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OCTOBER, 1944

A III—PHYSIOLOGY. BIOCHEMISTRY. ANATOMY

CONTENTS

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CONTENTS

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BUREAU OF CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

PUBLICATIONS OF THE BUREAU

ABSTRACTS SECTIONS

A I—GENERAL, PHYSICAL, AND INORGANIC CHEMISTRY.
A II—ORGANIC CHEMISTRY.
A III—PHYSIOLOGY. BIOCHEMISTRY. ANATOMY.
B I—CHEMICAL ENGINEERING AND INDUSTRIAL INORGANIC CHEMISTRY.
B II—INDUSTRIAL ORGANIC CHEMISTRY.
B III—AGRICULTURE, FOODS, SANITATION, ETC.
C—ANALYSIS AND APPARATUS.

COLLECTIVE INDEXES

DECENNIAL INDEX 1923—1932. QUINQUENNIAL INDEX 1933—1937.

INDEX OF AUTHORS' NAMES, A III.

OCTOBER, 1944.

[continued on page iii of cover.

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A III—Physiology. Biochemistry. Anatomy.

OCTOBER, 1944.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Hypertrophy of choledochus-sphincter. E. A. Boyden (*Surgery*, 1941, **10**, 567—571).—A case is reported. G. P.

Histology of choledocho-duodenal junction and papilla duodeni, with particular reference to ampulla of Vater and sphincter of Oddi. J. Kirk (*J. Anat., Lond.*, 1944, **78**, 118—120).—The histology of the extra-hepatic biliary tract was studied in embryonic, fœtal, and adult human material. In seven adults no Vaterian ampulla was found; in one of two full-time fœtuses a well-marked ampulla was present. The sphincter of Oddi was represented by circular muscular fibres surrounding the submucosal portion of the duct proximal to the papilla and continuous with the thickened circular coat of the duodenum. W. J. H.

Inguinal canal in fœtus and new-born. H. Curl and R. G. Tromly (*J. Anat., Lond.*, 1944, **78**, 148—149).—A study was made on 17 male and 8 female fœtal and infant cadavers. There is an inguinal canal in the male fœtus before the testis passes through the abdominal wall. In fœtuses of 180 mm. crown–rump length the inguinal canal is parallel to the rectus abdominis muscle rather than to the inguinal ligament. The inguinal canal in the female is as definite as in the male. A table of measurements is given. W. J. H.

Shape of human being as function of time. P. B. Medawar (*Proc. Roy. Soc.*, 1944, **B**, **132**, 133—141).—Mathematical analysis of data derived from plane figures shows that, from the 5th fœtal month to maturity, the rate of change of gross outward shape of the human male decreases progressively; it may be represented as a single process of continuous deformation in time. W. McC.

External characters of adult female of the rare Cuban Hutia (*Capromys nana*). R. I. Pocock (*Proc. Zool. Soc. Lond.*, 1943, **113**, **B**, 198—200). H. L. H. G.

External characters of a Bongo (*Boocercus euryceros*). R. I. Pocock (*Proc. Zool. Soc. Lond.*, 1943, **113**, **B**, 201—205). H. L. H. G.

Comparative study of clavicular ligaments of rat, rabbit, cat, and dog. C. J. Sandstrom and A. Saltzman (*Anat. Rec.*, 1944, **89**, 23—32).—In the rat, traction of the forelimbs calls for forcible movements against the thorax and in consequence the ligaments are well developed and resemble those of man. The omosternum in the rat is adapted to increase the versatility of the shoulder and permits a reduction in shoulder width. Reduction of the clavicle in the cat and rabbit is correlated with longer and more slender ligaments only slightly involved in movements of the pectoral girdle. Marked degeneration of the ligaments occurs in the dog, where the function of the shoulder girdle is mainly concerned with progressional movement of quadripedal locomotion. The coraco-clavicular ligament has disappeared and only an elongated acromio-sternal in which the reduced clavicle is suspended remains. W. F. H.

Drainage of particulate matter from peritoneal cavity by lymphatics. P. H. Simer (*Anat. Rec.*, 1944, **88**, 175—192).—India ink or indigo-carmine was injected into the peritoneal cavity of cats. Lymph vessels in the diaphragm, parasternal lymph trunks, and sternal lymph nodes contained free ink a few min. after injection. The ink content of large phagocytes increased in amount after the first day. At the end of a week all lymph vessels were clear, but their location was shown by an accumulation of ink-filled phagocytes in the surrounding connective tissue. Connective tissue phagocytes, sternal and mediastinal lymph nodes retained stored pigment during the 18-month period of observation. The omentum was the most prominent site of ink adhesion in the abdomen and it retained pigment during the period of observation. Few ink-filled phagocytes or free particles were observed in the rich plexus of lymph vessels in the omentum. W. F. H.

Post-natal growth changes in human prostate. G. I. M. Swyer (*J. Anat., Lond.*, 1944, **78**, 130—145).—The prepubertal prostate consists of radiating ducts which end blindly near the peripheral part of the gland. At birth there are hyperplasia and squamous metaplasia in the collecting ducts, uterus masculinus, and the crista urethralis due to stimulation by the maternal œstrogens. This œstrogenic stimulation disappears 6—7 weeks after birth and there is little increase in size of the gland until about the 9th year. At puberty the prostate begins to grow under the influence of the male hormone until within 6 months to 1 year it becomes transformed into the adult type of organ. The arrangement of the glandular tissue of the prostate is discussed. After 45 years those prostates which do not undergo benign enlargement decrease progressively in size. W. J. H.

Apical pericardial adhesion resembling reptilian gubernaculum cordis. W. M. Cobb (*Anat. Rec.*, 1944, **89**, 87—91).—The resemblance of a serous-covered fibrous band uniting the apex of the heart to the pericardium in a male 71 years old is indicated. It is considered that the band was formed as the result of an old pericardial adhesion caused by extension of a tuberculous lesion in the adjacent lung. W. F. H.

Partial inversion of duodenum. G. von Bonin (*Anat. Rec.*, 1944, **89**, 71—73).—The second part of the duodenum in a male cadaver coursed downwards for about 8 cm. and then bent sharply upwards to the right. Below the level of the pylorus it assumed a horizontal course along the upper border of the pancreas between aorta and superior mesenteric artery. The curvature of the duodenum was thus opposite to that found in the normal subject. Peritoneal and bile duct relations are described. Apart from abnormal radiographic appearances which would obtain in such a case, it is not considered clinically important. W. F. H.

Experimentally increased blood supply to head and neck of femur. W. G. Stuck and J. J. Hinchey (*Surg. Gynec. Obstet.*, 1944, **78**, 160—163).—The blood supply of the head and neck of the femur in 28 dogs was increased by transplanting a muscle flap into the head of the bone. P. C. W.

Naegele pelvis associated with rudimentary femur. P. B. Wahrsinger (*Amer. J. Obstet. Gynec.*, 1944, **47**, 427—429).—A case is described. P. C. W.

Infantilism, congenital webbed neck, and cubitus valgus (Turner's syndrome) [treatment with œstrogens]. R. W. Schneider and E. P. McCullagh (*Cleveland Clin. Quart.*, 1943, **10**, 112—125).—7 cases of Turner's syndrome are reported. There was excessive urinary gonadotrophin and diminished 17-ketosteroid excretion. There was marked sexual development following prolonged œstrogenic therapy. A. S.

Persistence of ductus caroticus and unusual origin of right common carotid in pigeon. C. K. Subhapradha (*Current Sci.*, 1944, **13**, 105—106). J. D. B.

A four-legged ring-neck pheasant chick. T. H. Bissonette (*J. Heredity*, 1943, **34**, 345—348).—The anatomical details of a four-legged pheasant chick are described. L. G. G. W.

Effect of sex on development of pig. III. Differences in growth rate between gilts and barrows by lines of breeding. R. E. Comstock, L. M. Winters, and J. N. Cummings (*J. Animal Sci.*, 1944, **3**, 120—128).—The sex difference in the rate of growth from weaning to 200 lb. was 0·039—0·089 lb. per day, beginning at about 16 weeks of age and increasing with age. H. G. R.

Development of body form in swine. R. E. Comstock and L. M. Winters (*J. Animal Sci.*, 1944, **3**, 188—193).—The change in form during growth of swine is subject to genetic as well as environmental variation and follows different paths of development in boars and barrows. H. G. R.

Visualisation of blood vessels of nerves and other tissues. J. Epstein (*Anat. Rec.*, 1944, **89**, 65—69).—An injection apparatus and the method of prep. of several radio-opague media suitable for large and small blood vessels are described. W. F. H.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Development and growth of human embryo and fœtus. H. W. Clatworthy, jun., and R. G. Anderson (*Amer. J. Dis. Child.*, 1944, **67**, 167—175).—The growths of various organs are graphically represented based on recorded data in the literature. C. J. C. B.

Development of early human ovum. A. T. Hertig and J. Rock (*Amer. J. Obstet. Gynec.*, 1944, **47**, 1149—1184).—7 normal and 5 abnormal ova were discovered by examination of surgically removed uteri. The normal ova were 7½—16½ days old, 5 in the previllous and 2 in the villous stage. The age of the abnormal ova was within the same range. The blastocyst implants on the 6th—7th day in an endometrium which may show characteristics of the 18th—23rd day of the cycle. On the 8th day the solid syncytiotrophoblast develops lacunæ which coalesce and start to receive maternal blood on the 11th day. On the 12th day peripherally growing masses of cytotrophoblast arise from the chorionic membrane and form chorionic villi. When the villi come in contact with the decidua the peripheral syncytioblast desquamates and gives rise to placental site giant cells. P. C. W.

Human ovum nine to ten days old. F. Davies and H. E. Harding (*J. Obstet. Gynaec.*, 1944, **51**, 225—230).—The specimen indicates that primitive mesoblast formation is more precocious in the human than in other primates. Ectodermal and endodermal layers of the germ disc are derived from the formative cell mass while amnion and exocœlomic membrane are of mesoblastic origin. P. C. W.

Unusually long pregnancy in a macaque. F. M. P. Eckstein (*J. Anat., Lond.*, 1944, **78**, 147).—An instance of gestation in the rhesus monkey lasting for 191 days is recorded. W. J. H.

Implantation in the bat, *Myotis lucifugus*. W. A. Wimsatt (*Amer. J. Anat.*, 1944, **74**, 355—411).—A progestational reaction occurs in the uterus while the ovum is in transport and during implantation. There is a period of not less than 10 days between ovulation and implantation. Development up to the stage of the fully formed blastocyst and modifications of the endometrium during nidation and interrelationships between fœtal and maternal tissues during implantation are described. While there is no definite evidence that the trophoblast secretes an enzyme capable of eroding the maternal epithelium, the destruction of maternal tissues during the formation of the placenta may indicate that cytolysins are elaborated during later stages. W. F. H.

Pig embryo with bifid notochord, biaxiate brain, and paired hypophyses. W. C. George (*Anat. Rec.*, 1944, **89**, 107—123).—Cranial to the 10th spinal nerves in a 7-mm. embryo the notochord was double, exhibiting diverging prongs. Dorsal to the latter paired floor plates were present in the upper cord and brain. Between the floor plates a ridge of nervous tissue represented the medial walls of two incompletely separated brains and cervical spinal cords. Paired Rathke's pouches and infundibula were also present. Comparison with other dicephalous specimens is made and their genesis discussed in relation to the organising capacity of notochordal tissue. W. F. H.

Developmental pathology. II. Sporadic unilateral microphthalmia and associated malformations in chick embryos. P. Gruenwald (*Amer. J. Anat.*, 1944, **74**, 217—257).—Sporadic unilateral microphthalmia is an atypical malformation, the anomalies in various embryos differing by degrees and also in quality. There may be associated defects of the other eye, or of the brain in the homolateral hemisphere. Observations relating to the developmental mechanics of the malformation are recorded and a crit. review of agents causing or supporting abnormal development is given. The mechanism of action of these agents is believed to be an interference with the determination of the affected parts rather than a destruction of cells. W. F. H.

Defect of endocardial cushion development as a source of cardiac anomaly. A. W. McCullough and E. L. Wilbur (*Amer. J. Path.*, 1944, **20**, 321—328).—4 cases of congenital cardiac anomaly are described, ranging from a completely septate heart, with a communication from the left ventricle to the right atrium, to a primitive two-chambered heart with undivided atrium and ventricle and a common pulmonoaortic bulb. Failure of normal endocardial cushion development leads to patency of the anterior portion of the interventricular septum, which defect may be associated with anomalies of the great vessels or other structures. The ventral endocardial cushion plays some rôle in the normal union of the interventricular and bulbar septa. Patencies of the interventricular septum are of two origins: failure of the septum to close in the region of the future septum membranaceum, and failure of fusion of the bulbar and interventricular septa due to failure of contribution by the ventral endocardial cushion. C. J. C. B.

Recapitulation in decapod larvæ. M. K. Menon (*Current Sci.*, 1944, **12**, 331—332).—The nos. and arrangement of the gills in larval stages of *Albunea* lead to the conclusion that there is clear evidence of recapitulation by the free-swimming larvæ of an ancestral character. J. D. B.

Diapause in eggs of Indian cyprinodonts. S. Jones (*Current Sci.*, 1944, **13**, 107—108).—Prolongation of hatching time is recorded for specimens of *Oryzias melastigma*. It is suggested that the diapause is a natural provision to tide over unfavourable conditions and ensure a copious supply of fry at the onset of the rains. J. D. B.

Influence of temperature on elimination of diapause from eggs of the race of *Austroicetes cruciata*, Sauss. (Acrididæ), occurring in Western Australia. H. G. Andrewartha (*Austral. J. Exp. Biol.*, 1944, **22**, 17—20).—An exposure to 13·3° was more effective in eliminating diapause in the eggs of *A. cruciata* from W. Australia than either 10° or 6·5°, whereas with those from New South Wales (*Bull. entom. Res.*, 1943, **34**, 1) 10° was more effective than 13·3° or 6·5°. The results confirm the previous conclusion that diapause is related to the nutrition of the embryo and that the elimination of diapause is brought about by changes in the yolk during low temp. which convert the yolk into a suitable food and alter its physical condition so that it no longer obstructs katatrepsis. F. S.

Regenerative capacity in *Perionyx sansibaricus*. G. E. Gates (*Current Sci.*, 1944, **13**, 16).—A preliminary account of experiments on an earthworm species with an unusually high regenerative capacity. J. D. B.

Artificial insemination of queen bee (*Apis mellifera*, L.): morphological basis and results. H. H. Laidlaw, jun. (*J. Morph.*, 1944, **74**, 429—465).—An account of the reproductive organs of the queen and the drone is given. Details of natural mating have not been observed, but deductions are made from examination of queens on return from their mating flight. A method of artificial insemination is described whereby the difficulties of the valvefold are overcome, but the method is not yet entirely satisfactory. H. L. H. G.

