Henderson, E. B. Foster, and L. S. Eno (*Amer. J. Obstet. Gynec.*, 1941, 41, 596—606).—An analysis of 975 consecutive deliveries under general or local anaesthesia. General anaesthesia decreases the respiratory response of the newborn.

P. C. W.

Aseptic necrosis and bone infarcts in caisson and non-caisson workers. H. K. Taylor (*N.Y. Sta. J. Med.*, 1943, 43, 2390—2397).—Report of 12 cases in caisson workers and 38 cases who never worked under compressed air, were never subjected to sudden or violent changes in atm. pressure, and in whom the aetiology is unknown.

E. M. J.

New carbon dioxide absorbent: baralyme. M. G. Kilborn (*Anesthesiology*, 1941, 2, 621—627).—Baralyme [20% Ba(OH)₂·8H₂O + 80% Ca(OH)₂] is a more efficient CO₂ absorbent than soda-lime.

G. P.

Continuous intravenous morphine drip [in pulmonary embolism]. H. Neuhoef (*J. Mt. Sinai Hosp.*, 1944, 10, 731—732).—A massive pulmonary embolism occurred 11 days after lobectomy for bronchiectasis in a 30-year-old. A continuous intravenous morphine drip giving 1.5—1.75 grains per day was given for 5 days when convalescence set in. Subjectively great improvement set in 48 hr. after the drip with loss of anxiety and pain.

E. M. J.

VIII.—MUSCLE.

Small-angle interference of myosin.—See A., 1944, III, 764.

Comparative action of calcium gluconate and chloride on neuromuscular excitability. P. Chauchard, H. Mazoué, and R. Lecoq (*Compt. rend.*, 1943, 216, 744—746).—Intravenous injection of Ca gluconate or CaCl₂ into the rabbit produces firstly a phase of hypercalcaemia, followed by alkalosis in the case of the gluconate and acidosis in the case of the Cl⁻.

H. G. R.

Electromyographic studies in poliomyelitis. A. L. Watkins, M. A. B. Brazier, and R. S. Schwab (*J. Amer. Med. Assoc.*, 1943, 123, 188—192).—In the acute stage of poliomyelitis only muscles with some degree of paralysis discharged electrical potentials at rest. This abnormality was not correlated with the presence of clinical spasm. Partly paralysed muscles were hyperirritable to passive stretching as shown by electrical activity and pain. The electrical activity in paralysed muscles at rest increased while motor power was recovering and was also seen in muscles during regeneration of peripheral nerves. There was no abnormal electrical activity in the muscle contractures of the late stages of poliomyelitis or in completely paralysed muscles. Kenny's concept of "mental alienation" does not explain paralysis, but her concept of "inco-ordination" was supported by the demonstration of simultaneous activation of antagonists and agonists with intermittent synchronisation of action potentials in the 2 muscle groups, as was also found during regeneration after peripheral nerve injuries.

C. A. K.

Pathologic findings in nerve and muscle in poliomyelitis. W. B. Dublin, B. A. Bede, and B. A. Brown (*Amer. J. clin. Path.*, 1944, 14, 266—272).—Biopsy of skeletal muscle showed degeneration of nerve fibres, motor end-plates, and muscle fibres in degree commensurate with the degree of paralysis. The irregularity of distribution was in keeping with the irregularity of distribution of injury to nerve cells of the grey matter of the spinal cord. Degeneration of nerve fibres showed itself in failure of axons to stain together with preservation of cellular elements of capsules of motor endings and of sheaths of Schwann. Atrophy of muscle fibres appeared as pyknosis with loss of cross-striations and increase of longitudinal markings. Degeneration of nerve and muscle was probably secondary to injury to nerve cells of the spinal cord. (9 photomicrographs.)

C. J. C. B.

Myasthenia gravis. A. S. Giordano and J. L. Haymond (*Amer. J. clin. Path.*, 1944, 14, 253—265).—A report of 2 cases with necropsy findings. (6 photomicrographs.)

C. J. C. B.

Myasthenia gravis. F. S. Preuss and S. Goodman (*Arch. Path.*, 1944, 37, 389—391).—In a typical case of myasthenia gravis, autopsy revealed thymoma and neurofibromatosis. (2 photomicrographs.)

C. J. C. B.

IX.—NERVOUS SYSTEM.

Human fibrinogen and repair of nerve. P. Michael and W. Abbott (*J. Amer. Med. Assoc.*, 1943, 123, 279).—Human fibrinogen was successfully applied to an injured sciatic nerve. There were no signs of irritation.

C. A. K.

Clinical use of autopsy nerve grafts. R. M. Klemme, R. D. Woolsey, and N. T. de Rezende (*J. Amer. Med. Assoc.*, 1943, 123, 393—396).—Autopsy nerve grafts were successfully applied in 3 cases, using 50% acacia to glue the severed ends together.

C. A. K.

Action currents of pain impulses in man. V. S. Rusinov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 41, 36—38).—By applying electrodes to the skin over the course of large nerve trunks it is possible, with a sufficiently sensitive amplifier (4-cascade amplifier to oscillograph), to record the action currents transmitted along these trunks. The frequency of the currents as recorded from the median nerve (at the medial bicipital sulcus) with the arm at rest is 70—90 per sec. With adequate stimulation of the innervation zone definite variations in the frequency and amplitude of the action currents are produced. The changes resulting from tactile and proprioceptive stimulation have been reported previously (with S. A. Tschugunov, 1939). The present report describes the changes resulting from the application of painful stimuli. In man these pain currents differ markedly from tactile and proprioceptive impulses, consisting of a high-voltage spike and of a lengthy potential with duration up to 0.2—0.3 sec. The frequency is low, ranging from 2 to 7 per sec. Records from cases of causalgia are also reported.

J. D. B.

Pain threshold in dysmenorrhoea.—See A., 1944, III, 734.

Inhibition in spinal cord. I. Beritov and A. Bakuradze (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 26, 961—964).—Experiments are described to prove that stimulation of the dorsal roots produces generalised inhibition as well as inhibition of antagonists.

W. H. N.

Spinal cord inhibition as dependent on intensity, frequency, and duration of stimulation. I. Beritov and A. Bakuradze (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 26, 965—968).—Increased frequency, intensification, or prolongation of posterior root stimulation in-

variably deepens inhibition, but increases excitatory responses only within limits. Excitation is ultimately depressed, due to spread of general inhibition to excited units. W. H. N.

Surgical division of spinothalamic tract in medulla. R. D. Adams and D. Munro (*Surg. Gynec. Obstet.*, 1944, 78, 591—599).—2 cases of unilateral section and 1 of bilateral section are described. The operation was followed by analgesia on the contralateral side extending downwards from the 2nd thoracic dermatome. No analgesia was produced above the clavicles. Postmortem examination showed that it is impossible to cut the cervical portion of the tract without causing crippling damage. P. C. W.

Prefrontal lobotomy in chronic schizophrenia. A. E. Bennett, J. J. Keegan, and C. B. Wilbur (*J. Amer. Med. Assoc.*, 1943, 123, 809—813).—A review, with a report of 5 cases. C. A. K.

Fatal effects of prolonged complete curarisation. M. A. Perlstein and A. Winglass (*Amer. J. Dis. Child.*, 1944, 67, 360—364).—Prolonged curarisation has a lethal effect in dogs in spite of artificial maintenance of respiration. Atropine hastens the lethal effect of curare. The administration of atropine to curarised patients should therefore be avoided. C. J. C. B.

War neuroses. L. J. Karnosh (*Cleveland Clin. Quart.*, 1944, 11, 38—43).—A review. A. S.

Porencephalic cyst. A. T. Blunts (*Cleveland Clin. Quart.*, 1944, 11, 18—21).—A right porencephalic cyst contained 175 mg.-% of protein compared with 15 mg.-% in left ventricular fluid. A. S.

Postmortem studies in mental patients. Frequent findings in paranoid states. O. J. Pollak (*Amer. J. clin. Path.*, 1944, 14, 289—300).—Hyperplastic changes of the pituitary, parathyroid, adrenal cortex and medulla, and hyperplastic as well as inflammatory changes of the thyroid occurred 4 times more often in paranoid than in non-paranoid psychotics. Many patients with paranoid tendencies displayed tumours of the endocrine organs and also of the exocrine tissues. The incidence of all tumours was 10 times higher in paranoid patients than in non-paranoid psychotics. C. J. C. B.

Effects of sulphonamides on electrical activity of cerebral cortex. C. Brenner, S. Cohen, and M. M. Lyons (*J. Amer. Med. Assoc.*, 1943, 123, 948—950).—Various sulphonamides were applied locally to the cerebral cortex of anaesthetised cats and electrical activity was recorded. Sulphanilamide produced no changes, but the Na salts of sulphapyridine, sulphathiazole, and sulphadiazine all increased electrical activity. In powder form sulphapyridine and sulphathiazole increased electrical activity, but sulphadiazine had no effect. C. A. K.

[Electroencephalography in] hypoglycæmia and hyperinsulinism. I. S. Wechsler and J. H. Garlock (*J. Mt. Sinai Hosp.*, 1944, 10, 704—709).—Report of 2 cases, one of a successful removal of a pancreatic adenoma and one of unsuccessful subtotal pancreatectomy without tumour. E. M. J.

Presacral neurotomy for intractable vesical pain and neurogenic vesical dysfunction. C. E. Jacobson, W. E. Braasch, and J. F. Love (*Surg. Gynec. Obstet.*, 1944, 79, 21—26).—In 62 cases temporary relief of pain was produced in many instances but permanent relief only occasionally; permanent functional relief was seen in only 1 case. There was relaxation of the muscular tissues of the trigone and vesicular neck after operation. P. C. W.

Levinson ratio and the tryptophan test. F. A. Kriete, H. C. Epstein, and J. A. Toomey (*Amer. J. Dis. Child.*, 1944, 66, 469—471).—The Levinson ratio (cf. Levinson and McFate, "Clinical Laboratory Diagnosis," 2nd ed., 1943) was positive for 18 patients with tuberculous meningitis and negative for 16. For 2 patients who had more than one lumbar puncture, the results were positive and negative at different times. Of 77 patients with diseases of the central nervous system whose spinal fluids were clear, with low cell counts, the Levinson ratio was positive for 13. Of 59 patients with purulent meningitis the Levinson ratio was positive for 9, negative for 41, and positive and negative at different times for 9. The tryptophan reaction was positive for only 21% of 34 patients ill with tuberculous meningitis; however, it was also positive for 11% of 80 patients who were ill with diseases other than tuberculous meningitis. C. J. C. B.

X.—SENSE ORGANS.

Laboratory aids in diagnosis of infections of eye prevalent in tropical and subtropical countries. C. Weiss (*Amer. J. clin. Path.*, 1944, 14, 200—214).—A review. C. J. C. B.

Spontaneous folliculosis of conjunctiva in baboons (*Papio hamadryas*). J. O. W. Bland (*J. Path. Bact.*, 1944, 56, 446).—Report of occurrences. C. J. C. B.

Anophthalmia. T. Rogalski (*Brit. J. Ophthalm.*, 1944, 28, 429—440).—A description of a case which showed unilateral anophthalmos and other malformations of the face. Details of microscopic examination of the orbit by serial sections are given. The mesodermal structures external to the eyeball were well developed but the globe

itself was represented only in its anterior part as vestiges of the cornea, sclera, and muscles and vessels. There was no trace of the lens. There was an agglomerate mass of melanin thought to be derived from the pigment epithelium. The apparent independent development of the pigment epithelium and retina proper is discussed, and new definitions of anophthalmia and microphthalmia are suggested. A. J. B. G.

Treatment of epithelial ingrowth following cataract extraction [with X-rays]. B. B. Friedman (*Amer. J. Ophthalm.*, 1944, 27, 764).—The ingrowth of epithelium into the anterior chamber which may follow cataract extraction or a perforating injury is serious since secondary glaucoma may result due to obstruction of the angle. A case is described of epithelial growth following intra-capsular cataract operation. X-Ray treatment was begun 5 days after the epithelium was noticed. Complete recovery of the condition took place with full vision after the necessary refraction. M. G. M.

Evaluation of ocular functions. A. G. Martin (*Eye, Ear, Throat*, 1944, 23, 305—307).—The conditions under which all eye tests are carried out should be specified and the environmental circumstances and demands should in all cases be considered in assessing the cause of low visual acuity and the ocular potentialities of the subject. A. J. B. G.

Effects of faradically induced currents on extrinsic and intrinsic ocular musculature. J. H. Young (*Brit. J. Ophthalm.*, 1944, 28, 488—502).—The results of a clinical self-experiment are described in which faradic stimulation was applied over the left internal rectus of the eye, (a) under cocaine anaesthesia and (b) under cocaine anaesthesia and homatropine mydriasis. The effects are grouped as primary and secondary. The former include Lewis' triple response in the capillary vessels, exophthalmos, nystagmus, tetanisation of the plain muscle of the orbit and of the ciliary body with resulting accommodative myopia, and sympathetic stimulation. The secondary effects ascribed to sensory impulses originating in the tetanised ciliary muscle include alteration of taste, salivation, sweating, and vomiting. The physiology of the reactions experienced in the two tests is discussed and recommendations and contraindications for others who may wish to repeat the work are laid down. A. J. B. G.

Paresis of right superior rectus muscle. H. M. Burrian (*Amer. J. Ophthalm.*, 1944, 27, 884—888).—An analysis of the ocular findings in a young woman said to have a superior rectus paresis of unknown cause. The muscle imbalance was improved by an operation for shortening the affected rectus. A. J. B. G.

Value of an orthoptic clinic in private practice. E. C. Ellett and R. Rychner (*Trans. Amer. Acad. Ophthalm. Otolaryng.*, 1944, 290—308).—Orthoptics is the teaching of a patient to use the two eyes for comfortable binocular vision and should be regarded as complementary to the correction of refractive errors and, in gross cases, to operation. The clinic is of great val. in dealing with false projection, divergence excess and insufficiency, and above all perhaps in convergence insufficiency. A. J. B. G.

Choice of fixating eye in strabismus. J. W. White (*Amer. J. Ophthalm.*, 1944, 27, 817—819).—In squint the dominant eye is usually but not invariably the one with better vision. The choice of eye for fixation may vary for distance and near vision, and also as tests are made in the various primary positions. In paralytic squint additional factors are the ability of the paretic eye to maintain steady fixation, and the amount of separation of the images. A. J. B. G.

Simple test for binocular fixation. S. R. Irvine (*Amer. J. Ophthalm.*, 1944, 27, 740—746).—A 4D prism moved rapidly back and forth in front of the eye in the 4 positions, base in, up, out, and down, will cause diplopia if the eye is contributing to normal binocular vision. In amblyopia and strabismus the prism in front of the sighting eye induces no diplopia, a to-and-fro movement of the image, and conjugate deviation; in front of the defective eye it may or may not induce diplopia, and results in little or no movement of either eye. A. J. B. G.

Monocular diplopia. A. Posner (*Eye, Ear, Throat*, 1944, 23, 301—303).—Monocular diplopia may be produced either by splitting the light rays into two separate bundles as by having two apertures in the same plane of the optical system, or by prismatic deflexion of part of the light rays. For the first cause to operate, the eye must be ametropic. Three illustrative cases are described. A rare cause of monocular diplopia is the simultaneous functioning of the true and false maculae in cases of squint with false projection. A. J. B. G.

Tobacco alcohol amblyopia. F. D. Carroll (*Amer. J. Ophthalm.*, 1944, 27, 713—725, 847—863).—Of 175 patients with tobacco-alcohol amblyopia seen during 9 years, 25 were allowed to maintain their usual intake of alcohol and tobacco under the following dietetic conditions: (1) 11 patients on adequate diet supplemented by brewers' yeast; (2) 5 patients on their usual diet with added vitamin-B complex; (3) 4 patients on a diet inadequate in all known vitamins but with large amounts of -B complex; (4) 5 patients on the same diet as (3) but with synthetic -B₁ in place of -B complex.

All patients in all groups improved partially or completely in spite of unabated tobacco and alcohol consumption. A. J. B. G.

Distribution of penicillin in eye. G. C. Struble and J. G. Bellows (*J. Amer. Med. Assoc.*, 1944, 125, 685—690).—The distribution of penicillin in the ocular tissues of dogs and rabbits was determined by the Florey method after (a) a single massive intravenous dose (12,800 units per kg.); (b) parenteral administration in approx. clinical dosage; (c) subconjunctival injection (2500 units per c.c.); (d) topical application of 20,000 units per c.c. to the cornea and conjunctiva. After (a), penicillin could be detected in the eye within 15 min. and the concn. vals. were in descending order: extra-ocular muscles, sclera, conjunctiva, tears, chorio-retina, aqueous, vitreous, and cornea. The concn. in aqueous and less vascular tissues increased slowly for 1 hr. After 3 hr. little penicillin was left in the eye. After (b) the concns. were so slight that they were not measurable by the ordinary methods. After (c) and (d), very high concns. were reached in the cornea, iris, ciliary body, and sclera. Aqueous and vitreous contained moderate amounts, and the posterior chorio-retina nil. None is found in the lens after any method of administration. The figures for other body tissues and fluids at 1 hr. are also given. A. J. B. G.

Development of peripheral anterior synechiæ in experimental acute glaucoma. M. U. Troncoso (*Arch. Ophthalm.*, 1944, 31, 481—502).—Increased intraocular tension was produced in dogs, rabbits, and monkeys by the injection of homologous blood serum, pure blood, or defibrinated blood into the anterior chamber. The first step in the production of increased tension was not a mechanical obstruction to the aqueous outflow channel, but a disturbance in the flow of aqueous due to alterations in osmotic pressure. This in turn caused the usual tissue response of vasodilatation and oedema obliterating the cilio-scleral sinus and resulting secondarily in the formation of anterior synechiæ. The sequence of events is the same as that noted clinically in subacute primary (congestive or narrow-angle) glaucoma. A. J. B. G.

Dynamic factors in formation and reabsorption of aqueous humour. J. S. Friedenwald (*Brit. J. Ophthalm.*, 1944, 28, 503—510).—An attempt to harmonise the views of workers in this field on the basis of the author's opinions on the secreting-reabsorbing mechanism. A. J. B. G.

Family with ectopic lenses. C. A. Clapp (*Amer. J. Ophthalm.*, 1944, 27, 738—740).—In 8 of 11 sibs both lenses were ectopic but not dislocated, i.e., the zonular fibres were present on one side and the lens was firmly fixed in its abnormal position. Several of the sibs had arachnoidecty. The mother was normal; the father was dead, but there was no history of his having had poor vision. 3 of the affected and one of the normal sibs had between them at least 8 offspring, in none of whom were the lenses misplaced. A. J. B. G.

Almost complete retinal detachment after cataract extraction; complete reattachment after glaucoma attack. F. Nelson (*Amer. J. Ophthalm.*, 1944, 27, 876—883).—A case report of a man of 80 who had intra-capsular cataract extraction in the left eye followed by retinal detachment within 6 months and acute glaucoma 3 months later. After a further 3 months the glaucoma had subsided and the retina was reattached. The reattachment is attributed to the increase of intra-ocular pressure following extreme hypotony after the detachment. This pressure must have squeezed the sub-retinal fluid through a tear in the retina and pressed it against the globe wall, where it was retained by adhesions due to an inflammatory wheal process started by the irritant nature of sub-retinal fluid. M. G. M.

Intra-ocular pressure and its relation to retinal extravasation. J. Igersheimer (*Arch. Ophthalm.*, 1944, 32, 50—55).—A high intra-ocular pressure tends to inhibit retinal hæmorrhages and exudates in cases of albuminuric and diabetic retinopathy. Similarly in retinal venous thrombosis, oedema and hæmorrhages may be absent if the obstruction develops in eyes in which the intra-ocular pressure is already high. Conversely papilloedema and hæmorrhages are not uncommon in cases of ocular hypotension. Thus in the eye, as elsewhere, the pressure outside the vessel wall is a factor in determining the amount of extravasation. A. J. B. G.

Lipæmia retinalis in non-diabetic patient. C. W. Lepard (*Arch. Ophthalm.*, 1944, 32, 37—38).—Description of the case of a 6-year-old boy without diabetes whose blood had a creamy appearance and whose liver and spleen were enlarged. While on a high-fat diet his retinal arteries increased to twice their normal size whereas on a low-fat diet the lipæmia retinalis was observed only peripherally. On the high-fat diet the increase of neutral fat in the blood was greater in the erythrocytes than in the plasma. The degree of lipæmia retinalis may be dependent on the increase of neutral fat. M. G. M.

Evaluation of ocular angiospasm. S. R. Gifford (*Arch. Ophthalm.*, 1944, 31, 453—460; cf. A., 1944, 111, 104).—The author considers that many cases of central angiospastic retinopathy (usually called in this country oedema of the macula) are due to a spasm of the retinal vessels associated with peripheral vasomotor neurosis elsewhere. He supports his contention with the results of special ex-

aminations and treatment of affected cases. He also produces evidence that a similar factor may operate in some cases of recurrent vitreous hæmorrhage in young adults (Eales' disease), and in other ocular conditions. In such cases a careful examination of the peripheral vascular system is indicated and should always precede treatment with vasodilators. A. J. B. G.

Rosettes, nature, and nomenclature of glioma retinae. E. Wolff (*Brit. J. Ophthalm.*, 1944, 28, 448—450).—It is argued that the columnar cells of the rosettes of these tumours are comparable with the neuro-epithelium of the 3rd—4th months of foetal life, and that they represent therefore aberrant rods and cones. The author concludes that the tumour arises from all the elements of the primitive nuclear layer, except the ganglion cells. The histological differences are said to be due to variation in the relative nos. of the original constituents. A. J. B. G.

Defects in visual fields produced by hyaline bodies in optic discs. C. W. Rucker (*Arch. Ophthalm.*, 1944, 32, 56—59).—The presence of hyaline bodies in the discs may simulate papilloedema or optic atrophy and may cause field defects, enlargement of the blind spots, arcuate scotomata, or peripheral contraction, which most often occurs in the lower nasal quadrant. A. J. B. G.

Type of foveo-macular retinitis observed in U.S. navy. F. C. Cordes (*Amer. J. Ophthalm.*, 1944, 27, 803—816).—The results of an investigation of 176 cases carried out in the Pacific area in 1941—1943. The patients were young and the condition was bilateral in 30% of cases. Most treatment was ineffective (though vasodilators were sometimes beneficial), but eventually vision returned to normal. The cause may be peripheral vascular disease with angiospasm due to worry or fear especially when combined with excessive smoking. M. G. M.

Juvenile amaurotic familial idiocy; its ocular pathology. I. Givner and L. Roizin (*Arch. Ophthalm.*, 1944, 32, 39—47).—Description of 2 cases, a girl aged 4 and a boy aged 14 with fundus photographs and post-mortem photomicrographs of sections of the retina, optic nerve, choroid, and brain. The retina showed a decrease and sometimes absence of the outer fibre layer, dense masses of pigment granules at the site of rods and cones, and increased glial tissue in the inner fibre layer. The optic nerve was atrophied but the choroid normal. The place of origin of the degeneration in the retina is discussed. In the second case histochemical tests for fats and lipins were made on the retina and brain and similar types of lipins (phosphatides and cerebroside) were found in both tissues. M. G. M.

Psychophysics of colour. Committee on Colorimetry (*J. Opt. Soc. Amer.*, 1944, 34, 245—266).—A review of techniques, technical terms and their definitions, and of recent results in the measurement and standardisation of luminosity and colour. E. N. W.

Interaction of excitatory and inhibitory processes in synthesis of sensations of colour and of white. G. F. Göthlin (*Uppsala Läkare-fören. Forh.*, 1944, 49, 433—446).—Three fundamental receptors, red, green, and blue (not violet), are assumed. Stimulation of any receptor is accompanied by inhibition of the receptor for the complementary colour and blue acts as the complementary to the yellow which results when impulses from the red and green receptors exactly balance. For the production of white, the red and green receptors are balanced against each other, thus producing a yellow sensation, and this yellow is then balanced by the blue, yielding white. E. N. W.

Monochromatism. F. H. G. Pitt (*Nature*, 1944, 154, 466—468).—An unusual case of monochromatism is described. The subject had no photophobia, visual acuity above normal, and a luminosity curve very like that of the protanope, and very like the curve representing the fundamental green sensation. He behaved as a protanope towards the Ishihara and other tests, but had difficulties with blues and was capable of matching any colour with any other. He may be regarded as suffering from both protanopia and tritanopia. From the frequency of occurrence of these two defects the author predicts the probable frequency of occurrence of such cases of monochromatism. E. N. W.

Flicker fusion tests as measure of fatigue in aviators. A. Graybiel, J. L. Lilienthal, and O. Horwitz (*J. Aviat. Med.*, 1943, 14, 356—359).—There was no significant correlation between flicker fusion frequency and the state of fatigue in 32 pilot instructors tested frequently before and after a working day. F. S.

Retinae of two North American Teleosts with special reference to their tapeta lucida. G. A. Moore (*J. Comp. Neurol.*, 1944, 80, 369—379).—*Stizostedion v. vitreum* has both large twin cones and single cones in a 2:1 ratio, while numerous small rods are grouped between the elongated pigment cells. The no. of visual cells per optic nerve fibre is high. The pigment epithelial cells, packed with guanine, create a retinal tapetum lucidum for the promotion of dim light vision. This tapetum differs sharply from that of its close European relative, *Hiodon tergisus* has only rods and its pigment epithelium constitutes a retinal tapetum lucidum. This is the first fresh-water clupeoid reported to have a retinal tapetum and the first non-deep-sea teleost known to have a pure rod retina. P. G.

Drusen of optic nerve simulating cerebral tumour. N. S. Schlezinger, S. Waldman, and B. J. Alpers (*Arch. Ophthalmol.*, 1944, 31, 509—516).—Two case reports show the condition with no X-ray evidence of cerebral tumour. The clinical syndrome is characterised by headache, vomiting, and an appearance of the optic discs simulating papilloedema, and negative neurological findings. In both there was history of removal of cystic masses in various parts of the body.

M. G. M.

Chemotherapy and biotherapy: their relation to prevention and treatment of diseases of ear, nose, and throat. J. A. Kolmer (*Arch. Otolaryngol.*, 1944, 40, 17—28).—A crit. review of methods of prevention and treatment of infections of the ear and upper respiratory passages by vaccines, sulphonamide drugs, penicillin, tyrothricin, and patulin, with a note on the treatment of syphilitic lesions of the ear, nose, and throat.

K. T.

Local use of sulphadiazine solution, radon, tyrothricin, and penicillin in otolaryngology. S. J. Crowe (*Ann. Otol. etc. St. Louis*, 1944, 53, 227—241).—A description of the treatment of (1) hypertrophied lymphoid tissue in the nasopharynx by a combination of sulphadiazine solution through the nose to kill the infecting organisms and irradiation with β - and γ -rays to destroy the tissue; (2) infections of the ear and upper respiratory passages with sulphonamides, penicillin, and tyrothricin. The great importance first of identifying the infecting organisms and then bringing an effective concn. of the appropriate drug into actual contact with them for an adequate period is emphasised.

K. T.

Audiometric method for group testing of hearing of school children. S. F. Nielsen (*Acta Otolaryngol.*, 1944, 32, 263—283).—A detailed description of an apparatus for taking simultaneous pure tone audiograms from large nos. of children of 12 or over or of adults. The method of conducting an actual test is also detailed. An abbreviated test using only 5 different tones was used for younger children.

K. T.

Irradiation of ear. H. B. Perlman (*Laryngoscope*, 1944, 54, 255—266).—X-Radiation in doses up to nearly 6000 r. at a dose-rate of not more than 15 r. per min. and 300 r. per day had no effect on the audiograms of normal human ears or on the tensor tympani reflex in the rabbit when these were tested up to a year after treatment. No pathological changes could be detected in sections of the rabbit cochleas. When similar doses of radiation are used on ears suffering from conduction deafness due to long-standing tubal obstruction with middle ear changes of an exudative catarrhal character associated with carcinoma of the nasopharynx, complete recovery of hearing can be obtained. This is probably due to the destruction of secretory cells, including those of the Eustachian tube, as well as of the tumour itself. Such doses produced a temporary delay in the healing of a clean perforation of the rabbit cochlea.

K. T.

Stenosis of Eustachian tube. H. A. E. van Dishoeck (*Acta Otolaryngol.*, 1944, 32, 346—352).—A negative pneumophone val. always indicates some obstruction of the Eustachian tube (tubal stenosis) which may be physiological, due to a narrow tube, acute, or chronic. The latter types are both due to inflammation, in either the throat or middle ear, including catarrh in narrow tubes; both produce some degree of deafness and may or may not be accompanied by otitis media.

K. T.

Histologic otosclerosis. S. R. Guild (*Ann. Otol. etc. St. Louis*, 1944, 53, 246—266).—Report of an investigation of the incidence of histologically identifiable otosclerosis in the collection of serially sectioned human temporal bones belonging to the Otological Research Laboratory of the Johns Hopkins Medical School. In this collection of 1161 ears 82 showed otosclerosis, but only 1 of 161 from children under 5 showed otosclerosis and this age-group is, therefore, excluded from estimations of the incidence of the disease. Although the no. of specimens of white and negro origin were approx. equal, the white ones showed an overall incidence of 1 in 12 while that of the negroes was only 1 in 96. For the white specimens the incidence was significantly higher for females (1 in 8) than for males. No conclusion as to sex difference in negroes could be drawn because of the small no. of cases affected. Among the whites the age-group 30—49 years showed the highest incidence for both sexes, indicating, since otosclerosis has never been known to disappear, that the disease is correlated in some way with probable length of life. These specimens bear out the generally accepted belief that otosclerotic areas most often occur anterior to the oval window but do not support the view that it begins in the fissura ante fenestram. On the whole, large otosclerotic areas were active and small ones quiescent; the total no. of active and quiescent areas was practically the same (57 and 56). The proportion of otosclerotic ears showing stapedial ankylosis was 1 in 8 and in no case was the entire stapediovestibular articulation obliterated. Hearing tests had been made on 55 and some information as to the hearing of 22 others of the 81 cases with otosclerosis was available. Correlations showed that otosclerosis does not cause hearing loss unless there is also stapedial ankylosis.

K. T.

Development of organ of Corti in relation to the inception of hearing. O. Larsell, E. McGrady, and J. S. Larsell (*Trans. Amer. Acad. Ophthalmol. Otolaryngol.*, 1944, 333—357).—The development of the

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supporting structures of the organ of Corti was studied in the pouch young of the opossum, *Didelphys virginiana*, and results are correlated with the appearance of the first signs of sensitivity to pure tones of different frequency. The earliest differentiation occurs in the upper basal and adjacent lower medial coils of the cochlea and is associated with responses to pure tones from 1000 to 1300 c.p.s. With increasing age differentiation spreads both apically and basally and at the same time the acoustic sensitivity range increases to 200—26,000 c.p.s. with an associated increase in excitability. The bearing of the relationship between the stage of development of the various cochlea structures and acoustic sensitivity at any given age on the theories of the structural mechanism of the cochlear analysis of sound is discussed.

K. T.

Prevention of traumatic deafness. W. H. Wilson (*Arch. Otolaryngol.*, 1944, 40, 52—59; cf. A., 1943, III, 643).—An account of a study of the occurrence of traumatic deafness due to rifle and pistol practice in a group of enlisted men at an army training centre. It was found that (1) there was a definite relationship between abnormal auditory fatigue and irreversible loss of hearing due to acoustic trauma; (2) the max. rise in threshold was for a tone one octave higher than that used for producing fatigue. It is suggested that persons showing abnormal auditory fatigue should not be allowed to work in noisy industries.

K. T.

Progressive deafness. I. Prevention and alleviation. E. P. Fowler. **II. Present status of medical and surgical therapy.** S. J. Kopetzky. **III. Rehabilitation.** W. M. Hunt (*Laryngoscope*, 1944, 54, 209—216, 217—228, 229—234).—I. General recommendations.

II. A general account with special emphasis on the impossibility of knowing whether any given case will benefit from the fenestration operation.

III. A plea for a more lively interest and knowledge of methods of rehabilitation (lip-reading, hearing aids, etc.) of the hard of hearing.

K. T.

Hysterical deafness in war. C. Buzoianu (*Acta Otolaryngol.*, 1944, 32, 253—262).—An account of the types of total bilateral deafness which may result from proximity to an explosion and which exhibit no organic lesions. A favourite diagnosis, deafness due to isolated labyrinthine lesion, is meaningless since this condition never occurs without associated cerebral lesions and is probably due to damage to the auditory tracts and centres. In consequence all cases of total bilateral deafness without organic lesions or other symptoms must be functional and are either hysterical or simulated. Differential diagnosis is difficult but the former type is by far the more common in cases coming out of the front line.

K. T.

Present status of diagnosis and management of Ménière's syndrome. H. Brunner (*Arch. Otolaryngol.*, 1944, 40, 38—43).—A general review of the present state of knowledge of Ménière's syndrome with suggestions for treatment. It is claimed that the symptoms are due to hydro-labyrinth and may be either idiopathic or symptomatic, the latter being most often due to cerebral arteriosclerosis or focal infections.

K. T.

Relative sweetnesses of sugars, mixtures of sugars, and glycerol. A. T. Cameron (*Canad. J. Res.*, 1944, 22, E, 45—63).—The following were found equally sweet: (a) 2% sucrose and 3.8% glucose; 10% sucrose and 14.7% glucose; 20% sucrose and 25% glucose; (b) 2% sucrose and 6.5% lactose; 5% sucrose and 14.9% lactose; 8% sucrose and 21.7% lactose; (c) 2.25% sucrose and 4% glycerol; 5.5% sucrose and 8% glycerol; 8.9% sucrose and 12% glycerol. A method is described for calculating the sweetness of a mixture of sugars of known composition in terms of the sweetness of a sp. concn. of sucrose or of glucose (cf. A., 1944, III, 464).

G. P.

Structural identity of pain spots in human skin. G. H. Bishop (*J. Neurophysiol.*, 1944, 7, 185—198).—The sensitive points for the evocation of pain were mapped out. When patches of epidermis were removed by means of BaS or by surgical means the epithelium regenerated before the sensory endings. A regenerating nerve twig was distributed to an area containing one pain spot and one group of hair follicles, and the growing ends were more sensitive to mechanical and less sensitive to electrical stimulation. The extreme sensitivity of the central high point in a pain area may be correlated with its position directly over a pain twig in the sense that the terminals of several fibres may be activated by a stimulus at one point.

P. G.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

New approaches to thyroid physiology. J. H. Means (*Ann. int. Med.*, 1943, 19, 567—586).—A lecture.

A. S.

Antithyroidal substances of blood and vitamin-A. O. Hochstadt and S. Malkiel (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 22—23).—Soxhlet ether extracts of normal human blood had a powerful antithyroid effect on mice after 15 hr. extraction. They contained, by spectroscopic analysis, a small amount of vitamin-A after 1 hr. extraction but none after 2 hr.

V. J. W.

Report of two cases of myxoedema with extreme hypercholesteræmia. L. S. Craig and H. Lissner (*J. clin. Endocrinol.*, 1944, 4, 12—16).—The high cholesterol vals. (877 and 926 mg. per 100 ml.) fell *pari passu* with rise in basal metabolic rate under thyroid treatment. Xanthoma tuberosum was present in one case and cleared up during treatment. P. C. W.

Hyperthyroidism at menopause. M. G. Wohl and N. Pastor (*Amer. J. Obstet. Gynec.*, 1941, 41, 792—799).—Six cases are reported and discussed. Many of the main symptoms of hyperthyroidism may be shown by menopausal women, including an increase in basal metabolic rate. Until oestrogenic therapy has failed to control the symptoms thyroid disturbance cannot be taken as the primary cause. P. C. W.

Effect of oestrogenic hormone on hyperthyroidism. A. A. Farbman (*J. clin. Endocrinol.*, 1944, 4, 17—22).—9 cases of thyrotoxicosis in women were treated with 210,000—3,410,000 i.u. of oestrone for 6 weeks—16 months. Where the hyperthyroidism was moderate or severe there was occasionally a transient decrease in basal metabolic rate but no permanent effect. 2 cases of mild hyperthyroidism showed a prompt and complete remission of symptoms. P. C. W.

Acute goitre during thiocyanate therapy of hypertension. M. P. H. Foulger and E. Rose (*J. Amer. Med. Assoc.*, 1943, 122, 1072—1073).—Case report. C. A. K.

Use of thiourea in thyrotoxicosis: report of eight cases. F. L. Ritchie and B. L. Geddes (*Med. J. Austral.*, 1944, 1, 381—390). F. S.

Action of thiouracil on thyroid gland in Graves' disease. R. W. Rawson, R. D. Evans, J. H. Means, W. C. Peacock, J. Lerman, and R. E. Cortell (*J. clin. Endocrinol.*, 1944, 4, 1—11).—Thiouracil was administered to 19 patients with Graves' disease with lowering of the basal metabolic rate and relief of symptoms similar to those following I administration. Hyperplasia and vascularity of the thyroid were increased with a loss of colloid and occasional increased lymphoid hyperplasia. There was subnormal concn. of administered radioactive I in the thyroid and increased elimination in the urine. The thyroid glands removed from patients under thiouracil treatment had no thyroid action when fed to myxoedematous patients. P. C. W.

Tumours of thyroid produced by 2-acetamidofluorene and allylthiourea. F. Bielschowsky (*Brit. J. exp. Path.*, 1944, 25, 90—95).—Adenomata of the thyroid gland were produced in 9 of 10 rats by the combined feeding of a goitrogenic agent, allylthiourea, and a carcinogenic agent, 2-acetamidofluorene (A., 1944, III, 416). Malignant tumours were also present in 3 of the rat thyroids. (11 photomicrographs.) F. S.

Excess gonadotropin in urine of patients with thyroid disease. L. P. Howell, D. G. Drips, and H. C. Fisher (*Amer. J. Obstet. Gynec.*, 1941, 41, 868—873).—30 control assays of urinary gonadotropin from normal men and women showed a content of 20 r.u. per l. in 1 case and all the others lower vals. In 53 patients with thyroid disease excessive gonadotropin excretion (more than 24 r.u. per l.) was found in 18. There was no correlation between type of thyroid disease and level of gonadotropin excretion. P. C. W.

Properties of living thyroid cells and follicles.—See A., 1944, III, 712.

Capillary permeability in myxoedema.—See A., 1944, III, 719.

Effect of hyperthyroidism on genital structure and function.—See A., 1944, III, 734.

Hypoparathyroidism in pregnancy, treated with dihydrotachysterol. H. A. Schwartz, J. K. Curtis, and J. V. Lichtenstein (*Amer. J. Obstet. Gynec.*, 1941, 41, 700).—A case is reported. P. C. W.

Subtotal pancreatectomy for hypoglycæmia. A. L. Umansky (*J. Mt. Sinai Hosp.*, 1944, 10, 698—703).—Report of a case of a 36-year-old man in whom exploration of the pancreas failed to disclose a tumour; the excised portion of pancreas showed no histological abnormalities. Hypoglycæmic attacks continued. E. M. J.

Carcinoma of Langerhans islands with liver metastasis producing hyperinsulinism. J. S. Browning (*Ann. int. Med.*, 1943, 19, 669—673).—The patient survived 14 months after an inoperable metastatic islet cell carcinoma had been found; he had severe hypoglycæmic crises which responded well to intravenous glucose or sugar by mouth. A. S.

Effect of testosterone propionate in patient with diabetes mellitus and Addison's disease. C. D. Armstrong (*J. clin. Endocrinol.*, 1944, 4, 23—29).—A 5½-year follow-up of a patient with Addison's disease and diabetes mellitus showed a progressive hypothyroidism. A course of testosterone propionate injections produced a retention of urinary Cl similar to that in normal cases, showing the effect to be independent of the adrenals. The androgen treatment produced increased glycosuria, appetite, activity, and polyuria. P. C. W.

Experimental diabetes. A. B. Corkill, P. Fantl, and J. F. Nelson (*Med. J. Austral.*, 1944, 1, 285—286).—Experimental diabetes was produced in rabbits by 1—3 intravenous injections daily of alloxan,

the doses increasing from 100 mg. to 200 or 430 mg. Alloxan had no direct action on the blood-glucose level in the spinal eviscerated cat. F. S.

Diabetogenic effect of diethylstilbœstrol in adrenalectomised, hypophysectomised, partially-depancreatized rats. D. J. Ingle (*Endocrinol.*, 1944, 34, 361—369).—The diabetogenic effect of stilbœstrol (0.1 mg. daily) in these animals maintained on sub-diabetogenic doses of adrenal cortical and anterior pituitary extracts was not so great as in normal partly-depancreatized rats. If spontaneous glycosuria was severe in spite of the cortical and pituitary injections, stilbœstrol injections failed to augment it. P. C. W.

Misuse of adrenaline during ether anaesthesia. M. L. Byrd (*Anesthesiology*, 1941, 2, 654—656).—A case is reported in which the application of adrenaline to a bleeding surface during N₂O-O₂ ether anaesthesia was followed by marked tachycardia and fall in blood pressure. G. P.

Sudden death during cyclopropane-ether anaesthesia following administration of adrenaline. M. H. Adelman (*Anesthesiology*, 1941, 2, 657—660).—A case is reported with post-mortem findings. G. P.

Appraisal of water test of adrenal function. R. W. Schneider (*Cleveland Clin. Quart.*, 1944, 11, 18—21).—194 consecutive water excretion tests for adrenal function in 173 patients were useful in diagnosis and exclusion of adrenal cortex insufficiency. Adrenal insufficiency was not proved to exist in any patient by completing part 2 of the test after part 1 was negative. False positive results were obtained in 8 patients with chronic cachexia, duodenal ulcer, or renal disease. A. S.

Heart failure in Addison's disease with myocardial changes of potassium deficiency. I. I. Goodof and C. M. MacBryde (*J. clin. Endocrinol.*, 1944, 4, 30—34).—After death by cardiac failure foci of cardiac muscle necrosis were found in all 4 chambers of the heart similar to those described in animals given excess of deoxycorticosterone acetate or fed K-deficient diets. P. C. W.

Successful adrenalectomy for phaeochromocytoma causing paroxysmal hypertension. W. H. Mencher (*J. Mt. Sinai Hosp.*, 1944, 10, 743—746).—Report of a case of a 23-year-old girl. Bio-assay showed that each g. of tumour caused a reaction in the denervated cat's iris equiv. to 8 mg. of adrenaline. E. M. J.

Cell replacement and its relation to zona glomerulosa in adrenal cortex of mammals.—See A., 1944, III, 712.

Effect of adrenalectomy on the susceptibility of rats to a transplantable leukaemia.—See A., 1944, III, 747.

Morphological and functional relationships of bovine hypophysis. L. O. Gilmore, W. E. Petersen, and A. T. Rasmussen (*Univ. Minnesota Agric. Exp. Sta.*, 1941, *Tech. Bull.* 145).—A description of the structure of the bovine hypophysis based on the study of glands from 139 females and 62 males of known origin and age. At birth the hypophysis is about 0.45 g. in females and 0.5 g. in males. The gland increases rapidly in size for the first 3—4 years, after which there is a decreasing rate of increase. The period of greatest size increase in the gland corresponds to the period of greatest increase in body size, but the hypophysis increase is much slower. Wts. of hypophyses from freemartins tend to be smaller than for normal females. In part, at least, this is accompanied by smaller body wts. No relationship was found between relative hypophysis wt. and producing ability. Distinct differences in the proportional wts. of the subdivisions of the hypophysis were found in different breeds. The presence of a cone of Wulzen is not limited by breed, sex, or to any particular postnatal age. The pars intermedia is much wider than in the human. The acidophils in the pars anterior can be divided into two groups, crimson and brick-red, of which the former appear to be associated with sexual activity. Differential counts suggest differences between the bovine and other species (cat, pigeon, and, possibly, the human). J. D. B.

Food and composition of tissues after hypophysectomy. L. Levin (*Amer. J. Physiol.*, 1944, 141, 143—150).—The large losses of protein and water from the carcass and the changes in composition of the liver (but not the wt. losses of kidneys, testes, or adrenals) occurring after hypophysectomy in rats are nearly prevented by forcibly feeding quantities of food isocaloric with those consumed by normal rats. There is an actual gain in wt. due to excessive fat deposition. T. F. D.

Mechanism of glycogen-forming action of anterior lobe of hypophysis on liver of dog. A. Loubatières (*Compt. rend.*, 1943, 216, 691—692).—Extracts of anterior hypophysis do not lead to increased formation of liver-glycogen in the depancreatized dog. H. G. R.

Anti-insulin action of anterior pituitary extracts. J. F. Nelson (*Austral. J. Exp. Biol.*, 1944, 22, 131—133).—The anti-insulin effect is investigated on isolated rat diaphragm muscle. The action of insulin in promoting glycogen storage is greatly reduced in muscles from animals previously injected with anterior pituitary extract. Consumption of O₂ is unaffected by either insulin or the extract. The effect of pH on deposition of glycogen *in vitro* is discussed. J. N. A.

Pituitrin shock. M. H. Adelman and B. B. Lennon (*Amer. J. Obstet. Gynec.*, 1941, 41, 652—659).—7 cases are reported and discussed. P. C. W.

Pituitary extract for dystocia due to uterine inertia in first stage of labour. R. S. Siddall and D. G. Harrel (*Amer. J. Obstet. Gynec.*, 1941, 41, 589—595).—Subcutaneous injections of oxytocin (10 i.u. per ml.) repeated every 20—30 min. from an initial dose of 1 minim rising to a max. dose of 5 minims, or until successful results were obtained, produced efficient and lasting stimulation of labour pains in 42 of 62 women in prolonged 1st stage with poor labour pains. P. C. W.

cycloPropane-pituitrin incompatibility. S. Belinkoff (*Amer. J. Obstet. Gynec.*, 1944, 48, 109—113).—2 fatal cases of pituitrin shock are recorded during cyclopropane anaesthesia. P. C. W.

Diabetes insipidus complicating pregnancy. S. D. Hart and H. B. Breiman (*Amer. J. Obstet. Gynec.*, 1941, 41, 527—528).—A case is reported in which diabetes insipidus appeared during the 6th month of pregnancy, and disappeared on the seventh post-partum day. P. C. W.

Rôle of thymus, spleen, and gonads in development of leukaemia in a high-leukaemia stock of mice.—See A., 1944, III, 747.

Histogenesis of pig neurohypophysis. Histological alterations in the hypophysis during larval development in *Rana temporaria*.—See A., 1944, III, 711.

Atypical cell proliferation in the anterior lobe [of pituitary] adenomas of oestradiol-treated rats.—See A., 1944, III, 747.

XII.—REPRODUCTION.

Sex endocrines in development and prepuberal life. C. R. Moore (*J. clin. Endocrinol.*, 1944, 4, 135—141).—A review. P. C. W.

Experimental study of sexual behaviour in male mammals. F. A. Beach (*J. clin. Endocrinol.*, 1944, 4, 126—134).—A review. P. C. W.

Functional relations between scrotum and pouch in *Trichosurus vulpecula*. A. Bolliger (*J. Proc. Roy. Soc. New South Wales*, 1943, 78, 283—292).—The experimental production of a pouch-like structure by the administration of female sex hormones in the male of this marsupial is reported. From the responses of the scrotum and pouch to hormones of the opposite sex it is concluded that the former is an eversion and the latter an inversion of an homologous area of the body wall. Complete prolapse of the pouch and formation of a pendulous mammary gland similar in appearance to a scrotum was observed in a nursing female. J. D. B.

The theca cone and its tropism toward the ovarian surface, a typical feature of growing human and mammalian follicles. E. O. Strassmann (*Amer. J. Obstet. Gynec.*, 1941, 41, 363—378).—Over 18,000 ovarian serial sections have been examined in man, dog, cat, rabbit, horse, cow, and pig. In the early stages of follicular growth the follicles descend from the albúginea to the hilus, while the larger follicles ascend towards the ovarian surface, this ascent starting when the theca layer appears. The growth of the theca layers is eccentric. The theca interna is thicker on the side of the follicle nearer the ovarian surface, forming a cone which in the larger follicles is 8—10 times wider than the layer on the opposite side of the follicle, and which points towards the surface. The theca externa is rich in connective tissue fibres and wider on the surface of the follicle furthest from the ovarian surface, thus directing follicular expansion towards the surface of the ovary. The theca interna cone is only visible in the sections cut perpendicularly to the ovarian surface, and by active infiltrating growth through the stroma and albúginea directs the passage of the follicle to the surface of the ovary. The membrana granulosa protrudes asymmetrically into the cone. In mammalian species with free ovarian surfaces the cones diverge towards the nearest point of the surface, but in the horse, the ovaries of which are surrounded by connective tissue, the cones converge towards the only free spot—the ovulatory pit. The cones are not shown by sections cut in any plane not perpendicular to the ovarian surface. The cone is present in growing follicles only, and disappears when degeneration sets in. It may be used as a test for gonadotropic activity. P. C. W.

Breeding and rearing of young by albino rats subjected to auditory stimulation. E. J. Farris and E. H. Yeakel (*Anat. Rec.*, 1944, 89, 325—330).—Virgin female albino rats were air-blasted for 5 min. daily for 5 days a week after weaning and mated with males of equiv. age similarly treated. Pregnancies in experimental animals exceeded controls by 30%. The litters contained a normal no. of young of normal wt., but first-day mortality was 10% greater than in control litters. Survival of young to 21 days of age was not affected. W. F. H.

Ovarian hypertrophy in rats united in parabiosis with litter mates previously treated with antigonadotropic sera. H. S. Kupperman, R. K. Meyer, and J. C. Finerty (*Anat. Rec.*, 1944, 89, 277—285).—Marked ovarian hypertrophy occurred in immature female rats parabiotically united to litter mates previously treated with anti-

gonadotropic serum. The hypertrophy observed indicated an increased level of secretion of the gonadotropic hormone from the hypophysis of the antihormone-treated animal. Histological and gross changes in the pituitaries of the antihormone-treated animals are described and the mechanism whereby hypertrophy occurs is discussed. W. F. H.

Hæmorrhagic ovarian cysts and menometrorrhagia accompanying thrombocytopenic purpura. I. C. Rubin (*J. Mt. Sinai Hosp.*, 1944, 10, 673—677).—Report of a case of a 25-year-old woman of a severity necessitating hysterectomy. E. M. J.

Chemistry of ovarian cysts. R. M. Watts and F. L. Adair (*Amer. J. Obstet. Gynec.*, 1944, 48, 1—15).—Extensive chemical analyses were made of 29 specimens of cyst fluid from 15 ovarian tumours (9 benign and 6 malignant). There were great variations in the vals. found. There was some correlation between the composition of the fluid and the secretory activity of the lining of the cyst. With actively secreting epithelia the N, protein, and K contents were high and the Cl content was low. In cysts with no such active secretion the fluid was low in N, protein, and K and high in Cl. P. C. W.

Case of primary ovarian pregnancy. O. Browne (*J. Obstet. Gynec.*, 1944, 51, 321—323). P. C. W.

Estrogens in dysmenorrhœa. J. H. Randall and L. D. Odell (*J. Amer. Med. Assoc.*, 1943, 123, 735—737).—Primary dysmenorrhœa was studied in 41 female university students. There were no consistent anatomical or endocrine abnormalities. The pain occurs only with a secretory endometrium; treatment with stilbœstrol, by stopping ovulation and producing a proliferative endometrium, relieves pain but is not advised. C. A. K.

Clinical experiments with diethylstilbœstrol. I. Estrogen withdrawal bleeding in primary and postmenopausal amenorrhœa. A. Palmer (*Amer. J. Obstet. Gynec.*, 1941, 41, 861—867).—Estrogen withdrawal bleeding occurred 5—6 days after the last dose of a 14-day treatment with diethylstilbœstrol in 4 menopausal women and 4 women with primary amenorrhœa. The optimal dose was 1 mg. by mouth for 7 days followed by 5 mg. by mouth for another 7 days (total dose 42 mg.). When the total dose in 14 days was 70 mg. cystic hyperplasia of the endometrium was produced. P. C. W.

Effect of small and large doses of stilbœstrol on menopausal symptoms, vaginal smear, and urinary gonadotropins in 23 oophorectomized women. C. G. Heller, R. E. Chendler, and G. B. Myers (*J. clin. Endocrinol.*, 1944, 4, 109—116).—Daily oral doses of 0.5 mg. of stilbœstrol given when menopausal symptoms had fully developed alleviated these symptoms in 20 cases and produced œstrogenic changes in the vagina in all cases. The average gonadotrophin excretion was slightly raised, due to an increased output of luteinising hormone. Gonadotrophin excretion was completely suppressed by daily doses of 5 mg. P. C. W.

Clinical use of octofollin (synthetic œstrogen). A. R. Hufford (*J. Amer. Med. Assoc.*, 1943, 123, 259—260).—Octofollin [β -di-(p-hydroxyphenyl)- γ -ethylhexane] was given by mouth or by intramuscular injection to 21 women with signs of œstrogen deficiency, in doses up to 5 mg. It effectively relieved symptoms and there were no side reactions such as headache, nausea, vomiting, dizziness, etc., as seen with diethylstilbœstrol. C. A. K.

Clinical use of octofollin. H. K. Roberts, E. Loeffel, and C. M. MacBryde (*J. Amer. Med. Assoc.*, 1943, 123, 261—264).—Octofollin, in doses of 5—15 mg. daily by mouth, relieved the vasomotor symptoms in 44 women with signs of œstrogen deficiency. Nausea was not produced. Studies of vaginal smears showed that the substance was $\frac{1}{4}$ — $\frac{1}{5}$ as potent as diethylstilbœstrol. Liver function tests, blood studies, and urine examinations showed no evidence of toxic effects. C. A. K.

Action of hydriodic acid on phenolic pinacols and pinacolins. Synthesis of œstrogenic compounds. E. Adler, H. von Euler, and G. Gie (*Arkiv Kemi, Min., Geol.*, 1944, 18, A, No. 1, 21 pp.).—When tested by the Allen-Doisy method the œstrogenic activity of meso- β -di-p-hydroxyphenylbutane (butœstrol) is about one tenth that of hexœstrol; the racemic form is much less active (see also A., 1944, II, 367). H. W.

Iodine vapour or carbolfuchsin staining for vaginal smears.—See A., 1944, III, 713.

Effect of vitamin deficiency on œstradiol inactivation by liver.—See A., 1944, III, 742.

Corpus luteum and endometrium in patients with uterine fibroids. J. I. Brewer and H. O. Jones (*Amer. J. Obstet. Gynec.*, 1941, 41, 733—750).—The removed ovaries and endometria from 100 consecutive patients with uterine fibroids showed no abnormality in ovarian-endometrial relations; ovulation was normal; there was no evidence of excess œstrogen except in 1 case where moderate cystic hyperplasia of the uterus was present. P. C. W.

Clinical experience with pregnenolone. E. S. Burge and H. J. Holloway (*Amer. J. Obstet. Gynec.*, 1941, 41, 873—877).—28 patients with various sex or menstrual disorders received 15—40 mg. of

pregneninone orally daily for 12–14 days, premenstrually where possible. Little beneficial effect was produced in non-sp. disorders. In 3 cases of secondary amenorrhœa bleeding occurred from a secretory endometrium after each period of medication. No toxic effects were noted even after a single dose of 270 mg. P. C. W.

Clinical study of progesterone therapy by pellet implantation. D. R. Mishell (*Amer. J. Obstet. Gynec.*, 1941, 41, 687–693).—No threats of abortion occurred in 4 women with habitual abortion implanted with 40–60-mg. tablets of progesterone. 4 cases of 6 with dysmenorrhœa were benefited. 2 of 4 cases of functional bleeding were cured; one of the failures had an endometrium showing no evidence of œstrogen stimulus. Endometrial biopsies showed that tablet-implantation caused the appearance of a true secretory endometrium where there had been previously a persistent proliferative or abortive secretory phase. P. C. W.

Metabolism of progesterone in hysterectomised woman. G. E. S. Jones and R. W. Telinde (*Amer. J. Obstet. Gynec.*, 1941, 41, 682–687).—The % recovery of injected progesterone in the form of urinary pregnanediol is the same in hysterectomised women as in normal women during the follicular phase of the menstrual cycle. The urinary pregnanediol excretion in hysterectomised women during the luteal phase of the cycle was the same as that in normal women. P. C. W.

Antifibromatogenic effects produced by the intermittent action of progesterone. Inactivation of antifibromatogenic substances (progesterone and deoxycorticosterone acetate) in the liver.—See A., 1944, III, 746.

Fluorescence studies on cancer. I. Porphyrin metabolism, Harderian gland fluorescence, and susceptibility to carcinogenic agents. II. Red fluorescence of the genitalia of women. III. Extraction and identification of porphyrins from the red-fluorescent exudates on the genitalia of women.—See A., 1944, III, 748.

Spectroductometer study of cellular respiration *in vivo* in climacteric. L. Berman (*N.Y. Sta. J. Med.*, 1943, 43, 2301–2302).—Basal reduction time was 50–85 in 15 normally menstruating women, aged 20–30, the urine of whom contained 0–18 urinary mouse units of gonadotropic hormone per l. In 15 climacteric women the basal reduction time was 50–105 and appeared to be correlated with the amount of urinary hormone (15–70 units). E. M. J.

Arapesh maternity. R. F. Fortune (*Nature*, 1943, 152, 164).—The lactogenic interval in Arapesh (New Guinea) women is from 6 to 25 months. The bearing of this fact on the sociology of the Arapesh is discussed. E. R. R.

Effects of pentobarbital sodium on intact uterus of animals. D. S. Penkratz (*Amer. J. Obstet. Gynec.*, 1941, 41, 877–882).—Subcutaneous or intramuscular injection of nembutal (0.1 grain per lb.) had little or no effect on the tone or contractions of the intact pregnant uteri in dogs, cats, guinea-pigs, or rabbits. A second or third injection 1 and 2 hr. later slowed maternal respiration and depressed foetal activity. P. C. W.

Control of conception. R. L. Dickinson (*J. Amer. Med. Assoc.*, 1943, 123, 1043–1046).—A review of the various methods for preventing conception. C. A. K.

Skin test for diagnosis of pregnancy. F. H. Falls, V. C. Freda, and H. H. Cohen (*Amer. J. Obstet. Gynec.*, 1941, 41, 431–438).—Colostrum solution injected intradermally in non-pregnant women produced characteristic wheals and areolæ in 96% of cases; men reacted similarly. No reactions were produced in 98% of pregnant women or pre-pubertal children. P. C. W.

(Endocrine) treatment of pelvic endometriosis. W. T. Dannreuther (*Amer. J. Obstet. Gynec.*, 1941, 41, 461–474).—Progesterone may control the symptoms in some cases, but surgical treatment is usually necessary. P. C. W.

Correlation of ovarian and endometrial histology, vaginal epithelium, gonadotrophic hormonal excretion, and day of menstrual cycle in 28 women. C. G. Heller, J. P. Farney, D. N. Morgan, and G. B. Myers (*J. clin. Endocrinol.*, 1944, 4, 95–100).—28 women undergoing bilateral salpingo-oophorectomy and hysterectomy were studied. Vaginal smears and day of menstrual cycle were unreliable indices of the state of the ovaries. Urinary gonadotrophin excretion adequately differentiated functioning and non-functioning ovaries, but was not a reliable indication of the state of the ovaries or time of ovulation. The most reliable index of ovarian status was the endometrial histology, which correlated in all but 4 cases (which had cystic ovaries and low gonadotrophin excretion). P. C. W.

Development and correlation of menopausal symptoms, vaginal smear, and urinary gonadotrophin changes following castration in 27 women. C. G. Heller, J. P. Farney, and G. B. Myers (*J. clin. Endocrinol.*, 1944, 4, 101–108).—27 women were studied at intervals after bilateral oophorectomy. All with normal pre-operative gonadotrophin excretion showed significant rises after operation (86% by the 10th day and 100% by the 30th day); there was no rise in 5 patients whose pre-operative excretion was within the

menopausal range. Menopausal symptoms attained max. severity 27–66 days after operation. Vaginal smear changes did not parallel the rise in gonadotrophin excretion or development of menopausal symptoms. 4 of 5 patients with high pre-operative gonadotrophin excretion and atrophic reproductive systems developed menopausal symptoms after operation, suggesting that atrophic ovaries may still secrete small amounts of œstrogen. P. C. W.

Frequency of anovulatory menstruation. A. B. Levan and P. B. Szanto (*Amer. J. Obstet. Gynec.*, 1944, 48, 75–80).—261 endometrial biopsy specimens were examined from 103 patients in a mental hospital, all being taken during the last third of the cycle. 14 anovulatory cycles were detected in 9 patients, giving an incidence of 5.4% of cycles and 8.7% of patients. The incidence was slightly higher in the women over 40. P. C. W.

Incidence of endometrial hyperplasia with uterine fibroids and external and internal endometriosis (adénomyosis). D. N. Henderson (*Amer. J. Obstet. Gynec.*, 1941, 41, 694–697).—The incidence of uterine hyperplasia in cases of uterine fibroids and external endometriosis was 6% and 9%, suggesting that excess œstrogen is not a cause of the conditions. In adenomyosis the incidence was 25%, suggesting excess œstrogen as a cause of this condition. P. C. W.

107 cases of uterine bleeding with endometrial biopsies. G. F. Douglas (*Amer. J. Obstet. Gynec.*, 1941, 41, 624–627). P. C. W.

Amenorrhœa and sterility caused by bilateral polycystic ovaries. M. L. Leventhal (*Amer. J. Obstet. Gynec.*, 1941, 41, 516–517).—A case is reported. P. C. W.

Clinical observations on the endocrinology of abortion. E. C. Hamblen (*Amer. J. Obstet. Gynec.*, 1941, 41, 664–675).—Gradual or abrupt falls in pregnanediol excretion usually occur before abortion; the excretion previously may be normal or low. Abortion may threaten when pregnanediol excretion is normal. Intensive progesterone therapy alone or combined with thyroid, œstrogen, and chorionic gonadotropin therapy failed to maintain pregnancy in 4 of 6 cases. There is no evidence that the injected progesterone increases pregnanediol excretion. The results are discussed. P. C. W.

Erythrocyte sedimentation reaction during pregnancy.—See A., 1944, III, 715.

Endometrial pattern before and after treatment of amenorrhœa. W. Bickers (*Amer. J. Obstet. Gynec.*, 1944, 48, 58–68).—9 patients were studied. 7 of them had persistent proliferative endometria and 6 were successfully treated with 5 mg. of stilboestrol daily for 10 days supplemented during the last 5 days with 5 mg. of progesterone. Cyclic bleeding occurred in 5 of the cases for variable periods. The endometrium exhibited no significant change after treatment. 2 cases showed persistent secretory endometria (1 with positive Friedman test) and regained normal cyclic menstruation after removal of persisting corpora lutea. P. C. W.

Zondek's simplified treatment of secondary amenorrhœa. R. S. Finkler (*Amer. J. Obstet. Gynec.*, 1944, 48, 26–35).—Uterine bleeding was produced in 81% of 31 cases of secondary amenorrhœa treated with 2.5 mg. of œstradiol benzoate + 12.5 mg. of progesterone on 2 successive days. The failures were in cases with hypoplastic uteri or in whom the amenorrhœa had lasted more than 2 years. No changes in endometrial biopsy were detected. P. C. W.

Statistical study of purpose and errors of routine daily measurement of puerperal uterus. C. S. Russell (*J. Obstet. Gynec.*, 1944, 51, 334–339). P. C. W.

Recession of toxæmia following intrauterine death of one of dizygotic twins. W. A. White (*Amer. J. Obstet. Gynec.*, 1941, 41, 710–711).—A case is reported. P. C. W.

Non-sensitivity of ovarian follicles of *Bufo vulgaris* to action of luteinising hormone. P. Rey (*Compt. rend.*, 216, 693–694).—The luteinising hormone has no morphogenetic action on the follicular tissue of *B. vulgaris*. H. G. L.

Effect of combined administration of chorionic gonadotrophin and pituitary synergist on human ovary. C. Mazer and E. Ravetz (*Amer. J. Obstet. Gynec.*, 1941, 41, 474–484).—Combination of amounts of chorionic gonadotropin and anterior pituitary extract, each without effect alone, produced stimulation or over-stimulation of the ovaries in 20 of 23 surgical patients. The combination produced menstruation in 19 of 23 women with amenorrhœa, arrested uterine dysfunctional bleeding in 14 of 18 patients, and was promptly followed by conception in 2 of 8 cases of anovular menstruation. The reasons for the extra activity of the combined compounds are discussed. P. C. W.

Failure of menopausal urine concentrates to induce egg extrusion in female *Xenopus* frog test for pregnancy. A. I. Weisman and C. W. Coates (*J. clin. Endocrinol.*, 1944, 4, 35–36). P. C. W.

Are the anterior pituitary-like substances gonadotrophic? W. E. Brown, J. T. Bradbury, and I. Metzger (*Amer. J. Obstet. Gynec.*, 1941, 41, 582–588).—12 mental patients with regular menstrual history for 12 months were given 500 r.u. of chorionic gonadotrophin daily

for 4–6 weeks. 7 were unaffected while 5 had 1–5 months' amenorrhoea after the treatment with progressive endometrial atrophy. 4 women with amenorrhoea similarly treated showed no return of menstrual rhythm. P. C. W.

Employment of equine gonadotrophins in gynaecology. E. C. Hamblen (*Amer. J. Obstet. Gynec.*, 1941, 41, 495–515).—8 cases are described and discussed. The effects of equine gonadotropin are often temporary. Cyclic therapy with gonadotrophins fails to ensure cyclic bleeding, even if courses of equine and chorionic gonadotrophins are alternated. P. C. W.

Blood precursors of milk-protein. E. P. Reineke, V. E. Peterson, O. B. Houchin, and C. W. Turner (*Missouri Agric. Exp. Sta. Res. Bull.*, 1939, No. 296, 20 pp.).—The lactating mammary gland of goat may take up fibrinogen, globulin, or albumin from the blood. Reversible transformations between these proteins may possibly occur within the gland. The uptake of considerable amounts of non-protein-N by the gland indicates that unidentified constituents of this fraction are concerned in milk synthesis. In goats fasting for 14–18 hr. the lactating mammary gland may show a negative amino-acid balance. Differences between arterial and venous blood-N frequently disclose a negative total-N balance in the gland. A. G. P.

Presence of combined sugar in human milk. M. Husset-Bierry (*Compt. rend.*, 1943, 216, 674–675).—Human milk contains three types of combined sugar: (1) an acid-labile fraction consisting of phosphoric esters of galactose; (2) an alkali-labile fraction which readily hydrolyses to galactose; (3) a disaccharide, different from lactose, which may be hydrolysed into glucose and galactose (*d*-galactose and *d*-glucose are present in the mol. proportion of 3:1). H. G. R.

Inhibition of lactation. H. L. Stewart and J. P. Pratt (*Amer. J. Obstet. Gynec.*, 1941, 41, 555–566).—Breast engorgement may be prevented by the injection in the early puerperium of total doses of 250,000 i.u. of oestrone, or 125 mg. of testosterone, or 10–50 mg. of stilboestrol orally, each over 5 days. Lactation may be temporarily diminished by the stilboestrol treatment and it is unaffected by the other compounds. P. C. W.

"Electrical production" of semen in guinea-pig and character of ejaculate. L. Collery (*Proc. Roy. Irish Acad.*, 1944, 50, B, 1–14).—Ejaculation was produced in guinea-pigs by electric stimuli from the secondary coil of a du Bois-Reymond apparatus, the electrodes being placed in the anus and on the skin at the level of the 1st–3rd lumbar vertebrae. The sperm in the ejaculate appeared normal. They were not motile in the absence of the achrosome. A tendency to form rouleaux and to agglutinate was noted. Polymorph leucocytes and epithelial cells were present in the semen and are regarded as evidence of seminal exhaustion. P. C. W.

Non-septic spermaphagia in male guinea-pig. L. Collery (*Proc. Roy. Irish Acad.*, 1944, 50, B, 23–38).—In the guinea-pig after frequent ejaculations elicited by electric stimuli the semen contains polymorph leucocytes and epithelial cells, though not before 24–72 hr. have elapsed after the initial ejaculation. The genitalia show marked leucocytic infiltration in the seminal vesicles and urethra with some epithelial desquamation in the latter; the leucocytes dispose of dead sperms by phagocytosis. The findings are discussed with reference to male fertility. P. C. W.

Effects of massive doses of testosterone propionate on spermatogenesis. R. S. Hotchkiss (*J. clin. Endocrinol.*, 1944, 4, 117–120).—Alternate injections of chorionic and pituitary gonadotrophins 4 times weekly for 10 weeks (total doses of 10,000 i.u. and 1000 r.u.) had no effect on germinal dysfunction in one case. Courses of testosterone propionate of 250–1000 mg. for 4–5 days also had no effect, while 100–200 mg. given for 28 days transiently depressed spermatogenesis. P. C. W.

X-Irradiation of rabbit spermatozoa *in vitro*. E. C. Amoroso and A. S. Parkes (*Nature*, 1943, 152, 244).—Rabbit semen, subjected to X-irradiation from 50 to 100,000 r., was used for the artificial insemination of females in which super-ovulation had been induced by injection of gonadotrophin. Observations, including cytological examinations, were made at up to 40 hr., 9 days, and 28 days after insemination. Penetration occurred at all dosages; no syngamy occurred at 100,000 r., while at 10,000 to 50,000 r. syngamy occurred but derangement in chromosome distribution or repression of the male chromosome was observed. Up to 1000 r. there was no irregularity in syngamy, although development of the embryos was abnormal above 250–500 r. E. R. R.

Water and electrolyte content of testicular tumours and of normal, cryptorchid, and oestrogenised testis.—See A., 1944, III, 748.

Pathological anatomy of benign prostatic enlargement. G. I. M. Swyer (*J. Path. Bact.*, 1944, 56, 365–375).—In most early cases of benign prostatic enlargement, the characteristic adenomatous masses are situated only in the lower part of the gland. The upward extension of these masses may give rise to intravesical projections, not associated with the so-called middle lobe in 11 out of 15 cases. In some enlarged prostates there are direct connexions between

utricular glands and outer prostatic glands, as well as with the adenomatous masses; tissue of Muellierian origin may thus participate in the pathological changes of benign hypertrophy. The adenomatous masses may drain into the prostatic sinuses. It is suggested that prostatic hypertrophy usually commences in those zones of the prostate which show the highest growth potential as evidenced by the longest persistence of active growth, namely the antero-lateral extensions of the lateral lobes and, in some cases, the prespermatic lobe; a stimulation of this normal growth, with subsequent relative disorganisation, is thus held to account for benign enlargement. (3 photomicrographs.) C. J. C. B.

Gastrointestinal tract in hyperthyroidism.—See A., 1944, III, 727.

Animal peptidases. V.—See A., 1944, III, 766.

XIII.—DIGESTIVE SYSTEM.

Stomach after operation. Radiological consideration of types of operation, peptic ulcer, and neoplasm. F. E. Templeton (*Cleveland Clin. Quart.*, 1944, 11, 27–37).—A review. A. S.

Effect of certain drugs on motility of jejunum-ileum in normal man. F. Huidobro, E. Montero, and F. Cuevas (*Surg. Gynec. Obstet.*, 1944, 78, 471–476).—The movements of the jejunum-ileum in 11 normal men were recorded by passing the balloon of a Miller-Abbott tube 2½–4½ ft. below the pylorus. The intestinal movements were of 3 types that are illustrated. Amyl nitrite (inhaled), theophylline-ethylenediamine (240 mg. intravenously), methyloctenylamine (100 mg. subcutaneously), and diphenyldiethylaminoethanol hydrochloride (75 mg. subcutaneously) decreased the intestinal movements and tone; the actions were longer in the above order. Pitressin (4–10 units subcutaneously) and prostigmine (0.5 mg. subcutaneously) increased motility; this was decreased by atropine or morphine (1 and 8–20 mg. subcutaneously), the former inhibiting the effect of pitressin. Nitroglycerin had no action. P. C. W.

Roentgenological pattern of small intestine in infants and children. H. Zwerling and W. E. Nelson (*Radiology*, 1943, 40, 277–282).—Of 77 apparently healthy infants and children 5 showed "adult," 38 "infantile" or "deficiency," and the remainder intermediate bowel patterns. The earliest age at which the "adult" pattern appeared was 11 months. From this study it is inferred that the roentgenological appearances of the small intestine of children is not at present a reliable criterion for the diagnosis of nutritional deficiency states. E. M. J.