Development of normal and homozygous *Brachy* mouse embryos in extraembryonic cœlom of chick. S. Gluecksohn-Schoenheimer (*Proc. Nat. Acad. Sci.*, 1944, **30**, 134—140).—Embryos from crosses of *Brachy* short-tailed mice (*T*/+) *inter se* were transplanted, seven days after copulation, to the extraembryonic cœlom of chick embryos. They remained in the hosts for periods of 18—47 hr. and were then removed for study. They could be classified as (1) normal embryos; (2) abnormal embryos with different degrees of abnormalities, with reduced developmental potencies, possibly representing *T*/+ embryos; (3) abnormal embryos with typical abnormalities representing *T*/*T* embryos. The last, therefore, develop true to their genotype even if explanted before the time at which morphological differences appear. J. D. B.

Wild-type iso-alleles in *Drosophila*. S. C. Stern and E. W. Schaeffer (*Proc. Nat. Acad. Sci.*, 1943, **29**, 361—367). J. D. B.

Chromosome complements of some South Brazilian species of *Drosophila*. T. Dobzhansky and C. Pavan (*Proc. Nat. Acad. Sci.*, 1943, **29**, 368—375). J. D. B.

Primary attributes of alleles in *Drosophila*. C. Stern and E. W. Schaeffer (*Proc. Nat. Acad. Sci.*, 1943, **29**, 351—361).—A study of the action of the mutant gene *cubitus interruptus* (*ci*) of *D. melanogaster* and of the effects when two or three alleles are present or when *ci* is combined with certain normal alleles of the *ci* locus. From the study of these effects it is concluded that the action of *ci* in terms of a single primary reaction of this allele is ruled out by the findings and that either multiple, different, primary reactions of *ci* are involved or that a single reaction is repeated at different places or times in development causing different effects (repetitive-action). J. D. B.

Chromosome balance and interaction in *Hyacinthus*. C. D. Darlington and K. Mather (*J. Genet.*, 1944, **46**, 52—61).—There is an exceptionally low qual. differentiation of the chromosomes. The chance of loss of *L*, *M*, and *S* chromosomes at meiosis in the triploid is inversely proportionate to their size. Pollen grains with different total nos. of chromosomes show no distinguishable difference in the rate of entry into the mitotic stage. It is concluded that the statistical analysis of chromosome combinations in the pollen of triploids may be used to explore their physiological and evolutionary relationships. W. F. H.

Genetic organisation of leaf-shape development in *Gossypium*. S. G. Stephens (*J. Genet.*, 1944, **46**, 28—51).—Leaf-shape is controlled by series of multiple alleles. "Developmental tracks" characteristic for each allele may be constructed by plotting logarithmically the dimensions of fully expanded leaves at successive nodes on the main stem. Three phases through which "developmental tracks" can be induced to pass are described. There is a mathematical relationship between leaf growth and leaf development and the latter is a recapitulation of the former. Recapitulation is complete in the case of entire-leaved types and modified in lobed-leaved types. The growth and developmental mechanism are controlled by the alleles, which vary the rate and extent of change in leaf pattern. W. F. H.

III.—PHYSICAL ANTHROPOLOGY.

Origin of the Slavs. T. Sulimirsky (*Man*, 1944, **44**, 98).—The location of the oldest Slavonic settlements is in the territory which is to-day Poland and Eastern Germany. It is deduced that the bearers of Lusatian culture were the Slavs. W. F. H.

Anthropological features of the Shans and their geographical environment in south west Yunnan. Yin-Tang Chang (*Man*, 1944,

44, 61—68).—The Shans are mainly a meso- to brachyo-cephalic people. Only 2 dolichocephals were found out of 105 examined. The stature is short and medium height is rare even among males. Most females belong to the pygmy category. The hair is straight and black and leiotrich in type. The irises are chestnut-coloured. The majority are platyrrhine and the interorbital space is generally wide. Prominent occiputs are common. Like other Mongols the Shans are xanthodermic, but the pigmentation is lighter than in the Indo-Chinese. Geographical and climatological conditions are discussed and it is suggested that the latter influence the skin and iris pigmentation. W. F. H.

Charles Benedict Davenport (1866—1944). The man and his contributions to physical anthropology. M. Steggerda (*Amer. J. phys. Anthrop.*, 1944, [ii], 2, 167—185). W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Attachment of skeletal muscle fibres. C. M. Goss (*Amer. J. Anat.*, 1944, 74, 259—289).—Bielschowsky Ag method preps. revealed a layer of reticular (argyrophil) connective tissue fibrillæ (argentofibrillæ) between the end of the muscle fibre and the tendon. In the monkey the morphology of the end of the muscle fibre and the associated argyrophil network varies within a definite pattern in specimens of representative muscles. Argentofibrillæ are continuous with those forming a delicate sheath over the entire fibre. The effect of the argyrophil network on the visibility of structural detail at the ending of a muscle fibre is discussed and an explanation is offered for the erroneous view that muscle and tendon fibrillæ are continuous. W. F. H.

Nerve fibres within cranio-pharyngeal canal. G. A. Drager (*Anat. Rec.*, 1944, 88, 235—243).—The cranio-pharyngeal canal in the cat contains 30—40 nerve fibres derived from the internal carotid plexus. The nerve bundles are closely associated with blood vascular channels and their fibres often accompany small arterial branches into the substance of the sphenoid. At the pharyngeal opening of the canal the nerve fibres also ramify in the pharyngeal tissue. The origin of larger nerve fibres in the sphenoid, not continuous with the cranio-pharyngeal bundle, was not determined, but their size and resemblance to myelinated fibres indicate that they are not of autonomic origin. It is suggested that they are sensory to the endosteum. W. F. H.

Structural changes associated with advancing age in thyroid gland of female rat with particular reference to alterations in the connective tissue. W. Lansing and J. M. Wolfe (*Anat. Rec.*, 1944, 88, 311—325).—Structural changes correlated with age were observed in connective tissue, thyroid epithelium, and follicular colloid. In 10-day rats the capsule and septa of the thyroid contain thin collagenous fibres, or fibres transitional between reticulum and colloid. As age advances a transformation of the transitional type into collagen, and a thickening and increase in no. of collagenous fibres, occur. Pericapillary reticular fibres become coarser and more numerous. Interfollicular connective tissue becomes collagenous and increases markedly with age. An increase in the size of the follicles also occurs, and there is a decrease in the height of the thyroid epithelium and a shift in the staining reaction of the colloid from grey to a rose colour. W. F. H.

Measurement of epithelial growth of surgical wounds of rabbit's ear. P. S. Henshaw and H. L. Meyer (*J. Nat. Cancer Inst.*, 1944, 4, 351—358).—The repair process following removal of skin from a rabbit's ear can be divided into three phases: (*a*) a lag period of 3—5 days during which the wound remains the same size, (*b*) a phase of rapid growth varying in time according to the size of the wound, and (*c*) a period of slow growth as healing is completed. The total healing time depends on the breadth of the wound or on the diameter of the largest possible inscribed circle in the case of wounds of irregular shape. E. B.

Localisation of maximum cell division in epidermis. E. V. Cowdry and H. C. Thompson, jun. (*Anat. Rec.*, 1944, 88, 403—409).—In the epidermis of the hind foot pad of the 10-day-old mouse the ratio of mitoses to non-dividing nuclei was 1 : 39·7 in the basal layer, and 1 : 371·1 in all suprabasal layers taken together. 8 hr. after injection of 0·25 c.c. of 1 : 10,000 aq. colchicine subcutaneously, the ratio in litter mates increased to a max. of 1 : 22·1 and 1 : 18·6. In the untreated animal the site of max. mitotic frequency was in the spinous cells of the proximal third of the suprabasal epidermis, while in all treated animals it was in those of the middle third. The conclusion is drawn that the level of max. mitoses is not fixed but subject to change in different physiological and pathological conditions. W. F. H.

Relation between number of nucleoli and number of chromosome sets in animal cells. G. Fankhauser and R. R. Humphrey (*Proc. Nat. Acad. Sci.*, 1943, 29, 344—350).—The no. of nucleoli of haploid and polyploid animal cells shows the same relationship as in plants, *i.e.*, the nucleolar no. increases in direct proportion to the chromosome no. Observations are recorded on epithelial cells of heteroploid axolotl larvæ covering the whole range from haploidy to pentaploidy. The max. no. of nucleoli visible in the nuclei of any individual corresponded to the no. of haploid chromosome sets. It is concluded that the no. of nucleoli may be used as a criterion in the diagnosis of completely polyploid individuals or of polyploid cells or tissues in animals as well as in plants. J. D. B.

Pericentric inversion resulting in apparent iso-chromosomes at meiosis. N. H. Giles, jun. (*Proc. Nat. Acad. Sci.*, 1944, 30, 1—5).—The plant *Gasteria* gives rise to large nos. of two types of metacentric chromosomes (in addition to the normal type) as a result of the aberrant behaviour of a single one of the seven tetrad chromosomes at meiosis. Cytological study of the meiotic prophase configurations and of the types and frequencies of the various quartets at anaphase II indicates that the new types of chromosomes arise from crossing-over in a heterozygous pericentric inversion rather than from aberrant centromere behaviour. J. D. B.

Locomotion of blood cells in tissue cultures. P. P. H. De Bruyn (*Anat. Rec.*, 1944, 89, 43—63).—Movement of the blood cells from rabbit-lymph nodes and bone marrow was studied by means of time-lapse motion pictures. On a flat surface the moving lymphocyte and hæmocytoblast presented an active anterior pseudopodal and a passive posterior part. Both types are polarised cells. Loss of polarisation occurs during development from hæmocytoblast into mature granulocyte and the type of motion becomes less marked in mature leucocytes. Movement inside the plasma clot is "worm-like." W. F. H.

Method for staining glycogen in paraffin sections with Best's carmine stain. J. P. Mullen (*Amer. J. clin. Path. Tech. Sect.*, 1944, 8, 9—10). C. J. C. B.

Removal of formaldehyde-produced precipitate from sections. A. M. Barrett (*J. Path. Bact.*, 1944, 56, 135—136).—After removal of the wax, the sections are placed in a covered staining jar containing a saturated alcoholic solution of picric acid for 2 hr. and then rinsed in water. Frequently all the ppt. is removed in 1 hr. or, less rarely, a trace of ppt. may persist after 2 hr. This can be removed if necessary by prolonging the treatment. C. J. C. B.

Comparison of procedures for staining tubercle bacilli in fluorescence microscopy. H. I. Lee (*J. Lab. clin. Med.*, 1944, 29, 218—221).—The application of stronger decolorising agents than those commonly employed is advantageous. The additional staining of the slides with $KMnO_4$ solution improves the visibility of the organisms. Counterstaining with methylene-blue solution is unnecessary and may reduce the no. of organisms visible in the field. C. J. C. B.

V.—BLOOD AND LYMPH.

Sternal bone marrow in aged. C. Reich, M. Swirsky, and D. Smith (*J. Lab. clin. Med.*, 1944, 29, 508—509).—The bone marrow remains relatively normal in the aged. C. J. C. B.

Method for computing red cell count in photoelectric colorimeter. G. M. Parker, H. E. Spicer, and H. Porter (*Amer. J. clin. Path. Tech. Sect.*, 1944, 8, 37—38).—The method gives too high readings in macrocytic anæmia and too low in microcytic anæmias. The instrument is calibrated on normal bloods of known counts. C. J. C. B.

Effect of cobalt on work performance under conditions of anoxia. [Cobalt stimulates erythropoiesis.] S. S. Dorrance, G. W. Thorn, M. Clinton, jun., H. W. Edmonds, and S. Farber (*Amer. J. Physiol.*, 1943, 139, 399—405).—Small doses of Co (given as $CoCl_2$) induced erythropoiesis in the spleen and liver and increased red-cell formation in the bone marrow of normal rats; the hæmoglobin content of the blood increased; these animals had a better work performance under conditions of anoxia than controls. There were signs of vascular congestion and enlargement of the spleen. Growth was not retarded. A. S.

Erythrocyte fragility. E. A. Fennel (*Amer. J. clin. Path. Tech. Sect.*, 1944, 8, 21—26).—A simple screen test using one tube of 0·38% NaCl is recommended. C. J. C. B.

Relation of physical exertion to resistance of red blood cells to laking. C. W. Heath (*Amer. J. Physiol.*, 1943, 139, 569—573).—Red cell resistance to laking on addition of water is increased by physical exercise; this resistance change is related to the increase in blood-lactic acid level. A. S.

"Heat-resistance" of erythrocytes; specific test for Marchiafava's anæmia. R. Hegglin and C. Maier (*Amer. J. med. Sci.*, 1944, 207, 624—626).—Hæmolysis of clotted blood *in vitro* evident to the naked eye after 6 hr. at 37° is pathognomonic of Marchiafava's anæmia. C. J. C. B.

Survival of transfused erythrocytes in hæmolytic disease of newborn. P. L. Mollison (*Arch. Dis. Childh.*, 1943, 118, 161—171).—In 8 out of 9 cases of icterus gravis neonatorum transfused during the first 14 days of life, donated *Rh*-positive erythrocytes were destroyed within 10 days. In 4 cases in which *Rh*-positive erythrocytes were

transfused after the 14th day of life, destruction was less rapid and in 2 instances was as slow as that of *Rh*-negative erythrocytes. *Rh*-negative erythrocytes transfused to 21 infants with hæmolytic disease survived for at least 80 days in all but 1 case. In one normal infant transfused within a few hr. of birth, in 1 infant aged 11 months and in one aged 15 months (and in adults), transfused *Rh*-positive erythrocytes survived for up to 100 days. C. J. C. B.

Hæmolysing action of lysocithin. E. Gorter and J. J. Hermans (*Rec. trav. chim.*, 1944, **62**, 681—686).—In man, rabbits, and sheep, the amount of lysocithin needed to hæmolyse a red cell was sufficient to cover the cell with a unimol. layer. Beyond this amount, the no. of red cells hæmolysed was independent of the concn. of the lysocithin used and hæmolysis was complete in 15 min. C. J. C. B.

Hæmolytic disease of newborn. G. L. Taylor and R. R. Race (*Brit. Med. J.*, 1944, I, 288—289).—A serum (" St ") which agglutinates the blood of all homozygous *Rh*-negative persons (*rh rh*) and of all heterozygous *Rh rh* persons, but not the blood of about half the homozygous *Rh Rh* persons, was used to determine the genotype of the fathers of 46 families in which the disease occurred. There is in these families a marked preponderance of homozygous fathers and the homozygote appears to be 4—5 times more dangerous than the heterozygote. These findings have been confirmed by other tests. The prognosis is unfavourable unless the father is shown to be heterozygous, by serological tests or by his having a *Rh*-negative child or parent. I. C.

Anæmia associated with infection. M. F. Saifi and J. M. Vaughan (*J. Path. Bact.*, 1944, **56**, 189—197).—Anæmia in cases of infection when present was normocytic or microcytic in type, the colour index never being above unity. A raised reticulocyte count occurred commonly in the chronic cases with severe anæmia. In acute cases the reticulocyte count often rose when fever abated. Increased activity of the marrow was found in 12 of 15 cases examined, leucopoiesis predominating. There was no aplasia of erythropoietic tissue, primary erythroblasts and normoblasts being present with few mature red cells. The degree and character of the response are unrelated to the type of infection, the severity of the anæmia, or the age of the patient. As there is no evidence of increased hæmolysis, anæmia associated with infections is attributed to impaired synthesis of hæmoglobin. C. J. C. B.

Biliary excretion of radioactive iron and total iron influenced by red cell destruction. W. B. Hawkins and P. F. Hahn (*J. Exp. Med.*, 1944, **80**, 31—38).—Fe is eliminated in the bile of normal dogs at a const. rate (0·2 mg. per day). This rate of excretion is not increased by feeding large amounts of Fe or intravenous injection of large doses of colloidal Fe. Hæmolysis, produced by subcutaneous injections of acetylphenylhydrazine, increases the elimination of biliary Fe 10-fold, parallel to the increase in bile pigment excretion; the biliary output of radioactive Fe is increased when red cells were previously labelled. The excretion of Fe and bile pigments is independent of the bile vol. When red cells are destroyed the pigment radical is totally excreted as bile pigment but only 3% of the released Fe is excreted in the bile; the remainder is retained. The liver and spleen store Fe, even when it is present in marked excess. A. S.

Fainting in blood donors. Report by Sub-committee of Blood Transfusion Research Committee (*Brit. Med. J.*, 1944, I, 279—283).—The incidence of fainting was 5·4% and 5·7% in two different centres. Women, especially married women, are more liable to fainting attacks. Age, length of wait at centres before bleeding, or difficulties in bleeding had no effect on incidence of fainting. Fainting was less common in the fortnight preceding menstruation than in the week after its cessation. Women clerks probably faint more often than other workers. Most fainters gave a history of fainting either at a previous donation or at some other occasion. 14% of donors reported some discomfort after bleeding. 1·2% of the men and 1·3% of women reported delayed faints. I. C.

Bacteriological aspects of transfusion work.—See A., 1944, III, 616.

Direct blood transfusion. J. S. Guest and K. C. Bradley (*Med. J. Austral.*, 1944, I, 292—295).—Massive transfusion of unmodified blood by the rotary pump technique, with a report of 3 cases, is described. It is concluded from a study of dosage and rate of transfusion that the so-called " speed shock " syndrome in cases unassociated with cardio-respiratory does not occur. F. S.

Concentrated red cell transfusions. M. L. Binder and A. Klein (*Amer. J. med. Sci.*, 1944, **208**, 95—105).—Conc. red cell transfusions are as efficacious as whole blood in raising the hæmoglobin concn. of anæmic patients in whom only the cellular elements of the blood are deficient. The reaction rate was 5·8%. C. J. C. B.

Red blood cell suspensions in anæmia. C. K. Murray, D. E. Hale, and C. M. Shaar (*J. Amer. Med. Assoc.*, 1943, **122**, 1065—1067).—The results of 116 infusions of red blood cell suspensions are described. 300 c.c. of suspension raised the recipient's hæmoglobin by about 1 g. per 100 c.c. Only 2 reactions occurred and clinical results were good. C. A. K.

Preservation of normal human plasma in liquid state. I. Statistical study of 1751 administrations. E. L. Lozner and L. R. Newhouser (*J. clin. Invest.*, 1944, **23**, 343—349).—The average length of preservation was 5·0 months and 545 administrations were of plasma over 6 months old. The reaction rate possibly attributable to plasma was 1·1%. C. J. C. B.

Comparative *in vitro* studies on the physiologic activity of labile constituents of liquid and frozen plasma. F. H. L. Taylor, E. L. Lozner, C. S. Davidson, H. J. Tagnon, L. R. Newhouser, H. MacDonald, and M. A. Adams (*J. clin. Invest.*, 1944, **23**, 351—355).—The protein components of both liquid and frozen plasma are well preserved. The coagulation factors of liquid plasma are lost but better preserved in frozen plasma. Complement and prothrombin are lost from liquid plasma but preserved in frozen plasma. C. J. C. B.

Isohæmagglutinin titres of stored normal human plasma. E. L. Lozner and L. R. Newhouser (*J. clin. Invest.*, 1944, **23**, 361—363).—Pooling the plasma reduced the % with titres of " 1 : 16 " and over of anti-*A* isoagglutinin from 72% in the controls to 8% in the pools, and of anti-*B* isoagglutinin from 78% in the controls to 15%. Pools over 4 months old have a much lower % of titres over " 1 : 16 " than pools under 4 months old. C. J. C. B.

Chemical and physico-chemical changes of normal human plasma during the second year of storage. E. L. Lozner, F. H. L. Taylor, S. Lemish, R. Snyder, and L. R. Newhouser (*J. clin. Invest.*, 1944, **23**, 357—360).—During storage of 1—2 years the non-protein-N, the α-amino-N, the " residual " non-protein-N, and the " polypeptide index " increased slightly; 0·5—2·0% of the original protein is hydrolysed to amino-acids and polypeptides, and 98—99·5% remains precipitable. Electrophoretic and osmometric data indicate that limited protein cleavage takes place. The osmotic effectiveness of the preserved plasma is slightly increased above that of fresh plasma. It is concluded that when plasma is prepared by a " closed " system, with scrupulously aseptic technique and careful bacteriological control, it may be preserved in the liquid state at room temp. in a moderate climate for periods up to at least 2 years. C. J. C. B.

Effect of single injection of concentrated human serum-albumin on circulating proteins and proteinuria in nephrosis. J. A. Luetscher, jun. (*J. clin. Invest.*, 1944, **23**, 365—371).—A single injection of 25 g. of conc. serum-albumin was followed in 3 nephrotic patients by a rapid increase of plasma vol. by 25—30% of the original vol.; a rise in serum colloid osmotic pressure by 10 and 20%; small, variable changes in total serum-protein concn., an increase in circulating albumin (always considerably less than the amount injected); a small increase in circulating globulin; an increased proteinuria due to the higher proportion of serum-albumin with little change in albumin and globulin clearance; a small increase in urine vol. but no rise in Cl′ excretion. Within 48 hr. after the injection, most of the effects had disappeared. C. J. C. B.

Fate and effects of transfused serum or plasma in normal dogs. W. Metcalf (*J. clin. Invest.*, 1944, **23**, 403—414).—Protein given intravenously to normal dogs, either as normal or conc. serum or plasma, leaves the blood stream rapidly. Its rate of disappearance is const. and not related to the changes in vol. or concn. caused by the transfusion or to the state of protein reserves. The correlation between the rate of protein disappearance and the dye disappearance suggests that the former is logarithmic and therefore related to the total amount of circulating protein. The diuresis induced is proportional to the increase in plasma vol. and change in protein concn. The transfusion causes a loss of water from the red cells resulting in a decrease in their size. The latter may be an important source of error in calculations of vol. change by the hæmatocrit. C. J. C. B.

Isoagglutinin and agglutinogen contents of pooled plasma. L. L. Blum (*Amer. J. clin. Path.*, 1944, **14**, 112—117).—The isoagglutinin titers of 40 unselected plasma pools in a medium-sized hospital were low enough to be disregarded as a source of transfusion reactions. There is no contraindication for giving, if needed, whole blood or red-cell suspensions following administration of pooled plasma. Injected " incompatible " isoagglutinins disappear from the circulation almost immediately. C. J. C. B.

***Rh* factor.** D. Durie (*Med. J. Austral.*, 1944, I, 333—339).—A review. F. S.

***Rh* factor : its incidence in Victorian Red Cross donors.** R. T. Simmons, J. J. Graydon, R. Jakobowicz, and L. M. Bryce (*Med. J. Austral.*, 1943, II, 496—501).—Of 3641 blood samples tested 17·66% were *Rh*-negative when tested with a human anti-*Rh* serum. 185 of the *Rh*-negative samples gave a positive reaction with one or more of 5 other anti-*Rh* sera, which would reduce the total of non-reactors to 16·6%. There was a higher % of non-reactors in group *A* samples than in the other groups. F. S.

Heredity of *Rh* blood types. A. S. Wiener, E. B. Sonn, and R. B. Belkin (*J. Exp. Med.*, 1944, **79**, 235—253).—Data collected, and statistically analysed, of the *Rh* blood types in 97 females with 275

children and in 135 mother–child combinations are in complete agreement with the theory of 3 allelic genes. A. S.

Anti-human hæmagglutinins and anti-*Rh* antibody in guinea-pig and human sera. E. E. Ecker, E. W. E. Macfarlane, and T. C. Laipply (*Amer. J. clin. Path.*, 1944, **14**, 168—174).—The serum of $\frac{1}{3}$ of normal guinea-pigs contains anti-human hæmagglutinins, chiefly anti-*A*. Guinea-pig anti-*Rh* agglutinin differs from other artificial agglutinins as it reacts with all human cells unless diluted to a sp. strength. The *Rh* antigen is present in the red cells of all individuals, but in some it is much less sensitive. Even the undiluted anti-*Rh* guinea-pig serum differentiated between the two classes of red cells, one of which gave a titre with a strong serum two or more times as high as did the other class of less sensitive cells. The latter are the *Rh*-negative cells. For general use the guinea-pig anti-*Rh* serum should be diluted (1 : 10). C. J. C. B.

Erythroblastosis fœtalis. J. R. Gilmour (*Arch. Dis. Childh.*, 1944, **19**, 1—25).—52 fatal cases of erythroblastosis fœtalis were examined. They were grouped into 3 types roughly corresponding to (i) hydrops fœtalis, (ii) icterus gravis, and (iii) congenital anæmia. The 3 types are merely varieties of a single disease; more than one type frequently occurs in siblings. The pathological changes were variable in incidence and degree. Lipoid infiltration of the adrenal cortex was common in (i) but does not occur in (ii) and (iii). Nuclear jaundice and jaundice of the renal medullary pyramids and foci of necrosis of the white matter occurred only in (ii). The cause of erythroblastosis fœtalis is discussed. (19 photomicrographs.) C. J. C. B.

Double ova pregancy in which *Rh*+ twin developed erythroblastosis. E. L. Potter (*J. Pediat.*, 1944, **24**, 449—453).—Twins, one of whom died of erythroblastosis while the other remained normal, are reported. The affected twin and the father were *Rh*+; the normal twin and the mother were *Rh*−. It is suggested that the father was heterozygous for the *Rh* factor and that two ova were fertilised, one by a sperm carrying a *Rh*+ gene and the other by a sperm carrying a *Rh*− gene. The *Rh*− mother had been sensitised to the *Rh* factor either in the previous pregnancy, when an *Rh*+ fœtus had been carried, or possibly during the course of this pregnancy by the *Rh*+ twin. The antibodies produced in the mother passed through the placentas of both fœtuses but affected only the one which was *Rh*+. The cells of the *Rh*+ fœtus only were destroyed by the *Rh* antibodies. C. J. C. B.

Haldane hæmoglobinometer. I. Iron, oxygen, and the British Standards Institution colour standard. R. G. Macfarlane and J. R. P. O'Brien [with C. G. Douglas, E. M. Jope, H. M. Jope, R. H. Mole, B. Amos, and P. Quelch] (*Brit. Med. J.*, 1944, I, 248—250).—There was a lack of proportionality in the results of hæmoglobin estimations by the Haldane–Gowers hæmoglobinometer, the spectrophotometer, O_2 capacity, and Fe determination on 49 samples of blood. These variations are partly due to technical errors, and partly to a sex difference in the relative proportions of colour, Fe content, and O_2 capacity of hæmoglobin. Blood samples of the same extinction coeff. as measured by the spectrophotometer may show estimated O_2 capacities differing by 7% and Fe contents differing by nearly 10%, whilst if the hæmoglobinometer is used as a measure of hæmoglobin the differences are 15—16%. The B.S.I. Haldane colour standard is equiv. to 19·7±0·2 c.c. O_2 capacity per 100 c.c. of blood, and 49±0·8 mg. of Fe per 100 c.c. of blood. The Haldane–Gowers method for estimating hæmoglobin is insufficiently exact for purposes of standardisation and in attempts to define the B.S.I. Standard should be replaced by the N.P.L. comparator. I. C.

Hæmoglobin equivalent of the B.S.I. Haldane standard. E. J. King, M. Gilchrist, and A. Matheson (*Brit. Med. J.*, 1944, I, 250—252; cf. A., 1944, III, 451).—The Haldane colorimetric standard recently defined by the British Standards Institution is equal to a hæmoglobin concn. of 14·8 g. per 100 c.c. of blood or 19·8 c.c. of O_2. Hæmoglobin results by the Haldane and alkaline methods are in agreement when the correction for the Haldane standard was applied. I. C.

Methæmoglobinæmia after administration of *p*-aminoacetophenone and *p*-aminopropiophenone.—See A., 1944, III, 609.

Formation of methæmoglobin. III. Influence of total hæmoglobin on formation of methæmoglobin by acetanilide. IV. Limited importance of methæmoglobinæmia in toxicity of aniline derivatives.—See A., 1944, III, 609.

Allergic agranulocytosis with complications [due to sulphadiazine]. J. A. Blue (*Amer. J. med. Sci.*, 1944, **207**, 453—461).—A case due to sulphadiazine (after 2 courses of 27 g. and 4 g.) is described with recovery. C. J. C. B.

Presence in allergic disease of atypical lymphocytes and symptoms suggesting recovery phase of infectious mononucleosis. T. G. Randolph and E. B. Gibson (*Amer. J. med. Sci.*, 1944, **207**, 538—646).—Almost all of 24 cases with different types of allergy showed the presence of atypical lymphocytes in the blood similar to those in infectious mononucleosis. The Paul–Bunnell tests were below diagnostic level but the symptoms of weakness and lassitude common to both allergic cases and mononucleosis suggested a connexion between the two conditions. C. J. C. B.

Morphological obliteration of chronic myeloid leukæmia by active tuberculosis. R. W. Heinle and D. R. Weir (*Amer. J. med. Sci.*, 1944, **207**, 450—453).—A case diagnosed as myeloid leukæmia was followed for several years and then active tuberculosis supervened. At autopsy no leukæmia infiltration was found. C. J. C. B.

Effect of amino-acids on induction of leukæmia in mice.—See A., 1944, III, 599.

Incidence of leukæmia in physicians.—See A., 1944, III, 599.

Rôle of pyrogens in alleged leucocytic response to allantoin. E. G. Young and W. W. Hawkins (*J. Pharm. Exp. Ther.*, 1944, **81**, 10—16).—The oral administration of 0·26—7·35 g. of allantoin in single or repeated doses to man, dog, or rabbit produced no leucocytosis. Marked leucocytosis with neutrophilia and pyrexia was observed in 11 human subjects 3—5 hr. after the intravenous or subcutaneous injection of 50—240 mg. of allantoin dissolved in Ringer's solution. No such effects were observed after the injection of recryst. allantoin dissolved in sterile saline made up with double-glass-distilled water. The alleged leucocytic response to allantoin is attributed to pyrogenic impurities. G. P.