Magnesium poisoning following magnesium sulphate enema. D. W. Fawcett (*J. Amer. Med. Assoc.*, 1943, 123, 1028–1029).—2 cases, 1 fatal, are reported. C. A. K.

Local effect of local anaesthetic drugs on motility of gastro-intestinal tract of human and dog. N. Crohn, W. H. Olson, and H. Necheles (*Surg. Gynec. Obstet.*, 1944, 79, 41–49).—6 local anaesthetics and 2 spasmolytic drugs (butyn, diothane, metycaïne, pontocaine, procaine, syntropan, and trasentine) were applied locally to the mucosa at various levels of the intestines in dogs and humans. Intestinal tone and motility were inhibited in all cases; gastric motility was unaffected. The effect was local and not reflex as shown by negative results when the drugs were applied at different sites from the recording balloons. P. C. W.

Effects of retrograde venous thrombosis in intestinal strangulation. J. T. Chesterman (*J. Path. Bact.*, 1944, 56, 442–443).—Minor degrees of venous obstruction and secondary strangulation give early radiographic evidence of their presence, but severe initial venous obstruction, alone or combined with arterial occlusion, does not, owing to increased intestinal tonus which prevents distension until peritonitis has taken place in a non-strangulated area or until peritonitis has set in. Dye injection to determine the site of resection is valueless, as anastomosis can only be safely performed in areas where venous engorgement is not present. C. J. C. B.

Formation of lower glycerides during hydrolysis of triglyceride with pancreatic lipase.—See A., 1944, III, 766.

XIV.—LIVER AND BILE.

Chromosome complexity in regenerating rat liver.—See A., 1944, III, 663.

Fluorescent concentrates from the non-saponifiable fractions of human livers.—See A., 1944, III, 662.

Glycogen content of human liver. D. S. MacIntyre, S. Pedersen, and W. G. Maddock (*Surgery*, 1941, 10, 716–729).—The glycogen content of livers, determined on biopsies taken from the edge of the liver of 33 patients during abdominal operations, varied from 1.1 to 7.56%. G. P.

Ascorbic acid content of liver in mice.—See A., 1944, III, 665.

Effect of castration and testosterone propionate on "alkaline" and "acid" phosphatases of kidney, liver, and intestine of mouse.—See A., 1944, III, 691.

Estimation of anti-fatty liver factor of pancreas and of pancreatic juice using depancreatized dogs maintained with insulin. M. L. Montgomery, C. Entenman, and I. L. Chaikoff (*Amer. J. Physiol.*, 1944, 141, 216—220).—For the first 3—8 weeks after pancreatectomy, dogs were maintained by daily injections of insulin on a diet supplemented with raw pancreas. On omitting the raw pancreas, measurements were made on the rate of deposition of fatty acids in the liver, which was independent of the preliminary feeding period. Fatty acid concns. of 17—53% were found in the livers of dogs examined at intervals of 15—20 weeks after discontinuing the raw pancreas feeding. No support was obtained for the views that the anti-fatty liver factor is stored by the completely depancreatized dog on insulin or is contained in the internal secretion of the pancreas.

T. F. D.

"Lipocaic" and fatty liver after pancreas removal. C. Entenman, M. L. Montgomery, and I. L. Chaikoff (*Amer. J. Physiol.*, 1944, 141, 221—226).—"Lipocaic," tested for its ability to prevent the development of fatty livers in completely depancreatized dogs on insulin, is a poor source of the anti-fatty liver factor of the pancreas and failed, in amounts equiv. to 100 g. of pancreas in these animals, to prevent the fall of cholesterol, phospholipin, or total fatty acids of the blood below preoperative levels.

T. F. D.

Unidentified factor(s) in yeast and liver essential to the cure of achromotrichia in dogs on synthetic diets.—See A., 1944, III, 671.

Potency of liver extract in stimulating gastric secretion by intravenous injection and by direct lavage.—See A., 1944, III, 657.

Sensitivity to liver extracts.—See A., 1944, III, 704.

Effects of liver extirpation and transplantation on blood-cell formation [in Amphibia]. W. M. Copenhaver (*Trans. New York Acad. Sci.*, 1944, 6, 223—227).—Amphibian embryos survive complete liver extirpation for a period which is sufficiently long to produce anaemia. The anaemia does not occur during the embryonic yolk stages, but begins 1 week after yolk resorption. In the final stages, 20—40 days after operation, there are few or no circulating erythrocytes left. The anaemia has not been modified by injections of liver extracts but can be prevented by transplantation of liver tissues to other parts of the body.

C. J. C. B.

Absence of liver damage in chicks hypoprothrombinæmic due to vitamin-K deficiency or ingestion of 3 : 3'-methylenebis-(4-hydroxycoumarin). V. M. Emmel and H. Dam (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 11—14).—No macro- or micro-scopic changes were found in livers of such chicks when compared with controls.

V. J. W.

Arachnoidal fibroblastoma (meningioma) with metastases to the liver.—See A., 1944, III, 669.

Vitamin-B, nutrition in surgical patients as determined by the blood level of pyruvic acid. I. Hepatic disease.—See A., 1944, III, 672.

Changes of water tolerance test in hepatic disease. D. Adlersberg and C. L. Fox, jun. (*Ann. int. Med.*, 1943, 19, 642—650).—In cases of severe hepatitis urinary output after drinking 1500 c.c. of water was 300—1000 c.c. within 5 hr., the water retention running parallel with the severity of the disease.

A. S.

Experimental hepatic injury. P. Gyorgy (*Amer. J. clin. Path.*, 1944, 14, 67—81).—A general review and details of additional diets which produce hepatic injury in rats. There is correlation between hepatic injury and the abs. and relative supply of methionine, cystine, and choline in the diet. On a low-protein diet, insufficient intake of methionine may be a causal factor. A high-protein diet which is relatively and absolutely rich in cystine compared with methionine is harmful. Supplements of cystine without compensatory addition of choline or methionine aggravate the cirrhosis including the appearance of ceroid and of serous effusions. For the prevention and treatment of liver damage in man the following are recommended: methionine 2—4 g. daily, or as a less effective substitute, cystine + choline, 2—4 g. of each daily; a protein-rich diet with a high content of methionine; low fat intake; adequate vitamin-B-complex. (9 photomicrographs.)

C. J. C. B.

Cardiac or congestive cirrhosis. S. Koletsky and J. H. Narnebee (*Amer. J. med. Sci.*, 1944, 207, 421—430).—Livers the seat of prolonged and advanced passive hyperemia, due to heart failure, sometimes show diffuse fibrosis and alteration of architectural pattern. The main etiologic factor is prolonged and severe hepatic venous stasis. Repeated episodes of decompensation favour the development of the lesion. The most severe degree of fibrosis and architectural change occurred in patients with chronic constrictive pericarditis. Congestive cirrhosis is relatively common in patients with rheumatic heart disease, in those both with mitral stenosis and with combined valvular lesions. It is less frequent in hypertensive patients and is uncommon or rare in other forms of heart disease.

C. J. C. B.

Takata-Ara reaction in jaundice. H. B. Stein (*S. Afr. J. Med. Sci.*, 1944, 9, 41—50).—Takata-Ara reaction and Mancke-Sommer reaction were carried out in 132 cases of jaundice with serum-bilirubin of not below 2 mg. per 100 ml. and/or icterus index of not less than 25 units. Positive reactions occurred in about half

the cases of intrahepatic jaundice but only rarely in cases of obstructive jaundice unless associated with liver disease. The reaction is of no val. in distinguishing between obstructive and intrahepatic jaundice.

P. C. W.

Massive acute necrosis of the liver; its significance and experimental production. L. E. Glynn and H. P. Himsworth (*J. Path. Bact.*, 1944, 56, 297—305).—A method is described for producing necrosis of the liver in rats by means of a protein-deficient diet. Necrosis closely resembles acute yellow atrophy in man and progresses to a condition of scarring similar to that of nodular hyperplasia. It differs both clinically and pathologically from the acute zonal necrosis produced by many liver-poisons, the latter being due to the active intervention of a toxin, the former to a sp. deficiency. This deficiency is due to a lack of casein in the diet and the exhibition of methionine in a dose of 20 mg. per rat per day is completely protective. (12 photomicrographs.)

C. J. C. B.

Liver necrosis from trinitrotoluene. W. L. Palmer, G. S. McShane, and W. H. Lipman (*J. Amer. Med. Assoc.*, 1943, 123, 1025—1027).—3 cases of liver necrosis following industrial exposure to trinitrotoluene are reported.

C. A. K.

Problems of infective hepatitis. Epidemic of infective hepatitis in Gloucestershire.—See A., 1944, III, 701.

Effect of experimental hepatitis on plasma-proteins of (I) immature, (II) pregnant rats.—See A., 1944, III, 634.

Thyroid function as factor in gall-bladder disease and formation of gall-stones. E. A. Simendinger (*Surg. Gynec. Obstet.*, 1944, 79, 10—20).—76% of patients with gall-bladder disease have subnormal basal metabolic rates. The incidence of gall-bladder disease and hypothyroidism is greatest in middle-aged women and both conditions have common gastro-intestinal symptoms and high blood-cholesterol. In thyroidectomized dogs the blood-cholesterol rose 27—30 days after operation and was maintained at high levels; there was no increase in the biliary output of cholesterol and the bile salt and cholesterol concns. of the bile were normal or low. The gall bladders of most hypothyroid dogs were distended and contained thick brown ppts. consisting mostly of pigment soaps, Ca, and cholesterol; cholecystograms failed to visualise or showed prolonged emptying times. After administration of 4 grains of thyroid extract daily for 23 days the cholecystograms were normal.

P. C. W.

Common bile duct peristalsis. D. Macdonald (*Surg. Gynec. Obstet.*, 1941, 73, 864—866).—A preliminary report of the demonstration of peristalsis by serial roentgenograms in a single case.

P. C. W.

Pregnancy and gallstones. H. E. Robertson and G. R. Dochat (*Int. Abst. Surg.*, March, 1944, 193—204).—A statistical review not establishing any relation.

P. C. W.

XV.—KIDNEY AND URINE.

Absorption of galactose by renal tubules of dog. J. J. Eiler, T. L. Altharsen, and M. Stockholm (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 67—70).—Galactose absorption was determined by the method of Shannon and Fisher (A., 1939, III, 152), and is about 40% of the galactose of glomerular filtrate. It is independent of concn. of galactose in plasma or glomerular filtrate. Absorption of galactose (unlike glucose) is not affected by thyroxine administration.

V. J. W.

Action of adrenal cortical compounds and l-ascorbic acid on secretory kidney tubules in tissue culture. R. Chambers and G. Cameron (*Amer. J. Physiol.*, 1944, 141, 138—142).—The secretory activity of chick renal proximal tubules in tissue culture (teased fragments of mesonephros in chick plasma in which the distension of the tubular segments is being studied by the aid of phenol-red) is stimulated by whole cortical extract and by 17-hydroxy-11-dehydrocorticosterone but not by 11-dehydrocorticosterone, l-ascorbic acid, or by Kendall's amorphous fraction.

T. F. D.

Production of pressor substances in kidney. U. S. von Euler and T. Sjöstrand (*Naturwiss.*, 1943, 31, 145).—Fresh pig kidneys yield approx. 0.01% of tyramine, probably produced by decarboxylation of preformed tyrosine, in 8 hr. Hydroxytyramine, if present, occurs in much smaller proportion. The tyramine is extracted with 2 vols. of alcohol or acetone, from which it is removed at pH 9—10 by extraction with ether. If this extraction is continued at pH 3—4, small proportions of another pressor substance, possibly nephrine, are obtained.

W. McC.

Effect of castration and testosterone propionate on "alkaline" and "acid" phosphatases of kidney, liver, and intestine of mouse.—See A., 1944, III, 691.

Effect of pregnancy on experimentally produced renal injury. L. V. Dill and C. E. Isenhour (*Amer. J. Obstet. Gynec.*, 1941, 41, 675—682).—Pregnant rabbits are less susceptible than non-pregnant ones to injections of U nitrate, equally susceptible to staphylococcus toxin and ureteral ligation, and more susceptible to Na oxalate. As, however, abortion or foetal resorption occurs soon after renal

damage has been produced, the effects of pregnancy are only temporary. Rises in blood pressure were produced by ureteral ligation in pregnant animals and by Na oxalate in both types of animal.

P. C. W.

Vitamin-B, nutrition in surgical patients as determined by the blood level of pyruvic acid. III. Renal disease, neoplastic disease, and infection.—See A., 1944, III, 672.

Electrocardiographic variations in acute glomerulonephritis.—See A., 1944, III, 637.

Static intrapelvic pressure of hydronephrotic kidney. H. A. Wilmer (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 52—54).—After ligation of one ureter in a rabbit, a needle was passed into the renal pelvis and connected with a null-point manometer. Intrapelvic pressure was 7.5 mm. Hg after 3 days; it reached a max. of 25—27 mm. in 6—16 days, and fell to 16 mm. at 63 days.

V. J. W.

Posterior pituitary injection as renal concentration test. W. A. Sodeman and H. T. Engelhardt (*J. Amer. Med. Assoc.*, 1943, 122, 1070—1072).—The increased concn. of urine following injection of 10 i.u. of posterior pituitary extract is used instead of the water restriction concn. test. Urine specimens are collected 1 and 2 hr. after injection. The lowest max. sp. gr. in 45 normal subjects was 1.023; vals. as low as 1.009 were found in patients with renal disease. The test requires no preliminary prep. of the patient.

C. A. K.

Urinary incontinence relieved by restoration and maintenance of normal position of urethra. W. T. Kennedy (*Amer. J. Obstet. Gynec.*, 1941, 41, 16—28).—Changes in the position of the female urethra during micturition are described. Persistent displacement of the urethra from any cause may produce incontinence and loss of sphincter function. Operative procedures to restore such function are described.

P. C. W.

Lead content of "normal" urine. L. A. Meston (*Med. J. Austral.*, 1944, I, 392—393).—In Brisbane the Pb content of many normal urines was less than 0.01 mg. per l.

F. S.

Chief urinary pigment. Relationship between rate of excretion of yellow urinary pigment and metabolic rate. M. Ostow and S. Philo (*Amer. J. med. Sci.*, 1944, 207, 507—512).—The hourly excretion of urinary yellow pigment was const. in any given subject with a range of $\pm 10\%$. Among normal males, there was a correlation between the pigment (P) and creatinine (C) output rates, i.e., the concn. ratio P/C was const. When the metabolic rate was elevated by thyroid extract, P/C variations paralleled the fluctuations of the basal metabolic rate closely. Among adult females (but not males) there was a good correlation between individual P/C vals. of urine collected during a basal period and the basal metabolic rate determined at the end of that period.

C. J. C. B.

Excretion of a methæmoglobin-forming substance in urine. E. H. Fishberg (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 24—26).—In various pathological states, mainly subacute infections, the urine contains a substance which converts hæmoglobin into methæmoglobin *in vitro*. It gives most of the reactions of the water-sol. quinones and can be determined by titrating the urine, after adding KI, H_2SO_4 , and starch, with $Na_2S_2O_3$. It interferes with the determination of ascorbic acid.

V. J. W.

XVI.—OTHER ORGANS, TISSUES, AND BODY-FLUIDS. COMPARATIVE PHYSIOLOGY (not included elsewhere).

Climate and disease. C. A. Mills (*J. Amer. Med. Assoc.*, 1943, 123, 551—552).—A review.

C. A. C.

Pregnancy and fever therapy. J. R. Marx (*Amer. J. Obstet. Gynec.*, 1940, 40, 1056—1057).—Fever therapy for paresis did not affect the course of pregnancy or the normality of the infant in 1 case.

P. C. W.

Survival of hypothermia by dogs. L. M. Woodruff (*Anesthesiology*, 1941, 2, 410—420).—Dogs anaesthetised with nembutal died when their body temp. was lowered to 72—78° F. by external cooling. The pulse, respiratory rate, and blood-sugar decreased, and blood-sp. gr. increased, with falling body temp. The cause of death was either respiratory or circulatory failure. Digitalis prevented circulatory failure for some hr. and prolonged the life of the animals.

G. P.

Subcutaneous temperatures in moderate-temperature burns. K. Mendelssohn and R. J. Rossiter (*Quart. J. Exp. Physiol.*, 1944, 32, 301—308).—For a corresponding degree of narcosis nembutal causes a smaller fall in body temp. of guinea-pigs than ether. The horizontal distribution of subcutaneous temp. under a burning iron at a range of 45—70° and after a 1-min. application of the iron was plotted.

A. S.

Study of three infants dying from congenital defects following maternal rubella in early stages of pregnancy. C. Swan (*J. Path. Bact.*, 1944, 56, 289—295).—The naked eye and microscopic characters of the congenital cataract and congenital heart disease encountered in 3 infants whose mothers had suffered from rubella

in the second month of pregnancy are described. The rubella was considered of aetiological importance. (6 photomicrographs.)

C. J. C. B.

Scientific evidence in cases of injury by gunfire. A. R. Moritz and F. R. Dutra (*Arch. Path.*, 1944, 37, 340—349).—A general review.

C. J. C. B.

Influence of metabolic stimulants on wound healing; influence of thyroid and α -[2:4]-dinitrophenol. T. H. C. Barclay, D. P. Cuthbertson, and A. Isaacs (*Quart. J. Exp. Physiol.*, 1944, 32, 309—315).—Feeding of dried thyroid gland to rats, or previous treatment with thyroid, reduces the period of healing of circular skin wounds. Similar effects were noted by adding to the diet 2:4-dinitrophenol (0.012%); larger doses (0.09%) did not produce this effect and the loss in body wt. was marked.

A. S.

Rôle of allergy in delayed healing and in disruption of wounds. I. Antigenicity of catgut. II. Effect of specific sensitivity to catgut on reaction of tissues to catgut sutures and on healing of wounds in the presence of catgut sutures. III. Delayed healing and disruption produced by local allergic reaction (Auer phenomenon). H. C. Hopps (*Arch. Surg.*, Chicago, 1944, 48, 438—444, 445—449, 450—456).—I. Injections of sheep serum or suspensions of sheep intestine or catgut produced hypersensitivity to catgut in rabbits and guinea-pigs, as shown by sp. reactions of the skin and anterior chamber of the eye, and the demonstration of humoral antibodies. Catgut stimulated the production of antibodies sp. for itself and for collagen and mucoprotein.

II. There was a slightly increased reaction of the tissues to catgut sutures in rabbits rendered hypersensitive to catgut but no delay in the healing of laparotomy wounds. (8 photomicrographs.)

III. In rabbits rendered sensitive to horse serum or ovalbumin and given sp. antigen intravenously immediately after laparotomy there was a local allergic reaction leading to delayed healing. The delayed healing was due to a failure of the maturation of macrophages, with resultant failure in the production of reticulum and collagen. (3 photomicrographs.)

F. S.

Experimental and clinical study of use of adult animal tissue extract in acceleration of wound healing. R. S. Hoffman and J. A. Dingwall (*Surg. Gynec. Obstet.*, 1944, 79, 103—108).—Circular wounds were made on each side of the chest of 10 dogs. The healing was more rapid on the side dressed with a Tyrode extract of sheep's heart than on the side dressed with saline. In patients the healing time in 8 of 10 cases treated similarly was faster than expected according to DuNouy's formula (*J. exp. Med.*, 1916, 24, 451, 461).

P. C. W.

Use of synthetic, non-absorbable suture material. J. K. Narat (*Surg. Gynec. Obstet.*, 1941, 73, 819—821).—Favourable surgical report on the use of Vinyon and Zytel, which have the advantages over silk of giving less tissue reaction, ability to withstand repeated autoclaving or immersion in alcohol, and that the knots hold better.

P. C. W.

Effect of environmental factors on hatching, moulting, and survival of zoea larvae of the blue crab *Callinectes sapidus*, Rath. M. Sandoz and R. Rogers (*Ecology*, 1944, 25, 216—228).—Hatching occurred from 19° to 29° and the optimum salinity was 2.3—2.8‰. Young orange-coloured eggs hatched in 11—14 days at the optimum salinity and no pre-zoea larvae were obtained; this stage is probably not a normal one for blue crab. First instar period is from 6 to 7 days and second instar from 5 to 7 days under favourable conditions. Three larval stages of the crab occur, first and second zoeal stages having been observed to moult.

L. G. G. W.

Polymorphism in giant beetles. G. J. Arrow (*Proc. Zool. Soc. Lond.*, 1943, 113, A, 113—116).—Polymorphism is probably a manifestation of the degree of vigour of the insects.

H. L. H. G.

Composition of casein in milk. G. A. Ramsdell and E. O. Whittier (*J. Biol. Chem.*, 1944, 154, 413—419).—Ca caseinate was prepared from skimmed milk by pptn. in the supercentrifuge. An increase in pH on addition of Ca oxalate shows that $Ca_3(PO_4)_2$ and not $CaHPO_4$ is present. The complex prepared contains 4.8% of $Ca_3(PO_4)_2$ and the Ca caseinate has 1.18% of Ca.

R. L. E.

Structure and reactivity of wool keratin. XIII. Keratin fibres shortened by heat. H. Zahn (*Naturwiss.*, 1943, 31, 137—139).—Purified white horse hair decreases in length by 32% and in wt. by 2.6% and increases in thickness by 58% and in vol. by 70% when drawn through the flame of a Bunsen burner. The cystine content decreases by 10% but the total and NH_2 -N contents are but slightly diminished and the isoelectric point is scarcely affected. The solubility in alkali is increased. X-Ray examination shows that the heated hair is not so far degraded as, but closely resembles, α -keratin, the β -keratin obtained by acidifying and oxidising wool and other fibrous keratins. Examination of hair which is heated but prevented from shrinking confirms this. Hair shrunk by heat can be stretched by approx. 50% in steam. The ratio change in thickness: change in length on swelling in water, 0.1N-HCl, or 0.1N-NaOH accords with the evidence obtained from X-ray diagrams and the loss of double refraction. The changes due to heat apparently occur only if water (e.g., adsorbed water) is initially present and is not prematurely removed. Thus, 25% shrinkage occurs on

heating with water at 130° for 2 hr. and a similar effect is produced by heating in aq. glycerol at 150°. The shrinkage is a special form of super-contraction. W. McC.

Chromosomin, a protein constituent of chromosomes. E. Stedman and (Mrs.) E. Stedman (*Nature*, 1943, 152, 267—269).—A new protein, *chromosomin*, has been isolated from nuclei, especially fish sperm, in addition to the histone and deoxyribonucleic acid. It is predominantly acidic and contains arginine (9.5%), histidine (5%), lysine (11%), relatively large amounts of glutamic acid and tryptophan, and small amounts of aspartic acid and cystine (0.4%). The dried material takes up methylene-blue, is stained blue by haematoxylin, and resembles the chromosomes in its behaviour with Feulgen's reagent. It is suggested that basic groups of chromosomin, which represents the major part of the nucleus, may serve to attach the chromosomes to the nucleic acid gel which supposedly forms the spindle fibres at metaphase. Details of isolation and class of protein are not given. E. R. R.

XVII.—TUMOURS.

Long-term cultivation *in vitro* of a dibenzanthracene mouse sarcoma. F. Jacoby (*Nature*, 1943, 152, 299).—A strain of fibroblastic sarcomatous tissue, from a dibenzanthracene mouse tumour, was kept *in vitro* for more than 2 years, in Carrel flasks in dil. hen plasma coagulum containing 5% of chick embryo juice, and fed twice weekly with a hen serum (0.2 c.c.)—chick embryo juice (0.05 c.c.)—Tyrode (0.55 c.c.) mixture. 38 transfers were made, according to the health of the culture. The aged adherent plasma clot was removed mechanically or by trypsin digestion; the latter often caused disintegration of the culture. The tendency to grow in new media decreased with the time *in vitro*, and growth was much slower compared with normal chick fibroblasts. The frequency of takes on inoculating mice with the cultures decreased with the time *in vitro* and became zero after 393 days. This may be due to the very long latent period after transplantation. E. R. R.

Experimental production of tumours by inhalation of radium emanation. B. Rajewsky, A. Schraub, and G. Kahlan (*Naturwiss.*, 1943, 31, 170—171).—The continual inhalation of Ra emanation to the extent of $1-2 \times 10^{-8}$ curie per c.c. produces a definite toxic effect on white mice (rapid loss of wt., pathological changes in the blood, death in 60—100 days). There was irregular cell arrangement and occurrence of abnormally large cells in the bronchial lining, more marked the longer the treatment. Experiments were also carried out with a smaller dosage, of 1.16×10^{-9} curie per c.c. Mean life was then 286 days. After the 83rd day there was a gradual loss of wt. Changes in the bronchial mucosa were observed, exceeding that produced by the stronger dosage. In 12 animals there were 10 adenomata and one adenocarcinoma, and one peribronchial and perivascular growth of the lymphoreticular tissue of one lung, with considerable polymorphism of the cells. A. J. M.

Action of X-rays on nucleic acid metabolism in Jensen sarcoma. II. H. von Euler and G. von Hevesy (*Arkiv Kemi, Min., Geol.*, 1944, 17, A, No. 30, 60 pp.).—Experiments in which ^{32}P is injected into rats having Jensen sarcoma show that X-irradiation inhibits mitosis and, possibly earlier, decreases production of deoxyribonucleic acid in the growing sarcoma, the effect decreasing when the interval between the irradiation and the injection is increased from a few min. to several days. The production is not appreciably affected by fasting. New production of nucleic acid is accompanied by simultaneous degradation of previously formed nucleic acid and, in degenerating sarcoma, degradation counterbalances or more than counterbalances new production. The contents of free P in the liver and plasma of rats are 58 and 6.5 mg.-%, respectively, and the free and total P contents of the sarcoma are 49 and 298 mg.-%, respectively, these vals. being unaffected by irradiation. W. McC.

Size and synthetic activity of the chromosomes of two rat neoplasms. J. J. Bieseke (*Cancer Res.*, 1944, 4, 540—546; cf. A., 1944, III, 789).—Metaphase figures in transplants of rat hepatoma 31 and Walker carcinosarcoma 256 show chromosomes which are (a) the size found in normal organs poor in B vitamins, (b) twice as large, (c) four times as large. Most are of double size. The proportion of division figures that are polyploid is greatly exceeded by the proportion of resting nuclei with more plasmosomes than are carried by the diploid set of chromosomes in normal organs. While the large size of the chromosomes of adult liver is related to great functional activity, the large chromosomes from the hepatoma result from a twinning process. If the synthetic activity of the tumour chromosomes is assessed from half their average vol. a low rate of synthesis of chromosomal products is indicated. F. L. W.

Comparative glycolytic and respiratory metabolism of homologous normal, benign, and malignant rabbit tissues, with particular reference to benign virus papilloma (Shope) and a transplanted cancer derived therefrom (the V2 carcinoma). J. G. Kidd, R. J. Winzler, and D. Burk (*Cancer Res.*, 1944, 4, 547—553).—Cells of the V2 rabbit carcinoma

have a glycolysing capacity about as great as that of the Brown-Pearce carcinoma and of sarcoma I of Andrews and Ahlström but much greater than that of the benign virus cells from which they were derived. The metabolism of the V2 cells is characteristic of malignant cells generally, while that of the Shope virus papilloma is characteristic of benign tumour cells but distinguishable from that of normal rabbit skin cells. The O_2 consumptions in glucose-phosphate medium with and without succinate or *p*-phenylenediamine were measured for normal and neoplastic tissues. Shope virus papilloma showed the same low Q_{O_2} response to the added substrates as did the V2 carcinoma. Polarographically it was shown that rabbits carrying V2 carcinomas had more protease in their blood than had rabbits with Shope papillomas. Biotin contents of benign papilloma and of V2 carcinoma were the same and higher than that for normal rabbit skin. The proportion of avidin-uncombinable biotin (miotin) was exceptionally high in the V2 carcinoma. F. L. W.

Multiple primary malignant tumours and susceptibility to cancer. S. Warren and T. Ehrenreich (*Cancer Res.*, 1944, 4, 554—570).—In a series of 2829 cancer necropsies 194 cases of multiple malignant neoplasms were found (6.8%). Inclusion of an earlier series brings the total no. of cases to 3907 with an incidence of 6.0% multiple cancers. In the 194 patients with multiple cancers there were 131 males and 63 females. The average age of the males was 65.2 years, of the females 56.9 years, and of the whole group 62.5 years. The average duration from onset of the first tumour till death was 2.7 years. The average interval between successive tumours, when it could be determined, was 3.1 years. The frequency of the multiple cancers is elevenfold greater than the chance expectation. F. L. W.

Cancer of liver in the negro in Africa and in America. E. L. Kennaway (*Cancer Res.*, 1944, 4, 571—577).—Available data suggest that the very high incidence of primary cancer of the liver found among negroes in Africa does not appear among negroes in the United States and is therefore not of a purely racial character. The prevalence of this form of cancer in Africa may be due to some extrinsic factor which could be identified. Available statistics are confused by the inclusion of cancer of the gall bladder in the same category as cancer of the liver. F. L. W.

Mouse tumours cultivated in the yolk sac of the embryonic chick. F. R. Heilman and J. J. Bittner (*Cancer Res.*, 1944, 4, 578—582).—A mammary carcinoma of the mouse was cultivated in the yolk sac of the developing chick embryo for 20 serial transfers. The embryos died at progressively shorter intervals but their death was not related to tumour size. Results of transplantation into mice after the serial passage in the chick embryos suggested that the genetic constitution of the cells had changed. A limited no. of attempts to find a cell-free agent in tumour-bearing eggs that would induce tumours in mice failed. F. L. W.

Tumour induction in rats. H. von Euler, B. Skarzynski, and I. Säberg (*Arkiv Kemi, Min., Geol.*, 1944, 17, A, No. 24, 11 pp.).—A comparison was made of the susceptibility of a rat strain to grafts of a benzpyrene tumour, a methylcholanthrene tumour, and Jensen rat sarcoma. A rat which had proved resistant to Jensen sarcoma and whose parents were similarly resistant showed an exceptionally long latent period for tumour induction following injection with benzpyrene in glycerol. The implications of this observation are discussed. F. L. W.

Difference in carcinogenicity between shale oil and shale. I. Berenblum and R. Schoental (*Brit. J. exp. Path.*, 1944, 25, 95—96).—Painting the skin of mice with a conc. CHCl_3 extract of shale failed to produce tumours (cf. A., 1944, III, 350). F. S.

Dietary fat with reference to spontaneous appearance and induction of leukaemia in mice. F. D. Lawrason and A. Kirschbaum (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 6—7).—A high-fat diet did not modify the appearance of leukaemia in F-strain mice (cf. A., 1940, III, 226). Onset of leukaemia in *Db*a-strain mice, caused by application of methylcholanthrene, was slightly delayed in the high-fat group, possibly because the larger amount of oil on the fur delayed absorption. V. J. W.

Influence of 11-dehydro-17-hydroxycorticosterone (compound E) on growth of malignant tumours in mice. F. R. Heilman and E. C. Kendall (*Endocrinol.*, 1944, 34, 416—420).—Compound E given as a solution in the drinking-water or by subcutaneous injection prevented the appearance, or caused the regression, of implanted lymphosarcomata in mice. Female mice were affected more than male mice; the effects in the latter were increased by castration or oestrogen treatment. The cure was only temporary in most animals and after days or weeks the tumours recur and are then refractory to further treatment with compound E. P. C. W.

Protective colloids in cancer. L. A. Munro (*J. Physical Chem.*, 1944, 48, 187—195).—By addition of 0.075 ml. of serum to 5 ml. of 0.1% Congo-red, followed by addition of 5 ml. of 0.3% quinine hydrochloride as coagulant, incubation at 30° for 30 min., and photoelectric determination of the residual colour, comparison has been made between the protective colloids of cancer sera and normal

sera. The colloids in the latter are much more effective than those in the former. There is only rough agreement between the albumin/globulin ratio and the protective colloid index. C. R. H.

Conditions determining enhanced infection with rabbit papilloma virus. W. F. Friedewald (*J. Exp. Med.*, 1944, 80, 65—76).—The infection of normal or hyperplastic rabbit's skin with the papilloma virus can be enhanced by protection of the scarified inoculation area with paraffined gauze until healing occurs; epithelial regeneration is complete within 24 hr. The effective virus titre is thus increased 10—100 times. A. S.

Recoverability of virus from papillomas produced in domestic rabbits. W. F. Friedewald and J. G. Kidd (*J. Exp. Med.*, 1944, 79, 591—605).—Hyperplastic changes in the rabbit's skin were produced by painting with methylcholanthrene in benzene or a mixture of turpentine and acetone. Shope papillomas growing on this skin were extracted and contained infective virus whereas no growths were obtained on inoculation of papilloma extracts growing on normal skin. The virus yield was always smaller than those obtained from cottontail rabbit papillomas. The sp. antibodies elicited by both types of papillomas are proportional to the amount of infective virus demonstrable in the suspension. A. S.

Effect of chemical carcinogens on virus-induced rabbit papillomas. P. Rous and W. F. Friedewald (*J. Exp. Med.*, 1944, 79, 511—538).—Local application of tar and methylcholanthrene to Shope virus-induced papillomas in the rabbit rapidly changed the papillomas into carcinomatous growths, frequently with multiple malignant changes. The chemicals acted as sp. carcinogenic substances, not by stimulating cell proliferation. The cancers developed from the papilloma cells and were of the same types which develop spontaneously from Shope papilloma after a much longer time. The chemical carcinogen acted by way of the virus. (1 illustr.) A. S.

One year observations of treatment of cancer with avidin (egg white). I. I. Kaplan (*Amer. J. med. Sci.*, 1944, 207, 733—743).—The theory of the treatment is to cause biotin deficiency with avidin. Each patient ate 36—42 egg whites daily with a diet free from foods rich in biotin, plus a daily supplement of vitamins and minerals. No cure has as yet been obtained but there was some improvement in several cases. C. J. C. B.

Epidemiology of cancer. M. L. Levin (*Amer. J. Publ. Health*, 1944, 34, 611—620).—A general review. C. J. C. B.

Mixed mesodermal tumours of uterus. M. Glass and J. W. Goldsmith (*Amer. J. Obstet. Gynec.*, 1941, 41, 309—317).—Report of a case and review of 94 collected from the literature. P. C. W.

Deep cauterisation in prevention of cervical cancer. B. Z. Cashman (*Amer. J. Obstet. Gynec.*, 1941, 41, 216—224).—A report of 10,000 cases. P. C. W.

Role of Fallopian tubes in spread of pelvic cancer. O. Wallis (*Amer. J. Obstet. Gynec.*, 1941, 41, 196—206).—A case report and review of literature. P. C. W.

Malignant degeneration in case of multiple benign [familial] exostoses. G. E. Bennett and G. A. Berkheimer (*Surgery*, 1941, 10, 781—792).—Review and case report. G. P.

Primary signet-ring cell carcinoma of ovary. W. Schiller and D. D. Kozoll (*Amer. J. Obstet. Gynec.*, 1941, 41, 70—78).—Discussion and case report. P. C. W.

Dysgerminoma occurring in pseudohermaphrodite. C. H. Long, J. Ziskind, and A. H. Storck (*Surg. Gynec. Obstet.*, 1941, 73, 811—818).—A case is described. No testicular tissue was found, but removal of both ovaries with dysgerminoma did not interfere with male behaviour. P. C. W.

Hodgkin's disease: incidence and prognosis based on 244 cases. S. R. Bersack (*Arch. intern. Med.*, 1944, 73, 232—237).—The favourable elements in the histological picture of Hodgkin's disease comprise preservation of follicles, intact capsule, fibrosis, trabeculation or tendency to giant follicle formation, vascularity, presence of fibroblast-like cells, and persistence of many small lymphocytic elements of the node. The extent of involvement is directly related to the course, and second in importance only to the histological features. Truly localised lesions in the cervical and axillary regions have a much more favourable prognosis. The inguinal involvement, though clinically localised, has the same significance as generalised spread. The incidence is not confined to the age groups 20—40 but is almost similar at 40—50 and not uncommon thereafter. C. J. C. B.

Histoplasmosis of Darling (reticulo-endothelial cytomyces). W. P. Martin and B. Silber (*Amer. J. clin. Path.*, 1944, 14, 119—124).—A case report. C. J. C. B.