Acute thrombocytopenic purpura in infectious mononucleosis. P. C. Lloyd (*Amer. J. med. Sci.*, 1944, **207**, 620—624).—A case report. C. J. C. B.

Postoperative thrombocytosis. E. Adams (*Arch. intern. Med.*, 1944, **72**, 329—335).—The degree and time of the max. elevation are variable; most patients show the max. rise between the 10th and the 15th postoperative day. C. J. C. B.

Experimental hypoproteinæmia and œdema. A. J. Beams, A. H. Free, and J. R. Leonards (*Arch. intern. Med.*, 1944, **73**, 397—402).—Hypoproteinæmia with œdema was produced in 5 dogs by means of plasmapheresis. The rate of intestinal absorption or metabolism of galactose and glycine, gastric emptying time, and intestinal motility were not altered. The plasma vol. was not altered but the available (thiocyanate) fluid vol. was increased. C. J. C. B.

Plasma retention, urinary excretion, and effect on circulating total red cell volume of intravenous gelatin in normal dogs. J. M. Little and J. T. Dameron (*Amer. J. Physiol.*, 1943, **139**, 438—445).—Approx. 50% of the injected gelatin leaves the plasma within 30 min. following a single intravenous injection of a gelatin–NaCl mixture; the plasma contained only traces of gelatin after 72 hr.; 23—35% of the gelatin was excreted in the urine. Following repeated injections the serum-gelatin concn. and total serum-gelatin increased, the total serum-protein remained unaffected, but the serum-protein concn. diminished. After a single injection of 6—7% gelatin solution there is an almost immediate marked decrease in the circulating total red cell vol., persisting for at least 3 days; repeated injections of 4% gelatin solutions had less effects on the red cell vol. A. S.

Amino-acid mixtures effective parenterally for long-continued plasma-protein production. Casein digests compared. S. C. Madden, R. R. Woods, F. W. Shull, and G. H. Whipple (*J. Exp. Med.*, 1944, **79**, 607—624).—Control of N intake in dogs after plasmapheresis produces a steady state of hypoproteinæmia and a const. level of plasma-protein production; the resistance of these dogs to infection and intoxications is lowered. N balance is maintained by the 10 essential amino-acids of Rose plus glycine; as much new plasma-protein is formed as on good dietary protein. There was no evidence of toxicity on oral or parenteral administration over several months. The min. daily requirements for a 10-kg. dog may be given intravenously in 10 min. without reaction; 10% solutions were given subcutaneously; the mixture contained (in g.) *dl*-threonine 0·7, *dl*-valine 1·5, *l*(−)-leucine 1·5, *dl-iso*leucine 1·4, *dl*-lysine hydrochloride 1·5, *l*(−)-tryptophan 0·4, *dl*-phenylalanine 1·0, *dl*-methionine 0·6, *l*(+)-histidine hydrochloride 0·5, *l*(+)-arginine hydrochloride 0·5, glycine 1·0, Glycine improves tolerance to rapid intravenous injection. One casein digest, prepared by enzymic hydrolysis, produced good N retention and plasma-protein production, but was less well tolerated on intravenous injection; the other digest, prepared by acid hydrolysis and addition of tryptophan, gave bare N equilibrium and no plasma-protein production. Skin lesions, probably due to some vitamin-B_2 deficiency, were observed after 10—20 weeks of synthetic diet. A. S.

Influence of alimentation on regeneration of plasma-proteins following single severe non-fatal hæmorrhage. C. E. Lischer, R. Elman, and H. W. Davey (*Amer. J. Physiol.*, 1943, **139**, 638—641).—The presence or absence of proteins or carbohydrates in the food does not influence the rapidity of regeneration of plasma-proteins during the first 72 hr. following a single severe non-fatal hæmorrhage in dogs. A. S.

Effect of experimental hepatitis on plasma-proteins of (I) immature, (II) pregnant, rats. G. H. Berryman and J. L. Bollman (*Amer. J. Physiol.*, 1943, **139**, 592—595, 596—599).—I. The plasma-protein level of immature rats exposed to CCl_4 and subsequent toxic hepatitis

is considerably lowered, almost exclusively at the expense of the plasma-albumin.

II. In pregnant rats, the maternal plasma-protein concn. (mainly the albumin) is lowered; the globulin fraction was frequently increased. The livers showed hypertrophic changes. A. S.

α-Globulin fraction of serum of normal and hypophysectomised rats. D. H. Moore, L. Levin, and J. H. Leathem (*J. Biol. Chem.*, 1944, **153**, 349—353; cf. A., 1942, III, 889; 1944, III, 108).—Sera from hypophysectomised and normal rats were examined electrophoretically and by salt pptn. The ratios of serum-albumin to -globulin determined by the two methods were very similar and confirm the previous finding that hypophysectomy causes a decreased ratio of albumin to globulin. Normal rat serum differs from that of other species by absence of the electrophoretic α-globulin component, but it is present in sera of hypophysectomised rats. It is suggested that thyroid insufficiency following hypophysectomy is responsible for appearance of α-globulin in the serum. J. N. A.

Relationship of lymphogranuloma venereum infection to incidence of hyperglobulinæmia. O. B. Beeson and E. S. Miller (*Amer. J. med. Sci.*, 1944, **207**, 643—646).—Hyperglobulinæmia was found in 0·4% of white males and in 0·6% of white females in Georgia. In Negroes the respective rates were 5·6% and 8·3%. The difference in prevalence of lymphogranuloma venereum infection may account for this racial difference. C. J. C. B.

Test for increased coagulability of blood. T. R. Waugh and D. W. Rudick (*Canad. Med. Assoc. J.*, 1944, **50**, 547—549).—Blood is added to decreasing amounts of heparin in tubes and the coagulation thus decelerated. The coagulation times of the different tubes are graphed and a normal curve is established in 50 people. C. J. C. B.

New practical method for subcutaneous administration of heparin. L. Loewe and P. Rosenblatt (*Amer. J. med. Sci.*, 1944, **208**, 54—63).—A simple, safe, and practical method for the subcutaneous administration of heparin is discussed using the Pitkin menstruum as a vehicle. It was successfully used in 15 cases of thrombophlebitis and phlebothrombosis. C. J. C. B.

Hæmorrhagic sweet clover disease. XIII. Anticoagulant activity and structure in the 4-hydroxycoumarin group. R. S. Overman, M. A. Stahmann, C. F. Huebner, W. R. Sullivan, L. Spero, D. G. Doherty, M. Ikawa, L. Graf, S. Roseman, and K. P. Link (*J. Biol. Chem.*, 1944, **153**, 5—23).—Of 106 compounds of the 4-hydroxycoumarin class or related thereto, 3 : 3′-methylenebis-(4-hydroxycoumarin) was the most active anticoagulant when tested on rabbits, but other compounds showed small degrees of activity. The min. requirements for activity are an intact 4-hydroxycoumarin structure with the 3-position substituted by C or H. For high activity, the 3-substituent group must contain a keto-group in the 1 : 5 position relatively to the 4-hydroxy-group. E. C. W.

Minimal effective dose of a water-soluble vitamin-*K* substitute in prevention of hypoprothrombinæmia in the newborn infant. S. H. Hardwicke (*J. Pediat.*, 1944, **24**, 259—269).—The min. effective daily dose of Na_4 2-methyl-1 : 4-naphthaquinol diphosphoric ester given orally to newborn babies is 0·005—0·0005 mg. 1·25 mg. of the substance is effective in lowering an excessively high prothrombin time to a normal range and maintaining it there. Administration of seconal, nembutal, and Na amytal to the mothers of the babies did not prolong the prothrombin time of the babies. C. J. C. B.

Level of vitamin-*A* and carotene in plasma of rheumatic subjects. R. E. Shank, A. F. Coburn, L. V. Moore, and C. L. Hoagland (*J. clin. Invest.*, 1944, **23**, 289—295).—Irrespective of the initial concn. there is a fall in plasma-vitamin-*A* with the development of acute rheumatic fever; plasma-carotene is not changed. The decrease of plasma-*A* varies directly with the intensity of the rheumatic attack. In severe attacks plasma-*A* concns. varied between 0 and 70 i.u. per 100 c.c. C. J. C. B.

Subclinical vitamin deficiency. IV. Plasma-thiamin. M. H. Carleen, N. Weissman, and J. W. Ferrebee (*J. clin. Invest.*, 1944, **23**, 297—301).—As the yeast-stimulating materials in plasma (thiamin and others) are freely diffusible at pH 5—7 they are probably free to move in and out of the extracellular fluids. The yeast-stimulating activity of plasma varies with the level of thiamin nutrition, the level of thiamin excretion, and the " true " plasma-thiamin concn. Measurements of the yeast-stimulating activity of plasma are thus indices of thiamin nutrition. C. J. C. B.

Serum-diastase in newborn infant. E. E. Richman and G. W. Salmon (*J. Pediat.*, 1944, **24**, 310—311).—The blood during the neonatal period has little diastatic activity (5—35 units). The highest vals. obtained during the neonatal period were in the first 3 days of life. This may possibly represent a persistence of enzyme supplied by the mother. C. J. C. B.

Seasonal variation in serum-choline-esterase in guinea-pigs. Effect of experimental scurvy. A. D. Herschberg and E. Frommel (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 33—36).—In general, serum-choline-esterase is higher (up to 50%) in summer than in winter. Low tissue-ascorbic acid vals. tend to reduce serum-choline-esterase, but inhibition of the enzyme by eserine does not affect tissue-ascorbic acid. P. G. M.

Serum-lipins in cœliac syndrome. L. Luzzatti and A. E. Hansen (*J. Pediat.*, 1944, **24**, 417—435).—All 4 cœliac children showed cystic fibrosis of the pancreas. Several others showed clinical findings suggestive of pancreatic fibrosis. In 8 patients examined the vals. for the various fractions of the serum-lipins were normal, except in 1 patient with a low total cholesterol. The I vals. of the fatty acids of all fractions of the lipin in these 8 patients were low. In 5 cases no increase in serum-lipin occurred after a fatty meal; in one patient there was a slight increase; in two the increase was normal. The low degree of unsaturation of serum-fatty acids in the patients with cœliac syndrome is best explained on the basis of a deficient fat absorption. C. J. C. B.

Blood-proteose and cancer.—See A., 1944, III, 599.

Homogeneity of phosphatide–sterol–protein complexes in blood serum by ultracentrifugation and electrophoresis. M. Mâcheboeuf, J. L. Delsal, P. Lepine, and J. Giuntini (*Ann. Inst. Pasteur*, 1943, **69**, 321—333).—Ultracentrifugation and electrophoresis failed to separate the components of the acid-precipitable fraction of horse serum which is a complex of albumin, cholesterol ester, and phosphoaminolipins (A., 1929, 206, 587, 838). Electrophoresis, however, showed two homogeneous fractions of unequal mobility but with the same relative proportions of P and sterol, indicating a difference in the phospholipin, the esterfying fatty acid, or the protein. F. S.

VI.—VASCULAR SYSTEM.

Anterior cardiac veins. Functional importance in venous drainage of right heart. D. E. Gregg, R. E. Shipley, and T. G. Bidder (*Amer. J. Physiol.*, 1943, **139**, 732—741).—2—5 major anterior cardiac veins were found in the subepicardial surface of the right ventricle in dogs; they empty separately and directly into the right auricle 4—8 mm. superior to the border of the tricuspid valve; there are many smaller veins. The flow from these veins ranged from 8·5 to 26·5 c.c. per min., is derived almost entirely from the coronary arteries, and approaches or exceeds the simultaneously measured right coronary inflow. 50—92% of the right coronary inflow drains via the anterior cardiac veins into the right auricle. A. S.

Tonus changes in cardiac muscle and their significance for initiation of impulses. E. Bozler (*Amer. J. Physiol.*, 1943, **139**, 477—480).—The after-potentials of turtle's cardiac muscle are accompanied by changes in " tonus "; in fresh muscle the tension falls below the previous level corresponding to the positive after-potential. After treatment with excess of Ca^{++} the responses are followed by oscillatory changes in tension. A. S.

Effect of temperature on activity of cardiac muscle in *Helix pomatia*. A. Reinberg (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 47—52).—Rise in temp. produces a positive chronotropic effect and negative tonic effect, and fall in temp. produces the opposite effects, within the limits 0—45°. The automatic activity is dependent on and is in the opposite sense to tonic activity. P. G. M.

Electrolyte redistribution in cat heart and skeletal muscle in potassium poisoning. J. M. Crismon, C. S. Crismon, M. Calabresi, and D. C. Darrow (*Amer. J. Physiol.*, 1943, **139**, 667—674).—K poisoning, indicated by the disappearance of the *P* wave of the e.c.g. in cats, occurred when the serum-K level reached 11·0 m-equiv. per l. following intraperitoneal injections of KCl solution, but occurred at lower serum-K levels if the rate of rise of K was faster than 0·33 m-equiv. per l. per min. Heart- and skeletal muscle-K increase with increased plasma-K concns.; there is no quant. relationship between the amount of K found in the heart and the appearance of K poisoning. The uptake of K by the heart is associated with the loss of Na and the appearance of considerable amounts of Cl in the intracellular phase. A. S.

Responses of heart to reflex activation of right and left vagus nerves by pressor compounds, neosynephrin and pitressin. H. F. Haney, A. J. Lindgren, A. I. Karstens, and W. B. Youmans (*Amer. J. Physiol.*, 1943, **139**, 675—685).—Intravenous injection of pitressin, neosynephrin, or angiotonin into non-anæsthetised dogs produces a reflex slowing of heart rate. After cutting the left vagus, the response usually includes auriculo-ventricular block and occasionally nodal rhythm. No auriculo-ventricular block was observed following cutting the right vagus with the left nerve intact. There was no difference in the sinus bradycardia observed in the two groups of dogs. There was no depressant action on the heart following complete denervation of the heart. In all other experiments denervation of the heart and destruction of the adrenal medullæ had been carried out before the experiments. A. S.

Augmentation of blood flow in coronary arteries with elevation of right ventricular pressures. D. E. Gregg, W. H. Pritchard, R. E. Shipley, and J. T. Wearn (*Amer. J. Physiol.*, 1943, **139**, 726—731).—Progressive elevation of the right ventricular pressure (to 80 mm. Hg systolic) by pulmonary artery constriction in anæsthetised open chest dogs is accompanied by a progressive augmentation of right

(25—200%) and left (19—29%) coronary inflow when aortic perfusion pressure is const. Right coronary inflow may increase in spite of a moderate uncompensated reduction in coronary perfusion pressure. A. S.

Electrogram of ventricle of turtle's heart. A. Rosenblueth, W. Daughaday, and D. D. Bond (*Amer. J. Physiol.*, 1943, **139**, 464—476).—The potentials recorded from leads on an intact and an injured region of the turtle's ventricle are due to changes which occur in the intact, not the injured, part of the muscle ("monotopic potential"). Records with leads from intact to intact tissue are influenced by the position of the leads with regard to the stimulated region; these records represent the algebraic summation of two monotopic records ("ditopic potential"). The electrical and the mechanical phenomena of the ventricle are largely independent. A. S.

Electrocardiogram and "two-step" exercise. A. M. Master, S. Nuzie, R. C. Brown, and R. C. Parker, jun. (*Amer. J. med. Sci.*, 1944, **207**, 435—449).—Positive changes in the e.c.g. after the "two-step" exercise indicate anoxæmia of the heart muscle or coronary insufficiency. Both this test and the 10% O_2 anoxæmia test were performed on 87 patients. The e.c.g. changes corresponded almost exactly in both tests. The exercise must be standardised for age and wt. since changes occur in normal people if the effort is excessive. In normal persons the blood pressure and pulse return to within 10 points of resting levels in 1½ min. The following changes in the e.c.g. after the "two-step" exercise are considered abnormal: depression of the *RST* segment of more than 0·5 mm. in any lead, a change from an upright *T* wave to an isoelectric or inverted *T* wave or *T*-wave changes in the opposite direction. In patients with coronary heart disease, the test is of particular val. in detecting latent coronary insufficiency. In valvular heart disease, the test discloses the state of cardiac function and whether the cardiac output is adequate for the coronary arteries. In patients with hypertension the control e.c.g. often shows evidence of coronary insufficiency and therefore may not change after exercise. There is a lag in return of the blood pressure and pulse following the "two-step" exercise in effort syndrome (neurocirculatory asthenia) and the e.c.g. gives evidence of anoxæmia of the heart muscle following exercise. In this syndrome it is believed that there is a congenitally small, hypoplastic heart which is inadequate on effort. C. J. C. B.

Evolution of cardiogram as function of time. Effect of temperature, alkaline cations, and alkaline earths on ventricle of *Helix*. E. Bachrach (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 44—47).—$Mg^{\cdot\cdot}$ exerts negative tonic and chronotropic, and positive isotropic, effects on ventricular cardiac muscle of *Helix*. $K^{\cdot}$ has the opposite effects, a balance of the two leading to more prolonged automatic activity. High temp. favours the $Mg^{\cdot\cdot}$ effect and low temp. the reverse. Mean temp. (15—27°) are most favourable for maintenance of automatic activity in the presence of $Mg^{\cdot\cdot}$, with or without added $K^{\cdot}$. $Ca^{\cdot\cdot}$ exerts a much less marked negative tonic effect than $Mg^{\cdot\cdot}$. P. G. M.

Electrocardiographic changes following artificial hyperpyrexia. A. H. Clagett, jun. (*Amer. J. med. Sci.*, 1944, **208**, 81—95).—While most of the e.c.g. changes following fever therapy are insignificant and probably due to fever, the cases should be treated in the same way as cases of myocardial infarction due to any other cause. C. J. C. B.

Diagnosis and location of acute myocardial infarct by electrocardiogram. S. Baer and H. Frankel (*Arch. intern. Med.*, 1944, **73**, 286—289).—E.c.g. taken in 321 cases revealed the presence of infarction in 94%. On e.c.g. study alone, 52% of the infarcts were found to be anterior and 34% posterior. C. J. C. B.

Use and advantages of augmented unipolar extremity leads in diagnosis of myocardial infarction. E. Goldberger (*N.Y. Sta. J. Med.*, 1943, **43**, 961—968).—An indifferent electrode with three lead wires is used, leaving one wire unconnected, connecting the other two to the electrodes on two extremities, and its central terminal to the right arm lead wire of the electrocardiograph. The LL lead wire is left unconnected and the LA lead wire connected with the third extremity electrode, thus giving the augmented Vl, Vr, and Vf leads if this is the left forearm, right forearm, and left leg, the electrocardiograph being set for lead I. The e.c.g. obtained in myocardial infarction and certain cases of pericarditis are described in detail and the recording of definite standard patterns is claimed. (Cf. *Amer. Heart J.*, 1942, **23**, 483, for the normal.) E. M. J.

Heart block. R. B. Logue and J. F. Hanson (*Amer. J. med. Sci.*, 1944, **207**, 765—769).—100 cases of heart block with prolonged *P–R* intervals are reported. C. J. C. B.

Electrocardiographic variations in acute glomerulonephritis. R. Ash, M. I. Rubin, and M. Rapoport (*Amer. J. Dis. Child.*, 1944, **67**, 106—116).—72% of 50 children ill with a first attack of acute glomerulonephritis had abnormal e.c.g. The most striking changes were observed in the *T* wave, consisting chiefly of flattening and inversion in one or more leads, not infrequently preceded, especially in leads I and II, by a slightly depressed, upward bowed, *ST* segment. Transient inversion of the *T* wave occurred as frequently in lead III as in lead I. The incidence of heart failure, however, was greater in association with inversion of this wave in lead III. C. J. C. B.

The systolic murmur. W. A. Sodeman (*Amer. J. med. Sci.*, 1944, **208**, 106—118).—A review of the literature. C. J. C. B.

[Contrast cardiovascular study of] case of dextrocardia and complete situs inversus with rheumatic mitral disease. A. G. Silberstein and I. Steinberg. (*N.Y. Sta. J. Med.*, 1943, **43**, 1755—1757).—Report of a case of 33-year-old woman. E. M. J.

Rheumatic fever and rheumatic heart disease in Los Angeles children. D. B. Davis and S. Rosin (*J. Pediat.*, 1944, **24**, 502—513).—There were 157 patients with childhood rheumatic disease out of 22,537 total admissions to the Los Angeles County Hospital over a 5-year period. The relatively low incidence of rheumatic diseases agrees with the findings in other cities with subtropical climates. Chorea occurred much less frequently than in Eastern areas. No variation in seasonal incidence was noted. There was no correlation between temp., rainfall, and R.H. and the incidence of the disease. Familial incidence was negligible. The mortality was 9·5%. C. J. C. B.

Clinical aspects of pain in chest. I. Angina pectoris. T. R. Harrison (*Amer. J. med. Sci.*, 1944, **207**, 561—587).—77 patients with angina pectoris are analysed. The pain was felt substernally in half the patients. Pain entirely limited to the periapical, axillary, or abdominal regions did not occur in any case. The duration of the pain was usually a few min. only, rarely longer than ½ hr. Pain of great intensity was exceptional, the discomfort being mild or min. in more than half the patients. The discomfort was constrictive or heavy in character in 50%. Frequently, the pain was of an aching quality; burning discomfort was occasionally found, while lancinating pain was encountered in only one subject. In addition to the "trigger" factors of exertion, eating, emotion, and cold, recumbent posture and glucose deficiency were common precipitating causes of the seizures. In exceptional patients, anginal attacks with typical e.c.g. changes may be induced by spontaneous hypoglycæmia in patients who have no seizures with severe effort and no evidence of structural cardiac disease. The act of eating may precipitate anginal attacks in certain patients and may prevent the attacks in other subjects. Pain induced by sitting or standing or aggravated by breathing, coughing, or swallowing can usually be safely ascribed to disorders other than angina pectoris. 10% of patients may have anginal attacks which have never been related to effort. Among the causes of such attacks are status anginosus ("coronary insufficiency," "pre-infarction angina"), ectopic tachycardia, spontaneous hypoglycæmia, and conditions such as intermittent claudication, congestive failure, and undue anxiety about the cardiac condition, which induce the patient to lead an unusually sedentary life. C. J. C. B.

Physiologically induced myocardial ischæmia as a test for circulatory efficiency as applied to the selection of pilots. W. M. Bartlett (*J. Aviat. Med.*, 1943, **14**, 264—278).—A description is given of the electrocardiographically controlled tilt-table test (which produces postural ischæmia) and its val. in distinguishing psychogenic, physiogenic, and organic conditions is discussed. F. S.

Infarction of lateral wall of left ventricle. H. W. Thomson and H. Feil (*Amer. J. med. Sci.*, 1944, **207**, 588—600).—19 cases of left lateral infarction were found in 106 cases of myocardial infarcts examined pathologically. In 9 recent cases the e.c.g. of 4 showed the pattern described by Wood *et al.* (A., 1939, III, 17). Auricular fibrillation or flutter was found in 5 of the recent cases. In the 5 recent cases without e.c.g. of lateral infarction, the changes were diagnostic of posterior and basal infarction in 3. The other 2 cases showed auricular fibrillation, and in 1 of these the e.c.g. showed slight depression of the *S–T* segment in lead 4R. 2 cases associated with infarction of the posterior and basal region of the left ventricle presented e.c.g. dominated by the T_3 pattern. 1 case associated with anterior and apical infarction had left bundle block. 7 cases of remote infarction showed no characteristic pattern. C. J. C. B.

Diffuse isolated myocarditis associated with dietary deficiency. W. E. Toreson (*Arch. intern. Med.*, 1944, **73**, 375—383).—A 15-year-old girl with a history of prolonged malnutrition died of diffuse isolated myocarditis. Heart disease had existed for at least 6 months before death, with signs of right heart failure, left bundle branch lesion, heart block, and ventricular fibrillation. The heart showed dilatation and hypertrophy, with acute, subacute, and chronic, non-infective inflammatory lesions diffusely distributed throughout the myocardium. Mural thrombi were found in both auricles and in both ventricles. Thiamin deficiency was suspected but not proved. (4 photomicrographs.) C. J. C. B.

Relationship between blood volume and blood specific gravity in recovery from cardiac decompensation. J. R. Di Palma and P. E. Kendall (*J. Lab. clin. Med.*, 1944, **29**, 390—397).—Decompensated cardiac patients can be divided into 2 groups. The first had a high initial blood vol. which fell with recovery. In the first 2—3 days following the onset of recovery there was a marked fall in plasma sp. gr. and hæmatocrit level. Later, with further recovery, there

was a gradual rise in plasma sp. gr. and hæmatocrit levels, to control or slightly above the control levels. The changes in whole blood sp. gr. corroborated these findings. The 2nd group did not have a marked initial increase in blood vol. and the reduction with recovery was slight. In this instance, there was either little change in plasma sp. gr. or a rise during the first period of recovery from decompensation. In all instances the hæmatocrit level paralleled the changes in plasma sp. gr. C. J. C. B.

Rôle of coronary arteriosclerosis in cardiac hypertrophy. H. Cross and J. R. Lisa (*N.Y. Sta. J. Med.*, 1943, **43**, 1030—1032).—All of 18 cases with a heart wt. of more than 400 g. and gross coronary arteriosclerosis had renal arteriolosclerosis but no evidence or history of hypertension. No relationship could be demonstrated between the severity of the coronary artery disease and the degree of cardiac hypertrophy and their association was considered to be coincidental. E. M. J.

Life expectancy after an attack of myocardial infarction. G. McHardy and D. C. Browne (*Arch. intern. Med.*, 1944, **73**, 290—292).—Report of a case of survival for 19 years after coronary thrombosis. C. J. C. B.

Spontaneous renal apoplexy with resuscitation after cardiac arrest. S. L. Governale and H. G. Rink (*Brit. Med. J.*, 1944, II, 43).—Case report. During the operation the heart stopped and restarted after cardiac massage, intracardiac injection of coramine and metrazol, and intraventricular infusion of blood and saline. I. C.

Influence of hook-worm infection on heart muscle. G. S. R. Rao and N. Anandalwar (*Proc. Indian Acad. Sci.*, 1944, **19, B**, 204—210).—When serum of severely anæmic patients with ankylostomiasis was added to the perfusion fluid of the isolated frog heart in $1 : 10^6$ or $1 : 10^5$ concn. it decreased the amplitude of cardiac contractions. This depressing effect of the serum disappeared in a few cases after Fe and in most cases after anthelmintic treatment. Normal serum in $1 : 10^6$ or $1 : 10^5$ concn. had no or only slight depressing effect. When normal serum or the serum of patients with ankylostomiasis was added to the perfusion fluid in concn. higher than $1 : 10^4$ it increased the amplitude of cardiac contractions. G. P.

Acid cardiolipin and improved method for preparation of cardiolipin from ox heart. M. C. Pangborn (*J. Biol. Chem.*, 1944, **153**, 343—348; cf. A., 1942, III, 495, 577).—An improved method for prep. of cardiolipin depending on pptn. by $BaCl_2$ from methyl alcoholic extracts of tissue and purification successively by way of the Ba and Cd salts is described. The yield is approx. 3 g. of Na salt per kg. of dried ox heart. Acid cardiolipin is a viscous yellow oil, $[\alpha]_D^{25}$ +5·8° in alcohol, I val. 119, and apparent mol. wt. by titration 726. It contains 4·31% of P. When stored in alcoholic solution in the dark, the optical rotation and serological activity decrease, slowly at 3—6°, more rapidly at 25°, and the change produced is irreversible. The pure Na salt retains its activity for at least 18 months. J. N. A.

Case of classical type of constrictive pericarditis cured by pericardiectomy. C. K. Friedberg (*J. Mt. Sinai Hosp.*, 1944, **10**, 717—721). E. M. J.

Case of atypical constrictive pericarditis cured by pericardiectomy. W. Hitzig (*J. Mt. Sinai Hosp.*, 1944, **10**, 722—724). E. M. J.

Abdominal aortic aneurysm. Rupture into jejunum preceded by occult blood in the stool. G. I. Hiller and R. M. Johnson (*Amer. J. med. Sci.*, 1944, **207**, 600—606).—A case report. C. J. C. B.

Effects of occlusion of experimental chronic patent ductus arteriosus on cardiac output, pulse, and blood pressure of dogs. S. E. Leeds (*Amer. J. Physiol.*, 1943, **139**, 451—459).—A side-to-side anastomosis between the aorta and the left pulmonary artery and an end-to-side anastomosis between the left subclavian and the left pulmonary artery after ligation distal to the left subclavian artery were made in dogs. None of the dogs developed peripheral œdema or symptoms of cardiac failure; the venous pressure was not elevated and the mean arterial blood pressure was normal. The output of the left ventricle was twice that of the right, and in 5 experiments the average blood flow through the ductus as a % of left ventricular output, was 46. The immediate effects of occlusion of a chronic experimental patent ductus arteriosus are an increase in the systemic arterial blood pressure, a slowing of the pulse, and a decrease in the output of both ventricles. A. S.

[Successful] ligation of patent ductus arteriosus. E. E. Arnheim (*J. Mt. Sinai Hosp.*, 1944, **10**, 727—728).—Report of a case in an 11-year-old girl. E. M. J.