General neurofibromatosis (von Recklinghausen's disease) with local sarcomatous change and metastasis to regional lymph nodes. M. Wachstein and E. Wolf (*Arch. Path.*, 1944, 37, 331—333).—A case report.

Case of solitary myeloma of skull. J. J. Esposito (*Radiology*, 1943, 40, 195—197). E. M. J.

Smooth muscle tumours of gastrointestinal tract and retroperitoneal tissues. T. Golden and A. P. Stout (*Surg. Gynec., Obstet.*, 1941, 73, 784—810). P. C. W.

Papillary carcinoma of renal pelvis. T. J. Kirwin (*Surg. Gynec. Obstet.*, 1941, 73, 759—765). P. C. W.

Malignant thymoma. C. A. Hellwig (*Surg. Gynec. Obstet.*, 1941, 73, 851—863).—8 cases are reported. P. C. W.

Granuloma from use of glove powder. F. X. Byron and S. Welch (*Surgery*, 1941, 10, 766—769).—Foreign body-granulomata may result from the implantation of talcum powder into the tissues during an operation. 4 cases are reported. G. P.

Epithelioma of cheek 15 years after [Tricho] X-ray treatment for hair on face. I. I. Kaplan (*N.Y. Sta. J. Med.*, 1943, 43, 1758—1759).—A 46-year-old woman developed an epithelioma of one cheek 15 years after X-ray treatment for superfluous hair on the face performed by a commercial company. The skin of the other cheek was leathery and showed telangiectases. The epithelioma responded to treatment by surface Ra. E. M. J.

Solid teratoma of ovary in young girl. M. Smeltzer (*Amer. J. Obstet. Gynec.*, 1941, 41, 616—623).—2 cases are reported and discussed. P. C. W.

Bilateral granulosa cell tumours. E. E. Zemke and W. E. Herrell (*Amer. J. Obstet. Gynec.*, 1941, 41, 704—707).—A case is reported. P. C. W.

Embryonic carcinoma of ovary in girl of 13. S. Goldstein (*Amer. J. Obstet. Gynec.*, 1944, 43, 129—132). P. C. W.

Nationality and carcinoma of cervix. F. R. Smith (*Amer. J. Obstet. Gynec.*, 1941, 41, 424—430).—The incidence among Jews is low; the incidence among Italians and Britons is high. The results are discussed. P. C. W.

Calcified fibromyomas. W. J. Tomlinson and T. K. Laird (*Amer. J. Obstet. Gynec.*, 1941, 41, 894—899).—Four cases are reported. P. C. W.

Carcinoma of both lungs associated with lipid pneumonia. E. H. Wood (*Radiology*, 1943, 40, 193—195).—A 52-year-old woman who died of bilateral carcinoma of the lung affecting mainly the lower lobes gave a history of using four bottles of oily nose drops in one week 10 years previously for sinusitis and using them intermittently since in smaller quantities. She had also habitually used mineral oil for constipation during 15 years. Histologically the alveoli were lined by simple columnar or pseudo-stratified columnar tumour epithelium with papillomatosis. Few mitoses were seen. There was also extensive lipid pneumonia. The possible correlation of lipid pneumonia and carcinogenesis is discussed. E. M. J.

Retroperitoneal digit-containing teratoma. C. W. Gale and R. A. Willis (*J. Path. Bact.*, 1944, 56, 403—409).—A retroperitoneal teratoma surgically removed from a girl aged 13 years is described. It contained a well developed digit with 2 nails, a metacarpal (or metatarsal) bone, and fused phalanges. C. J. C. B.

Cortical kidney tumour—analysis of 100 consecutive cases. C. C. Herger and H. R. Sauer (*Surg. Gynec. Obstet.*, 1944, 78, 584—590). P. C. W.

Sarcoma botryoides. W. A. Dwyer (*Amer. J. Obstet. Gynec.*, 1944, 48, 119—124).—A case is reported. P. C. W.

Neurofibroma of left vagus. B. Blades and D. J. Dugan (*J. Amer. Med. Assoc.*, 1943, 123, 409—410).—Case report. C. A. K.

Factors that alter the fluorescence of certain carcinogens.—See A., 1944, I, 237.

Cerebrospinal fluid protein and intracranial tumours.—See A., 1944, III, 725.

Malignant tumour of parathyroid glands with osteitis fibrosa cystica.—See A., 1944, III, 729.

Antifibromatogenous action of synthetic deoxycorticosterone.—See A., 1944, III, 731.

Carcinoma of adreno-cortical rest associated with hypophyseal abnormality.—See A., 1944, III, 732.

Metabolism of steroid hormones. Excretion of oestrogenic material by ovariectomised mice bearing adrenal tumours.—See A., 1944, III, 735.

Are oestrogens carcinogenic in human female?—See A., 1944, III, 736.

Nucleotide and polynucleotide content of liver.—See A., 1944, III, 743.

Irradiation sickness.—See A., 1944, III, 763.

Animal peptidases. Specificity of peptidases in sera.—See A., 1944, III, 766.

Peptidases. III. Kögl's tumour theory. Specificity of d-peptidase in [cancerous and normal] sera.—See A., 1944, III, 767.

XVIII.—ANIMAL NUTRITION.

Nutrition in preventive medicine. W. H. Sebrell (*J. Amer. Med. Assoc.*, 1943, 123, 280—287, 342—351).—A review. C. A. K.

Problems of communal feeding. C. P. Stewart (*Edinb. Med. J.*, 1944, 51, 215—228).—A lecture. H. S.

War-time growth of school boys. E. M. Billington, R. A. McCance, and E. M. Widdowson (*Nature*, 1943, 152, 187).—No significant change in height or wt. was observed in boys in two groups (14—15 years and 15—16 years) from two schools over the four years (1939—1943) of rationing. E. R. R.

Nutritional value of poor South African diets and of dietary supplements in rats. M. L. Creed (*S. Afr. J. Med. Sci.*, 1944, 9, 21—30).—The growth rate, reproductive performance, and general condition of rats fed a diet representative of 78 Cape native diets or a diet based on the B.M.A. No. 2 scale are very poor. When the latter diet was supplemented with milk powder and fish meal the growth and reproduction were normal. P. C. W.

Fluorescent material (ceroid) in experimental nutritional cirrhosis [of liver].—See A., 1944, III, 658.

Composition and palatability of some common grasses. Chemical composition of some American wild feedstuffs.—See B., 1944, III, 235.

Production of yeast in Sweden for nutritional purposes.—See B., 1944, III, 235.

Effect of mealie meal porridge and sour milk on growth of albino rats. C. Gilbert, J. Gillman, J. Mandelstam, T. Gillman, and L. Golberg (*S. Afr. J. Med. Sci.*, 1943, 8, 148—155).—Young rats (50—60 g.) fed on mealie meal porridge and water become dwarfs without showing any acute deficiency diseases and ultimately die. After 10 weeks of the diet they can still grow normally when placed on a full diet. When maas (fermented cow's milk) is added to the diet the growth is still about 40% of normal. Rats grown to 100 g. on a full diet do not show any significant alteration in growth when placed on a diet of mealie pap and sour milk. Rats fed on mealie pap and sour milk before they are 100 g. in wt. invariably develop liver damage. P. C. W.

Nutritive value of protein of edible fungi. W. Lintzel (*Chem.-Ztg.*, 1943, 67, 33—34).—Edible fungi collected in Germany contain approx. 1.0—4.8% of digestible protein. N balance experiments lasting 9 days with men on a diet in which fungi are sole source of protein show that this is physiologically only slightly inferior to the protein of meat. Since fungi contain valuable protein but are low in calories they form a useful supplement to foods rich in carbohydrates. W. McC.

Biological value of a mixture of essential amino-acids. A. A. Albanese and V. Irky (*Science*, 1943, 98, 286—288).—Young rats were fed on four diets which differed only in the nature of the nitrogenous moiety. The N was fed as a mixture of Rose's essential amino-acids, as enzymic digest of casein, as acid hydrolysate of casein + 1% of cystine and 1.5% of tryptophan, or as unhydrolysed casein; the N level in all diets was the same reckoned as the natural forms of the amino-acids. The essential amino-acid diet was inferior to the other three. When the amino-acid content was doubled to ensure that no one acid was a limiting factor, the inferiority was more marked, though this might be due to the toxic effect of the unnatural forms of the amino-acids present. E. R. R.

Amino-acids and related compounds in honey.—See B., 1944, III, 235.

Amino-acid mixtures effective parenterally for long-continued plasma-protein production. Casein digests compared. Influence of alimentation on regeneration of plasma-proteins following single severe non-fatal hæmorrhage.—See A., 1944, III, 634.

Effects of a low-lysine diet on the growth of spontaneous mammary tumours in mice and on the nitrogen balance in man.—See A., 1944, III, 665.

New method of feeding cholesterol to animals. O. J. Pollak (*Arch. Path.*, 1944, 37, 337).—Cholesteræmia may be produced in rabbits by feeding them cholesterol in gelatin capsules. C. J. C. B.

Response of laboratory animals to celluloseglycollic acid and its sodium and aluminium salts. V. K. Rowe, H. C. Spencer, E. M. Adams, and D. D. Irish (*Food Res.*, 1944, 9, 175—182).—Young rats receiving 5% of celluloseglycollic acid or its Na or Al salt in the diet for 8 months exhibited no ill effects demonstrable by growth curves, organ wts., gross observations, or histopathological examination. 20% of the diet as this acid fed to practically mature female animals for 2 months had no ill effects but the Al salt had a slight depressive effect on the growth curve, and produced a slight enlargement and congestion of the spleen and a softening of the faeces in an otherwise normal animal; the Na salt produced no effects on organ wts. or histopathological changes and a very slight growth curve depression

with somewhat soft faeces. The acid and its Al and Na salts had no irritating effects on the skin of rabbits. H. G. R.

Fluorides in water in relation to dental decay.—See B., 1944, III, 240.

Vitamins.

Inhibition in enzyme systems. V. Relation between vitamins and anti-vitamins.—See A., 1944, III, 687.

Amblyopia due to vitamin deficiency.—See A., 1944, III, 648.

Vitamin content of ingredients of microbiological culture media.—See A., 1944, III, 693.

Vitamins and hormones in dietary achromotrichia. B. Lustig, A. R. Goldfarb, and B. Gerstl (*Amer. J. Physiol.*, 1944, 141, 259—261).—A strain of mice which could be raised on a synthetic diet developed achromotrichia on a vitamin-deficient diet. Females were less susceptible than males to greying. Female hormones administered to male mice tended to reduce the rate and degree of greying although testosterone propionate did not affect the females. Pantothenic acid, *p*-aminobenzoic acid, inositol, or cystine in the diet had no effect. T. F. D.

Effect of fat-soluble vitamins on growth. B. von Euler, H. von Euler, and I. Säberg (*Arkiv Kemi, Min., Geol.*, 1944, 17, A, No. 19, 15 pp.).—The growth-promoting action of margarine which contains a small proportion of palm oil, considerable amounts of hardened fats, and has been enriched by carotene and vitamin-D is equal to that of butter. The hypothesis that the fatty acids of butter have more marked growth-promoting action than those of this margarine receives no support. There is no evidence of the presence of a unique, characteristic factor in butter. H. W.

Influence of large doses of vitamin-A on the plasma-vitamin-A level. F. Steigmann and H. Popper (*Amer. J. med. Sci.*, 1944, 207, 468—476).—As the vitamin-A tolerance curve is not necessarily related to the fasting plasma-A level, plasma-A level does not depend solely on concurrent intestinal absorption of -A. -E did not influence the tolerance curve. No relation was found between blood-fat and -cholesterol concn. and -A tolerance curve. Ingestion of -A alcohol or -A esters causes a similar rise of the plasma-A level in the tolerance curve; carotene only had a minimal effect. Intramuscular -A did not raise plasma-A level. C. J. C. B.

Vitamin-A content of sheep's colostrum and milk. G. H. Satterfield, R. E. Clegg, and A. D. Holmes (*Food Res.*, 1944, 9, 206—211).—The vitamin-A content of the colostrum and milk of ewes that produced lambs which grew to maturity varied from 10.11 to 1.10 Lovibond units per g. from the 1st to the 7th day of lactation, respectively, the val. being slightly higher for 2-year-old ewes than for older animals. The val. decreases during the 2nd and 3rd weeks to 0.27—0.75. H. G. R.

Level of vitamin-A and carotene in plasma of rheumatic subjects.—See A., 1944, III, 635.

Development of thiamin deficiency in cat on diet of raw fish. D. C. Smith and L. M. Proutt (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 1—3).—Cats fed entirely on raw carp or herring developed thiamin deficiency, with convulsions, in 23—40 days, and died. The effect was not produced by various other fish tried. V. J. W.

Subclinical vitamin deficiency. IV. Plasma-thiamin.—See A., 1944, III, 635.

Influence of thiamin deficiency on work performance.—See A., 1944, III, 685.

Aneurin inactivation by the Chastek paralysis factor. Inhibition of aneurin inactivation.—See A., 1944, III, 688.

Effect of dietary protein on liver-riboflavin and on inactivation of œstradiol by liver.—See A., 1944, III, 658.

Riboflavin, pantothenic acid, and biotin excretion tests in patients with paralytic poliomyelitis.—See A., 1944, III, 644.

Ascorbic acid, riboflavin, and thiamin content of cow's milk. A. D. Holmes, C. P. Jones, and A. W. Wertz (*Amer. J. Dis. Child.*, 1944, 67, 376—381).—When a herd of 69 cows was changed from good winter rations to early pasture of rapidly growing green grass, the content of ascorbic acid and of riboflavin in the milk decreased, but there was no change in the thiamin content. C. J. C. B.

Urinary excretion of nicotinic acid and its derivatives. G. A. Goldsmith (*Arch. intern. Med.*, 1944, 73, 410—414).—The total excretion of nicotinic acid derivatives was greatest in normal persons, next highest in hospitalised patients without evidence of deficiency disease, and lowest in patients with pellagra and vitamin-B complex deficiency. The difference in total excretion is due to variations in the output of trigonelline; administration of a large test dose of nicotinic acid, Na nicotinate, or nicotinamide magnifies this difference. Measurement of the quantity of derivatives of nicotinic acid excreted in 6 hr. following the oral administration of 300 mg. of nicotinamide is a useful procedure in evaluating nicotinic acid nutritional status. C. J. C. B.

Influence of pantothenic acid deficiency on resistance of mice to experimental poliomyelitis. H. C. Lichstein, H. A. Waisman, C. A. Elvehjem, and P. F. Clark (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 3—5).—Mice on a synthetic diet deficient in pantothenate, and showing deficiency symptoms, had an increased resistance to Theiler's encephalomyelitis virus (strain GD VII) but not to the Lansing strain of poliomyelitis. V. J. W.

Resynthesis of dethiobiotin from diaminopelargonic acid.—See A., 1944, II, 382.

Combined bios-growth substances in *Boletus edulis*.—See A., 1944, III, 691.

Vitamin-C requirements of Syrian hamster. D. F. Clausen and W. G. Clark (*Nature*, 1943, 152, 300—301).—Growth curves are given supporting the contention that no ascorbic acid supplement is needed to a diet containing glucose 50, casein (vitamin-free) 20, dried brewer's yeast 10, U.S.P. X1 salt mixture 2, cod-liver oil 2, corn oil (Mazola) 9, and lard 7%. The average intake was 14 mg. per animal per day (average body wt. 42 g. increasing to 90 g.). E. R. R.

Defective granular eggshell formation by *Schistosoma mansoni* in experimentally infected guinea-pigs on a vitamin-C-deficient diet. C. Krakower, W. A. Hoffman, and J. H. Axtmayer (*J. Infect. Dis.*, 1944, 74, 178—183).—(6 photomicrographs.) F. S.

Antioxidant properties of *d*-isoascorbic acid and its sodium salt. F. J. Yourga, W. B. Esselen, jun., and C. R. Fellers (*Food Res.*, 1944, 9, 188—196).—*d*-isoAscorbic acid has 1/20 the antiscorbic activity of *l*-ascorbic acid. *d*-isoAscorbic acid in buffered aq. solution oxidises more rapidly during storage than does its Na salt or *l*-ascorbic acid, developing a yellow-brown colour as the oxidation proceeds. The order of increasing colour production is Na *d*-iso-ascorbate, *d*-isoascorbic acid, *l*-ascorbic acid, factors influencing the development of colour being the amount of O₂ present, the temp. and time of storage. *d*-isoAscorbic acid is oxidised preferentially to *l*-ascorbic acid in bottled aq. solution and is recommended as an antioxidant for the latter. H. G. R.

Ultra-violet light and apparent vitamin-C. F. Wokes (*Nature*, 1943, 152, 328—329).—Irradiation of dehydrated foods at pH 4—6 with ultra-violet light of λ more than 2800 Å. produced no reductions or other constituents of apparent vitamin-C. E. R. R.

Hypovitaminosis-C and antineuralgic medication.—See A., 1944, III, 683.

Effect of sodium ascorbate on survival of animals poisoned by lead, mercury, phosphorus, arsenic, and barium.—See A., 1944, III, 684.

Effect of aromatic compounds on ascorbic acid content of liver in mice.—See A., 1944, III, 658.

Ascorbic acid content of liver in mice.—See A., 1944, III, 665.

Synthetic activity of [plant] embryo. I. Formation of ascorbic acid and carotenoids in etiolated wheat seedlings.—See A., 1944, III, 705.

Ascorbic acid content of strains of snap beans. Vitamin-C content of different tomato varieties grown in the Nelson district. Vitamin-C content of Nelson apples.—See B., 1944, III, 233, 234.

Seasonal variation in serum-choline-esterase in guinea-pigs. Effect of experimental scurvy.—See A., 1944, III, 635.

Calcium and vitamin-D requirements of the older child. J. A. Johnston (*Amer. J. Dis. Child.*, 1944, 67, 265—274).—An intake of 28 mg. per kg. of body wt. of Ca (range 21—35) resulted in a retention of 9 mg. per kg. of body wt. (range 4—14) without ingestion of supplementary vitamin-D. -D (as viosterol) increased Ca retention; the increase paralleled the amount of -D ingested up to 3900 U.S.P. units. C. J. C. B.

Influence of pregnancy, D-hypervitaminosis, and partial nephrectomy on volume of parathyroid glands in rats.—See A., 1944, III, 652.

Effect of vitamin-E on reproduction in dogs on milk diets.—See A., 1944, III, 654.

Minimal effective dose of a water-soluble vitamin-K substitute in prevention of hypoprothrombinæmia in the newborn infant.—See A., 1944, III, 635.

[Vitamin-P in] rose hips and rose hip products. F. Wokes and E. H. Johnson (*Chem. and Ind.*, 1944, 295).—The high vitamin-P content found by Bacharach and Coates (A., 1944, III, 676) in a rose hip conc. extract may be influenced by the species and habitat (which may cause a wide variation in the -P content with a possible peak val. at some period in the season, by ripening and climatic factors and by losses due to destruction by oxidising enzymes. H. G. R.

Vitamin-P in ophthalmology.—See A., 1944, III, 648.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Atmospheric influence on biochemical processes in living organisms. H. von Euler (*Arkiv Kemi, Min., Geol.*, 1943, 17, B, No. 6, 5 pp.).—

Rats kept in ordinary animal rooms do not gain as much wt. in a fixed period as do others living under less confined conditions and breathing air purified by radiation from a Hg-vapour lamp. Growth is probably inhibited by impurities (e.g., NH₃, amines) in the atm. of the rooms. W. McC.

Metabolism of liver slices after burning. E. J. Clark and R. J. Rossiter (*Quart. J. Exp. Physiol.*, 1944, 32, 269—277).—The red cell count of anaesthetised rabbits, after burning at 70° for 30 sec. of $\frac{1}{4}$ of their body surface, rises within 2—4 hr. and is normal again after 24 hr. Liver tissue shows normal oxidation of alanine or Na butyrate, and O₂ uptake and glycolysis (measured in NaHCO₃ buffer solution) 4 or 24 hr. after burning. The R.Q. (measured in PO₄''' buffer) and the glycogen formation from glucose in the liver fall after 4 hr., while anaerobic glycolysis increases; these all return to normal within 24 hr. After 24 hr. there is a slight rise in O₂ consumption. A. S.

Survival and glycolysis of cells under aerobic and under anaerobic conditions. R. Schreck (*Arch. Path.*, 1944, 37, 319—327).—By the method of unstained cell counts, the survival of cells at 45° was determined under aerobic and anaerobic conditions, in the presence or absence of glucose. The major factor determining the length of survival was the type of cell. Generally cell survival was not affected by glucose or O₂. Most types of cells studied survived for long periods in the absence of glucose and O₂. Thymic cells (rabbit) required the presence of either O₂ or a fermentable sugar for survival. Aerobic and anaerobic glycolysis of cells was studied by determining the no. of viable cells and pH of the suspensions before and after incubation. In peritoneal fluid and suspensions derived from the testis as much acid developed aerobically as anaerobically. Thymic cells produced less acid under aerobic conditions; they can ferment glucose and mannose, possibly galactose, but not fructose, xylose, sucrose, and maltose. Polymorphs of peritoneal exudate and of human blood produced acid in a glucose-free medium, by utilisation of cell-glycogen. Leukemic cells survive as long *in vitro* as normal leucocytes. Myelogenous and lymphatic leukæmic cells differed in their capacity for aerobic and anaerobic glycolysis. C. J. C. B.

Action of vitamin-C in respiration of living cells.—See A., 1944, III, 674.

Growth and development. I. Influencing of fasting and refeeding on milk production, heat production, and respiratory quotient. L. E. Washburn, S. Brody, and A. C. Ragsdale (*Missouri Agric. Exp. Sta. Res. Bull.*, 1939, No. 295, 24 pp.).—Heat production in lactating animals is much higher than (sometimes double) that of non-lactating animals. In fasting rats, goats, and cows there is a parallel decline in % milk production, heat production, and R.Q. The basal metabolism of lactating animals at normal production levels cannot therefore be measured under fasting conditions. Omission of one or even of several meals, although affecting the actual milk flow, does not alter the milk-producing capacity, since normal flow is resumed after refeeding. A. G. P.

Nitrogen balances on rats during pregnancy and lactation. L. M. Morse and C. L. A. Schmidt (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 57—59).—N balances on normal and various synthetic diets were compared. The only synthetic diet able to maintain N retention was one containing a supplement of liver extract. V. J. W.

Metabolic studies in patients with cancer of the gastrointestinal tract. XIII. Effect of glycine on urinary excretion of creatine and creatinine.—See A., 1944, III, 667.

Metabolism of patients with gastro-intestinal cancer. XX. Lipotropic properties of protein. J. C. Abels, I. M. Ariel, G. T. Pack, and C. P. Rhoads (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 62—63).—7 patients who received 2.5 g. of protein per kg. per day for 10—21 days before laparotomy showed no fatty infiltration of the liver, but 9 who received 75 g. of amino-acids (as casein hydrolysate) during 10 hr. before laparotomy showed a fatty infiltration as great as that found in fasting subjects. V. J. W.

Rôle of thiamin in synthesis of fatty acids from carbohydrate precursors.—See A., 1944, III, 672.

Factors influencing the return of tolerance for glucose in middle-aged obese diabetics. M. B. Handelsman (*Amer. J. med. Sci.*, 1944, 208, 15—24).—Glycosuria and hyperglycæmia occurring in obese patients over 40 years of age represent a temporary decrease in carbohydrate tolerance. Prompt treatment consisting of wt. reduction by means of low-caloric regimens can restore tolerance for glucose, sometimes to normal. C. J. C. B.

Carbohydrate metabolism after burning. E. J. Clark and R. J. Rossiter (*Quart. J. Exp. Physiol.*, 1944, 32, 279—300).—The blood-sugar of ether-anaesthetised rats or rabbits rises after burning as after adrenaline injections; the hyperglycæmia disappears after 24 hr. and was not observed after double adrenalectomy. Blood-lactic acid increased in rats 1 hr. after burning but was normal after 3 hr.; adrenaline caused similar changes; the total glycogen content of burned rats was diminished and, 3 hr. later, that of burned adrenalectomised rats remained normal. Rabbits starved for 24 hr.

and burned had a lower liver-glycogen after 4 and 24 hr. than anaesthetised controls; burning produced no change in liver-glycogen content of normal or adrenalectomised rats starved for 24 hr., but adrenaline increased it. Glycogen formation from glucose by rabbit's liver slices killed 4 hr. after burning was decreased but, after adrenaline, glycogen formation was normal although the degree of hyperglycaemia in both cases was similar. There was no alteration in glycogenolysis of rabbit's liver brei by phosphorylase or amylase activity after burning; serum-amylase activity was not increased. The adrenal ascorbic acid content in rabbits decreased; that of liver was normal 4 and 24 hr. after burning. Acidosis plays no part in burn hyperglycaemia. Well-fed rats did not survive burning better than animals starved for 24 hr. Burn hyperglycaemia is due to enhanced release of adrenaline from the adrenals and to processes stimulating hepatic glycogenolysis or inhibiting glycogenesis; the chief glucose source is muscle-glycogen, which is mobilised by a mechanism similar to the Cori cycle. During shock and haemorrhage after burning patients should be given carbohydrate-rich diets.

A. S.

Ketosis in relation to the hepatic reserves of glycogen. I. A. Mirsky and W. E. Nelson (*Amer. J. Dis. Child.*, 1944, 67, 100—105).—Intravenous administration of 1 g. of phloridzin, repeated in 3 hr., to 52 normal and 26 diabetic children and the consequent glycosuria result in removal of sugar from the blood, which in turn induces a compensatory increase in the breakdown of glycogen in the liver. When the hepatic reserves of glycogen are adequate, the blood-sugar remains relatively const. during and after a short period of phloridization. When the hepatic reserves of glycogen are inadequate hypoglycaemia and ketonæmia develop as soon as a small amount of sugar is lost from the body. Removal by glycosuria of 15—20 g. of sugar from the normal child or of a small amount from the diabetic child lowers liver-glycogen with consequent development of hypoglycaemia and ketonæmia. Loss of 15—20 g. of sugar by the normal adult does not produce such an effect, but in the diabetic adult it results in a decrease in the blood-sugar and the development of ketonæmia. There is an inverse correlation between the age of the child and the incidence of ketonæmia. The administration of extra carbohydrate results in a greater storage of glycogen in the liver and decreases the susceptibility to ketosis.

C. J. C. B.

Carbohydrate metabolism and vitamin-C.—See A., 1944, III, 674.

Metabolism of pyruvate by normal and leukæmic white cells.—See A., 1944, III, 666.

Sodium and potassium metabolism of asthmatic and non-allergic children. P. B. Donovan and G. F. Harsh (*J. Allergy*, 1943, 14, 281—287).—Asthmatic children have slightly higher plasma-K concn. and slightly lower plasma-Na concn. than normal children, even with wide variations of Na and K intake in the diet. Asthmatic children excrete more Na and more acid in the urine.

C. A. K.

Trace elements in biological activity. O. Baudisch (*J. Amer. Med. Assoc.*, 1943, 123, 959—966).—A review.

C. A. K.

Synthesis, some derivatives, and metabolism of α -diketo-octoic acid.—See A., 1944, II, 379.

Fate of polyvinyl alcohol introduced intraperitoneally in rats.—See A., 1944, III, 685.

Mercapturic acids. V. Metabolic formation of *p*-fluorophenylmercapturic acid from fluorobenzene. L. Young and S. H. Zbarsky (*J. Biol. Chem.*, 1944, 154, 389—395; cf. A., 1944, II, 193).—Administration of fluorobenzene to rats subcutaneously or by stomach tube is followed by excretion of *p*-fluorophenylmercapturic acid.

R. L. E.

Metabolic studies on epileptic patients receiving azosulphamide and phenobarbital.—See A., 1944, III, 645.

Antimalarial drugs. Preparation and properties of a metabolic derivative of quinine.—See A., 1944, III, 680.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Penicillin in *Staphylococcus aureus* septicaemia. D. S. Likely and M. Y. Swirsky (*J. Amer. Med. Assoc.*, 1943, 123, 956—958).—Successful case report.

C. A. K.

Penicillin in surgical infections. C. Lyons (*J. Amer. Med. Assoc.*, 1943, 123, 1007—1018).—Penicillin was successfully used in 12 of 19 cases of bacteraemia due to various organisms, in 69 of 79 cases of non-bacteraemic staphylococcal infections, in 10 of 11 non-bacteraemic haemolytic streptococcal infections, in 42 of 47 septic compound fractures (chiefly staphylococcal), and in other infections. In chronic infections penicillin helps in regeneration of red cells and haemoglobin.

C. A. K.

Pneumococcal meningitis [treated with penicillin]. A. M. Litvak, E. Appelbaum, and M. Greene (*Amer. J. Dis. Child.*, 1944, 66, 485—486).—Complete recovery of a 6-month-old infant treated with penicillin is reported.

C. J. C. B.

Penicillin cream. M. H. Payne (*Pharm. J.*, 1944, 153, 133).—48 g. of lanette wax base are autoclaved at 20 lb. pressure for 20—30 min. in a sealed jar. After cooling, the jars are placed in a hot water-bath at about 70° and 2 ml. of sterile penicillin solution (10,000 Oxford units) are injected through a puncture hole in the lid. After vigorous shaking for 1 min. the jars are placed in a refrigerator. The penicillin does not lose its activity by being heated to 65° for a few min.

G. P.

Influence of access of free oxygen on action of antiseptics with special reference to sulphonamides. J. W. McLeod, A. Mayr-Harting, and N. Walker (*J. Path. Bact.*, 1944, 56, 377—388).—Sulphonamides in the superficial and deeper layers of solid media show increased activity against bacteria sensitive *in vitro* to sulphonamides in the parts of the culture most penetrated by O₂. Similar results are obtained for only a few bacteria and to a slight extent with carbolic acid, but notably for the meningococcus, which is very sensitive to sulphonamides *in vitro*. A substance related in structure to sulphanilamide and possibly derived from it in the process of oxidation—*p*-aminophenol—undergoes spontaneous oxidation to an antiseptic substance potent for a wide range of bacteria. It also shows in a very marked way increased potency in the superficial layers of deep cultures in solid media. Evidence of greater potency under conditions favouring O₂ access was not obtained with I, but was obtained with proflavine, although in a smaller degree than with sulphonamides.

C. J. C. B.

Relationship of structure to activity of sulphanilamide-type compounds. P. H. Bell, J. F. Bone, and R. O. Roubin, jun. (*J. Amer. Chem. Soc.*, 1944, 66, 847).—The views of Kumbler *et al.* (A., 1944, I, 96; III, 294) are invalidated by absorption max. of sulphanilamide at 2585 Å. (ϵ 16,380 \pm 49) in N-NaCl and 2505 Å. (ϵ 16,150 \pm 48) in N-NaOH.

R. S. C.

Control [by sulphadiazine] of acute infections of the respiratory tract. M. Siegel (*Amer. J. Dis. Child.*, 1944, 67, 365—370).—The illnesses were milder, on the whole, in the sulphadiazine-treated groups than in the untreated groups, with the exception noted in outbreaks of uncomplicated infections presumably of viral origin. The beneficial effects were attributed to the bacteriostatic action of sulphadiazine on the susceptible bacteria primarily or secondarily involved.

C. J. C. B.

Treatment of pneumococcal pneumonia with sulphamethazine. E. H. Loughlin, R. H. Bennett, and M. E. Flanagan (*J. Lab. clin. Med.*, 1944, 29, 568—573).—The death rate in 48 cases, of which 21% had bacteraemia, was 6%. The only toxic effects noted were 2 instances of drug fever.

C. J. C. B.

Chemotherapy of meningococcal infections. W. B. Daniels, S. Solomon, and W. A. Jaquette (*J. Amer. Med. Assoc.*, 1943, 123, 1—9).—80 soldiers with meningococcal meningitis and 32 with meningococcal meningitis were treated with sulphadiazine. One death occurred in the former group and none in the latter.

C. A. K.

Sulphonamides in meningococcal infections. L. W. Hill and H. S. Lever (*J. Amer. Med. Assoc.*, 1943, 123, 9—13).—105 cases of meningococcal infections were treated with sulphadiazine without a single death. Intravenous injection of Na sulphadiazine for the first 24 hr. is suggested.

C. A. K.

Treatment of meningococcus carriers with sulphadiazine. F. S. Cheever, B. B. Breese, and H. C. Upham (*Ann. int. Med.*, 1943, 19, 602—608).—During an outbreak of meningococcal infections in barracks 57.6% of the population were meningococcus carriers, type I being 5 times as frequent as all other meningococcus types. 8 g. of sulphadiazine were given in 72 hr. to 161 subjects; all carriers were negative on the 4th day; 160 were still negative 3 days later. After 37 days the carrier rate in the treated group was 20%, that of an untreated control group 81.3%.

A. S.

Sulphapyridine fastness in case of pneumococcal meningitis. C. S. Shuman (*N.Y. Sta. J. Med.*, 1943, 43, 2087—2089).—A 3-year-old girl with pneumococcal meningitis (type XVIII) lost her fever for 24 hr. after two days' treatment with 0.5 g. of sulphapyridine 4-hourly, treatment having been started on the 8th day of the illness and after 4 doses of 5 grains of sulphanilamide had been given without effect. The fever then returned in spite of continued use of sulphapyridine (at times 0.25 g. 3-hourly because of vomiting). Spinal drainage was instituted on the 13th day together with the use of type-sp. rabbit serum to a total of 135,000, 200,000, and 225,000 units in 9 intravenous, 11 lumbar, and 17 cisternal injections. The child died on the 25th day of the illness having had 35 g. of sulphapyridine.

E. M. J.

Prophylactic value of sulphathiazole against neonatal gonococcal conjunctivitis. M. Gleich, M. L. Blumberg, and A. S. Mason, jun. (*Amer. J. Dis. Child.*, 1944, 66, 472—473).—Effective protection against gonococcal conjunctivitis was afforded by oral administration of sulphathiazole in a total dose of 20 grains given over 3 days, starting 12 hr. after birth.

C. J. C. B.

Treatment of scarlet fever. M. J. Fox and N. F. Gordon (*Arch. intern. Med.*, 1944, 74, 1—3).—Sulphonamide compounds find their chief val. in the treatment of complications, but are of no val. in

the toxic phase or type of scarlet fever. Commercial antitoxin, prepared with horse serum, combats the toxic phase of the disease but introduces the danger of foreign protein reactions. Pooled human convalescent serum produces rapid improvement including prompt subsidence of fever, alleviation of signs and symptoms, avoidance of complications (with certain exceptions cited), shortened period of hospitalisation, and lower mortality rate. C. J. C. B.

Attempts to protect against influenza virus with various sulphonamides, acridines, and antibiotics. Personnel of Naval Laboratory Research Unit No. 1 (*Science*, 1943, 98, 348—349).—15 sulphonamides, 3 acridines, 5 antibiotics, azochloroamide, pyridium, and nearsphenamine were tested for protection of mice against the PR-8 strain of influenza-A virus. None of the compounds, nor any combination of them, afforded protection at the levels used. E. R. R.

Therapeutic value of sulphaguanidine in treatment of bacillary dysentery in an Australian general hospital. B. A. Baker (*Med. J. Austral.*, 1944, I, 435—437).—The average duration of the disease in 26 cases treated with sulphaguanidine was 7 days shorter than in 31 cases treated with Na_2SO_4 . F. S.

Sulphaguanidine in typhoid carrier. T. P. Burroughs and F. A. Freyhan (*J. Amer. Med. Assoc.*, 1943, 123, 763—764).—A chronic typhoid carrier continued to discharge typhoid organisms in the stools after a course of 174 g. of sulphaguanidine. C. A. K.

Local use of sulphonamides in dermatology. H. N. Cole (*J. Amer. Med. Assoc.*, 1943, 123, 411—417).—A review. C. A. K.

Sulphadiazine in actinomycosis. W. F. Hollenbeck (*J. Amer. Med. Assoc.*, 1943, 123, 1115—1117).—Successful case report. C. A. K.

Severe pemphigus-like reaction following sulphamerazine. L. A. Kasselberg (*J. Amer. Med. Assoc.*, 1943, 123, 1035—1036).—Case report. The eruption developed rapidly after 4 g. of sulphamerazine, after sulphathiazole (8 g. daily for 1 week) had produced no toxic effects, in a patient with acute gonorrhoea. C. A. K.

Experimental *Clostridium welchii* infection. II. Local sulphonamide therapy (sulphadiazine, sulphathiazole, and sulphanilamide). L. R. Hac and A. C. Hubert. **III. Local therapy (zinc peroxide, tyrothricin, and mixtures of sulphadiazine and urea and sulphadiazine and zephiran).** **IV. Penicillin therapy.** L. R. Hac (*J. infect. Dis.*, 1944, 74, 150—160, 161—163, 164—172).—II. Mice infected intramuscularly with cultures of *Cl. welchii* were treated immediately after infection with sulphonamides in suspension injected into and near the infected area. The best survival rates were obtained with sulphadiazine (49—57%) and sulphathiazole (40—53%); sulphanilamide was of little val. A delay of 1—2 hr. in the institution of therapy greatly reduced the protective action. The rate of survival was as good with a 1-mg. as with a 50-mg. dose, but the extent of tissue injury was greater.

III. ZnO_2 or tyrothricin administered locally had no protective action against *Cl. welchii* infection in mice. Mixtures of sulphadiazine and urea or sulphadiazine and zephiran were no more effective than sulphadiazine alone.

IV. 5 units of penicillin protected mice as well as the largest dose of sulphadiazine. Continued therapy gave better protection than single doses; e.g., 7 injections each of 25 units protected 96% of mice, while 1 injection of 500 units protected 98%. Local was of more val. than systemic administration when small doses were used. When treatment was delayed for 3 hr. protection was reduced. F. S.

Method for differentiating [between butanol-soluble and water-soluble] excretion products of sulphonamides and their rôle in urolithiasis. J. V. Scudi and V. C. Jelinek (*J. Pharm. Exp. Ther.*, 1944, 81, 218—223).—40% of sulphapyridine, 10—20% of sulphanilamide, sulphathiazole, and sulphamerazine, and 4—6% of sulphadiazine and sulphapyrazine excreted in the urine in the free form are water-sol. metabolites. It is suggested that, the greater is the proportion of org. (butanol)-sol. metabolites excreted, the greater is the tendency of the sulphonamide to form uroliths. G. P.

Administration of alkalis in sulphadiazine therapy. J. H. Rohr and F. Christopher (*Surg. Gynec. Obstet.*, 1944, 78, 509—519).—1 l. of M/6-Na *r*-lactate given intravenously maintains urinary alkalinity for 24 hr. The solution must not make contact with the sulphadiazine. After intravenous therapy has stopped 24 g. of NaHCO_3 are needed daily to maintain the same conditions. P. C. W.

Sulphanilamide absorption from rectum and vagina. G. L. Carrington, T. Rhorer, E. Jones, and P. Moore (*Surg. Gynec. Obstet.*, 1944, 78, 333—334).—Sulphanilamide powder is absorbed from the site of rectal or vaginal operations as shown by blood concn. studies. Sulphanilamide persisted in the blood for 1—6 days and was twice as conc. after rectal implantation as after vaginal. P. C. W.

Pathological changes produced by prolonged administration of sulphapyrazine and sulphamethyldiazine (sulphamerazine) in kidneys of rabbits as compared with sulphathiazole and sulphadiazine. F. T. Callomon and L. G. Linton (*J. Lab. clin. Med.*, 1944, 29, 574—584).—

Sulphapyrazine and sulphamerazine, given in doses of 0.05—0.1 g. per kg. twice a day for 10 days, did not produce marked tissue damage in the kidneys of rabbits. With doses of 0.2—0.25 g. per kg., renal damage regularly occurred. Sulphathiazole (0.2 g. per kg.) produced less damage than other compounds, and sulphapyrazine less than sulphadiazine or sulphamerazine. Sulphamerazine (0.2—0.25 g. per kg.) caused gross intrarenal and extrarenal concretions (uroliths) in rabbits. This did not occur with sulphapyrazine and sulphathiazole and less often with sulphadiazine. C. J. C. B.

Renal damage due to sulphonamide compounds. F. D. Murphy, J. F. Kuzma, T. Z. Polley, and J. Grill (*Arch. intern. Med.*, 1944, 73, 433—443).—The total amount of sulphonamide and blood concn. were not related to production of renal damage in 14 cases. As much as 41 g. and as little as 0.6 g. produced fatal renal injury. Generally the renal lesions were independent of mechanical blocking. Simple tubular degeneration was always present. Advanced tubular degeneration, necrosis of the tubular cells, and intense inflammatory reaction outside the nephron in the surrounding tissues occurred in some cases. In 1 case advanced glomerular changes occurred. (6 photomicrographs.) C. J. C. B.

Sulphamerazine (2-sulphanilamido-4-methylpyrimidine). III. Comparative activity of sulphamerazine, sulphadiazine, and sulphapyridine in production of hæmolytic anæmia in mouse. A. R. Latven and A. D. Welch (*J. Pharm. Exp. Ther.*, 1944, 81, 301—306).—The % incidence of anæmia in mice treated with sulphonamides depends on the concn. of the drug in the blood. Anæmia was considered established when the hæmoglobin concn. fell from the control val. of 17.1 g. to below 15 g. per 100 ml. after 2 weeks' treatment with the drugs. The concn. of sulphonamide in the blood necessary to produce anæmia in 50% of the mice was: with sulphapyridine 2.8 mg., with sulphadiazine 33 mg., and with sulphamerazine 31 mg. per 100 ml. G. P.

Sulphonamides and cold hæmagglutinins. W. Dameshek (*J. Amer. Med. Assoc.*, 1943, 123, 77—80).—Severe hæmolytic reactions in 3 cases following sulphathiazole and sulphadiazine administration were associated with the presence in the blood of cold hæmagglutinins which were active against the patients' red blood cells. C. A. K.

Dosage-mortality ratio of pentothal sodium after toxic doses of sulphanilamide. P. H. Lorhan, G. Guernsey, and A. E. Pugh (*Anesthesiology*, 1941, 2, 456—459).—Sulphanilamide in doses of 0.6—1.0 g. per kg. produces toxic effects which render rats more susceptible to pentothal Na. G. P.

Sulphathiazole dermatitis. T. W. Clark (*J. Amer. Med. Assoc.*, 1943, 123, 958—959).—Case report. The dermatitis occurred only on areas of skin exposed to light. C. A. K.

Skin sensitisation to sulphathiazole. B. Shaffer, J. W. Lentz, and J. A. McGuire (*J. Amer. Med. Assoc.*, 1943, 123, 17—23).—4 cases of skin sensitisation to sulphathiazole from local application to the skin are described. The skin reactions in sensitised subjects can sometimes be elicited by oral administration of the drug. The eruption may mimic the dermatitis for which the sulphathiazole is being applied. Direct patch tests were negative in these cases, but Prausnitz-Küstner transfer tests were positive, giving both a wheal reaction and a tuberculin type response. C. A. K.

Hepatic damage associated with sulphanilamide therapy in infants and children. I. Morphological pathology. M. L. Menten and M. A. Andersch. **II. Changes in liver function tests during sulphanilamide treatment.** M. A. Andersch (*Ann. int. Med.*, 1943, 19, 609—621, 622—628).—I. In 299 post-mortem examinations 38 cases of liver damage associated with sulphanilamide therapy were observed. Toxic necrosis of the liver was found in 3 cases, toxic central necrosis in 9, and serous hepatitis and early toxic central necrosis in 26. There was no relationship between sulphanilamide dosage and occurrence of liver damage.

II. Using Gray's colloidal Au liver function test, 24 out of 73 children under chemotherapy showed signs of impaired liver function. There was no correlation with the amount and duration of treatment. A. S.

Ethylenediamine derivatives having trypanocidal action. A. Funke, D. Bovet, and G. Montezin [with, in part, Viaud and Horclois] (*Ann. Inst. Pasteur*, 1943, 69, 358—371).—The synthesis of 39 ethylenediamine derivatives is described (see A., 1944, II, 365). 8 having a curative action on *T. brucei* infection in mice were: α -amino- β -(*p*-ethylbenzylamino)ethane, and the corresponding *n*- and *iso*-propyl- and *sec*-butyl-benzyl derivatives, α -amino- β -(2-methyltetrahydro- and -(methylisopropyl-naphthyl)amino-, β -(2-methylbenzyl-5-isopropylamino)-, and - β -(*p*-chlorobenzylamino)-ethane. A no. were active *per os* as well as by subcutaneous injection. 23 of the derivatives were totally inactive. F. S.

Antibacterial action of derivatives and analogous of *p*-aminobenzoic acid. O. H. Johnson, D. E. Green, and R. Pauli (*J. Biol. Chem.*, 1944, 153, 37—47).—The bacteriostatic effects, towards *E. coli*, *S. hæmolyticus*, and *D. pneumoniae*, of 35 compounds related to *p*-aminobenzoic acid have been studied. The following showed bacteriostatic effects reversible by *p*-aminobenzoic acid: 3-bromo-

4-aminobenzoic acid; 4-amino-3-methyl-, -2-methyl- (hydrochloride), -2-acetamido-, and -3-methoxy-benzoic acid; *p*-aminoacetophenone, 4-amino-3-methylbenzamide, 5-nitrothiophen-2-carboxylic acid and its amide, 2-5-acetamidothiophenyl methyl ketone, and 6-aminopyridine-3-carboxylic acid. *p*-Aminocinnamic acid and *p*-aminobenzoyl-*l*-glutamic acid behaved as weak analogues of *p*-aminobenzoic acid in reversing the bacteriostatic effect of sulphonamides. 2-Chloro-4-aminobenzoic acid showed the first effect at high concn. and the second at low concn. The bacteriostatic effect of analogues of *p*-aminobenzoic acid may be dependent on the reactivity of substituent groups and similarity in the physical dimensions of the mols. to *p*-aminobenzoic acid. (For new compounds see A., 1944, II, 369.) E. C. W.

Drug treatment of malaria. Office of the Surgeon-General of U.S. Army (*J. Amer. Med. Assoc.*, 1943, 123, 205—208).—A special article. C. A. K.

Mode of action of quinine alkaloids and other antimalarials. P. P. Keogh and F. H. Shaw (*Austral. J. Exp. Biol.*, 1944, 22, 139—147).—Addition of excess of Ca⁺⁺ to an isolated intestine causes relaxation, whilst if the intestine is previously treated with quinine or other antimalarials it responds to Ca⁺⁺ by contraction. A similar "Ca reversal" is observed if the intestine is treated with Ca-free Tyrode's solution or with citrate or oxalate. The quinine alkaloids and atabrin increase the tension developed by striated muscle. Citrates, tartrates, and oxalates have a similar effect. The usual rise in blood pressure produced by intravenous injection of Ca⁺⁺ is changed to a fall if the animal is previously treated with quinine. Quinine increases corpuscular fragility and the toxic effect of oxalates. It is suggested from these facts and others on the interrelationship between Ca and quinine that quinine interferes with the life cycle of the plasmodia of malaria by decreasing the amount of Ca in erythrocytes available for growth and reproduction. J. N. A.

Use of modification of Pryce's slide culture method for estimation of bacteriostatic power of chemicals on tubercle bacillus. H. Muller (*J. Path. Bact.*, 1944, 56, 429—433).—Of the sulphonamide drugs, sulphathiazole has little effect. Sulphathiazole is the most powerful and shows good bacteriostasis in a concn. of 5 mg.-%, but even at 40 mg.-%, some growth takes place. Promanide (Promin) produces very slight inhibition of growth at 5 mg.-%. The cationic detergents, Cetavlon and Phemeride, produce complete bacteriostasis in concns. of 40 and 20 mg.-%, respectively. The most powerful of the chemicals tested was K₂TeSO₄; it gives complete bacteriostasis in concn. of 10 mg.-%. C. J. C. B.

Antibacterial action of 4:6-dimethoxytoluquinone. H. Barber (*J. Path. Bact.*, 1944, 56, 434—438).—4:6-Dimethoxytoluquinone has a powerful bacteriostatic action against *Staph. aureus* and *Strep. pyogenes* in broth, but owing to the great reduction of this action by blood or serum and to the markedly antileucocytic properties of the compound, it is contra-indicated as a therapeutic agent. C. J. C. B.

Cotton hose as vehicle for a fungicide in treatment of athlete's foot. P. J. Crittenden and L. S. Joiner (*J. Lab. clin. Med.*, 1944, 29, 606—608).—18 subjects with clinical athlete's foot wore cotton hose impregnated with CuSO₄ or Cu acetate for periods of 1½—10 months. The skin of 6 appeared normal, 11 showed improvement, and 1 was worse at the end of the experiment. The acetate seemed to be more beneficial than the sulphate. C. J. C. B.

Diasone. A new and active chemotherapeutic agent. G. W. Raizis (*Science*, 1943, 98, 350).—Na₂ formaldehydesulphoxylate diammonodiphenyl sulphone ("diasone") reduces the toxicity of arspenamine or neosarsphenamine without proportionally lowering its therapeutic action. It is as effective as sulphathiazole against streptococcus hemolytic strain C 203 and as sulphadiazine against pneumococcus type II, in mice; it is more effective and less toxic than promin in experimental tuberculosis. E. R. R.

Pharmacology of aliphatic amines. R. P. Ahlquist (*J. Pharm. Exp. Ther.*, 1944, 81, 235—239).—The pressor and depressor action of β -methylaminoisooctene ("Octin," Bilhuber), β -methylaminoheptane ("EA-1," Bilhuber), and of β -aminoheptane ("Tuamine," Lilly) was determined on dogs. On repeated injection tachyphylaxis is observed and the depressor effect of the compounds predominates; in this respect the 3 compounds are interchangeable. The 50% lethal doses were determined in rats. G. P.

Clinical actions of ethylorsuprenin [β -amino- α -(3:4-dihydroxyphenyl)butanol]. M. L. Tainter, W. M. Cameron, L. J. Whitsell, and M. M. Hartman (*J. Pharm. Exp. Ther.*, 1944, 81, 269—277).—Ethylorsuprenin, a sympathomimetic amine, lowers the diastolic blood pressure and increases the pulse rate. It does not raise the systolic pressure or excite the central nervous system. Injected subcutaneously, intramuscularly, or intravenously in 0.5—2-mg. doses to patients it relieves acute asthmatic attacks. Its undesirable side effects are fewer and less marked than those of adrenaline. G. P.

Inhibition of nervous transmission in synapses and end plates by thiamin. K. Unna and E. P. Pick (*J. Pharm. Exp. Ther.*, 1944, 81, 294—300).—Thiamin and cocarboxylase inhibit the action of nicotine

on the isolated rabbit and guinea-pig intestine and on the isolated striated muscle of frog. These effects are not influenced by prostigmine. The action of thiamin is linked to the thiazole moiety of the mol. The action of drugs stimulating sympathetic or parasympathetic nerve endings is not influenced by thiamin. G. P.

Comparative activities of atropine, *l*-hyoscyamine, hyoscyne, and homatropine on mammalian smooth muscle. D. P. D. Graham and J. A. Gunn (*Quart. J. Pharm.*, 1944, 17, 88—95).—The pharmacological activities of the alkaloids are determined by their ability to antagonise the rise of tone of isolated mammalian intestine produced by acetylcholine. The following relative activities are found: atropine sulphate 1, *l*-hyoscyamine sulphate 2.4, hyoscyne hydrobromide 1.5, homatropine hydrobromide 0.14. When determined on constrictor pupillae (ox), hyoscyne is less than twice as active as atropine. The results are compared with those found by other workers, and reasons are advanced to explain some of the differences. J. N. A.

Comparison of some ergot alkaloids. III. General pharmacology. A. C. White (*Quart. J. Pharm.*, 1944, 17, 95—102; cf. A., 1944, III, 554).—Ergosine, ergosinine, ergocristine, *iso*ergosine, and *isolysergic* acid have a pressor, whilst ergometrine has a depressor, action in the pithed cat. The adrenaline response of the perfused cat hind limb is reversed by ergosine, ergocristine, and ergocornine, and reduced after ergosinine, ergometrine, and *iso*ergosine, whilst ergine has no effect. Ergosine and ergosinine decrease the activity of the isolated rabbit intestine, and the effects on the adrenaline response are similar; in each case ergosine is much more active. Ergometrine decreases the activity of the intestine considerably more than does ergometrinine. *iso*Ergine and ergine reduce contraction of the intestine; the adrenaline effect is modified more by *iso*ergine, but the effect is transitory. *iso*Lysergic acid is inactive in the doses employed, whilst lysergic acid decreases tone and movement. Ergosine, ergometrine, and *iso*ergine contract, whilst ergosinine, ergometrinine, ergine, lysergic and *isolysergic* acids, ergocornine, and ergocristine relax, the isolated guinea-pig intestine. Ergocornine, ergosine, ergotamine, ergometrine, and ergometrinine have oxytocic effects on the rabbit uterus *in situ*. Sympathicolytic activity is most marked with ergosine, but is exhibited by all the *l*-alkaloids with higher mol. wt. than that of ergometrine. Ergosine, ergosinine, ergocristine, ergometrine, *iso*ergine, and ergine all show oxytocic activity on the guinea-pig uterus. The relations between constitution and pharmacological effects of the alkaloids are discussed. J. N. A.

Does acetylation of yohimbine and corynanthine modify their sympathicolytic properties? Raymond-Hamet (*Compt. rend.*, 1943, 216, 614—616).—The sympathicolytic activity of yohimbine and corynanthine is only slightly affected by acetylation. H. G. R.

Action of rubellin, glycoside from *Urginea rubella*. N. Sapeika (*S. Afr. J. Med. Sci.*, 1944, 9, 31—32).—The glycoside has a digitalis action and is more potent than ouabain in the frog. P. C. W.

Development of anaesthesia. T. E. Keys (*Anesthesiology*, 1941, 2, 552—574).—History of anaesthesia. G. P.

Technical development of gas anaesthesia. A. H. Miller (*Anesthesiology*, 1941, 2, 398—409).—An historical review. G. P.

The first anaesthesia death [from chloroform]. H. K. Beecher (*Anesthesiology*, 1941, 2, 443—449). G. P.

Recommended safe practice for use of combustible anaesthetics in hospital operating rooms. Conference Committee on Operating Room Hazards (*Anesthesiology*, 1941, 2, 580—586, 689—694). G. P.

Unsaturated monohalogenated hydrocarbons as general anaesthetic agents. B. E. Abreu (*Anesthesiology*, 1941, 2, 393—397).—Monobromo-olefines are more potent anaesthetic agents and more toxic than the compounds containing Cl. G. P.

Carbon dioxide absorption appliances for anaesthesia. J. Adriani and M. L. Byrd (*Anesthesiology*, 1941, 2, 450—455; cf. A., 1944, III, 329). G. P.

Anaesthetic potency and biochemical effects of α - and β -chloro- and α - and β -bromo- Δ^2 -propene. B. E. Abreu, S. A. Peoples, C. A. Handley, and D. F. Marsh (*Anesthesiology*, 1941, 2, 535—540).—It is suggested that these compounds might be of val. in general inhalation anaesthesia. G. P.

Minimal numbers of anaesthetic treatments with urethane required to induce pulmonary tumours.—See A., 1944, III, 746.

Device incorporated with "to and fro" canister for rapid vaporisation of ether. S. S. Lyons (*Anesthesiology*, 1941, 2, 695—697).—Description of apparatus. G. P.

Volatile anaesthetics—ether, chloroform, ethyl chloride, and divinyl ether. H. B. Stewart (*Anesthesiology*, 1941, 2, 535—640).—A review. G. P.

Blood-ether levels in surgical anaesthesia. R. Potter, H. Livingstone, E. Andrews, and G. Light (*Surgery*, 1941, 10, 757—765).—The ether content of venous blood during the 2nd plane of the 3rd stage of anaesthesia in human subjects is 50—130 mg.-%, generally 80—

100 mg.-%. Premedication with morphine, morphine and hyoscine, or morphine and atropine had no significant effects on the blood-ether levels during anaesthesia. G. P.

Hepatorenal syndrome after vinethene anaesthesia. M. H. Hawk, O. S. Orth, and F. J. Pohle (*Anesthesiology*, 1941, 2, 388—392).—Severe liver and kidney damage occurred in a woman after 2 prolonged administrations of vinethene. G. P.

Variation of oil-water distribution ratio of divinyl ether with concentration.—See A., 1944, I, 246.

Protection from cyclopropane-adrenaline tachycardia by various drugs. C. R. Allen, J. W. Stutzman, H. C. Slocum, and O. S. Orth (*Anesthesiology*, 1941, 2, 503—514).—The tachycardia that develops during cyclopropane anaesthesia after the injection of adrenaline can be prevented by an injection of a suitable dose of procaine, quinidine, morphine, F 883, or yohimbine, or by increasing the concn. of CO₂ in the anaesthetic mixture to 20—24%. G. P.

Cardiac arrhythmias under cyclopropane anaesthesia. C. H. Thienes, P. O. Greeley, and A. E. Guedel (*Anesthesiology*, 1941, 2, 611—620).—Cardiac arrhythmias during cyclopropane anaesthesia are ventricular extrasystoles, and appear just before respiratory failure. High concn. of cyclopropane (50—75% in the alveolar air) abolishes or minimises these arrhythmias. G. P.

Failure of barbiturates to prevent cyclopropane-adrenaline ventricular tachycardia in dog. O. S. Orth, C. P. Wangeman, and W. J. Meek (*Anesthesiology*, 1941, 2, 628—634).—Pentothal, secnol, nembutal, amytal Na, barbital Na, and delvinal Na injected intravenously in subanaesthetic doses failed to prevent cyclopropane-adrenaline tachycardia. G. P.

cycloPropane anaesthesia: report of results in 41,690 administrations. I. B. Taylor (*Anesthesiology*, 1941, 2, 641—653). G. P.

Circulation in spinal anaesthesia with procaine. B. Kisch (*Exp. Med. and Surg.*, 1943, 1, 336—366).—Spinal anaesthesia in man, produced by 150 mg. of procaine hydrochloride, diminishes the pulse rate and the systolic and diastolic blood pressures. With these doses, the fall in blood pressure is due to a marked peripheral vasodilatation. Toxic effects of procaine, given intrathecally in cats and dogs in large doses, were shown on the heart, the peripheral circulation, and respiration. Procaine and its decomp. products were demonstrated in the aq. humour shortly after the injection. A. S.

New experiments with procaine-esterase. B. Kisch and E. Strauss (*Exp. Med. and Surg.*, 1943, 1, 367—370, 371—379).—I. Procaine-serum mixtures (3 mg. per c.c.) showed 20—23% non-enzymic and 75% enzymic procaine hydrolysis after incubation at 37° for 20 hr. at pH 7.5. The procaine-esterase effect of horse serum is $\frac{1}{2}$ — $\frac{1}{3}$ of that of normal human serum.

II. Human serum-procaine-esterase retains its original potency after 2—6 days' dialysis against water. The euglobulin ppt. obtained after dialysis and the washed globulin fraction obtained by $\frac{1}{2}$ -saturation with (NH₄)₂SO₄ showed no procaine-esterase activity. The dialysed albumin fraction showed the enzymic activity of the original serum; this effect was destroyed by treatment with acids. Dried serum and dried albumin retain their original enzymic activities. A. S.

Analgesia and anaesthesia in obstetrics. Inhalation methods. W. A. Conroy. **Local anaesthesia.** H. Buxbaum. **Continuous caudal anaesthesia with pontocaine.** J. E. Fitzgerald, J. M. Thomson, and H. O. Brown. **Continuous caudal anaesthesia with procaine.** W. F. Mengert. **Commentary.** A. Baptisti (*Amer. J. Obstet. Gynec.*, 1944, 48, 81—89, 90—93, 94—99, 100—102, 103—108).—A symposium. P. C. W.

Caudal analgesia: experimental and anatomical study. V. S. Lanier, H. E. McKnight, and M. Trotter (*Amer. J. Obstet. Gynec.*, 1944, 47, 633—641).—The levels reached by 30 ml. of solution injected into the epidural space through the hiatus of the sacral canal were studied in 56 embalmed cadavers in different positions. The size of the hiatus and the distance between the dural sac and the apex of the hiatus were also measured. P. C. W.

Complications of caudal anaesthesia. T. G. Greedy (*J. Amer. Med. Assoc.*, 1943, 123, 671—675).—Methods of avoidance of the complications of caudal anaesthesia are discussed. C. A. K.

Synthetic organic local anaesthetics. M. B. Moore (*J. Amer. Pharm. Assoc.*, 1944, 33, 193—204).—A review, mainly of the relationships between structure and anaesthetic activity (228 references). F. O. H.

Optimal composition of local anaesthetic solutions. M. L. Tainter (*Anesthesiology*, 1941, 2, 489—502).—A summary. G. P.

Detoxication of local anaesthetics. Comparison of protective effects of sodium, potassium, and calcium salts. H. Wastl (*Anesthesiology*, 1941, 2, 661—668).—The benzoates, salicylates, laevulates, gluconates, lactates, and to a smaller degree the chlorides of Na, K, and Ca are antidotes for the toxic convulsant effects of butyn and

procaine in guinea-pigs. They are more effective when injected before the anaesthetic (cf. A., 1944, III, 361). G. P.

Refrigeration anaesthesia in amputations. H. E. Mock and H. E. Mock, jun. (*J. Amer. Med. Assoc.*, 1943, 123, 13—17).—Application of ice to a limb lowers the temp. of the tissues to a little above 0° and produces anaesthesia adequate for amputation. Shock is much reduced, there is less likelihood of infection, and there is no post-operative pain. The only disadvantage is a slight delay in healing. C. A. K.

Local nervous tissue changes after spinal anaesthesia in experimental animals. Co Tui, A. L. Preiss, I. Barcham, and M. J. Nevin (*J. Pharm. Exp. Ther.*, 1944, 81, 209—217).—Degenerative changes in the white and grey matter and inflammation of the meninges of spinal cord occurred in cats and rabbits only after the subarachnoidal injection of toxic doses of procaine hydrochloride, monocaine formate, or nupercaine. G. P.

Toxicity and pharmacological action of sodium ethyl-sec-butyl-barbiturate (Butisol sodium). C. M. Gruber, F. W. Ellis, and G. Freedman (*J. Pharm. Exp. Ther.*, 1944, 81, 254—268).—The toxicity of Butisol Na has been compared with other barbiturates in dogs, rabbits, rats, and mice. Butisol Na injected intravenously causes a slowing of respiration and fall in blood pressure without change in cardiac rhythm. It has a depressant effect on the isolated intestine and uterus of rabbits, cats, and guinea-pigs. The duration of the action of the drug is the same in normal and in nephrectomised dogs. G. P.

Analgesics derived from oxazolidine-2:4-dione.—See A., 1944, II, 382.

Combined action of morphine and central stimulants. L. W. Hazleton and T. Koppanyi (*Anesthesiology*, 1941, 2, 427—442).—Injections of subconvulsant doses of morphine with subconvulsant doses of strychnine, picrotoxin, metrazol, or coramine produced convulsions in rabbits. Large doses of morphine (150—200 mg. per kg.), after an initial depression, stimulate the rate of respiration, increase the respiratory min. vol., and produce convulsions and circulatory collapse. G. P.

Relation of intensity of morphine abstinence syndrome to dosage. H. L. Andrews and C. K. Himmelsbach (*J. Pharm. Exp. Ther.*, 1944, 81, 288—293).—There is a functional relationship between the intensity of symptoms of morphine abstinence and min. dose of morphine required for relieving these symptoms. A mathematical treatment of the relationship is given. G. P.

Urinary excretion of morphine in opium addicts with and without lecithin-glucose treatment. R. N. Chopra, G. S. Chopra, and A. C. Roy (*Indian J. Med. Res.*, 1941, 29, 195—201; cf. A., 1944, III, 280).—Treatment with lecithin-glucose after opium withdrawal shortened the excretion of morphine in the urine from 7—10 to 5—7 days. S. E. M.

Cajedrol: new analgesic and antiseptic for genitourinary system. C. F. Elvers and C. E. Burkland (*Surgery*, 1941, 10, 776—780).—Cajedrol (propyl *p*-hydroxybenzoate 1 g., cajuput oil 50 ml., arachis oil to make 1 l.) is an analgesic and mild antiseptic in cystitis, prostatitis, and urethritis of the male and female. G. P.

Cobra venom for intractable pain [of cancer]. J. W. Kelso (*Amer. J. Obstet. Gynec.*, 1940, 40, 1050—1051).—Intractable pain associated with cervical carcinoma was relieved by intramuscular injections of 5 mouse units of cobra venom in 11 of 15 cases. P. C. W.

Leptazol and diuresis. E. S. Boyd and J. A. S. Dourance (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 41).—Leptazol (unlike nikethamide) has no diuretic action on rats in any dosage. V. J. W.

Combined diuretic therapy. A. Ruskin (*J. Lab. clin. Med.*, 1944, 29, 486—491).—Fortification of 2 c.c. of mersalyl with theophylline-ethylenediamine up to 0.5 g. of the latter results in greater diuresis than the addition of 0.1 g. of theophylline. The latter is the amount in ordinary mercupurin or salyrgan-theophylline. C. J. C. B.

Aminophylline deaths. G. A. Merrill (*J. Amer. Med. Assoc.*, 1943, 123, 1115).—In 3 cases of heart disease intravenous injection of 0.25 g. of aminophylline was immediately followed by sudden death. C. A. K.

Tissue-lead concentrations in disease. H. E. Riggs, T. V. Letonoff, and J. G. Reinhold (*Amer. J. clin. Path.*, 1944, 14, 175—185).—95 patients whose death was not adequately explained by clinical and necropsy studies showed significantly higher concns. of Pb in kidney and pituitary than 40 patients with obvious causes of death. In the group showing high tissue-Pb concns. neuropathy, fatty liver (10% of cases), repeated vomiting (34%), peripheral collapse (31%), and elevated blood pressure (20%) without organic lesions occurred more frequently than in the control group. C. J. C. B.

Non-appearance of salicylates in urine after administration of dicumarol. D. Lester (*J. Biol. Chem.*, 1944, 154, 305—306).—Urine of rats given dicumarol was analysed for total salicylates by a method similar to that of Brodie *et al.* (cf. C., 1944, 126) but involving ether extraction of a H₂SO₄ hydrolysate and colorimetric (FeCl₃)

determination of the salicylic acid in the residue of the ether extract. Results indicated that dicumarol does not cause hypoprothrombinaemia through the intermediation of salicylates. G. D.

Toxicity and trypanocidal activity of organic antimonials. L. G. Goodwin (*J. Pharm. Exp. Ther.*, 1944, 81, 224—234).—The quinquivalent are less toxic and cause less local irritation of tissues than the trivalent Sb compounds. Neostibosan and the quinquivalent analogues of tartar emetic are not trypanocidal. The trypanocidal activity of other Sb compounds was determined by two methods, one depending on disappearance of trypanosomes from the peripheral blood, the other on the survival time of infected mice. The two methods gave similar results, except with phenylstibonic acid derivatives. G. P.

Toxicity and trypanocidal activity of *p*-sulphonamidophenylarsonic acid and its derivatives. E. L. Way and L. K. Chan (*J. Pharm. Exp. Ther.*, 1944, 81, 278—283).—The tolerated dose of *p*-sulphonamidophenylarsonic acid for mice was 1.9 g. per kg. and the dose which cured mice infected with *T. equiperdum* 0.7 g. per kg. Cure was considered effective when the blood of mice remained free from trypanosomes for 21 days. The tolerated dose of propamide was 40 mg. per kg. and the curative dose 5 mg. per kg. The *N*-substituted derivatives of *p*-sulphonamidophenylarsonic acid showed no trypanocidal activity. G. P.

Acute toxicity for mice of "Mapharsen" and sodium sulphathiazole administered separately and in combination. E. M. Cranston, W. G. Clark, and E. A. Strakosch (*J. Pharm. Exp. Ther.*, 1944, 81, 284—287).—The intraperitoneal LD₅₀ of "Mapharsen" for mice was 34 ± 0.5 mg. per kg. and that of Na sulphathiazole 1.32 ± 0.02 g. per kg. When both drugs were given together the LD₅₀ of the combination was 65% of the LD₅₀ of each drug when given alone. G. P.

Five-day treatment of syphilis with mapharsen and bismuth. H. Rattner (*J. Amer. Med. Assoc.*, 1943, 122, 986—989).—421 early syphilitic patients were given 5-day treatment, 310 with mapharsen alone, 111 with mapharsen + Bi. There were no deaths, but 3 serious cerebral reactions occurred and minor toxic effects were frequent. In those cases observed for more than 5 months 86% of mapharsen cases, and 95% of mapharsen + Bi cases, were seronegative. C. A. K.

Intensive methods of treating syphilis. H. N. Cole, E. B. Heisel, and G. Stroud (*J. Amer. Med. Assoc.*, 1943, 123, 253—258).—A review. C. A. K.

Intensive treatment of gonorrhoea and syphilis. H. N. Bundesen, T. J. Bauer, and H. W. Kendell (*J. Amer. Med. Assoc.*, 1943, 123, 816—820).—An account of work done at the Chicago Intensive Treatment Centre is given. Mapharsen + fever therapy are given for early syphilis and sulphathiazole + fever therapy for gonorrhoea. Preliminary results in 931 cases of syphilis are described, fever + chemotherapy giving better immediate results than chemotherapy alone. C. A. K.

Status of dichlorophenarsine hydrochloride. Council on Pharmacy and Chemistry (*J. Amer. Med. Assoc.*, 1943, 123, 208—209).—A review. C. A. K.

Analysis of results obtained with small doses of gold salts in treatment of rheumatoid arthritis. W. B. Rawls, B. J. Gruskin, A. A. Ressa, H. J. Dworzan, and D. Schreiber (*Amer. J. med. Sci.*, 1944, 207, 528—533).—Patients who are sensitive to Au therapy can be detected by using much smaller doses than are usually employed (commencing dose 5 mg. twice a week). By increasing the dose only as it is tolerated, the no. and severity of toxic reactions are markedly reduced. The favourable results (86%) obtained in 100 patients with these small doses are comparable with those reported by others with much larger doses. C. J. C. B.

Epidemiology of epidemic dropsy. X. Outbreak associated with the use of mustard oil pressed from seeds adulterated with seeds of *Argemone mexicana*. R. B. Lal and A. C. Das Gupta. XI. Biological test of specific toxin in samples of oil. R. B. Lal, S. R. Chatterji, S. P. Agarwala, and A. C. Das Gupta (*Indian J. Med. Res.*, 1941, 29, 157—165, 167—193; cf. A., 1944, III, 282).—X. The severe outbreak among 5 families in a small village could be traced to the consumption of mustard oil contaminated with argemone oil.

XI. Clinical signs of epidemic dropsy could not be induced in rats, cats, guinea-pigs, or pigs fed on specimens of toxic mustard oil or on argemone oil. Instead, time of death, loss of wt., and histological changes in the tissues, particularly the skin, were used to assess toxic effects. Rats and cats are suitable test animals. The growth of rats on a standard diet, which includes butter, followed the normal curve which obeys the logistic law. Replacement of butter by mustard oil depresses growth, but the curve still obeys the logistic law, whilst on addition of argemone oil or samples of toxic oils growth is further depressed and the curve does not follow the logistic law. Histological changes of the skin resembled the lesions found in epidemic dropsy. The length of time between start of experiment and the death of the animal is not significant for the toxicity of the oil. A mathematical discussion of the growth

curves is given. (12 photomicrographs of histological changes of the skin.) S. E. M.

War-time and public health need for antiparasitic agents in tropical diseases other than malaria. W. H. Wright (*Chem. Eng. News*, 1944, 22, 1360—1365).—Discussion of the possible importation of tropical diseases into the U.S.A. by troops now serving abroad. G. P.

Organometallic compounds used as antiparasitic agents. C. K. Banks (*Chem. Eng. News*, 1944, 22, 1368—1374).—Org. As and Sb compounds are reviewed. G. P.

Non-metallic compounds used as antiparasitic agents against tropical diseases other than malaria. C. R. Addinall (*Chem. Eng. News*, 1944, 22, 1374—1378).—Review. G. P.

Photosensitivity diseases in New Zealand. III. Photosensitising agent in facial eczema [of sheep]. N. T. Clare (*New Zealand J. Sci. Tech.*, 1944, 25, A, 202—220).—Phylloerythrin and coproporphyrin (isomeride I) were isolated from the blood and urine of sheep suffering from facial eczema. The intravenous injection of a single dose of 0.6—1.0 mg. of phylloerythrin per kg. produces photosensitisation as severe as that found in cases of facial eczema. The range of the spectrum to which sensitivity is enhanced lies between 400 and 620 mμ, i.e., it includes those parts of the spectrum where absorption by phylloerythrin is greatest. Coproporphyrin caused no photosensitivity on injection. G. P.