Effect of adrenaline, ephedrine, ergotoxine, and pitressin on small blood vessels in rabbit's ear before and after denervation. J. P. Levinson and H. E. Essex (*Amer. J. Physiol.*, 1943, **138**, 423—432).—Vascular changes were directly observed, using the transparent chamber method. Adrenaline and ephedrine produced marked arteriolar and slight venule constriction; refractoriness developed following repeated injections of ephedrine. Pitressin (0·1 pressor unit per kg. body wt.) had the most marked vasoconstrictor action; refractoriness developed on repeated injections. Ergotoxine prevented the vasoconstrictor effects of adrenaline. Stimulation of the cervical sympathetic chain had a more pronounced vasoconstrictor effect than stimulation of the dorsal or great auricular nerves. Hypersensitivity to adrenaline occurred after denervation; the vessels regained their tone eventually. Denervation alters the adrenaline-antagonistic effect of ergotoxine and the tachyphylaxis. A. S.

Circulation in hind limbs of a dog ten years following left lumbar sympathetic ganglionectomy. H. E. Essex, J. F. Herrick, E. J. Baldes, and F. C. Mann (*Amer. J. Physiol.*, 1943, **139**, 351—355).—Stromuhr blood flow measurements in the femoral arteries of a dog were made before and 15 days, 10 months, and 9 and 10 years following unilateral lumbar sympathetic ganglionectomy. The blood flow in the sympathectomised limb was twice that of the control limb up to 10 months after the operation; it was almost the same in the two limbs 9 and 10 years later. Stromuhr and plethysmographic studies showed great hypersensitivity to adrenaline of the vessels of the sympathectomised leg. There was arteriolar hypertrophy of the muscularis in a toe of the operated side. A. S.

Oscillometric index; aid in evaluating arterial status of lower extremities. S. H. Rinzler, J. Travell, and H. Civin (*Arch. intern. Med.*, 1944, **73**, 241—247).—The oscillometric index (ratio of the oscillometric reading at the ankle to that at the wrist), the cutaneous temp. following posterior tibial nerve block, and the presence or absence of calcification of the leg vessels in the roentgenogram were determined for 84 ambulatory patients with heart disease. As the oscillometric index decreases, the incidence and extent of calcification of the vessels of the lower extremities and the incidence of abnormal cutaneous temp. increase. In the presence of a normal circulation in the arms, an oscillometric index of 0·75 or more generally indicates adequate arterial function in the legs. Similarly, an index of less than 0·75 indicates sclerotic changes in the leg arteries, probably with calcification; an index of 0·3 or less indicates extensive calcification and probably advanced occlusive arterial disease. An oscillometric reading of more than 4 at the ankle or more than 2 at the foot nearly always indicates normal arterial flow and a reading of less than 1 at the ankle or 0 at the foot indicates occlusive arterial disease. C. J. C. B.

Clinical studies of circulation time with objective [photoelectric cell and dye] method. B. Jablons, J. Cohen, and M. Y. Swirsky (*N.Y. Sta. J. Med.*, 1944, **44**, 398—402).—A pencil flashlight bulb powered by a single or double 3-v. dry-cell battery was used as a source of light placed behind the pinna and a photoelectric cell, 35 mm. in diameter and of the Se barrier-layer type, was connected to a pointer type galvanometer with a full scale deflexion at 10 μa. adjusted so that the active side was in contact with the anterior surface of the pinna. The whole apparatus is self-contained in a portable wooden casing and adjusted on the patient by means of a headband. The strength of the light source was adjusted to give a deflexion of 70—80%. The dye used was a 1% solution of methylene-blue in distilled water; 2—5 c.c. were injected into the antecubital vein in 1—2 sec. after release of a tourniquet. Vals. in normals were 7·0—21·6 sec. (average 13 sec.); normal vals. were also seen in cases of bronchial asthma; there was prolongation in decompensated heart disease and shortening in hyperthyroidism. The results of 200 cases are reported. E. M. J.

Test for vascular tone in man and its application to study of vascular diseases with special reference to ætiology and prevention of thrombophlebitis. M. Naide and A. Sayen (*Amer. J. med. Sci.*, 1944, **207**, 606—619).—After entering the cold room (20—22°) the subject undresses completely and puts on a light gown and lies in the supine position, his legs and arms being uncovered. Thermocouples are attached to the first and third toes of each foot and the third fingers of each hand. The following routine measurements are taken 15 min. after the patient lies down and every 10 min.: the temp. at each thermocouple; mouth temp.; blood pressure and pulse rate. The toe and finger temp. gradually fall to 20—22° in 30—60 min. 2 electric heating pads are then applied to the trunk, covering it from pubis to neck. Readings are then taken as during the cold period; time of onset and degree of sweating are also recorded. The heating time is 60—150 min.; individuals with high-grade tone require more time to dilate, if they can vasodilate at all reflexly. The temp. of the toes and fingers when vasodilation is complete is between 30° and 34°. When the toe and finger temp. responses to cold and heat have been obtained, the grade of vascular tone can be determined from a table given. This table divides patients arbitrarily into 7 groups depending on rate of cooling or warming of the extremities. The importance of vasospasm in initiating thrombophlebitis or phlebothrombosis has been disclosed by this test. C. J. C. B.

Some uses for dry cold therapy and a proposed cooling cabinet. W. G. Bigelow and E. C. G. Lanyon (*Brit. Med. J.*, 1944, I, 215—217).—A description of a portable refrigerating apparatus to investigate the dry cold treatment of frost-bite, traumatic arterial spasm, peripheral embolism, and certain wounds of the extremities. I. C.

Effect of distal application of sphygmomanometer cuff on localised venous pressure and as aid in venipuncture. R. D. Barnard (*J. Lab. clin. Med.*, 1944, **29**, 539—541).—A blood-pressure cuff around the wrist inflated above the mean arterial pressure trebles the rate of venous blood flow from a venipuncture with the usual proximal band. Where the venipuncture had not already been performed, the superficial veins become very prominent, turgid, and easily entered by the needle. The blood collected by this procedure shows some clotting peculiarities. C. J. C. B.

Vasomotor rhinitis. N. D. Fabricant (*Amer. J. med. Sci.*, 1944, **207**, 535—540).—A review. C. J. C. B.

Recent work on hypertension. F. B. Byrom (*Med. J. Austral.*, 1944, I, 141—145).—A review. (9 photomicrographs.) F. S.

Rôle of brain stem in arterial hypertension subsequent to intracranial hypertension. F. M. Forster (*Amer. J. Physiol.*, 1943, **139**, 347—350).—The rise in arterial blood pressure following an increase in intracranial pressure in cats depends on the integrity of the medullary centres. Decerebration at the level of the superior or inferior colliculi enhances the medullary response to intracranial pressure increases. A. S.

Biology of hypertension [of greater circulation]. E. Moschcowitz (*J. Mt. Sinai Hosp.*, 1944, **10**, 747—754).—A review. E. M. J.

Analysis of shock. V. H. Moon (*Brit. Med. J.*, 1944, I, 773—779).—A review. I. C.

Shock resulting from intraperitoneal implantation of reconstituted desiccated muscle. E. E. Muirhead and J. M. Hill (*J. Lab. clin. Med.*, 1944, **29**, 339—346).—Reconstituted desiccated muscle regularly produces fatal shock in dogs when it is implanted in the peritoneal cavity in a dose greater than 5 g. per kg. The changes in the viscera are identical with those following freezing shock. After a time in the survival group the muscle substance loses its shock-producing qualities. (5 photomicrographs.) C. J. C. B.

Occurrence of vasoconstrictor substance in blood during shock induced by trauma, hæmorrhage, and burns. I. H. Page (*Amer. J. Physiol.*, 1943, **139**, 386—398).—Vasoconstrictor substances, demonstrated on the isolated perfused rabbit's ear, occur in the blood of dogs under shock conditions, produced by tourniquets placed around the hind legs, stripping and exposure of the intestines, hæmorrhage, or burns. Renal denervation, nephrectomy, adrenalectomy, and low spinal trans-section do not prevent the appearance of vasoconstrictor agents after tourniquet shock, nor does nephrectomy and adrenalectomy prevent it after hæmorrhage. Refractoriness may be produced by repeated perfusion with vasoconstrictor plasma or serum; the vessels of the rabbit's ear then still respond to plasma of different origin. Refractoriness to serum does not abolish the vasoconstrictor action of plasma from burned, bled, or shocked dogs, or the response to histamine; refractoriness to plasma from burned dogs does not abolish the effect of serum or histamine, but abolishes the response to plasma from bled or hypertensive dogs. Refractoriness to hypertensive plasma does not abolish the vasoconstrictor effect of plasma from burned or bled dogs. Rabbits' isolated intestinal rings contract powerfully when serum is added to Ca-free Ringer's solution; normal citrated plasma and plasma from burned or shocked dogs causes no contraction in dilutions of 1 to 30. A. S.

Motor control of thoracic duct. D. Acevedo (*Amer. J. Physiol.*, 1943, **139**, 600—603).—The thoracic duct in cats was perfused with Tyrode solution from the cisterna chyli and the venous ending of the duct. The flow in the duct diminished on adding acetylcholine to the perfusion fluid or intravenous injection; perfusion with adrenaline produced a dilator effect. Stimulation of the vagus produced constriction of the duct. A. S.

Permeability of lymph vessels and lymph pressure. F. C. Lee (*Arch. Surg. Chicago*, 1944, **48**, 355—365).—In cats, ligation of the thoracic duct in the chest produced an extravasation of chyle within 45 min. in the region of the cisterna chyli, whence it spreads retroperitoneally. In these conditions the lymphocytes were conc. in the lymph vessels distal to the ligation but not beyond the intestinal lymph gland, which acted as a barrier. Large particles of centrifuged, dialysed India ink were held back by the walls of the lymph vessels, whereas the smaller particles passed through. Pressure within the mesenteric lymph vessels was approx. 5·2 cm. H_2O and 1·0 cm. in the intestinal lymph trunks. Ligation of the thoracic duct increased the pressure in the intestinal trunks to as much as 63·5 cm. with no increase in the mesenteric vessels. F. S.

VII.—RESPIRATION AND BLOOD GASES.

Effects of direct chemical and electrical stimulation of respiratory centre in cats. J. H. Comroe, jun. (*Amer. J. Physiol.*, 1943, **139**, 490—498).—Injection in cats of 1—2 cu. mm. of 1·3% $NaHCO_3$ buffered to pH 7·4 by CO_2 with p_{CO_2} 250 mm. into the region of the respiratory centre as outlined by Pitts *et al.* (cf. A., 1940, III, 104) was followed by immediate increase in depth and rate of respiration. Carbonic or lactic acid or HCl rarely stimulated but frequently depressed respiration. 1·3% $NaHCO_3$ in water, without CO_2 and at pH 8·0 or more, and hypertonic and hypotonic $NaHCO_3$ with varying CO_2 pressure often stimulated respiration. 1·2% KCl stimulated in 12 of 57 injections but frequently led to depression either initially or following transient stimulation. 1% nicotine stimulated weakly in 4 out of 45 injections; 1% strychnine produced 2 doubtful responses in 87 injections; 0·01—1% acetylcholine, in 128 injections, produced no definite instance of stimulation of respiration. A. S.

Respiratory movements in carp fingerlings. H. Khan and A. Husain (*Current Sci.*, 1944, **13**, 16—18).—A description of respiratory movements and of their rate in fingerlings of *Cirrhina* and *Labeo*. The effects of anoxia on the movements are also recorded. J. D. B.

Anaërobic survival of adult animals. J. F. Fazekas and H. E. Himwich (*Amer. J. Physiol.*, 1943, **139**, 366—370).—The cerebral arterio-venous O_2 difference decrease in dogs under pentobarbital anaesthesia breathing a mixture of 8% O_2 + 92% N_2; intravenous injection of iodoacetate (32 mg. per kg. body wt.) shortens the survival time of these animals. Lactic acid accumulates in the central nervous system of cats breathing an O_2-poor mixture. A. S.

Intestinal gas volumes at altitude. E. W. Peterson, B. S. Kent, and H. R. Ripley (*Canad. Med. Assoc. J.*, 1944, **50**, 523—526).—The abdomen swells at high altitudes owing to expansion of intestinal gases. The swelling is relieved by belching and passage of flatus. C. J. C. B.

No effect on adrenal hypertrophy of subdiaphragmatic vagotomy under conditions of decreased barometric pressure.—See A., 1944, III, 590.

Effect of preventing acapnia on adrenal cortical hypertrophy under conditions of decreased barometric pressure.—See A., 1944, III, 589.

Effects of pleural effusion on respiration and circulation in man. M. D. Altschule and N. Zamcheck (*J. clin. Invest.*, 1944, **23**, 325—331).—The effects of pleural effusion were determined in 8 patients by comparison of measurements of the lung vol. and respiratory and cardiovascular dynamics before and after thoracentesis. The main changes were atelectasis, decreased expansibility of the lungs, decreased negativity of intrapleural pressure, and shallow respiration; anoxia may occur. Pleural effusion leads to increased peripheral venous pressure, because of mechanical interference with the venous return; there are no changes in cardiac output or circulation time at rest. C. J. C. B.

Stepwise activation of oxygen in the organism. See A., 1944, III, 611.

VIII.—MUSCLE.

Adenylpyrophosphatase and myokinase.—See A., 1944, III, 613.

Polyphasic action currents of motor unit complex. J. S. Denslow and C. C. Hassett (*Amer. J. Physiol.*, 1943, **139**, 652—660).—Mono-, di-, tri-, and poly-phasic action currents from single motor units were recorded in normal subjects from areas of 2—7 cm. vertically and 1—6 cm. horizontally; fascial sheaths act as dielectrics and limit the fields. A. S.

Histopathology of progressive muscular dystrophy revealed by ultra-violet photomicrography. C. L. Hoagland, R. E. Shank, and G. I. Lavin (*J. Exp. Med.*, 1944, **80**, 9—18).—Consistent changes in biopsy material obtained from muscle of patients suffering from progressive muscular dystrophy were shown with ultra-violet photomicrography. Better resolution is obtained with ultra-violet light than by staining and examination in visible light. A. S.

Neuromuscular regeneration under different levels of vitamin-*C* intakes.—See A., 1944, III, 603.

Dermatomyositis. B. V. Jaeger and L. A. Grossman (*Arch. intern. Med.*, 1944, **73**, 271—285).—Involvement of muscles was present in all of 9 cases of dermatomyositis in adults. Frequently there were tenderness, weakness, and atrophy of skeletal muscles; occasionally the striated muscles of deglutition and respiration were affected; biopsy specimens revealed histological changes. Involvement of the skin occurred in 7 of the cases. In 2 the mucous membrane of the mouth were affected. In 1 case there was diffuse scleoderma, and in 2 others sclerodermatous changes were confined to the hands. Extensive laboratory studies revealed no const. abnormality other than spontaneous creatinuria. (4 photomicrographs.) C. J. C. B.

IX.—NERVOUS SYSTEM.

Comparison of motor integration in mouse, rat, rabbit, dog, and horse. R. Gesell and A. K. Atkinson (*Amer. J. Physiol.*, 1943, **139**, 745—755).—Contraction of the diaphragm in these species shows characteristic electrical patterns of multifibre twitchings. A. S.

Physiology of frequency of afferent impulses. O. A. M. Wyss (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 63—66).—A theory of

the mechanism of transference of nerve impulses, based largely on the author's earlier experimental results. P. G. M.

Inhibition of choline-esterase activity of [peripheral and central] nervous tissues by eserine *in vivo*. G. L. Cantoni and O. Loewi (*J. Pharm. Exp. Ther.*, 1944, **81**, 67—71).—Subcutaneous injection of 1 mg. of eserine per g. to frogs prevented the hydrolysis of acetylcholine in the sciatic nerves, but the propagation of impulses in these nerves was unaffected. The hydrolysis of acetylcholine in the central nervous system, however, was not inhibited by the subcutaneous injection of even 15 mg. of eserine per g. G. P.

Polyneuritis of unknown ætiology in childhood. A. Hatoff (*J. Pediat.*, 1944, **24**, 393—404).—A review of 17 cases. C. J. C. B.

Equivalence of theories of nervous excitation. A. S. Householder (*Bull. Math. Biophysics*, 1944, **6**, 79—81).—The equivalence of the three current theories of nervous excitation (*i.e.*, those due to Hill, Monnier, and Rashevsky; cf. Offner, A., 1938, III, 100) is mathematically demonstrated. F. O. H.

[Theory of] neural nets. H. D. Landahl (*Bull. Math. Biophysics*, 1944, **6**, 77—78).—A neural mechanism is described which provides for a perception that is invariant with respect to movement of the stimulus. F. O. H.

Logical calculus of the ideas immanent in nervous activity. W. S. McCulloch and W. Pitts (*Bull. Math. Biophysics*, 1943, **5**,, 115—133).—A calculus based on propositional logic is evolved to describe the activity of a system which operates according to the cardinal principles of neurophysiology. These principles include that of the "all-or-none" law, the principles of unidirectional transmission at synapses with synaptic delay, of summation and inhibition, of facilitation and extinction, and of regenerated excitation through circular nerve paths. It is indicated that the fundamental activity of the cerebral cortex may have its counterpart in the two-valued logic of propositions. P. D. M.

Statistical consequences of logical calculus of nervous nets. H. D. Landahl, W. S. McCulloch, and W. Pitts (*Bull. Math. Biophysics*, 1943, **5**, 135—137).—A formal method is derived for transforming the propositional logical description of the activity of a nerve net into that of a statistical calculus. This transformation involves the assumption that sequences of impulses in sets of neurones in the net shall be statistically independent, and is therefore invalid where synchronous activity occurs. P. D. M.

Inexcitability to direct stimulation of nervous centres after destruction of central nervous system by compressed hypertonic sodium chloride solution into cisterna magna. P. E. Galvao and J. Periera, jun. (*Arq. Inst. Biol.*, 1942, **13**, 13—15).—After injecting a 20% solution of NaCl into the cisterna magna of dogs under a pressure of 60 mm. Hg for 6 min. (cf. A., 1944, III, 581) the motor cortex, medulla, and spinal cord are completely inexcitable to mechanical or electrical stimulation. I. C.

Retrograde degeneration. A. M. Lassek (*Arch. Neurol. Psychiat.*, 1943, **49**, 878—880).—Retrograde degeneration, implying breakdown and disappearance of axons, has not been observed to occur in the long motor or sensory tracts of the spinal cord of the cat or monkey within 10 months after hemisection. W. M. H.

Thoracic and lumbosacral cord injuries. D. Munro (*J. Amer. Med. Assoc.*, 1943, **122**, 1055—1063).—Clinical studies in 40 cases are reported. C. A. K.

Anterior chordotomy: physiologic results and optimum manner of performance. O. R. Hyndman and J. Wolkin (*Arch. Neurol. Psychiat.*, 1943, **50**, 129—148).—Anterior chordotomy may not disturb capillary flushing and reflex vasodilatation from heating the body, or responses of blood pressure to the cold pressor test, though the average blood pressure is reduced in 3—6 months. Parasympathetic connexions responsible for erection are severed. Anterior chordotomy abolishes shivering, various forms of girdle pain, and itching but not tickle. The optimal location of chordotomy is at the first thoracic segment. Combined with section of Lissauer's tract such section will bring the level of analgesia to the first thoracic dematome and is useful in abolishing pain high in the chest. W. M. H.

Lachrymation reflex.—See A., 1944, III, 583.

Vertebral level of termination of spinal cord with report of case of sacral cord.—See A., 1944, III, 569.

Primary and symptomatic amyotrophic lateral sclerosis. I. S. Wechsler, M. R. Sapirstein, and A. Stein (*Amer. J. med. Sci.*, 1944, **208**, 70—81).—A clinical study of 81 cases. C. J. C. B.

Tetany due to deficiency in magnesium. J. F. Miller (*Amer. J. Dis. Child.*, 1944, **67**, 117—119).—Clinical tetany, apparently caused by a low plasma-Mg content, occurred in a child of 6 years, who had also osteochondrosis of the capital epiphysis of the femur (Legg–Perthes' disease). A significant rise in plasma-Mg, with improvement in the nervous hyperirritability, was obtained by giving repeated doses of $MgSO_4$ by mouth. C. J. C. B.

Prostigmine in poliomyelitis. H. Kabat and M. E. Knapp (*J. Amer. Med. Assoc.*, 1943, **122**, 989—995).—Prostigmine, given by mouth or subcutaneously in 20 patients in the subacute stage of poliomyelitis, increased the range of passive movements, decreased deformities, and sometimes improved active movements. In 3 cases intrathecal injection of the drug produced greater effects than the other modes of administration. C. A. K.

Riboflavin, pantothenic acid, and biotin excretion tests in patients with paralytic poliomyelitis. W. O. Frohring, J. A. Toomey, D. M. Dicken, M. M. Bicking, and W. R. Mitchell (*J. Pediat.*, 1944, **24**, 293—294).—The urinary excretion of riboflavin, pantothenic acid, and biotin was determined in 10 patients acutely ill with poliomyelitis within 24 hr. of hospital admission. The normal content of biotin in the urine is unknown, but in 7 patients convalescent from scarlet fever tested simultaneously the total biotin content was 5·88 μg. as compared to 20·6 for the poliomyelitis patients. The vals. for pantothenic acid were within normal limits in 8 of the 10 specimens examined; the riboflavin vals. were approx. twice normal. C. J. C. B.

Treatment of herpes zoster ophthalmicus with smallpox vaccine. W. I. Lillie (*N.Y. Sta. J. Med.*, 1943, **43**, 857—859).—Report of 11 cases vaccinated on 4—5 occasions at 2—10 days' intervals with excellent local result. E. M. J.

Acute ataxia of unknown origin in children. W. O. Klingman and R. G. Hodges (*J. Pediat.*, 1944, **24**, 536—543).—7 cases of acute ataxia of unknown origin in children are reported. 3 patients gave a history of acute febrile illness shortly before the appearance of neurological signs. The chief features of the illness were ataxia and tremor. Recovery was complete in 5 of the patients, and there was very little residual impairment in co-ordination in the other two. A marked conduct disturbance developed in 1 patient. C. J. C. B.

Familial spastic paresis with strabismus. M. P. Crowe (*Arch. Dis. Childh.*, 1944, **19**, 32—33).—The presence of different degrees of loss of power, spasticity, and adduction deformity of lower limbs in the 5 children of a family is described. Signs of an upper motor neurone lesion are present in all cases. This condition first noticed in infancy resembles Little's disease, with, in addition, the presence of ocular manifestations. C. J. C. B.

Correlation between slow development and great vitality of human brain.—See A., 1944, III, 569.

Paralysis of divergence due to cerebellar tumour.—See A., 1944, III, 583.

Growth asymmetry due to lesions of the postcentral cerebral cortex. W. Penfield and J. S. M. Robertson (*Arch. Neurol. Psychiat.*, 1943, **50**, 405—430).—Infantile lesions of the postcentral gyrus are regularly associated with moderate comparative smallness of the contralateral part of the body, even when the precentral gyrus appears to be normal. This applies almost invariably to the arm and leg and usually to the thorax and face. Comparative smallness of the bones as well as of the muscles results from injury to the postcentral gyrus if this injury occurs before the third year. There is no clear evidence of the effects of lesions in later childhood. Lesions limited to the frontal occipital and temporal portions of the cerebral cortex are not associated with growth changes. W. M. H.

Audio frequency localisation in acoustic cortex of dog.—See A., 1944, III, 586.

Integration of cutaneous and auditory sensibilities in inferior colliculus.—See A., 1944, III, 586.

Electroencephalographic foci associated with epilepsy. E. L. Gibbs, H. H. Merritt, and F. A. Gibbs (*Arch. Neurol. Psychiat.*, 1943, **49**, 793—801).—In a group of 1161 epileptic patients, electroencephalograms (e.e.g.) from six cortical areas showed focal abnormalities in 160 (15%) and of these 92 or 58% had clinical localising signs corresponding to the e.e.g. localisations. There were 14 cases with local clinical signs but without corresponding e.e.g. focal evidence. In cases showing e.e.g. focal abnormalities the clinical evidence of localised damage to the brain is 58 times more frequently found than in all other epileptic cases. The same types of discharges are found focally and generalised, but particular types are more frequent in foci: irregular ½ to 3 per sec. activity spikes and 2 per sec. waves and spikes. W. M. H.

Influence of basal fore-brain areas on electrocorticogram. R. S. Morison, K. H. Finley, and G. N. Lothrop (*Amer. J. Physiol.*, 1943, **139**, 410—416).—Single shock stimulation of the hypothalamus in nembutalised cats did not alter the electrical activity of any major cortical area. Repetitive stimulation (15—600 per sec.) depressed the intermittent bursts of 5—10 sec. frequency without altering other types of cortical activity, and produced a gradual and prolonged building up of slow wave activity (2—3 per sec.); the first effect was also produced by thalamic stimulation, especially of its medial part. The depressant action is attributed to the activation of various fibre systems running through the dorsal hypothalamus to thalamic areas. A. S.

Effects of hyperventilation and of blood pressure changes on self-sustained responses of cerebral cortex. E. C. del Pozo and A. A. P. Leão (*Amer. J. Physiol.*, 1943, **139** 335—342).—The self-sustained responses of the cortex (electrencephalogram following cortical stimulation) are decreased (with respect to duration, voltage, and frequency of discharge) by hyperventilation in cats, even when the blood pressure was kept unchanged. Decreases in blood pressure with normal respiration, or cerebral anæmia produced by bilateral carotid occlusion, had similar effects. Hyperventilation decreased the voltage and frequency of spontaneous cortical discharges. The flexor reflex was unchanged by hyperventilation. A. S.

Metabolic studies on epileptic patients receiving azosulphamide and phenobarbital. M. E. Cohen, F. S. Coombs, and J. H. Talbott (*Arch. Neurol. Psychiat.*, 1943, **50**, 149—161).—In man during the period of anticonvulsant action of azosulphamide there is a decrease in serum-CO_2 content and tension, and a positive K balance like that following phenobarbital. A comparable degree of acidosis such as follows NH_4Cl does not prevent convulsions. W. M. H.

Electroencephalographic classification of epileptic patients and control subjects. F. A. Gibbs, E. L. Gibbs, and W. G. Lennox (*Arch. Neurol. Psychiat.*, 1943, **50**, 111—128).—Electroencephalograms (e.e.g.) for 1000 adult control subjects and 1260 epileptic subjects are classified on a scale based primarily on frequency, and the distributions are compared. The scale has 18 categories, 9 of which are regarded as normal. Paroxysmal waves are classed as petit mal variant (2 per sec. alternating wave and spike), petit mal type (3 per sec. alternating wave and spike, the pattern occurring in a clinical petit mal seizure, defined as a transient loss of consciousness, with convulsive movements, if any, limited to a 3 per sec. clonic jerking of the eyelids, head, and arms), psychomotor type (flat-topped 4 per sec. waves with high-voltage 6 per sec. waves, or irregular positive spikes), grand mal type (fast waves 12—35 per sec.), and as spikes (widely separated single, multiple, positive, negative, or diphasic spikes). The distribution of frequencies in adult epileptics is bimodal with modes to the fast and slow sides of 10 per sec. The incidence of abnormalities depends on age and the criteria used in classification. Paroxysmal waves, defined as above, occur in adult epileptics 33 times more frequently than in the adult controls; moderately slow and moderately fast frequencies are only twice as numerous. In children with epilepsy the petit mal variant occurs 5 times, the petit mal type 2½ times, as commonly as in adult epileptics. The 3 per sec. wave and spike is found in 77% of cases of petit mal, 3·5% of relatives of epileptics, and in 0·2% of normal controls. Paroxysmal seizure discharges are found in 38% of epileptic patients of all ages, very slow or very fast frequencies in 20%, moderately slow or fast in 29%, and normal records in 13%. In about 42% of cases with history of epilepsy the e.e.g. is of little val. W. M. H.

Conduction of cortical impulses and motor management of convulsive seizures. P. F. A. Hoefer and J. L. Pool (*Arch. Neurol. Psychiat.*, 1943, **50**, 381—400).—Electrical activity of the cortex and its projection systems was studied in cats. Cortical discharges during convulsive seizures and those following the application of strychnine or picrotoxin to the cortex result in conducted axonal spike activity in the pyramidal tracts and in extrapyramidal pathways running through the medial and the lateral reticular substance. The activity in the pyramidal tracts occurs in bursts and groups of spikes synchronous with the cortical discharges, while the extrapyramidal activity is more continuous. Section of the corpus callosum causes a rise in the seizure threshold and appears to shorten the duration of seizure. During generalised seizures in these instances the cortical discharges were equal on the two sides. Section of one or both pyramids causes pronounced changes in threshold and duration of the seizures, but the pattern of tonic and clonic movement is not abolished, even by complete bilateral pyramidotomy. W. M. H.

Corpus callosum. A. J. Akelaitis, W. A. Risteen, and W. P. Van Wagenen (*Arch. Neurol. Psychiat.*, 1943, **49**, 820—825).—In 22 cases of epilepsy in which the frontal lobes were relatively intact, partial and complete section of the corpus callosum did not result in forced innervation or forced grasping. In 3 cases of chronic unilateral lesions involving the anterior portion of the hemisphere, partial or complete section of the corpus callosum resulted in the temporary appearance of forced grasping in the contralateral hand. This was associated with an ideokinetic dyspraxia in 2 cases and with exaggeration of a preoperative kinetic dyspraxia in the third case. W. M. H.

Results of electrofit therapy [and its complications]. D. J. Impastato and R. J. Almansi (*N.Y. Sta. J. Med.*, 1943, **43**, 2057—2063).—An analysis of 2377 cases collected from the literature. E. M. J.