Dhobie mark dermatitis. A. M. Rogers and T. Fitz-hugh (*J. Amer. Med. Assoc.*, 1943, 123, 23—26).—52 cases of localised contact dermatitis followed the wearing of clothes marked by native dhobies. The marking fluid was obtained from the nut of the val or bella gutti tree. Over 80% of affected subjects gave a positive patch test. It is probable that "dhobie itch," which was considered a cutaneous fungus infection, is actually an allergic contact dermatitis of the above type. C. A. K.

Acute and chronic toxicity of isopropyl alcohol. A. J. Lehman and H. F. Chase (*J. Lab. clin. Med.*, 1944, 29, 561—567).—isoPropyl alcohol is twice as lethal as ethyl alcohol in several species of animals but in rats the continuous consumption of isopropyl alcohol in doses of 0.75—5.28 c.c. per kg. per day has little effect on growth or body wt. The effects of isopropyl and ethyl alcohols in animals are similar. C. J. C. B.

Oral deallergisation of food allergy with propeptans. E. Urbach (*Arch. Pediat.*, 1944, 61, 184—196).—Food propeptans are preps. in which the digestion of the proteins is carried beyond the stage of proteoses while retaining the specificity of the protein from which it was derived. Food propeptans serve to determine the responsible allergenic food and to treat hypersensitiveness due to nutritional allergens. Treatment can be carried out with species-sp. propeptans when the offending foods have been determined, or with polypropeptans (a mixture of 12 sp. food propeptans) if the responsible agent is not ascertained. C. J. C. B.

Fundamental formula in statistics of biological assay, and some applications. E. C. Fieller (*Quart. J. Pharm.*, 1944, 17, 117—123).—Mathematical. J. N. A.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Results of motor fitness tests. T. K. Cureton (*J. Amer. Med. Assoc.*, 1943, 123, 69—74).—Motor fitness tests of balance, flexibility, agility, strength, power, and endurance were performed on 1000 men students entering the University of Illinois. Details of results are given and the standards are considered to be very poor. Motor fitness is not very closely correlated with physique. C. A. K.

Dietary protein and physical fitness in temperate and hot environments.—See A., 1944, III, 670.

Toluene poisoning. R. H. Wilson (*J. Amer. Med. Assoc.*, 1943, 123, 1106—1108).—100 (10%) of 1000 workmen exposed for 1—3 weeks to toluene fumes in concn. of 50—1500 p.p.m. showed symptoms of intoxication. 10 (1%) showed blood changes, e.g., anaemia and leucopenia. It is recommended that no one should work in a concn. greater than 200 p.p.m. C. A. K.

Contact, contact-infective, and infective-allergic dermatitis of hands. J. H. Stokes, W. E. Lee, and H. M. Johnson (*J. Amer. Med. Assoc.*, 1943, 123, 195—202).—A lecture and a description of 3 cases of rubber glove dermatitis. C. A. K.

Dermatitis due to resin-finished shirts and fabrics. H. Keil (*J. Allergy*, 1943, 14, 477—491).—Detailed studies of 10 cases are reported. C. A. K.

Contact dermatitis from hair lacquer. I. J. B. Howell. II. S. Epstein (*J. Amer. Med. Assoc.*, 1943, 123, 408—409, 409).—Case reports. C. A. K.

XXII.—RADIATIONS.

Influence of high-frequency waves on higher animals and bacteria. H. von Euler and B. Skarzynski (*Arkiv Kemi, Min., Geol.*, 1944, 17, B, No. 15, 8 pp.).—Exposure of white mice or rats to high-frequency waves causes a marked increase of pyruvic acid in the blood. Similar exposure causes decrease in the fermentative ability of fresh yeast but the zymase system of dry yeast, invertase, and carboxylase appear relatively resistant. Diminution of the growth of the yeast cell appears to involve a change of cell structure in the first place. The development of the seeds of *Raphanus radiculatus* appears to be retarded somewhat by exposure whereas *B. coli* is unaffected even after addition of colchicine. The development of *B. delbrückii* and *S. aureus* is somewhat impeded. A reason for the differing resistances of micro-organisms to high-frequency waves cannot yet be given. H. W.

Foam cell plaques in the intima of irradiated small arteries (100–500 μ). J. F. Sheehan (*Arch. Path.*, 1944, 37, 297–308).—An uncommon lesion of small arteries (100–500 μ in external diameter) was observed in several irradiated organs. The lesion consists of a plaque-like thickening of the intima due to a collection of foam cells alone or of foam cells mixed with various other cells, fluid, fibrin, or hyaline material, between the endothelium and the internal elastic membrane. Pathological changes may be found in the adjacent internal elastic membrane, media, and adventitia. The plaque may cause marked narrowing or occlusion of the lumen; thrombosis is rare. The plaques probably result from migration into the intima from the blood stream of lymphocytes and monocytes and subsequent transformation of these into foam cells by ingestion of lipins. (5 photomicrographs.) C. J. C. B.

Comparison of the chromosome-cleaving action of X- and neutron rays in *Drosophila melanogaster*. K. Eberhardt (*Naturwiss.*, 1943, 31, 23).—Fast neutron rays are approx. 30% less effective than X-rays in initiating division of the chromosomes. W. McC.

Comparative studies on the radiosensitivity of normal and malignant cells in culture. II. Delayed lethal effect. III. Inhibitory effect of X-rays on cell outgrowth.—See A., 1944, III, 667.

Depth doses for 5, 10, 15, and 20-million-volt X-rays [produced by betatron]. H. W. Koch, D. W. Kerst, and P. Morrison (*Radiology*, 1943, 40, 120–126).—Depth doses were measured in a pressed wood phantom of a density of 0.65 and results converted to water equiv., allowance also being made for the 5% smaller range of electrons in water. The ionisation chamber used was shielded with grounded Al foil stretched over lucite with a chargeable circular Cu plate 2 mm. behind the foil. The focus-surface distance was 45 cm. and the field 10 \times 10 cm.² Peak doses of 125, 180, 245, and 305% of the surface dose occurred at 0.75, 2, 2.5, and 3 cm. depth for beams of 5, 10, 15, and 20 million v. respectively. This is attributed to the great range of the Compton electrons produced which may be as large as 10 cm. and to the fact that the assumption that the ionisation is produced at the location of the Compton is no longer valid as compared with X-rays produced at less than 1 million v. With the 20-million v. beam the dose at 10 cm. depth is 75% of the peak dose, falling in a straight line to 50% at 5 million v. and then rapidly to 28% at 200 kv. It is preferable to construct depth-dose percentage curves relative to the peak dose. E. M. J.

Quality, area, and distance relationship for D_5 , D_{10} , and D_{15} . I. II. M. C. Reinhard and H. L. Goltz (*Radiology*, 1943, 40, 283–292, 293–296).—Curves and tables are given permitting the calculation of depth doses within the range in quality from 0.9 to 9.0 mm. Cu $\frac{1}{2}$ -val. layer, areas from 25 to 400 cm.², and distances from 50 to 100 cm. on the one hand, and in quality from 2 to 12 mm. Al $\frac{1}{2}$ -val. layer, 20 to 200 cm.² area, and 20 to 60 cm. distance on the other, when a change is made in any of these factors. E. M. J.

Roentgen visualisation of placenta by soft tissue technique. A. L. Dippel and W. H. Brown (*Amer. J. Obstet. Gynec.*, 1940, 40, 986–994).—The placenta was clearly visualised in 90% of 261 pregnancies. The most common cause of failure is hydramnios. Placental implantations were almost equally divided between anterior and posterior walls of the fundus. With low implantations there were 8 times as many on the anterior wall as on the posterior wall. Only 11 of 92 cases of vaginal bleeding had true placenta previa; 15 had X-ray evidence of low implantation without the usual clinical signs. The average thickness of the walls of the fundus uteri at term was 1.24 cm. on roentgenograms made at a distance of 42 in. P. C. W.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Protective action of glucose in bovine plasma against heat-coagulation. C. R. Hardt, I. F. Huddleson, and C. D. Ball (*Science*, 1943, 98, 309–310).—Electrophoretic analysis, following dialysis against a diethylbarbituric acid-Na diethylbarbiturate buffer, of three aliquots of bovine plasma, one of which was untreated, one kept at 65° for 1 hr., and one saturated with glucose and kept at 65° for 1 hr.,

indicated that in the presence of glucose no Van Der Scheer's component C was formed, and no coagulation occurred. E. R. R.

Inhibition of catalysed oxidations by hæmins. F. P. Simon, M. K. Horwitt, and R. W. Gerard (*J. Biol. Chem.*, 1944, 154, 421–425; cf. A., 1941, III, 378).—Hæmoglobin accelerates oxidation of linoleic acid and phospholipin. Cytochrome *c* acts similarly on linoleic acid, but catalase was inactive in the concn. tested. Fe^{II} *o*-phenanthroline increases these effects; hæmoglobin tends to neutralise this increase. The significance of these reactions is discussed. R. L. E.

***Helix pomatia* hæmocyanin.** S. Brohult (*Nova Acta Regiæ Soc. Sci. Upsaliensis*, 1940, [iv], 12, No. 4, 69 pp.; *Thesis, Uppsala*, 1940).—The mol. wt. of hæmocyanin from fresh dialysed or undialysed blood of *Helix pomatia*, after simple dilution to the desired concn., was 8.91×10^6 (ultracentrifuge). The first and second dissociation fractions had mol. wts. of 4.31×10^6 and 1.03×10^6 respectively, corresponding to 0.5 and 0.125 of the original mol. On changing the pH, the hæmocyanin mol. forms intermediate compounds in addition to the well-defined fractions. Hæmocyanin dissociates on the addition of salts (cf. A., 1939, II, 526), the degree depending on the valency of the anion or cation. With NaCl and Na₄Fe(CN)₆, the dissociation is proportional to the ionic concn. of the solution. In certain buffer solutions, the sedimentation const. varies with the salt concn. and shows a max. Non-electrolytes (sugars, glycerol, and urea) dissociate the hæmocyanin mol. to a smaller extent than electrolytes. The dissociation mechanism is considered to be a solubility phenomenon. Ultrasonic waves (cf. A., 1938, III, 6) split the hæmocyanin mol. into halves and eighths, the amount of intermediate compounds decreasing during the action of the waves. Ultra-violet light (cf. A., 1939, III, 194) and α -rays (cf. A., 1939, III, 868) split the hæmocyanin mol. into half mols., both in the liquid state and at the temp. of liquid air. The splitting of the hæmocyanin mol. by ultra-violet light and α -rays is probably due to the breaking of peptide linkages, but the splitting by ultrasonic waves is effected by cavitation. J. E. P.

Size and shape of tobacco mosaic virus particles. M. A. Lauffer (*J. Amer. Chem. Soc.*, 1944, 66, 1188–1194).—Two monodisperse preps. of tobacco mosaic virus have intrinsic η 39, sedimentation consts. approx. 185 Svedberg units, and one has a diffusion const. of 5.3×10^{-8} cm.² per sec. The partial sp. vol. is 0.73. The size and shape of the predominating particles were calc. from various combinations of these consts. Results agreed with direct measurements from an electron micrograph of the prep. A partly aggregated prep. of the virus had a bimodal distribution of particle sizes. Sedimentation, viscosity, and electron micrograph data were mutually consistent and afford strong evidence of the reliability of the methods of determining the size and shape of particles within the colloidal range. W. R. A.

Influence of concentration on sedimentation rate of tobacco mosaic virus. M. A. Lauffer (*J. Amer. Chem. Soc.*, 1944, 66, 1195–1201).—The reciprocal of the sedimentation const. of tobacco mosaic virus is a linear function of virus concn. When the sedimentation rate is corr. for the viscosity (η) of the virus solution instead of for that of the solvent the dependence on concn. vanishes. A small residual effect in the opposite direction appears to be due to non-ideality of the solution. Data from the literature on sedimentation of polymers and macromols. show that close relationship between apparent concn.-dependence of sedimentation rate and solution η is fairly general. Data on diffusion of simple electrolytes support the conclusion that solution η rather than solvent η should be considered in physical studies of this type. W. R. A.

XXIV.—ENZYMES.

Inactivation of enzymes by irradiation. G. Goldhaber and J. Leibowitz (*Nature*, 1943, 152, 274).—Dilution with water increased the susceptibility of taka-diastase, taka-maltase, taka-sucrase, and yeast-sucrase to inactivation by ultra-violet light. Dilution with inactivated enzyme solution, however, exerted a protective action against the radiation. The "colloid carriers" appear to be of primary importance in the inactivation of enzymes by irradiation. E. R. R.

Degradation of amino-acids in the animal organism. II. Specificity of "l-amino-acid oxidase." S. Edlbacher and H. Graver (*Helv. Chim. Acta*, 1944, 27, 928–942).—The deamination of l-phenylalanine by sections of guinea-pig kidney is strongly restricted by 0.001M-HCN, 0.1M-NaF, 0.05M-malonic acid, and 0.001M-iodoacetic acid. 0.02M-Na₂P₂O₇ is only feebly restrictive whereas 0.001M-As₂O₃ is without action. Degradation of l-glutamic acid is inhibited only by 0.001M-HCN of the above reagents. The observation that the degradation of l-phenylalanine is not influenced by As₂O₃ which strongly inhibits that of l-alanine considered in conjunction with concurrence experiments with these compounds suggests that the two l-amino-acids are probably oxidatively deaminated by different enzymes. The contrasting behaviour of l-phenylalanine and l-aspartic acid towards H₂P₂O₇ and concurrence experiments with these substances suggest likewise their degradation by two different enzymes. The unique behaviour of

l-glutamic acid in these experiments is paralleled by its unique position among the *l*-acids of the animal organism. Possibly the degradation of *l*-phenylalanine is due to an enzyme system composed of dehydrogenase, H carriers, and cytochrome system. (Cf. A., 1944, III, 426.) H. W.

Regeneration of heat-inactivated peroxidase. S. Schwimmer (*J. Biol. Chem.*, 1944, 154, 487—495).—There are at least two vegetable peroxidases, which vary in their activity towards *I'* and pyrogallol. The regeneration after heating is a time reaction needing the presence of both the supernatant and the ppt. formed on heating, and depends on the rate and degree of heating. The ppt. formed on heating carries the characteristic properties of the enzyme. R. L. E.

Temperature activation and inactivation of the crystalline catalase-hydrogen peroxide system. I. W. Sizer (*J. Biol. Chem.*, 1944, 154, 461—473).—The effect of temp. on cryst. catalase activity was studied in short experiments to minimise inactivation of the enzyme by H_2O_2 . Up to the optimum temp. (53°) the reaction rate increases according to the Arrhenius equation. Above 53° the reaction rate is decreased by increasing inactivation of the enzyme. The kinetics of the reaction are explained best by the theory that a high degree of orientation is necessary for H_2O_2 -catalase collisions to be effective. R. L. E.

***l*-Lysine decarboxylase: preparation of specific enzyme and co-enzyme.** E. F. Gale and H. M. R. Epps (*Nature*, 1943, 152, 327—328).—Details are given for the prep. of *l*(+)-lysine from acetone-dried powders of *Bact. cadaveris* and for the extraction of the co-enzyme from brewer's yeast. The behaviour of the enzyme is described in detail and preliminary information on the nature of the co-enzyme is given. E. R. R.

Coccarboxylase hydrolysis by a wheat phosphatase. H. G. Obermeyer, W. C. Fulmer, and J. M. Young (*J. Biol. Chem.*, 1944, 154, 557—559).—Wheat flour was found to contain a heat-labile factor capable of hydrolysing coccarboxylase. No increase in thiamin was found when clarase (a phosphatase prep.) was added to the heated flour suspension, showing that natural thiamin of wheat occurs as such; no enzyme digestion is therefore needed to determine natural thiamin in wheat flour. J. F. M.

Urease activity and ascorbic acid. J. H. Quastel (*Nature*, 1943, 152, 215).—The inhibiting action of ascorbic acid may be due to the oxidised form (diketone), by analogy with the action of quinones. The prevention of this inhibition in both cases by cysteine is due to the reduction of the oxidised acid. E. R. R.

Choline-esterase in ontogenesis of mammals. A. M. Riabinovskaja (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 26, 826—828).—The leg muscle of growing rabbits and rats has a higher choline-esterase activity than that of the whole muscle of the newly born animal, whilst with guinea-pigs and cats the growing animal has the lower content. The results are discussed with respect to the distribution of the esterase in the organism. F. O. H.

Seasonal variation in serum-choline-esterase in guinea-pigs. Effect of experimental scurvy.—See A., 1944, III, 635.

Inhibition of choline-esterase activity of nervous tissues by eserine *in vivo*.—See A., 1944, III, 643.

Esterase (butyric) activity. III. Effect of foster nursing on esterase content of blood serum and liver of strains of mice susceptible or insusceptible to mammary cancer.—See A., 1944, III, 666.

Preparation and assay of glutaminase for glutamine determinations. R. M. Archibald (*J. Biol. Chem.*, 1944, 154, 657—667).—Glutaminase is prepared from dog or beef kidneys which are emulsified at 0° in a Waring blender with 0.04M-KCN at pH 7.2. The enzyme loses its activity rapidly in cold storage; small amounts of whole kidney stored in solid CO_2 are used for extraction as required. The glutaminase unit is the amount of the enzyme that will liberate 0.01 mg. of NH_3 -N from glutamine in 10 min. under the conditions prescribed for the determination. Max. activity was obtained at about pH 7.5. Addition of KCN decreased NH_3 formation from asparagine and enhanced or stabilised glutamine hydrolase activity of fresh kidney. G. D.

Dipeptidases of yeast. E. Maschmann (*Naturwiss.*, 1943, 31, 136—137).— Mn^{++} and, especially, Co^{++} increase enormously (e.g., 2000 times) the otherwise slight action of yeast dipeptidase on glycylglycine, which is much more rapidly (e.g., five times) hydrolysed by purified dipeptidase in presence of Co^{++} (with 0.001M- Co^{++} hydrolysis follows a linear course) than is leucylglycine in the absence of added metal. Purification of the enzyme probably results in partial separation of the individual enzymes which hydrolyse these amino-acids. The metals also activate the dipeptidase of Lebedev extract although much less than they do purified enzyme. *d*-Leucylglycine is scarcely hydrolysed by Lebedev extract or by purified dipeptidase alone but is appreciably attacked if Mn is added anaerobically. This effect attains a max. if Mn + cysteine or Fe + cysteine is added. The dipeptidase of yeast which hydrolyses *d*-leucylglycine is identical with that found in animal tissues. W. McC.

Cleavability of keratins treated with hot β -naphthol by proteinases. N. Lichtenstein (*Nature*, 1943, 152, 249).—Sheep wool dissolved in β -naphthol at 140—150° (solvent removed by extraction with ether) was hydrolysed by the glycerol extract of pancreatin, purified pancreatic proteinase, pepsin, and taka-diastase. Yeast polypeptidase causes hydrolysis only after preliminary treatment of the protein with pepsin. The product from chicken feathers, after the β -naphthol treatment, behaves similarly. E. R. R.

Proteolytic inhibiting substance in the extract from unheated soya-bean meal. W. E. Ham and R. M. Sandstedt (*J. Biol. Chem.*, 1944, 154, 505—506).—Soya beans contain an anti-proteolytic substance extracted by dil. acid. Protein was removed by kaolin, and the active material pptd. by 60% acetone. Activity was destroyed by dialysis, autoclaving, and treatment with alcohol. The proteolytic inhibitor may be identical with a growth-retarding factor present in soya beans. R. L. E.

Effect of caffeine and coffee extract on activity of digestive enzymes.—See A., 1944, III, 657.

Enzymic degradation of tuberculin.—See A., 1944, III, 700.

Nature and mode of action of staphylococcal coagulase. Wilson Smith and J. H. Hale (*Brit. J. exp. Path.*, 1944, 25, 101—110).—Coagulase is a thermostable substance and is particulate or associated with particles of fairly uniform size, being partially retained by a Gradocol membrane with an average pore diameter of 0.31 μ , and totally retained by a 0.11- μ membrane. It is the precursor of a thrombin-like substance, the production of which depends on the participation of an activator present in rabbit, horse, and most human plasmas, but deficient or totally lacking in guinea-pig, mouse, fowl, and a few human plasmas; the activator is also present in human and rabbit testis. The thrombin-like substance is thermolabile and its concn. at any moment depends on several factors, chief of which are temp., time, and concn. of reagents. The non-coagulability of the plasmas of some species and of occasional human beings in routine coagulase tests is due to deficiency of activator, or to conditions which prevent the accumulation of sufficient thrombin-like substance. F. S.

Ether-soluble fraction of navy beans and the digestion of starch. D. E. Bowman (*Science*, 1943, 98, 308—309).—An oil obtained from finely-ground navy beans by extracting with ether for a week greatly retarded the digestion of starch by pancreatic amylase. Heating the starch with yeast for 30 min. at 100° appears to overcome this interference, which is probably due to the presence in some foods of a fat-soluble factor which influences enzymes. E. R. R.

Action of β -amylase on corn- [maize]-glycogen. D. L. Morris (*J. Biol. Chem.*, 1944, 154, 503).—Under similar conditions β -amylase destroys 20% of maize-glycogen, 45% of rabbit liver-glycogen, 62% of potato-, and 70% of maize-starch. Maize-glycogen probably has a more branched structure than that of animal glycogen. R. L. E.

Enzyme inhibitions. H. von Euler, L. Ahlström, and B. Högborg (*Arkiv Kemi, Min., Geol.*, 1944, 17, A, No. 20, 11 pp.).—The inversion of sucrose by invertase is restricted by sulphanilic and *p*-aminobenzoic acid and their salts. Both acids react with the glucose which is produced but a similar change does not occur with fructose in neutral solution or with sucrose. *p*-Nitrophenol also restricts the change. Sulphanilic acid greatly restricts the growth of *Staph. aureus*; this effect is markedly opposed by *p*-aminobenzoic acid. Inhibition is also caused by acetylcholine and glutathione, which are also active towards *B. coli*. The action of the benzene-sol. portion of the plant wax from the berries and leaves of *Ribes nigrum* and the berries of *Sorbus aucuparia* and the aq. alcohol-sol. fractions from the shell of both berries towards *S. aureus* is described. H. W.

Complex affinity of heavy metals for proteins. III. Effect of organic nitrogen compounds and other substances that form complexes with silver on the action of silver on diastases.—See A., 1944, III, 687.

Enzyme formation and polysaccharide synthesis by bacteria. II. Polysaccharide formation by *Rhizobium radicicolum* strains.—See A., 1944, III, 696.

Enzymically synthesised crystalline sucrose.—See A., 1944, II, 361.

Starch. XXVI. Potato phosphorylase. K. H. Meyer and C. de Traz (*Helv. Chim. Acta*, 1944, 27, 840—842).—The purification of phosphorylase contained in potato juice by alternate dialysis and pptn. with saturated aq. $(NH_4)_2SO_4$ is described. Its purity is assessed by adding a sample of the solution to a solution of K_2 glucose 1-phosphate and Zulkowsky's starch which has been incubated at 35°; at given intervals an aliquot portion of the solution is acidified with trichloroacetic acid and inorg. P is determined by King's method. Impure solutions lose activity more or less readily whereas the cold, pure solution is stable. It is inactivated by dialysis against distilled water for 4 days, by evaporation in a vac., and by being heated to 60°. Its sensitiveness towards alkali is described. H. W.

Triphosphate and triphosphatase. Enzymic hydrolysis of triphosphoric acid by triphosphatase of tumours and plants. Specific chemical action of triphosphates. L. Frankenthal, C. Neuberg, and I. S. Roberts (*Exp. Med. and Surg.*, 1943, 1, 386—401).—Neutralised Na triphosphate is hydrolysed by experimental rat and chick sarcoma, human benign and malignant tumour tissue, normal chick muscle, potato- and "taka"-phosphatase; non-neutralised triphosphate is not hydrolysed. An acetone extract of Rous sarcoma and benzpyrene rat sarcoma preps. contained triphosphatase which was ineffective against non-neutralised Na triphosphate solutions. The optimum pH for the activity of tumour triphosphatase is between 5.5 and 6.0. A. S.

Plasma acid phosphatase in carcinoma of prostate and effect of stilboestrol treatment.—See A., 1944, III, 667.

Effect of certain salts on enzyme activity [in fermentation].—See A., 1944, III, 692.

XXV.—FUNGI. MICRO-ORGANISMS. IMMUNOLOGY. ALLERGY.

Alkaloidal constituents of New Zealand ergot.—See B., 1944, III, 237.

Isolation, cultivation, and pathogenicity of *Actinomyces israeli* recovered from human mouth and from actinomycosis in man. T. Rosebury, L. J. Epps, and A. R. Clark (*J. infect. Dis.*, 1944, 74, 131—149).—(15 photomicrographs.) F. S.

Antibacterial substance from *Aspergillus clavatus*.—See A., 1944, II, 376.

Clavacin, an antibiotic substance from *Aspergillus clavatus*. P. A. Katzman, E. E. Hays, C. K. Cain, J. J. van Wyk, F. J. Reithel, S. A. Thayer, E. A. Doisy, W. L. Gaby, C. J. Carroll, R. D. Muir, L. R. Jones, and N. J. Wade (*J. Biol. Chem.*, 1944, 154, 475—486).—The prep. of pure clavacin (cf. Waksman *et al.*, A., 1943, III, 770) is described. It is identical with patulin (cf. A., 1944, III, 219). Clavacin is active against Gram-negative and Gram-positive bacteria and fungi, and is toxic to animals. It is inhibited by fresh rabbit serum but not by that of other species. R. L. E.

Biology of two species of *Magnusia*. I. Effect of temperature on germination of spores, and on growth and reproduction. H. R. Sweet (*Amer. J. Bot.*, 1941, 28, 150—161).—Conidia of both species germinated at 1.5—43° (optimum 32°); those of *M. nitida* were more adversely affected by high and less by low temp. than were those of *M. brachytricha*. Mycelial growth took place in both species at 5—43° (optimum 32°). Production of cleistothecia occurred at 16—38°, of conidia at 10—40.5°, and of aerial mycelium at 16—40.5°. R. H. H.

Hetero-karyosis in *Penicillium notatum*. G. E. Baker (*Bull. Torrey Bot. Club*, 1944, 71, 367—373).—*P. notatum* spores are uninucleate. Anastomoses between hyphae from different spores accompanied by nuclear division and migration are common. In a multispore culture this ensures a combining of characters and may be important in maintaining a productive strain. L. G. G. W.

Action of thiamin on *Phytophthora infestans* (Mont.), de Bary. A. Payette and C. Perrault (*Canad. J. Res.*, 1944, 22, C, 127—132).—*Phytophthora infestans* required thiamin for development, max. effects being obtained with 0.2 µg. per ml., but (unlike *Phycomyces blakesleeanus*) did not respond to pyrimidine and thiazole derivatives of the vitamin. Thiamin activity was inhibited by inositol and stimulated by a yeast-extract prep. (almost ineffective alone). R. H. H.

Response of *Pythiomorpha gonapodyides* to manganese. W. J. Robbins and A. Hervey (*Bull. Torrey Bot. Club*, 1944, 71, 258—266).—*Phycomyces blakesleeanus* and *Aspergillus niger* grew satisfactorily in a medium of asparagine, glucose, MgSO₄, KH₂PO₄, and thiamin. *Pythiomorpha gonapodyides* grew only if Mn (0.01—0.02 p.p.m.) was supplied in addition to any traces present in the basal media. Zn and Fe added to the basal media had no effect on growth but in presence of Mn, Zn (0.09 p.p.m.) was beneficial. L. G. G. W.

Oral moniliasis in newborn infants. N. A. Anderson, D. N. Sage, and E. H. Spaulding (*Amer. J. Dis. Child.*, 1944, 66, 450—456).—20 cases were found in 107 infants examined. C. J. C. B.

Description of a top-fermentation strain of *Saccharomyces cerevisiae* Hansen, catalogued as no. 6479 in the National Collection of Type Cultures. R. S. W. Thorne (*J. Inst. Brew.*, 1944, 50, 222—224).—This strongly attenuative, non-flocculent yeast, used in investigations on yeast metabolism and fermentation (B., 1942, III, 19, 266), is described for cultural, morphological, and physiological characters, these being in agreement with the characters accepted for this species. I. A. P.

Effect of vanadium on yeast cells. S. Sampath (*Current Sci.*, 1944, 13, 47).—V₂O₅ in a concn. of 1/1000 inhibited and at 1/2000 favoured sporulation. Other effects were distortion of the cells, disturbance of the volutin body, and increased formation of vegetative spores. F. S.

Effect of β-alanine on respiration and fermentation of yeast. V. Hartelius (*Naturwiss.*, 1943, 31, 139).—When β-alanine is added to the medium in which yeast is propagated, the effects on respiration (four-fold increase in 5 hr.) and fermentation (20% decrease) become noticeable after approx. 3 hr. The ratio respiration: fermentation is increased from 0.05 to 0.40, max. effect being attained when the concn. of β-alanine is 500 µg. per l. The effect is not due to yeast growth, which is slight. W. McC.

Counteracting growth-promoting action of β-alanine on yeast by adding taurine, β-aminobutyric acid, and other substances. N. Nielsen (*Naturwiss.*, 1943, 31, 146; cf. A., 1940, III, 610).—Taurine, β-hydroxypropionic acid, and β-alanylglycine do not promote the growth of yeast and do not interfere with the growth-promoting action of β-alanine. β-Aminobutyric acid also does not affect growth but it reduces the effect of β-alanine from a five-fold to a 40% increase. W. McC.

Toxic effects of heavy metals on protoplasm. W. Scifriz and M. Uruguchi (*Amer. J. Bot.*, 1941, 28, 191—197).—The time required to stop protoplasmic streaming was determined following treatment of plasmodia of the slime mould, *Physarum polycephalum*, with 0.05M. solutions of the nitrates of heavy metals. The order of toxicity of the cations was: Ag > Hg > Cd > Tl > Cu > Pb > Zn > Y > Sr > La > Rb. The toxicities of nitrates of Fe, Th, and U were due primarily to low pH of their solutions. Toxicity was unrelated to valency or at. no., but was correlated with the degree of adsorption of the salts by blood-C. R. H. H.

Feeding value of yeast-proteins. Physiological nutrient value of yeast-protein.—See A., 1944, III, 670.

Influence of colchicine alone and combined with X-rays on *Paramecium*. L. Halberstaedter and A. Back (*Nature*, 1943, 152, 275—276).—Cultures of *Paramecium caudatum* were subjected to concns. of 0.0005, 0.00025, and 0.000125% of colchicine. The first solution is lethal, whilst both the others stimulate cell division. After treatment with colchicine the lethal and half-val. doses of X-rays were considerably smaller than for untreated cultures. Colchicine pre-treatment has no effect on the susceptibility of *P. caudatum* to As₂O₃ or to ultra-violet light. E. R. R.

Mechanism of relapse in avian malaria. J. E. Gajewski and A. L. Tatum (*J. infect. Dis.*, 1944, 74, 85—92).—An atm. containing O₂ at a partial pressure of 75 mm. Hg consistently produced relapses in canaries with latent malarial infections. Adrenaline administered subcutaneously, glucose administered enterally, and a low-O₂ atm. all retarded or prevented phagocytic removal of parasites, possibly by inducing hyperglycemia. F. S.

In vitro effects of high temperatures on avian malarial parasites. F. E. Caldwell (*J. infect. Dis.*, 1944, 74, 189—205).—The thermal death point of *Pl. cathemerium* was 50° for 8 min. Among disturbances in strains derived from parasites subjected to sublethal temp. doses were disturbance of synchronism in the production of asexual and sexual parasites and almost complete loss of power to form gametocytes. F. S.

Bovine intracutaneous and serological reactions to fractions of *Trichomonas fetus* (protozoon). M. H. Svec (*J. Bact.*, 1944, 47, 505—508).—A protein fraction isolated from a cell filtrate of *T. fetus* by ½-saturation with (NH₄)₂SO₄ gave a sp. ppt. with the sera of cows injected with living or formalised trichomonads, but only when large amounts of antigen were used. Of 4 fractions, including a polysaccharide, obtained from formamide extraction only 2 gave slight reactions with sp. antisera. None of the fractions produced skin reactions in cattle. F. S.

Morphology of intestinal trichomonad flagellates in man and of similar forms in monkeys, cats, dogs, and rats. D. H. Wenrich (*J. Morph.*, 1944, 74, 189—211).—The structure of the infecting organism is described from the examination of 24 human cases. The no. of anterior flagella is characteristically 5, but it is variable and may be 4 or 3; while it is possible that these represent different races, it is thought that they belong to a single species, *T. hominis*. Evidence is given that *T. hominis* also infects some monkeys, cats, dogs, and rats. H. L. H. G.

Swimming of unicellular flagellate organisms. A. G. Lowndes (*Proc. Zool. Soc. Lond.*, 1943, 113, A, 99—107).—The primary function of the flagellum is to produce rotation and gyration about an axis which constitutes the main direction in which the organism is swimming; the mechanical principle is that of a screw or propeller. H. L. H. G.

Slide test for the serological diagnosis of syphilis. J. L. Hamilton-Paterson, W. T. S. Cole, and G. L. C. Usher (*J. Path. Bact.*, 1944, 56, 335—342).—The prep. of a properly standardised antigen for the serological diagnosis of syphilis by the slide test is described. The test is shown with over 18,000 sera to have a greater sensitivity (98.68%) than the Kahn test or Wassermann reaction taken separately or together. This sensitivity, combined with great rapidity and simplicity, renders the test most suitable for the preliminary sorting out of large nos. of sera, thus saving much routine work. C. J. C. B.

Importance of malaria as cause of false positive serological reactions. T. R. Dawber (*Ann. int. Med.*, 1943, 19, 651—655).—19 out of 64 subjects suffering from malaria had positive Wassermann or Kahn reactions; in 8 out of these 19 cases the positive serological reactions were due to malaria and not to syphilis. 7 out of these 8 patients had negative reactions within 10 days of the last febrile attack and commencement of quinine treatment; 1 patient was positive for 18 days after the last chill. A. S.

Preparation of suspensions for Weil-Felix test. R. F. Bridges (*Trans. R. Soc. Trop. Med. Hyg.*, 1944, 37, 343—344).—The technique is described in great detail. C. J. C. B.

Factors concerned in intracutaneous injection of cattle. W. M. Henderson (*J. Path. Bact.*, 1944, 56, 315—325).—The pressure required for the intracutaneous injection of cattle is affected by the choice of site and by the vol. and viscosity of the inoculum and for the injection of 5 c.c. of a watery inoculum into the skin of the neck of cattle may be as great as 30 lb. per sq. in. A description is given of the design and use of a syringe which enables an intracutaneous injection of up to 10 c.c. of liquid to be made at a single site. Material injected intracutaneously is rapidly absorbed. C. J. C. B.

Mechanical aids in direct microscopic method of counting bacteria. C. Olson, jun., and F. G. Warren (*J. Bact.*, 1944, 47, 495—497).—An instrument is described for marking slides with a circle 1.13 cm. in diameter to give an area of 1 sq. cm., the circular area providing a more uniform distribution of bacteria than a square area. A mechanical stage of a microscope is modified by smoothing the knurled edge of the knobs for lateral and to-and-fro movements and cutting notches so that a stop spring provides 25 equally spaced stops when the stage is moved the diameter of the circular film. Thus a series of equally spaced fields can be counted, avoiding the errors of random selection (cf. Hanks and James, *ibid.*, 1940, 39, 297). F. S.

Preservation of tube cultures of fungi and bacteria with liquid paraffin. D. Norris (*J. Austral. Inst. Agric. Sci.*, 1944, 10, 77).—Week-old cultures of *Pleospora herbarum*, *P. rehmanniana*, *Pseudoplea trifolii*, *Colletotrichum trifolii*, *Ascochyta imperfecta*, *Vernicularia* sp., *Fusarium* sp., *Macrosporium* sp., and *Rhizobium* from *Medicago scutellata* remained viable when covered with sterilised commercial liquid paraffin and stored for 6 months. R. H. H.

Penicillin. J. L. Shimwell (*J. Inst. Brew.*, 1944, 50, 235—243).—A general review of bacterial antibiosis and of antibiotic substances prepared from bacteria, actinomycetes, and moulds, reference being made to the similarity between the action of certain of these and that of hop antiseptics. I. A. P.

Effect of penicillin on experimental streptococcus, pneumococcus, and staphylococcus infections of egg embryo. J. A. Epstein, E. J. Foley, and S. W. Lee (*J. Bact.*, 1944, 47, 573—574).—Fertile eggs injected with penicillin to a final concn. of approx. 0.1 Florey unit per ml. resisted experimental infection with pneumococcus, *Strep. pyogenes* (group A and C), and *Staph. aureus*. F. S.

Production of penicillinase by organisms of the subtilis group. E. S. Duthie (*Brit. J. exp. Path.*, 1944, 25, 96—100).—A stable extracellular penicillinase is produced in good quantity by organisms of the *subtilis* group in liquid media, if penicillin be added during or at the end of the growth phase. Methods of determining enzymic activity and of the amounts required for routine culture media are described. F. S.

In-vitro action of penicillin alone, and in combination with sulphathiazole, on Brucella. T. Tung (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 8—11).—8 out of 15 strains of *Brucella* organisms were inhibited in growth by penicillin, and its action was enhanced by addition of small amounts of Na sulphathiazole. V. J. W.

Synergistic effect of p-aminobenzoic acid and sulphapyridine on penicillin. J. Ungar (*Nature*, 1943, 152, 245—246).—p-Aminobenzoic acid enhances the inhibitory effect of penicillin against *B. subtilis* in media containing either hydrolysed casein or glucose, and against *Staphylococcus aureus* (strain 663) in the former broth, but not against *Streptococcus hemolyticus* (strain 618, group A). It had no effect in concn. above 1:1000. Sulphapyridine was even more effective in increasing the inhibitory action of penicillin against *S. aureus* in both broths, and also against streptococcus. In all experiments the added agent alone had no inhibitory effect. Preliminary *in vivo* experiments with mice infected with *S. hemolyticus* confirm the *in vitro* observations. E. R. R.

Action of sulphonamides and of p-aminobenzoic acid on *Bacterium tularensis*. J. T. Tamura (*J. Bact.*, 1944, 47, 529—533).—Sulphapyrazine in a concn. of 2×10^{-4} M. (5 mg.-%) induced complete bacteriostasis of *Bact. tularensis* with moderate and large inocula in a very favourable liquid medium (Tamura and Gibby, A., 1943, III, 694). Sulphadiazine and sulphathiazole were less effective. p-Aminobenzoic acid did not inhibit sulphonamide bacteriostasis and was itself bacteriostatic in concns. of over 10^{-4} M. F. S.

Bacteriostatic activity of sulphonamides against *B. morganii* and para-colon bacilli. E. R. Neter and P. Clark (*Proc. Soc. Exp. Biol.*

Med., 1944, 56, 34—35).—Sulphanilamide and sulphathiazole are both bacteriostatic to these organisms. At 100 mg.-% sulphathiazole is more, but at 1000 mg.-% is less, effective than sulphanilamide. V. J. W.

Retention of resistance to sulphonamides by pneumococci. C. L. Sesler, L. H. Schmidt, and J. Belden (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 42—45).—Strains which have acquired a high resistance retain it indefinitely. Those with only a moderate resistance may lose it after removal from contact with sulphonamides. V. J. W.

Biochemical and bacteriostatic actions of salicylic acid and salicylnicotinylamide. H. von Euler and B. Högborg (*Arkiv Kemi, Min., Geol.*, 1944, 17, B. No. 14, 8 pp.).—The hydrolysis of sucrose by invertase is markedly impeded by salicylnicotinylamide, which restricts the development of the apozymase system to a much greater extent than does nicotinic acid or its amide. The bacteriostatic action of phenols and phenolic compounds such as thymol exceeds that of salicylic acid, which is greater than that of *pp'*-dihydroxydiphenylmethane. The growth of *B. coli* is more restricted by salicylnicotinylamide than by Na salicylate; addition of p-aminobenzoic acid to the solution does not cause increase in growth and there is no antagonistic action between p-aminobenzoic acid and salicylnicotinylamide. At very low concn. salicylnicotinylamide promotes somewhat the growth of *Staph. aureus*. Apparently after hydrolysis of the mol. the accelerating influence of the nicotinamide outweighs the retarding effect of salicylic acid. Excess of unchanged salicylnicotinylamide can displace nicotinamide and therefore restrict the increase of *S. aureus*. (See also A., 1944, II, 378.) H. W.

History, chemistry, toxicity, and anti-bacterial properties of water-soluble chlorophyll derivatives as therapeutic agents.—See A., 1944, III, 681.

Canavalin, new enzymic bactericidal agent. D. L. Farley (*Surg. Gynec. Obstet.*, 1944, 79, 83—88).—Canavalin is an enzyme extracted from jack bean by org. solvents which, when combined with a co-enzyme extracted from mixtures of cellular material and thiamin kept for 7 days with daily heating to 70° (vitatropin or OBT), will oxidise polysaccharides. *In vitro* the enzyme system inhibits the growth of both Gram-positive and Gram-negative organisms. Preliminary clinical trials gave encouraging results. P. C. W.

Analysis of a partial hydrolysate of gramicidin by partition chromatography.—See A., 1944, II, 384.

Observations on electron microscopy of *B. cereus*, and tyrothricin action. F. H. Johnson (*J. Bact.*, 1944, 47, 551—557).—Normal cells had dense protoplasm and a sharply-defined cell wall. After growth on a tyrothricin-containing agar medium some cells showed granular disintegration of the outer part involving the cell wall as well as the peripheral protoplasm. This type of change was sometimes seen in control cultures but much less abundantly. (11 electron micrographs.) F. S.

Effects of X-rays on the frequency of bacterial mutation. R. Croland (*Compt. rend.*, 1943, 216, 616—618).—The rays act directly on *Moraxella lwoffii* var. *brevis*, augmenting transformation of the S⁻ form into the S⁺ form. This change is a function of the dose absorbed. H. G. R.

Influence of copper and of iodine on growth of *Azotobacter agilis*. J. C. Lewis (*Amer. J. Bot.*, 1942, 19, 207—210).—Addition of Cu⁺⁺ to culture media tends to prolong the log growth phase of *A. agilis*. Addition of I⁻ counteracts this effect. The logarithmic growth phase was unaltered. A. G. P.

Sugar and salt tolerance of *Clostridium pasteurianum* and some related anaerobes. C. H. Spiegelberg (*J. Bact.*, 1944, 48, 13—30).—*C. pasteurianum* was more tolerant of sugar and salt than several closely related types. Osmotic pressure was the limiting factor in the case of sugars but not of salts. Of the salts tested Cl⁻ was less toxic than NO₃⁻ and the latter less toxic than SO₄⁻. Tolerance of NaCl and sucrose was decreased by decrease in pH. Temp. had little effect on the tolerance of sucrose but an increase from 30° to 37° increased tolerance of NaCl. Cultures could be adapted to higher concns. of sucrose and NaCl. The data are discussed in relation to the spoilage of an acid canned fruit, *Ananas comosus* (L), Merrill. F. S.

Nutritional requirements of *L. bulgaricus*, *L. acidophilus*, and *Streptococcus lactis*. K. Bhagvat and N. S. Sekhon (*Current Sci.*, 1944, 13, 45—46).—In a basal medium containing alkali-treated photolysed peptone, casein hydrolysate, hydrolysed nucleic acid, cystine, glucose, and Na acetate, these bacteria required the addition of pantothenic acid and riboflavin for growth. Vitamin-B₁ and -B₆, nicotinic acid, and biotin were not required, but an avidin-inhibition test showed that biotin was necessary, the basal medium containing enough biotin to promote growth. F. S.

Riboflavin requirements of certain lactic acid bacteria. T. E. Campbell, and G. J. Hucker (*Food Res.*, 1944, 9, 197—205).—Lactic acid bacteria have a variable requirement of riboflavin and may be classified into four groups: (1) organisms failing to grow in the

basal medium both with and without riboflavin; (2) those failing to grow in the basal medium alone and exhibiting only slight growth when riboflavin is added; (3) those failing to grow in the basal medium and producing moderate to large amounts of acid on addition of riboflavin; (4) those growing in the basal medium and exhibiting no increase in acid production on addition of riboflavin. One culture of *Lactobacillus* responded to smaller amounts of riboflavin than did *L. casei* and may be used for assays in the range of 0.01–0.10 µg. per 5 ml.

H. G. R.

Action of Lemoigne's bacillus on pyruvic acid. P. Heitzmann and N. Grelet (*Compt. rend.*, 1943, 216, 694–696).—In absence of glucose a portion of the pyruvic acid which disappears is transformed into lactic and acetic acid and CO₂. In presence of glucose considerable glycolysis occurs and the quantity of pyruvic acid utilised is increased, a portion undergoing the same transformation as in absence of glucose and the remainder inducing oxidation of glucose, at the same time being reduced to lactic acid.

H. G. R.

Rôle of phosphate in pyruvic acid dissimilation by cell-free extracts of *Clostridium butylicum*. H. J. Koepsell, M. J. Johnson, and J. S. Meek (*J. Biol. Chem.*, 1944, 154, 535–547).—36% of pyruvic acid fermentation activity of frozen cells of *C. butylicum* was recovered in a dried water extract. During the fermentation of pyruvic acid inorg. PO₄^{'''} was taken up, which in the presence of glucose appeared as stable ester PO₄^{'''}, but in the absence of glucose only labile PO₄^{'''} appeared. By Ag pptn. it appeared that the latter contained acetic and butyric acids. The enzyme extract was able to catalyse the exchange of PO₄^{'''} from acetyl phosphate to butyric acid.

J. F. M.

Effect of narcotics and other inhibitors on oxidation and assimilation of glucose by *Achromobacter fischeri*. W. D. McElroy (*J. Cell. Comp. Physiol.*, 1944, 23, 171–192).—O₂ uptake at the point of glucose exhaustion is equiv. to 17% of the theoretical val. for complete oxidation. This includes endogenous respiration, which at 19° is greatly stimulated by 0.02M-chloral hydrate or 0.003M-chloretone, which themselves decrease luminescence by 75%. After glucose has disappeared neither barbiturates nor chloral hydrate have much effect, but chloretone increases O₂ uptake. Dinitrophenol decreases oxidation of glucose and sulphanilamide has little effect.

V. J. W.

Decomposition of guayule resins by micro-organisms. P. J. Allen, J. Naghschi, and S. R. Hoover (*J. Bact.*, 1944, 47, 559–568).—The incidence of resin-decomp. organisms during the retting of guayule shrub by the natural microflora was detected by their ability to cause clearing of resin emulsions suspended in agar. Resin-decomp. organisms included *Aspergillus fumigatus*, *Rhizopus arrhizus*, a *Micrococcus*, 3 *B. subtilis* strains, *Pseudomonas boreopolis*, *Achromobacter laticum*, *Actinomyces fradii*, a member of the Dematiaceae, and an unidentified Gram-negative rod. All attacked some portion of the crude-rubber extract, but compounds of the unsaponifiable fraction were attacked only by the last 3, and exuded resin was attacked only by the last 2. The presence of nutrients favoured resin clearing by promoting growth.

F. S.

Bacterial oxidation of corn oil. J. O. Mundt and F. W. Fabian (*J. Bact.*, 1944, 48, 1–11).—25 of 32 common soil and water bacteria showed an increase of O₂ utilisation when corn oil (mazola oil) was added to suspensions in the Warburg apparatus; only 6 dehydrogenated the oil. *Aerobacter aerogenes*, *Alkaligenes faecalis*, *Sarcina lutea*, *M. aurantiacus*, *M. flavescens*, *M. cinnabareus*, *Flavobacterium arborescens*, *Phytomonas tunejaciensis*, and *P. mephitica* were oxidative and non-lipolytic. 0.85% NaCl inhibited the rate of respiration of 3 of 6 species of *Pseudomonas*, and 2.5% NaCl inhibited the respiration of all species except *P. fluorescens* in the presence of oil to a point below that of endogenous respiration in saline-buffer suspension. The respiratory rate was lowered by decreased pH. The antioxidants, quinol and Avenex, did not prevent bacterial respiration in the presence of oil in the concns. used. Avenex was utilised by 4 of the 5 species tested.

F. S.

Citric acid fermentation by streptococci and lactobacilli. J. J. R. Campbell and I. C. Gunsalus (*J. Bact.*, 1944, 48, 71–76).—Several species of homofermentative lactic acid bacteria, cocci, and rods utilised citric acid as an energy source for growth in the absence of fermentable carbohydrate. The main products produced by representative strains of enterococci, *Lactobacillus delbrueckii*, and *L. casei* in neutral cultures were acetic acid and CO₂, with formic and lactic acid accounting for most of the remaining C. Traces of acetylmethylcarbinol and ethyl alcohol were also formed. These products are similar to those formed by the *Leuconostoc* and *Aerobacter* genera with citric acid as substrate.

F. S.

Fermentations of streptothricin-resistant cultures of *Aerobacillus polymyxa*. D. Perlman (*J. Bact.*, 1944, 48, 116–117).—The fermentations of streptothricin-resistant cultures were the same as those of the streptothricin-susceptible parent cultures.

F. S.

Biochemical classification of coliform bacilli in sputum. R. Salm (*Edinb. Med. J.*, 1944, 51, 247–251).—From 80 non-selected patients 100 strains of *B. coli* were isolated, in 4 cases in pure culture.

The strains were divided into 8 groups, of which *B. coli* and *B. coli intermedius* together made 38% of the total.

H. S.

Effects of spermine, spermidine, and other polyamines on the growth inhibition of *Escherichia coli* by atabrine. M. Silverman and E. A. Evans, jun. (*J. Biol. Chem.*, 1944, 154, 521–534).—Atabrine has most bacteriostatic effect at high pH, closely related to increased retention of the drug by the cells. Various protein digests diminished the growth inhibition, Witte's peptone being the most active. This peptone also stimulates the growth of *Lactobacillus casei*. Spermine and spermidine are the most active antagonists of atabrine, whilst atabrine and also quinine inhibit the oxidation of spermidine by lyophilised preps. of *Pseudomonas pyocyanea*. It is suggested that atabrine acts by interfering with the metabolism of spermine or spermidine.

J. F. M.

Chemical and immunological study of the capsular polysaccharide of *Clostridium perfringens*. M. H. Svec and E. McCoy (*J. Bact.*, 1944, 48, 31–44).—The capsular polysaccharide of *C. welchii* was pptd. by methyl alcohol from culture fluid after pptn. by (NH₄)₂SO₄. Analysis of 6 samples gave uronic acids 27–32%, N 0.06–1.6%, org. phosphate 0.34–4.23%, reducing val. 1.47–22.5%; constituent sugars mannose and glucose. 3 preps. were antigenic; pptn. and agglutination tests indicated a common polysaccharide for all strains tested.

F. S.

Rapid identification of *Clostridium welchii* in accidental wounds. W. A. Altmeier (*Surg. Gynec. Obstet.*, 1944, 78, 411–414).—The stormy fermentation of milk is sp. for *C. welchii* when controlled by examination of hanging drop and stained smear preps. of whey. Conditions for carrying out the test are detailed which give typical reactions from infected wound debris in 5–10 hr.

P. C. W.

Occurrence of diphtheria antitoxin in the human pregnant mother, newborn infant, and the placenta. J. Liebling, G. P. Youmans, and H. E. Schmitz (*Amer. J. Obstet. Gynec.*, 1941, 41, 641–652).—Non-immunised Schick-positive mothers showed no rise in antitoxin level during pregnancy such as is shown in non-immunised Schick-negative mothers. The infants of the former were Schick-positive with antitoxin content equal to that of their mothers at term. There was marked antitoxin formation following active immunisation in both groups, and the infants born in this series gave negative Schick tests and had antitoxin levels equal to those of their mothers. Only negligible amounts of antitoxin could be extracted from the blood-free placenta.

P. C. W.

Denaturation of antibodies. I. Action of urea on diphtheria antitoxin. G. G. Wright (*J. Exp. Med.*, 1944, 79, 455–461).—Half the diphtheria antitoxin activity, as measured by the neutralising power for toxin, is destroyed in 24 hr. in 7.5M-urea at pH 7.82. The initial rate of inactivation is independent of the antitoxin concn. but the rate decreases rapidly with time. Higher or lower pH or the presence of 0.1M-Na₂SO₃ increases the antitoxin inactivation by urea.

A. S.

Primary action of X- and ultra-violet rays on *B. paradysenteriae* Y6R.—See A., 1944, III, 687.

Codehydrogenase I and other pyridinium compounds as V-factor for *Haemophilus influenzae* and *H. parainfluenzae*. W. Gingrich and F. Schlenk (*J. Bact.*, 1944, 47, 535–550).—The min. concn. of codehydrogenase I and the reduced co-enzyme, dihydrocodehydrogenase I, which promotes the growth of these bacteria is 2 × 10⁻⁸ µ-mol. per ml. They are the most efficient compounds as substitutes for V-factor. Nicotinamide riboside supports min. growth in concns. of 5 × 10⁻⁷ µ-mol. per ml. or lower. It is far less efficient than the complete enzyme even in the presence of adenosine and may be considered to be the limit of adaptability of the organisms in synthesising the complete enzyme when it is not available. Codehydrogenase II is less efficient than nicotinamide riboside. Deaminocodehydrogenase I, an artificial derivative, satisfies the V-factor requirement with an efficiency of about 60% as compared with codehydrogenase I. Since the curve of growth in relation to concn. of the compound parallels that of the natural co-enzyme, it is probably utilised without change or may be converted into the proper co-enzyme by restoration of the amino-group. Factors influencing growth and nitrate reduction in relation to the bioassay of codehydrogenase I or V-factor are discussed.

F. S.

Plea for standardisation of lepromin test. J. W. Fielding and R. G. Cochrane (*Med. J. Austral.*, 1944, I, 313–315).—Lepromin is an antigen used in a skin test for leprosy.

F. S.

Lepromin test in laboratory animals. J. W. Fielding (*Med. J. Austral.*, 1944, I, 439–441).—The lepromin test with both human and rat emulsions gave variable results in animals except in rats, which consistently failed to react.

F. S.

Pathogenic myxobacteria. E. J. Ordal and R. R. Rucker (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 15–18).—A myxobacterium, *Chondrococcus columnaris*, was isolated in pure culture and shown to cause a fatal disease in various fish.

V. J. W.

Isolation of *Pasteurella septica* from appendicular abscess. G. B. Ludlam (*J. Path. Bact.*, 1944, 56, 307–313).—The properties of a

strain of *P. septic* isolated in pure culture from an appendicular abscess are described. C. J. C. B.

Infection of cat-bite and dog-bite wounds with *Pasteurella septic*. E. N. Allott, R. Cruickshank, R. Cyrilas-Williams, V. Glass, I. H. Meyer, E. A. Straker, and G. Tee (*J. Path. Bact.*, 1944, 56, 411—415).—6 cases of wound infection with *Pasteurella septic* following animal bites (3 cat bites and 3 dog bites) are described. C. J. C. B.

Carbonic anhydrase. III. Effect on growth of the type I pneumococcus, in vitro. E. R. Main and A. Locke (*J. Bact.*, 1944, 48, 77—81).—Concentrates of erythrocyte extracts containing carbonic anhydrase in an incompletely purified form had a growth-retarding effect on pneumococci in broth. Heating to 80° destroyed the growth inhibitor and the anhydrase but left unaffected a growth-accelerating factor. F. S.

Relation of sedimentation rate to amount of precipitate formed in plasma by type III pneumococcus. J. S. Youngner (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 18—20).—Sedimentation rate of blood in various pathological conditions was proportional to the amount of ppt. formed in the reaction described by Friedemann and Sutliff (A., 1940, III, 187) and attributed to the presence of an abnormal polysaccharide. V. J. W.

Electron micrographs of pleuropneumonia-like organisms. L. J. Weiss (*J. Bact.*, 1944, 47, 523—527).—Both bacillary and pleuropneumonia-like stages of the life cycle of a pleuropneumonia-like organism isolated from a rat were observed. (12 electron micrographs.) F. S.

Microbiological aspects of riboflavin. III. Oxidation studies with *Pseudomonas riboflavina*. J. W. Foster (*J. Bact.*, 1944, 48, 97—111).—*Ps. riboflavina* (A., 1944, III, 561) attacks ribose, but by different enzyme systems from those with which it attacks the ribityl group of riboflavin. Lumiflavin is not attacked. Ribityl groups of a no. of other riboflavin homologues and related compounds are also attacked. Some, like phenyl-4:5-dimethylisoxaloxazine, inhibit riboflavin oxidation by this organism. This action is not competitive since it cannot be reversed by higher concns. of riboflavin and it inhibits oxidation of glucose by *Ps. riboflavina* and other bacteria. It has no anti-vitamin activity in rats. F. S.

***l*-Amino-acid oxidase of *Proteus vulgaris*.**—See A., 1944, III, 688.

New *Salmonella* type with hitherto undescribed somatic antigens. P. R. Edwards and H. Hughes (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 33).—A new type, *S. invernensis*, is described, which is not agglutinated by any known somatic *Salmonella* anti-serum. Flagellar antigens are diphasic: phase 1 corresponds with phase 1 of *S. thompson*, and phase 2 with all non-sp. phases of Kauffmann-White classification. It therefore has the formula XXXVIII: k-1, 6. . . . V. J. W.

Salmonellosis as a public health problem in wartime. A. D. Rubenstein, R. F. Feemster, and H. M. Smith (*Amer. J. Publ. Health*, 1944, 34, 841—853).—356 epidemic cases occurred in 17 outbreaks: 11 food-borne and 6 contact outbreaks. 408 sporadic infections occurred in 295 households. 4 types (*S. typhimurium*, *S. newport*, *S. paratyphi B*, and *S. oranienburg*) accounted for 70% of the sporadic cases. Convalescents were infectious for long periods; 43% showed positive stools in the 4th week after onset, 18% in the 8th week, and 11% in the 10th week. 12 permanent carriers developed among 235 *S. paratyphi B* infections, none among 267 *S. typhimurium* infections, and 3 among 309 infections due to all other types. This indicates that permanent carriers are important reservoirs of *S. paratyphi B* infections. In all salmonella types persistent convalescent carriers, subclinical, and unrecognised cases were more important sources of infection than permanent carriers. C. J. C. B.

Phenomenon of local skin reactivity to *Serratia marcescens*. Immunological relationships between *S. marcescens* culture filtrate and Shear polysaccharides.—See A., 1944, III, 666.

Species differentiation within genus *Shigella* by test for reduction of trimethylamine oxide. A. J. Weil and J. Black (*J. Bact.*, 1944, 47, 575—577).—The val. of this test (cf. Wood *et al.*, A., 1944, III, 146) in the differentiation of *Shigella* is confirmed. F. S.

Initial aerobic flora of newborn (premature) infants. J. C. Torbey and M. K. Reese (*Amer. J. Dis. Child.*, 1944, 67, 89—99).—Up to 16 hr. after birth the naso-pharynx and throat of 13 of 16 infants were sterile. Between 24 and 48-hr. after birth, 6 of 12 infants in wards exposed to ultra-violet irradiation still showed sterility compared with 2 of 16 controls. Beyond that time the 2 groups were similar except for *Staph. aureus*. The irradiation did not retard the acquisition of non-haemolytic streptococci but did delay infection with *Staph. aureus*. The strains of streptococci and of *Staph. aureus* normally present in the throats and nasal passages of adults could pass through the types of face masks worn, even in the absence of coughing and sneezing. The acquisition of haemolytic strains of *Staph. aureus* was highest in the late winter and spring months and lowest in the early autumn. C. J. C. B.

Food poisoning caused by haemolytic staphylococcus in a defence plant. B. J. Slater and J. L. Norris (*Amer. J. Publ. Health*, 1944, 34, 854—856).—81 cases occurred. They were infected by corned beef sliced by a cook with an infected finger. C. J. C. B.

Staphylococcus and streptococcus carriers. Sources of food-borne outbreaks in war industry. V. A. Getting, A. D. Rubenstein, and G. E. Foley (*Amer. J. Publ. Health*, 1944, 34, 833—839).—In 13 out of 18 outbreaks reviewed identical organisms were recovered from incriminated food and the nose and throat of food handlers. 3 of the outbreaks were produced by α -streptococci (Lancefield group H or B). In each instance, kittens were made ill by whole cultures of the respective streptococcus, but not by its filtrate. The incubation period in both patients and kittens was prolonged as compared with staphylococcal food poisoning. C. J. C. B.

Isolation of streptococci from mixed cultures. G. H. Chapman (*J. Bact.*, 1944, 48, 113—114).—Two media are described, one of which contains crystal-violet, trypan-blue, and K tellurite, and the other Na azide and crystal-violet. F. S.

Growth factor requirements of certain streptococci. L. D. Wright and H. R. Skeggs (*J. Bact.*, 1944, 48, 117—118).—Asparagine promoted the growth of *Strep. lactis* and was not replaced by glutamine. Neither asparagine nor glutamine, nor both, stimulated growth of *Strep. faecalis*. In the absence of both, trypsinised vitamin-free casein promoted the growth of both streptococci. F. S.

Experimental streptococcal lesions of rabbit's eye and treatment. J. M. Robson and A. A. B. Scott (*Brit. J. exp. Path.*, 1944, 25, 81—90).—The local application of penicillin was highly beneficial in the treatment of these lesions even when applied 1 hr. after infection. Sulphapyridine, sulphacetamide, sulphathiazole, and sulphadiazine were beneficial when applied locally immediately after infection but were of no val. when applied after a delay of 1 hr. except when combined with 0.1% of Duponal (M.E. dry). Propamidine was beneficial after a delay of 1 hr. but caused irritation. With sulphonamides local treatment was more effective than systemic treatment against both streptococcal and pneumococcal lesions. F. S.

Value of examination of gastric contents for tubercle bacilli. J. A. Foley and J. B. Andosca (*Ann. int. Med.*, 1943, 19, 629—633).—187 out of 639 cases (29%) with negative sputum showed tubercle bacilli in their gastric contents; guinea-pig inoculation of the gastric contents gives a higher % of positive results than direct microscopy. A. S.

Artifacts encountered in stained preparations of tubercle bacilli. I. Non-acid-fast forms arising from mechanical treatment. D. Yegian and K. R. Porter (*J. Bact.*, 1944, 48, 83—90).—(4 photomicrographs.) F. S.

Influence of sulphanilamide on yellow pigment formed by *Mycobacterium tuberculosis* from *p*-aminobenzoic acid. R. L. Mayer (*J. Bact.*, 1944, 48, 93—96).—Under certain conditions the formation of a yellow pigment in cultures of *M. tuberculosis* in the presence of *p*-aminobenzoic acid and procaine (A., 1944, III, 509) was diminished or inhibited by sulphanilamide probably by a direct chemical reaction between the oxidation products of *p*-aminobenzoic acid and sulphanilamide. F. S.

Chemistry of the lipins of tubercle bacilli. LXVII. Lipins of human tubercle bacillus H-37 cultivated on a glucose-containing medium. M. M. Creighton, L. H. Chang, and R. J. Anderson. LXVIII. Lipins of cell residues from preparation of tuberculin. M. M. Creighton and R. J. Anderson. LXIX. Composition of the acetone-soluble fat of cell residues from preparation of tuberculin. C. O. Edens, M. M. Creighton, and R. J. Anderson (*J. Biol. Chem.*, 1944, 154, 569—579, 581—585, 587—591).—LXVII. The total lipins of the human tubercle bacillus, strain H-37, were about 30.6% whether they were grown on a medium containing glucose or glycerol, but the constitution varied. In those grown on glucose medium there was no phosphatide, only low-melting wax and acetone-sol. fat, similar to that formed on glycerol medium. Tuberculostearic acid, phthioic acid, phthiocol, and an unknown carbohydrate were present, but no glycerol. The low-melting wax contained mycolic acid, phthiocol, dextrorotatory fatty acids analogous to phthiocol acid, and a polysaccharide containing pentose.

LXVIII. The lipins of tubercle bacilli residues from the prep. of purified protein derivative contain phosphatides, low-melting wax, acetone-sol. fat, CHCl_3 -sol. wax, and firmly bound lipins. These fractions differed somewhat in chemical composition from similar fractions obtained from strain H-37.

LXIX. The acetone-sol. fraction from tubercle bacilli residues contained fatty acid esters of trehalose. The acids were tuberculostearic, phthioic, and other higher liquid saturated fatty acids. Phthiocol and anisic acid were also found. The solid fatty acids included hexacosanoic, palmitic, and stearic acid. J. F. M.

Inflammation: inhibitory action of tuberculin on cathepsin. C. Weiss and N. Halliday (*Arch. Path.*, 1944, 37, 272—274).—Purified protein derivative caused the same decrease (25%) in the speed of activity of cathepsin II whether the enzyme was obtained from the spleens of normal rabbits or from those of rabbits infected with virulent or with non-virulent tubercle bacilli. C. J. C. B.

Increased resistance to reinoculation after recovery from ocular tuberculosis shown by immune-allergic rabbit.—See A., 1944, III, 649.

Toxins secreted by the typhoid fever bacillus, particularly the enterotropic toxin. H. Vincent (*Compt. rend.*, 1943, 216, 707—710).—Lesions in the intestines and abdominal organs are due to the enterotropic toxin rather than to the organism itself. Selective fixation of the toxin on the adrenal capsules plays a large part in the symptomatology and evolution of the disease. H. G. R.

Viruses. H. Loewe (*Chem.-Ztg.*, 1943, 67, 7—11, 31—32).—A review, chiefly of the German literature. W. McC.

Studies on virus disease originating in guinea-pig injected with ticks (*Dermacentor andersoni*, Stiles). F. A. Humphreys, D. E. Helmer, and R. J. Gibbons (*J. infect. Dis.*, 1944, 74, 109—120).—The virus is highly pathogenic to the guinea-pig and moderately so for white mice. It causes a febrile condition with or without pneumonitis. It survives at least 70 days at 5—8° and becomes inactive within 3 days at 37°, within 20 min. at 60°, and within 24 hr. in 0.25% of formalin. Neutralising antibodies can be detected in the sera of recovered guinea-pigs. F. S.

Complications of infantile eczema caused by virus of herpes simplex. H. A. Wenner (*Amer. J. Dis. Child.*, 1944, 67, 247—264).—An unusual eruption occurred in 3 infants chronically ill with eczema, characterised by a dermal reaction that passed through the stages of papule, vesicle, pustule, and crust in 7—10 days. Strains of a filterable virus isolated from the vesicular fluid of each of the 4 infants and from the brain of 1 at necropsy were identified as closely related to, if not identical with, the virus of herpes simplex. C. J. C. B.

Susceptibility of cane rat (*Zygodontomys*) and of bush rat (*Proechimys*) to influenza viruses. J. M. Weir (*J. infect. Dis.*, 1944, 74, 121—130).—Cane rats were readily infected with influenza viruses A and B. There were considerable variations in susceptibility in bush rats to both viruses. F. S.

Isolation and characterisation of influenza virus B (Lee strain). D. G. Sharp, A. R. Taylor, I. W. McLean, jun., D. Beard, J. W. Beard, A. E. Feller, and J. H. Dingle (*Science*, 1943, 98, 307—308).—Influenza virus B cultivated in the chorio-allantoic sac of 11-day-old chick embryos was isolated by dialysis of the chorio-allantoic fluid against Ringer-CaCl₂ solution, followed by repeated adsorption on adult chicken red blood cells, elution, and ultracentrifugation. The particles are rounded or ovoid, give positive biuret, ninhydrin, and Millon tests, negative glyoxylic acid and Molisch test, a weakly positive Dische diphenylamine reaction, and a positive reaction with Bial's reagent after hydrolysis with 10% aq. H₂SO₄. Electron micrographs indicate a diameter of 98 mμ.; that calc. from S₂₀ (= 832 × 10⁻¹³) and sp. vol. (= 0.865), assuming spherical shape, is 100 mμ. [cf. 77.6 mμ. for virus A (PR8 strain)]. The virus consists of lipoprotein associated with nucleic acid of the deoxyribose type. E. R. R.

Human infection with Venezuelan equine encephalomyelitis virus. E. H. Lennette and H. Koprowski (*J. Amer. Med. Assoc.*, 1943, 123, 1088—1095).—8 cases of human infection with Venezuelan equine encephalomyelitis virus, acquired in the laboratory, are described. The chief symptoms were fever, severe body aches and pains, and unusually severe frontal headache. The sp. virus was recovered from the blood in 6 cases and neutralising antibodies in high concn. were recovered during convalescence. All cases recovered. C. A. K.

Diagnosis and treatment of epidemic cerebrospinal meningitis. J. L. Bohan and F. B. Lusk (*J. Lab. clin. Med.*, 1944, 29, 585—589).—Of 41 patients observed with meningococcus infection, 33 had pus cells and organisms in the c.s.f.; 2 with a positive blood culture had pus cells, but no organisms in the c.s.f.; 6 had a completely negative c.s.f., but a positive blood culture. The presence of headache, weakness and instability, vomiting, stiffness of the neck, and a skin eruption were the 5 earliest signs present and are presumptive evidence of meningococcus infection. The presence of headache with any two of the other findings is an indication for spinal puncture. Sulphadiazine was started immediately after spinal puncture without awaiting laboratory reports; the mortality rate was 5%. C. J. C. B.

Adaptation of virus of epidemic keratoconjunctivitis to development in extra-embryonic fluids of chick embryo. H. E. Calkins and G. C. Bond (*Proc. Soc. Exp. Biol. Med.*, 1944, 56, 46).—The virus was maintained with increasing virulence through 12 consecutive passages in chorio-allantoic fluid of 8-day chick embryos. V. J. W.

Feline pneumonitis (Baker), new member of the lymphogranulomatopneumonia group of agents. D. Hamre and G. Rake (*J. Infect. Dis.*, 1944, 74, 206—211).—The agent of feline pneumonitis can be distinguished from all the other agents of the lymphogranulomatopneumonia group by its pathogenicity, its lack of susceptibility to sulphonamides, and the specificity of its toxin. F. S.

Effect of vitamin-B₁ deficiency and of restricted food intake on response of mice to Lansing strain of poliomyelitis virus. C. Foster, J. H. Jones, W. Henle, and F. Dorfman (*J. Exp. Med.*, 1944, 79, 221—234).—The resistance of mice, kept on a vitamin-B₁-deficient

diet, to the Lansing poliomyelitis virus strain is increased (intracerebral inoculation); mortality rate and incidence of paralysis were lower than in normally fed controls. Restriction of the caloric food intake to 40% of normal was equally effective, even when extra-B₁ was given in the diet and saline was given by stomach tube to ensure an adequate intake of fluid. A. S.

Cultivation of South African rickettsiae in developing chicks and preparation of vaccines from membranes. C. de V. Bevan (*S. Afr. J. med. Sci.*, 1944, 9, 1—20).—Impression smears cleared in benzene are more clearly stained by a modified Machiavello technique. Egg tissues infected with rickettsiae remain infective to guinea-pigs for 3 hr. at room temp. or for 6 months if dried and sealed in vac.; infectivity is lost when drying is carried out at 37°. Rickettsiae are disintegrated by grinding in a mortar. Dil. egg vaccines protect completely against tick-borne infections, partly against endemic infections, and not against epidemic infections. Strains passed through eggs have a shortened incubation period and intensified Neill-Mooser reaction in guinea-pigs. P. C. W.

Survival of *Rickettsia prowazeki* in different diluents. C. R. Anderson (*J. Bact.*, 1944, 47, 519—522).—*R. prowazeki* survived at room temp. up to 48 hr. in skim milk, up to 24 hr. in chick juice or 20% normal yolk sac in plain broth, and less than 24 hr. in thio-glycollate medium, plain broth, allantoic fluid, or Tyrode solution. Distilled water and physiological saline were the most deleterious. 1% glutathione had no beneficial effect. F. S.

Use of chorio-allantois of developing chick embryo in diagnosis of small-pox. E. A. North, J. A. Broben, and A. H. Mengoni (*Med. J. Austral.*, 1944, 1, 437—438).—The developing egg was a more sensitive medium than the rabbit cornea for the diagnosis of small-pox and the infective foci produced were distinctive from those of vaccinia. F. S.

Eczema vaccinatum. F. C. Combes and H. T. Behrman (*N.Y. Sta. J. Med.*, 1943, 43, 2283—2286).—A review and report of a case of a 24-year-old man with folliculitis of the face who following contact with 2 vaccinated children developed generalised vaccinia mainly of the face with enlarged tender cervical glands and severe general reaction. He recovered after 11 days' treatment with sulph-anilamide (2 g. 6-hourly) and local application of HgCl₂ (1:5000). E. M. J.

Transmission of ieterogenic agent in yellow fever vaccine to horses and swine. B. N. Carle, W. H. Dewhirst, jun., W. Braun, and M. D. Eaton (*J. Bact.*, 1944, 48, 45—64).—4 of 6 horses inoculated with ieterogenic yellow fever vaccine, and 2 of 5 horses receiving material from human cases of jaundice resulting from yellow fever vaccination, developed increases in icteric index and serum-bilirubin 2—4 months after inoculation. Passage attempts in horses were unsuccessful. (6 photomicrographs.) F. S.

Possible rôle of birds in maintenance of yellow fever in West Africa. G. M. Findlay and T. A. Cockburn (*Nature*, 1943, 152, 245).—Virucidal bodies have been found in the blood of certain birds common in West Africa. E. R. R.

Virus protein of mosaic disease of tobacco. C. G. Vinson, D. K. McReynolds, and N. S. Gingrich (*Missouri Agric. Exp. Sta. Res. Bull.*, 1939, No. 297, 11 pp.).—The cryst. virus is obtained from plant juice by means of anhyd. Na₂SO₄ after adjustment of pH of juice to 4.0. Ash constituents are removed by washing with dil. acetic acid. Brown pigment is removed by dispersing the protein in PO₄ buffer and extracting with ether. X-Ray diffraction patterns of the virus (described) indicate a lower mol. wt. than that recorded by Wyckoff and Corey (A., 1936, 1533). A. G. P.

Combination of potato virus X and tobacco mosaic virus with pepsin and trypsin.—See A., 1944, III, 690.

Liberation of virus, together with materials that inhibit its precipitation with antiserum, from solid leaf residues of tomato plants suffering from bushy stunt.—See A., 1944, III, 707.

Experimental test of the framework theory of antigen-antibody precipitation. L. Pauling, D. Pressman, and D. H. Campbell (*Science*, 1943, 98, 263—264).—An RX substance which is pptd. by a mixture of anti-R and anti-X sera, but not by either serum alone, has been synthesised. The anti-R and anti-X sera were obtained by injecting into rabbits azo-proteins containing R and X groups respectively. R and X were the *p*-azophenylarsonic acid and *p*-azobenzoic acid groups, respectively, whilst the RX substance was 1-amino-2-*p*-(*p*-azobenzenazo)phenylarsonic acid-7-*p*-(*p*-azobenzenazo)benzoic acid-8-hydroxynaphthalene-3:6-disulphonic acid, or 1:8-dihydroxy-2-*p*-azophenylarsonic acid-7-*p*-(*p*-azobenzenazo)benzoic acid-naphthalene-3:6-disulphonic acid. In the formation of the ppt., both the haptenic groups (R and X) enter into sp. action, so that the antigen is bivalent. The antigen-antibody mol. ratio (0.7) corresponds to an average valency of 2.8 for the antibody, so that the antigen mol. can act as a link between antibody mols. and give rise to pptn. Further, the RX ppt. is sol. in excess of the mixed anti-sera. E. R. R.

Saprophytic acid-fast bacilli and paraffin oil as adjuvants in immunisation. J. Freund and A. W. Walter (*Proc. Soc. Exp. Biol.*

Med., 1944, 56, 47—50; cf. A., 1942, III, 857).—Falba (a lanolin) and paraffin oil, when mixed with horse serum before injection, enhance formation of antibodies but have little effect on sensitisation. If killed timothy bacilli (*Mycobacterium phlei*) are added, antibody formation and sensitisation are enhanced almost as much as by killed tubercle bacilli, and sensitivity to tuberculin is also increased.

V. J. W.

Effect of sodium, potassium, and thiosulphate ions on anaphylaxis. R. G. Carlson and R. W. Whitehead (*J. Allergy*, 1943, 14, 462—468).—Anaphylaxis was induced in guinea-pigs by injection of sheep serum into sensitised animals. Previous or simultaneous injections of $\text{Na}_2\text{S}_2\text{O}_3$ did not inhibit this reaction, but K salts were effective in antagonising the m.l.d. of serum.

C. A. K.

Effect of artificially induced fever on anaphylactic shock in actively sensitised guinea-pigs. R. Y. Gottschall, P. de Kruip, H. E. Cope, D. Laurent, W. M. Simpson, H. W. Kendall, and D. L. Rose (*J. Lab. clin. Med.*, 1944, 29, 614—623).—Sensitivity to horse serum in mature serum-sensitive guinea-pigs is suppressed by artificially induced fever temp. of 109—110° F. when the serum is injected as soon as these temp. are attained. Fever temp. of 108° F. do not suppress anaphylactic shock if the animals are injected with serum as soon as they reach this temp., but if this temp. is maintained for 30 min. some protection is afforded. Serum-sensitive guinea-pigs, 112 weeks old, are more readily protected than guinea-pigs 7 weeks old, when subjected to a fever temp. of 108° F. for 30 min.

C. J. C. B.

Acetylcholine nature of anaphylactic shock and shock produced by gelose. D. Danielopolu (*Compt. rend.*, 1943, 216, 618—620).—Intravenous injection of a suspension of gelose into guinea-pigs produces shock similar to anaphylactic shock which is augmented by eserine and reduced by atropine. It is suggested that in anaphylactic shock the antibody, antigen, and alexin unite to form the immunising complex, and that acetylcholine is split off in an active form to provoke the shock, which is preferably termed paraphylactic shock.

H. G. R.

Mechanism of protective action of ascorbic acid in anaphylactic shock in guinea-pigs. Ascorbic acid and anaphylactic shock of isolated organs.—See A., 1944, III, 674.

Anaphylaxis after tetanus toxoid. W. M. Edwards (*J. Allergy*, 1943, 14, 552—556).—A severe case is reported. The veal infusion in the toxoid was considered responsible.

C. A. K.

Allergic manifestations in atopic individuals following tetanus toxoid injection. H. Swartz (*J. Allergy*, 1943, 14, 544—551).—2 cases are reported.

C. A. K.

Skin tests in diagnosis of allergy. L. Tuft (*J. Allergy*, 1943, 14, 355—367).—A review.

C. A. K.

Contact reactions in atopy. M. Albert and M. Walzer (*J. Allergy*, 1943, 14, 437—443; cf. A., 1940, III, 691).—Contact tests were performed with oil-free preps. of 16 common allergens. Positive reactions were obtained in 75% of atopic children with asthma, in 75% with vernal catarrh, in 62·5% with eczema and neurodermatitis, and in 60% with hay fever. Silkworm and feathers gave the highest no. of positive contact reactions. Allergenic foods rarely gave positive contact reactions.

C. A. K.

Allergy to food odours. A. J. Horesh (*J. Allergy*, 1943, 14, 335—339).—In 9 cases of atopic dermatitis allergic symptoms were produced by inhalation of vapours or odours from cooked or raw foods.

C. A. K.

Gastrointestinal allergy to foods in children. J. H. Fries and M. Mogil (*J. Allergy*, 1943, 14, 310—321).—X-Ray studies of 30 children with gastrointestinal allergy showed that the foods to which they were hypersensitive produced gastric retention most commonly, and also increased small intestinal segmentation and colonic spasm.

C. A. K.

Skin reactions to body louse (*Pediculus humanus*). S. M. Peck, W. H. Wright, and J. Q. Gant (*J. Amer. Med. Assoc.*, 1943, 123, 821—825).—Skin reactions due to the body louse are: (1) a purpuric element due to the act of feeding and (2) an inflammatory reaction due to sensitisation, antigens being found in the head of the louse and in the faeces.

C. A. K.

Status asthmaticus associated with other allergies. J. W. Thomas and F. B. House (*Cleveland Clin. Quart.*, 1944, 11, 43—48).—A case report.

A. S.

Sensitivity to *Ailanthus* pollen. G. I. Blumenstein (*J. Allergy*, 1943, 14, 329—334).—2 cases are reported. Marked conjunctivitis was a feature.

C. A. K.

Weltmann reaction in hay fever and asthma. F. F. Furstenberg and S. Scherlis (*J. Allergy*, 1943, 14, 288—293).—Patients with hay fever showed a decrease in their usual coagulation band when symptoms developed. The Weltmann reaction showed no significant abnormality in asthmatic subjects.

C. A. K.

Gelatin-pollen extracts in hay fever. W. C. Spain, A. M. Fuchs, and M. B. Strauss (*J. Allergy*, 1943, 14, 376—381).—Gelatin-pollen extracts for hay fever were more slowly absorbed than aq. extracts after injection.

C. A. K.

Blocking antibody in serum of ragweed-treated patients. D. E. Frank and H. N. Gelfand (*J. Allergy*, 1943, 14, 273—289).—A thermostable antibody, which interferes with the interaction of reagin and antigen, is produced in ragweed-sensitive patients' serum after treatment with ragweed pollen extract. Convalescent pneumonia, scarlet fever, and measles sera did not contain this blocking antibody and did not inhibit the whealing reaction produced by ragweed antigen in ragweed-sensitive skins.

C. A. K.

Fractionation of ragweed pollen. M. B. Cohen, H. Friedman, and B. L. Rubin (*J. Allergy*, 1943, 14, 368—375).—Various fractions of ragweed pollen were separated by $(\text{NH}_4)_2\text{SO}_4$ pptn., dialysis, freezing, and thawing. A purified globulin which reacted specifically with its own reagin was prepared, and protein crystals, which were highly active in direct skin tests, in neutralising capacity, and against rabbit ragweed antiserum, were obtained.

C. A. K.

Electrophoretic studies on ragweed pollen extracts. J. M. Newell (*J. Allergy*, 1943, 14, 444—454).—Fractions were separated from ragweed pollen extracts by extraction with conc. K phosphate buffers at pH 7·0, by extraction in the cold with alcohol, or by pptn. of aq. extracts by $(\text{NH}_4)_2\text{SO}_4$ at $\frac{1}{2}$ and full saturation at pH 4·0. All fractions were active by scratch tests on sensitive subjects. Electrophoretic analysis of these fractions showed that each contained several components, and in none of them was a pure chemical substance isolated.

C. A. K.

Prophylaxis against poison ivy. F. A. Ellis (*J. Allergy*, 1943, 14, 557—563).—A review and discussion of 3 cases, with particular reference to desensitisation by oral therapy.

C. A. K.

Allergic rhinitis due to Spanish moss. G. A. Dean (*J. Allergy*, 1943, 14, 340—342).—Case report.

C. A. K.

Dermatitis from *Semecarpus anacardium*. N. R. Goldsmith (*J. Amer. Med. Assoc.*, 1943, 123, 27).—16 cases of dermatitis followed accidental contact with the oil of *S. anacardium*.

C. A. K.

Skin hypersensitivity to fur dye dust extracts. H. H. Shilkret and H. F. Schwartz (*J. Allergy*, 1943, 14, 538—543).—Positive reactions to fur dye dust extracts occurred in the same % in allergic subjects whether in the fur industry or not. Fur dye dust contains one fraction similar to that in house dust, and one different, which is probably not related to aniline dye or to *p*-phenylenediamine.

C. A. K.

Allergic agranulocytosis with complications [due to sulphadiazine]. Presence in allergic disease of atypical lymphocytes and symptoms suggesting recovery phase of infectious mononucleosis.—See A., 1944, III, 633.

XXVI.—PLANT PHYSIOLOGY.

Chromosome balance and interaction in *Hyacinthus*. Genetic organisation of leaf-shape development in *Gossypium*.—See A., 1944, III, 628.

Function and structure of the parenchyma sheath plastids of the maize leaf. M. M. Rhoades and A. Carvalho (*Bull. Torrey Bot. Club*, 1944, 71, 335—346).—Green plastids in the cells of the sheath enclosing the bundles of maize leaves are concerned with the formation of starch, which is deposited by day and at night is hydrolysed and translocated. Mesophyll plastids are always free from starch.

L. G. G. W.

Antipodals in relation to abnormal endosperm behaviour in *Hordeum jubatum* × *Secale cereale* hybrid seeds. R. A. Brink and D. C. Cooper (*Genetics*, 1944, 29, 371—391).—Failure of the seed of this cross is occasioned by delayed endosperm development followed by endosperm breakdown. This, it is suggested, is because *S. cereale* sperm on entering *H. jubatum* embryo sac fails to stimulate the antipodal cells so that they are not able to supply the endosperm with substances necessary for its development.

L. G. G. W.

Radiation and plant respiration. R. L. Weintraub (*Bot. Rev.*, 1944, 10, 383—459).—A review.

L. G. G. W.

Controlling time of blooming of chrysanthemums by the use of lights. N. W. Stuart (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 605—606).—With chrysanthemums which are short-day plants interruption of the dark period by short light intervals (30 min.) at midnight (i.e. the middle of the dark period) delays flowering by 2—3 months. The treatment must commence about 10 days before bud formation is visible.

L. G. G. W.

Response of grape vines to winter temperatures as related to their dormancy requirements. C. A. Magoon and I. W. Dix (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 407—412).—With grape plants placed in greenhouses between 15·5° and 21·1° after exposure to temp. below 7·2° the no. of days required in the greenhouse for the first greening of the buds to become apparent was related to the no. of hr. (from 200 to 1400) that the plants had been exposed to temp. below 7·2°. Marked varietal differences were apparent.

L. G. G. W.

Influence of time and method of pruning on yields of Muscadine grapes. N. H. Loomis (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 418—420).—Pruning after leaf fall or just before bud swelling gave the

same yield of fruit. Spring pruning caused bleeding but the exuded liquid contained only from 0 (in 3 cases out of 4) to a trace of reducing sugar and 0.04% of total sugar with a total sol. solids content too low to give a refractometer reading. L. G. G. W.

Maturity of apple fruits in relation to rate of transpiration. S. A. Pieniazek (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 231—237).—As ripening proceeds, the permeability of apple fruit skins and the transpiration rate of the fruit decrease until shortly before "picking maturity." After this stage a considerable increase (50% or over) in the transpiration rate occurs. L. G. G. W.

Transplantation in pea. III. F. W. Went (*Bot. Gaz.*, 1942, 104, 460—474).—The % of successful grafts of pea seedlings grown in darkness at 24° and 80% R.H. falls rapidly when plants used (scion or stock) are more than 8 days old. No benefit results from treatment of cut surfaces with growth-substances. The effect of stock on scion is due only to cotyledon and root systems and not to transport properties. Growth rate in grafts is not controlled by auxin but by caulocline derived from the stock. Decreasing viability of pea seeds with age is not due to diminution in growth factors in cotyledons. Growth rate of the scion is closely paralleled by its protein content. Genetic factors (stipuleless, acacia-leaf, rogue) are due to changes in tissue reactivity rather than in growth-factor content. Decrease in development of leaves, stipules, tendrils, and petioles resulting from soaking peas in water is caused by decreased growth-factor content. A. G. P.

Cation absorption mechanism of plants in soil. R. Overstreet, T. C. Broyer, T. L. Isaacs, and C. C. Delwiche (*Amer. J. Bot.*, 1942, 29, 227—230).—The intake of K⁺ by excised barley roots is examined by aid of aq. HCl containing radioactive K. In the process of absorption of cations from clay suspensions by plants CO₂, if involved at all, has only an intermediate rôle. A. G. P.

Metabolism of cereal grains. III. Influence of atmospheric humidity and mould infection on carbon dioxide output of wheat. W. Leach (*Canad. J. Res.*, 1944, 22, C, 150—161; cf. A., 1944, III, 308).—When wheat was kept at 25° and R.H. exceeding 91%, out of contact with water (i.e., germination was prevented), the rate of CO₂ production increased continuously and more rapidly as the R.H. approached 100%. This acceleration of rate was greater for degermed wheat. CO₂ production was due almost entirely to the respiration of micro-organisms (principally fungi) infecting the wheat. N. L. K.

Regeneration of nitrogen and phosphorus compounds during decomposition of dead plankton. B. A. Skopintzev and E. S. Bruck (*Compt. rend. Acad. Sci. U.R.S.S.*, 1940, 28, 807—810).—Suspensions of the alga *Microcystis aeruginosa* in water were kept in the dark at 6° and 16° with regular shaking. The biochemical O₂ demand of the suspensions increased steadily, especially at 16°. The org. P and N were converted into PO₄³⁻ and NO₃⁻, NO₂⁻, etc. to extents of 60—70 and 83%, respectively, within 17—20 days. The observed mineralisation of the plankton resembles that occurring with org. matter in sewage waters. F. O. H.

Nitrogen intake of dormant apple trees at low temperature. L. P. Batjer, J. R. Magness, and L. O. Regeimbal (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 69—73).—The roots of dormant apple trees absorb NO₃⁻ and NH₄⁺ and convert it into org. compounds at temp. just above 0°. Failure of trees in the field to absorb N is due, not to low temp., but possibly to inadequate soil-O₂. L. G. G. W.

Metabolism of organic acids in excised barley roots as influenced by temperature, oxygen tension, and salt concentration. A. Ulrich (*Amer. J. Bot.*, 1942, 29, 220—227).—In excised barley roots containing an ample supply of available sugar the non-volatile org. acid content remained const. unless the ionic balance in the roots was disturbed. Absorption by roots of excess of anions over cations was associated with the disappearance of org. acids and increased R.Q., and vice versa. Reduction in sugar content did not alter the org. acid content of roots except when the concn. of sugar reached very low levels. Formation or destruction of org. acids was unaffected by temp. or O₂ tension, since these factors had no influence on the ionic balance in roots. The org. acids are probably formed from carbohydrates rather than from amino-acids. A. G. P.

Tobacco root as site of production of nicotine. K. Mothes and K. Hieke (*Naturwiss.*, 1943, 31, 17—18).—Tomato shoots grafted on tobacco plants contain approx. the same proportion of nicotine as do normal tobacco shoots. Conversely, tobacco shoots grafted on tomato roots are practically free from nicotine. The fluid which exudes from the root of a flourishing tobacco plant when the stem is cut at the junction contains approx. 200 mg. of nicotine per 100 c.c. Results indicate that the tobacco root is one of the chief sites of nicotine production and that nicotine is probably not essential for the growth of the tobacco plant. Nicotine (and other alkaloids) are possibly produced from simple N compounds, e.g., NH₃, by interaction with products of carbohydrate decomp. W. McC.

Plant forms, law of mass action, and production of alkaloids, cyanogenetic and organic sulphur compounds. J. B. McNair (*Amer. J. Bot.*, 1941, 28, 179—184).—A greater concn. of electrolytes is

present in the leaf/tissue fluids of herbs than of trees; thus, formation of S compounds, cyanogenetic glucosides, and alkaloids (more abundant in herbs than in trees) may be influenced by the law of mass action. R. H. H.

Influence of light and of carbon dioxide on respiration of etiolated barley seedlings. R. L. Weintraub and E. S. Johnston (*Smithsonian Misc. Coll.*, 1944, 104, No. 4, 16 pp.).—Illumination with white light causes increase in the subsequent rate of CO₂ evolution, whether measured in light or in darkness; the rate increases slowly to a max. and then remains fairly const. for several hr. The magnitude of the stimulation depends on duration and intensity of the exposure. In absence of light, the rate of CO₂ production also varies with alterations in the atm. CO₂ content. R. H. H.

Effects of light on stem and leaf growth. F. W. Went (*Amer. J. Bot.*, 1941, 28, 83—95).—Daily application of small amounts of red and orange light to pea seedlings greatly increased leaf and reduced stem growth. Exposure to different λ showed a min. effect of green light on leaf growth and of blue light on stem growth; phototropism occurred only in blue and green light. The processes of phototropism, leaf growth, and stem elongation were unrelated. R. H. H.

Effects of ultra-violet radiations on higher vegetables. E. Gilles (*Compt. rend. Acad. Agric. France*, 1940, 26, 38—42).—In general, rays of less than 2900 Å. are injurious to the plants (turnip, lentil, lucerne, wheat, etc.), those of 2900—3100 Å. favour plant growth, and those of 3100—4000 Å. are without significant effect. R. H. H.

Polyploidy in the Easter lily. S. L. Emsweller and D. V. Lumsden (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 593—596).—In the tetraploids the flowers are larger and slightly broader, the leaves longer but not broader, and the bulbs less deep but with a greater diameter than in the diploids. L. G. G. W.

Raspberry and blackberry breeding. Production of tetraploid raspberries. H. E. Fischer, G. M. Darrow, and F. Perlmutter (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 447—456).—Seedlings at the green cotyledon stage were soaked for 5—24 hr. in aq. colchicine (0.2—0.5%) and a no. of tetraploids were obtained. L. G. G. W.

Veratrine—a new polyploidy-inducing agent. H. R. Witkus and C. A. Berger (*J. Hered.*, 1944, 35, 131—133).—Onion root tips treated for 4 hr. with 0.1% aq. veratrine exhibited polyploidy. L. G. G. W.

Occurrence and distribution of thiamin, riboflavin, and niacin in Avena seedlings. I. McVeigh (*Bull. Torrey Bot. Club*, 1944, 71, 438—444).—*Avena* seedlings growing in the dark increase their contents of riboflavin and niacin, but not of thiamin, in the first 5 days of germination. The embryo accounts for only 6.5% of the seed dry wt., but contains 50% as much thiamin and riboflavin and 80% as much niacin as the endosperm. The coleoptile increases its content of riboflavin throughout its whole growth period and its niacin content for the first three days but the thiamin content remains almost const. All three appear to be synthesised in the leaves. L. G. G. W.

Behaviour of excised roots of heterotic hybrids and their inbred parents in culture. W. G. Whaley and A. L. Long (*Bull. Torrey Bot. Club*, 1944, 71, 267—275).—When grown in Pfeffer's solution + thiamin, or thiamin + pyridoxine, or thiamin + pyridoxine + nicotinamide, excised roots of inbred tomato (var. Pritchard) responded better to pyridoxine in addition to thiamin, and those of the inbred variety Red River better to nicotinamide in addition to thiamin. Roots of the hybrid responded better than those of either parent in all media. With maize, hybrid roots gave greater growth than those of parents. L. G. G. W.

Growth of excised roots and heterosis in tomato. W. J. Robbins (*Amer. J. Bot.*, 1941, 28, 216—225).—Responses of the two parents (*Lycopersicon pimpinellifolium* and *L. esculentum*) and of the F₁ generation to thiamin, thiamin + pyridoxine with or without nicotinamide, and thiazole are recorded and discussed. The possible association of vitamin-like growth-substances with the effects of inbreeding and of heterosis is briefly considered. R. H. H.

Specificity of pyridoxine for excised tomato roots. W. J. Robbins (*Amer. J. Bot.*, 1942, 29, 241—245).—The effects of 12 analogues of pyridoxine on growth of excised tomato roots in culture media containing thiamin are examined. Acetylation of pyridoxine or substitution of ethyl for methyl in the 2-position did not decrease the vitamin activity. Methylation of the hydroxymethyl or phenolic hydroxyl groups or replacement of one or more hydroxymethyl by methyl or amino-groups resulted in complete loss of activity in respect of tomato roots. A. G. P.

Effects of various growth-substances on number and length of roots of Allium cepa. M. Levine and J. Lein (*Amer. J. Bot.*, 1941, 28, 163—168).—Aq. indolylacetic acid, 10⁻³%, is toxic to onion roots, but 10⁻⁸% accelerates root growth and root production. Both vitamin-B₁ and colchicine inhibit root growth, but when these are applied after exposure of roots to 10⁻⁸% indolylacetic acid, linear root growth is stimulated. R. H. H.

Presence of rhizogenic substances in certain natural media. R. Chaminade and J. Boucher (*Compt. rend. Acad. Agric. France*, 1940, 20, 66—76).—Treatment of geranium cuttings with aq. extract of turf improved the root system but did not stimulate root formation; treatment with ivy extract accelerated the rate of root formation and increased the no. of roots produced R. H. H.

Measurement of response of *Lemna* to growth-promoting substances. P. R. Gorham (*Amer. J. Bot.*, 1942, 29, 98—101).—A photographic method for measuring the frond area of *Lemna* is described. Max. increase in growth was produced by treatment with indolylacetic acid 0.25—0.50, indolylbutyric acid 0.10—0.25, and naphthylacetic acid 0.10—0.25 mg. per 100 ml. Vitamin-B₁ had no apparent effect. R. H. H.

Nastic and traumatic responses in the pea test. C. L. Schneider (*Amer. J. Bot.*, 1942, 29, 201—206).—The curvature of the slit pea stems in Went's test for auxin is the result of complementary rather than antagonistic effects of nastic and traumatic responses. A. G. P.

Total extraction of free auxin and auxin precursor from plant tissue.—See A., 1944, III, 708.

Gall formation by *Phytomonas tumefaciens* extract and indole-3-acetic acid in cultures of tomato roots. B. A. Friedman and T. Francis, jun. (*Phytopath.*, 1942, 32, 762—772).—Evidence of the production of a growth-substance by *P. tumefaciens* in culture media is advanced. Excised tomato root tips grown in media containing 3-indolylacetic acid produced galls if the min. concn. of the growth-substance was equiv. to that causing inhibition of growth. The galls persisted after transference of the roots to a standard culture medium although all new growth formed was normal. Neither addition of tryptophan, indole, or acetic acid to culture media nor variations in pH induced gall formation. A. G. P.

Experimental autoecism and other biological studies of a gall-forming *Peridermium* on northern hard pines. M. A. McKenzie (*Phytopath.*, 1942, 32, 785—798).—Histological changes in *Pinus* species following inoculation with a gall-forming *Peridermium* are recorded. Sections of tissue at the borderline of advancing mycelium in recently infected plants contained abnormally high proportions of starch, fat, resin, and tannin. A. G. P.

Histopathology of necrotic mango fruit. S. N. Das Gupta and S. N. Asthana (*Current Sci.*, 1944, 13, 77).—Certain yellowish or red deposits occur in the ducts and xylem of preserved (formaldehyde-acetic acid) diseased mangoes, and in (preserved) apparently healthy fruit from diseased orchards. The deposits (probably phlobatannins) are distinguishable only after preserving (7 days or more). They are rare in fresh diseased fruit in early stages of necrosis, but are found in and above the vessels of fruit in an advanced state of necrosis. None were found in fresh or preserved healthy fruit from healthy orchards. It is suggested that owing to some metabolic disturbance (fumes from kilns, or some deficiency), the tannins ordinarily used up by the fruit are deposited as an unusable compound. E. L.

XXVII.—PLANT CONSTITUENTS.

Molybdenum in Leguminosae. C. G. Vinogradova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 40, 26—29).—The Mo content (dry basis) in seeds of different leguminous plants (phaseolus, vetch, pea, lentil) from various parts of the U.S.S.R. varied from 0.066 to 2.1 mg. per 100 g. The nodules of vetch, lupin, and clover were much richer in Mo than were the plant, seeds, or soil. R. H. H.

Ascorbic acid content of walnut hulls. E. Hansen (*Proc. Amer. Soc. Hort. Sci.*, 1943, 42, 265—266).—Walnut hulls or involucre (moisture content 87—90%) are rich in ascorbic acid. Vals. obtained were 8.34% of dry wt. for *Juglans nigra*, 4.49% for *J. californica* var. *Hindsii*, and 4.20%—5.60% for varieties of *J. regia*. L. G. G. W.

Phytochemistry of *Eriodictyon angustifolium*, Nuttley. W. J. Hadley and O. Givold (*J. Amer. Pharm. Assoc.*, 1944, 33, 275—277).—The combined leaves and stems yield 4':5:7-trihydroxy-3'-methoxyflavanone (homoeiodictyol), a volatile oil, salicylic acid, 3-hydroxy-*o*-toluic acid, rhamnose, and a glucoside. No alkaloid was present. The ash contained Al⁺⁺⁺, Ca⁺⁺, Mg⁺⁺, Na⁺, K⁺, SO₄^{='}, SiO₃^{='}, Fe⁺, and NO₃^{='}. F. O. H.

Pharmacognosy of *Buchu* [species of *Barosma*]. H. S. Feldman and H. W. Youngken (*J. Amer. Pharm. Assoc.*, 1944, 33, 277—288).—Histological studies of *B. betulina*, *B. crenulata*, and *B. serratifolia* are reported. The leaves contained 1.95, 1.13, and 0.81%, respectively, of volatile oil. A method of differentiating the drug powders is based on the presence of Ca oxalate rosettes. F. O. H.

Phytochemistry of *Hermidium alipes*. D. W. Buelow and O. Givold (*J. Amer. Pharm. Assoc.*, 1944, 33, 270—274).—The dried

roots yield 3:4-dihydroxyphenylethylamine (picrate; tribenzoate; styphnate, m.p. 206°) as cryst. hydrochloride, which has a pressor activity 2—3% of that of adrenaline, a sterol fraction, m.p. 135—136°, [α]_D²⁰ —19.45° in CHCl₃ (acetate, m.p. 119—120°), and sucrose. F. O. H.

Isolation of hypaphorine from Argentine species of *Erythrina*. V. Deulofeu, E. Hug, P. Mazzocco, and R. Labriola (*Anal. Asoc. Quim. Argentina*, 1941, 29, 121—123).—Hypaphorine has been isolated from *E. crista galli* (cf. Cicardo and Hug, A., 1937, III, 478), *E. falcata*, and *E. dominguezii*. The flavanone, m.p. 235°, was prepared. F. R. G.

New constituent from Southern prickly-ash bark. F. B. LaForge and W. F. Barthel (*J. Org. Chem.*, 1944, 9, 250—253).—The coarsely ground bark is exhaustively extracted with light petroleum, b.p. 30—60°, and the extract is concd., thus leading to the separation of asarinin. The filtrate is extracted with 90% acetic acid, the acid removed, and the residue dissolved in ether; the ethereal solution is washed with water and with 2% KOH. The residue from the ethereal solution on distillation (0.01—0.005 mm.) affords cinnam-methyl-β-p-anisylethylamide, m.p. 75—76°. It does not represent the insecticidal principle of the plant and in combination with asarinin its toxicity to flies is only slight. β-p-Anisylethanol is converted by PBr₃ in benzene into β-p-anisylethyl bromide, b.p. 105—116°/1 mm. This is transformed by methylamine in aq. methyl alcohol at 100° into methyl-β-p-anisylethylamine, b.p. 141—142°/19 mm. (picrate, m.p. 112°), the hydrochloride, m.p. 181—182°, of which is transformed by cinnamoyl chloride and alkali into cinnam-methyl-β-p-anisylethylamide, identical with the natural compound. H. W.

Water-soluble mannan from seeds of *Daubentonia drummondii*. A. L. Curl and E. K. Nelson (*J. Amer. Chem. Soc.*, 1944, 66, 1227).—These seeds contain 6.5% of water, yield 2.8% of ash, and contain 4.6% of an oil, I val. (Wijs) 122.6, and a product (15.8%), decomp. 260°, [α]_D²⁰ +50.6° in water, whence 0.5% HCl generates 43% of mannose. R. S. C.

Resin-tannin complex in the cortex, cork, and central cylinder of *Sargentodoxa cuneata*, Rehd. and Wils. R. Lemesle (*Compt. rend.*, 1943, 216, 611—612).—The cork cells instead of losing their contents and filling with air accumulate reserve products and products of secretion, principally resin-tannin complexes associated with mucilages and proteins. H. G. R.

Theory of biogenesis of lichen depsides and depsidones.—See A., 1944, II, 370.

Vitamin-P activities of citrus fruits, rose-hips, black-currents, and some fruit products and concentrates.—See A., 1944, III, 676.

Distribution and preparation of citrus peroxidase. W. B. Davis (*Amer. J. Bot.*, 1942, 29, 252—254).—In orange, grapefruit, lemon, and tangerine max. peroxidase activity occurred in the inner seed coat. The possibility of large-scale prep. of the enzyme from lemon seeds is indicated. A. G. P.

"d-Peptidase" in growing parts of old plants. IV.—See A., 1944, III, 690.

New proteolytic enzyme of papain class in plants.—See A., 1944, III, 690.

Colouring matter of red cabbage as indicator in pH region 8.5—10. O. Grube, K. Diekmann, and R. Gundermann (*Chem.-Ztg.*, 1943, 67, 34).—Aq. alcoholic extract of sliced red cabbage is red at pH 2—4, green at 8—9, and yellow at 10—14; it is suitable for use as indicator at pH 8.5—10 as well as at 2—4. W. McC.

***Mahonia nepalensis*, DC. (*Berberis nepalensis*, Spreng).** (A) Origin and function of alkaloids. (B) Chemistry. R. Chatterjee (*J. Amer. Pharm. Assoc.*, 1944, 33, 205—210, 210—212).—(A) With *M. nepalensis*, the alkaloids umbellatine and neprotine appear to be waste products of metabolism, since they are stored mainly in dead and other cells that take no part in metabolic activities. Synthesis of the alkaloids occurs during the period of active growth and the alkaloids accumulate from year to year and do not decrease during winter. Feeding the plants with asparagine or, in presence of glucose, with NH₄ salts or inorg. NO₃^{='} increases the alkaloid content, which does not diminish during feeding with N-free culture solutions. The synthesis of the alkaloids appears to be due to condensation of sugars with degradation products of proteins. This is borne out by the formation of alkaloid-rich shoots when the bark is ringed or in etiolated plants.

(B) The roots contain about 0.48% of umbellatine and 0.02% of a new alkaloid neprotine (cf. A., 1944, II, 383). Data for the seasonal variation in total and individual alkaloid content of various parts of the plant are given; the highest contents occur in the roots of old plants during the winter months. F. O. H.

Alkaloids of *Duboisia leichhardtii*.—See A., 1944, II, 383.

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476 2* and 1*. For "the first is . . . , cytoplasm," read "the second is located in the nucleus and the first in the cytoplasm."

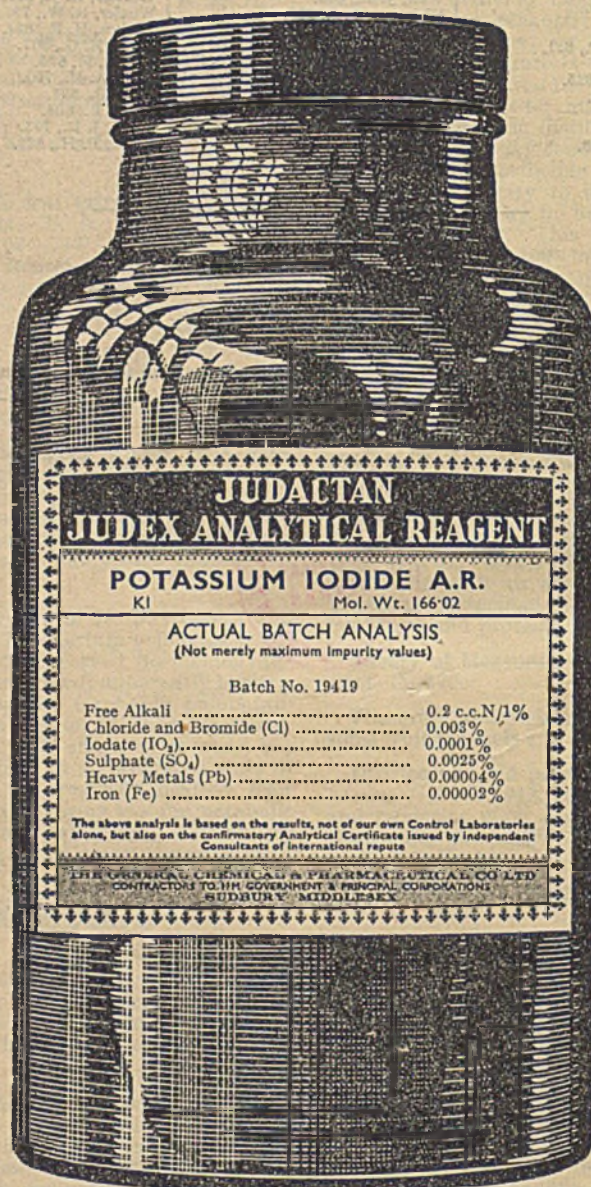
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