Electric shock therapy in manic depressive psychoses. M. T. Ross (*N.Y. Sta. J. Med.*, 1943, **43**, 2055—2057).—Report of 37 cases. E. M. J.

Electric shock therapy in a general hospital. T. J. Heldt, D. D. Hurst, and N. P. Dallis (*Arch. intern. Med.*, 1944, **73**, 336—340).—100 patients were successfully treated over a period of 11 months. Electric shock therapy has largely replaced metrazol convulsive therapy and is almost sp. therapy in the treatment of all depressive states. The therapy is of less val. for schizophrenia, although it makes many patients more manageable. In manic-depressive psychoses it facilitates management. The results in the psychoneuroses are discouraging. Curare was used as a routine. The only serious complication was compression fracture of the thoracic portion of the spine in only 2 cases, and in 1 of these the fracture occurred when the curare was omitted. C. J. C. B.

Interaction of electric shock and insulin hypoglycæmia. E. Gellhorn and M. Kessler (*Arch. Neurol. Psychiat.*, 1943, **49**, 808—819).—The effect of electric shock (40 v. and 30 ma.) in unanæsthetised rats is to produce tonic clonic convulsions, catatonia, and then recovery. Hypoglycæmia induced by 5 units of insulin per kg. leads to coma and death. The duration of coma may be prolonged by injections of glucose but the animals fail to recover in spite of hyperglycæmia. In adrenodemedullated rats in hypoglycæmia, electric shock induces quick recovery; behaviour and the electroencephalogram become normal in spite of persisting hypoglycæmia. An increase in blood flow through the brain may be associated with the increase of pulse rate noted after electric shock. W. M. H.

Effects of morphine on learned adaptive responses and experimental neuroses in cats. A. Wikler and J. H. Masserman (*Arch. Neurol. Psychiat.*, 1943, **50**, 401—404).—In cats morphine in doses of 1 mg. per kg. affected learned adaptive responses, particularly those more recently acquired, and complex experimental neuroses were produced by creating a conflict situation of hunger and fear. With morphine the signs of neurotic behaviour abated and the former adaptive behaviour patterns reappeared after 5—6 hr. In 3 out of 5 animals the " neurotic " behaviour reappeared in force after the effects of morphine had worn off. W. M. H.

Psychoneuroses in military personnel. C. Hirschberg (*Amer. J. med. Sci.*, 1944, **208**, 119—132).—A review. C. J. C. B.

Neuropsychiatry at Royal Air Force centre. S. I. Ballard and H. G. Miller (*Brit. Med. J.*, 1944, II, 40—43).—Classification of 2000 cases seen at a neuropsychiatric centre into diagnostic groups. The rate of affective disorders was high. Predisposition, importance of psychological factors in surgical treatment, psychiatric aspects of malingering, and the val. of rehabilitation are discussed. I. C.

Nervous breakdown in the Navy. Domestic difficulties as causal factor. G. Tooth (*Brit. Med. J.*, 1944, I, 358—360).—The rôle of domestic difficulties in causing nervous breakdown is compared with that of other causal agents. The prognosis and the type of worry are discussed. I. C.

Schizophrenic language. J. C. Whitehorn and G. K. Zipf (*Arch. Neurol. Psychiat.*, 1943, **49**, 831—851).—In standard language the frequency of occurrence of different words in a sample is mathematically related to their ranks when arranged in order of decreasing frequency. The relation is a close approximation to an equilateral hyperbola. Deviations from the normal relationship are described. In intimate correspondence the 10 most common words are used infrequently. A child's language production curve shows a concavity with a bend between the 30th and 50th rank indicating an excessive frequency of a small no. of words. A like tendency with a bend at a higher rank is reported for a patient with schizo-affective illness. One paranoid subject showed a no. of irregular deviations, another a consistent steepness interpreted as evidence of autism. A tendency to diversification increases the no. of different words, diminishes the relative frequency, and thus produces a relatively steady proportion seen in the hyperbola. Diversification promotes understanding and may well be evidence of allocentric behaviour in contrast to the verbal egocentricity seen in the writing of the autistic paranoid schizophrenic. W. M. H.

Cerebral angiography in oligophrenia. B. Fernandes and A. Alves (*Arch. Med. Legal*, 1935, **8**, 116—156).—Cerebral angiography by means of injections of thorotrast into the common carotid shows that vascular alterations are more frequent in cases of exogenous idiocy due to fœtal diseases and encephalo-meningitis than in endogenous degenerations. I. C.

Mathematical theory of affective psychoses. J. Y. Lettvin and W. Pitts (*Bull. Math. Biophysics*, 1943, **5**, 139—148).—A crude mathematical description of psychotic states is obtained in terms of two variables ϕ and ψ which represent respectively the " intensity of emotion " and the " intensity of activity " of the organism. P. D. M.

[Prognosis in] postconcussion syndrome. P. G. Denker (*N.Y. Sta. J. Med.*, 1944, **44**, 379—384).—Of 100 cases of simple cerebral concussion without contusion and excluding cases in which litigation for compensation was under consideration, headaches and dizziness lasted for less than one month in 10 and 12 respectively. Headaches, dizziness, and symptoms of nervous instability persisted for more than one year in 33% and for more than 3 years in 15% of the cases. Symptoms were less persistent in those under 30 years as compared with those over 40 years of age. Loss of consciousness was absent in 20 cases without influencing severity or persistence of symptoms. E. M. J.

Cardiac slowing as conditioned reflex in rabbits. J. M. Kosupkin and J. M. D. Olmsted (*Amer. J. Physiol.*, 1943, **139**, 550—552).—Conditioned reflex slowing of the heart rate in rabbits was produced by using inhalation of NH_3 as the unconditioned and the ringing of a bell as the conditioned stimulus. A. S.

Distribution of cortical potentials resulting from insufflation of vapours into nostrils and from stimulation of olfactory bulb and pyriform lobe. W. F. Allen and A. Tunturi (*Amer. J. Physiol.*, 1943, **139**, 553—555).—Action potentials were recorded from the pyriform lobe in dogs following single shock stimulation of the olfactory bulbs or insufflation into the nostrils of xylol, cloves, asafœtida, or room air after elimination of the trigeminal and vagal fibres. Single shock stimulation of the pyriform lobe produced potentials from the ventro-lateral portion of the prefrontal area and antidromically from the olfactory bulbs but not from other cortical areas. No spikes were recorded from the prefrontal area following stimulation of the olfactory bulbs or from stimulation of the pyriform lobe after undercutting from the rear of areas 8, 9, and 10. A. S.

Olfactory discrimination after destruction of anterior thalamic nuclei in rats. K. S. Lashley and R. W. Sperry (*Amer. J. Physiol.*, 1943, **139**, 446—450).—Discrimination between the smell of oil of wintergreen and of bread and milk was not destroyed by total bilateral degeneration of the anterodorsal, anteroventral, and anteromedial thalamic nuclei, with involvement of the septum. Removal of the olfactory bulbs permanently abolished the discrimination, which, therefore, depended on olfactory and not on trigeminal stimulation. A. S.

Sensory basis of bird navigation. D. R. Griffin (*Quart. Rev. Biol.*, 1944, **19**, 15—31). H. L. H. G.

Bilateral blindness due to lesions in both occipital lobes. H. A. Riley, J. C. Yaskin, M. E. Riggs, and A. S. Torney (*N.Y. Sta. J. Med.*, 1943, **43**, 1619—1632).—Report of 4 cases due to vascular lesions proved by autopsy, one of metastases from a carcinoma of the stomach, and one due to a meningioma. E. M. J.

Relation between Pandy test and total protein content of spinal fluid. M. J. Madonick and N. Savitsky (*J. Lab. clin. Med.*, 1944, **29**, 542—545).—Of 100 neurological cases, 59% had a negative Pandy with a total protein content of 50 mg.-% or over. Of the cases with a total protein content of 100 mg.-% or over, 83% had a positive Pandy reaction. The level of protein at which more than 50% of the cases began to show a positive Pandy test was 70—75 mg.-%. C. J. C. B.

Headaches following [diagnostic] lumbar puncture. H. Adler (*N.Y. Sta. J. Med.*, 1943, **43**, 1328—1330).—Of 10 cases going to bed immediately following lumbar puncture performed in the sitting posture, 7 had moderate or severe headaches; of 38 going to bed 6 hr. and of 20 8 hr. later 2 and none respectively had the same degree of headache. E. M. J.

Acute serous meningitis in scarlet fever. L. K. Sweet and M. H. Lepper (*J. Pediat.*, 1944, **24**, 295—309).—11 cases of acute serous meningitis occurring 5—8 days after the onset of scarlet fever are reported. The disease is characterised by fever, meningeal irritation, prostration, and toxæmia. The c.s.f. shows a pleocytosis of 32—1100 cells, almost all lymphocytes, increased protein, and normal sugar. Following lumbar puncture the symptoms subside. No sequelæ occurred. C. J. C. B.

Visceral nervous system of earthworm. III. Nerves controlling secretion of protease in anterior intestine. N. Millott (*Proc. Roy. Soc.*, 1944, **B, 132**, 200—212; cf. A., 1943, III, 552; 1944, III, 345).—Histological examination of the intestine of *Allolobophora longa*, Ude, and *Lumbricus terrestris*, L., and observation of the results of electrical stimulation of the gland cells of the epithelium of isolated sections of the anterior intestine show that the secretion of proteolytic fluid in the intestine is subject to nervous regulation. The pathway of the impulses which excite the secretion of protease is deduced and the distribution of the nerves involved compared with that of the nerves which influence the tone of the gut. The significance of the findings is discussed in relation to factors known to influence secretion in vertebrates. W. McC.

Reactivity of autonomic medullary centres under conditions of restricted brain circulation. E. Gellhorn and F. Pollack (*Amer. J. Physiol.*, 1943, **139**, 661—665).—The respiratory response of dogs to hypercapnia is increased after bilateral ligation of the carotid arteries in normal, vagotomised, and sino-aortic denervated animals. Ligation of one carotid or of one or both vertebral arteries alters the blood pressure response to anoxia. The blood pressure response to anoxia in normal and vagotomised dogs is increased after ligation of both carotids; the blood pressure, during anoxia, falls more rapidly after carotid ligation in animals with the sino-aortic area denervated. A. S.

Eserine, acetylcholine, atropine, and nervous integration. R. Gesell and E. T. Hansen (*Amer. J. Physiol.*, 1943, **139**, 371—385).—Intravenous injection of eserine in dogs increases the thoracic expiratory contractions, and produces temporary irregularity of strength of dorsal inspiratory contractions with diminished pulmonary ventilation and an initiation and strengthening of the facial accessory respiratory contractions; these effects persist after chemoreceptor denervation. The effects of eserine were potentiated by injections of acetylcholine. Atropine antagonises these effects. A. S.

Linguo-maxillary reflex. R. Greenberg and E. Gellhorn (*Amer. J. Physiol.*, 1943, **139**, 417—422).—Inhalation of mixtures containing 7·4% of CO_2 in cats increases blood pressure and ventilation vol. but depresses the linguo-maxillary reflex, even after chemoreceptor denervation. The reflex responses were increased 3—4 times during hyperventilation. Breathing 6·2% O_2 reduced or abolished the reflex, with a rise in blood pressure and increased respiratory activity; the reflex inhibition persisted following chemoreceptor denervation. Hypoglycæmia, produced by insulin, stimulated the reflex responses by 50—400%; inhalation of CO_2-rich mixtures was especially effective in hypoglycæmic cats. A. S.

X.—SENSE ORGANS.

Experimental modification and control of moults and changes of coat colour in weasels by controlled lighting. T. H. Bissonnette and E. E. Bailey (*Ann. New York Acad. Sci.*, 1944, **45**, 221—260). J. D. B.

Visual service for small manufacturing plants. H. S. Gradle (*J. Amer. Med. Assoc.*, 1944, **125**, 253).—15% of blindness in the U.S.A. is due to industrial accidents. The details of a medical and safety service for smaller plants are given. P. G.

Importance of vision in aviation. E. M. F. Weaver (*J. Aviat. Med.*, 1943, **14**, 289—298).—A review. F. S.

Causes of impaired vision in recently inducted soldiers. E. H. Theodore, R. M. Johnson, N. E. Miles, and W. H. Bonser (*Arch. Ophthal.*, 1944, **31**, 399—402).—A survey of the causes of impaired vision (less than 20/40 in one or both eyes) in 10,532 out of 190,012 soldiers. It does not represent a cross-section of American men of the 18—36 age groups as many had been eliminated by preliminary medical boards. 72·9% are classified as amblyopic, approx. 1/3 from muscle anomalies, 1/3 from refractive errors, and 1/3 unexplained. These cases are without demonstrable organic disease in the eye and early care might have prevented a large proportion of the amblyopia, particularly that resulting from strabismus and refractive errors. The surprisingly large proportion of 18·1% of visual defect is due to injury, mostly the result of carelessness. Inflammatory, degeneration, and congenital conditions with a residue of pathological conditions of unknown or indefinite cause make up the remainder. Groups are separately tabulated indicating the types of lesions, defects, or anomalies met with. A. J. B. C.

Vitamin-*P* in ophthalmology. W. R. Mathewson (*Brit. J. Ophthal.*, 1944, **28**, 336—346).—Two cases of ocular hæmorrhages are described in which vitamin-*P* appeared to have a definite therapeutic effect. The first patient had ocular hæmorrhages, both retinal and subhyaloid, following *X*-ray treatment for multiple myeloma. After treatment with -*P* the hæmorrhages ceased. When -*P* was discontinued for a short while nasal and bladder hæmorrhages reappeared but ceased on resumption of treatment. Vision eventually improved although some hemianopia was present probably due to bilateral thrombosis. The capillary permeability rose to 450 (300 being normal by Scarborough's method) during treatment but fell below normal when it was stopped. It is possible that either *X*-ray treatment or the disease itself increased capillary permeability. The second case was one of hyphæma following cataract extraction in a woman of 56. On giving -*P* the hæmorrhage was absorbed but it was not clear whether this was due to the treatment or not. M. G. M.

Progressive exophthalmos in toxic disease of thyroid gland. G. M. Haik (*Arch. Surg., Chicago*, 1944, **48**, 214—222).—A review and a report of a case of progressive post-thyroidectomy proptosis in a 6-year-old negro girl. F. S.

Amblyopia due to vitamin deficiency. A. V. Greaves (*Lancet*, 1944, **247**, 227—228).—86 cases of amblyopia were seen during 2 years in an internment camp in Hongkong. All showed reduced visual acuity and contraction of fields and most had central, paracentral, or ring scotomata. No other stigmata of dietary deficiency were observed among these patients. Increased protein intake, thiamin, nicotinic acid, and the small quantities of riboflavin available proved ineffective, but almost all improved when given yeast even in the small amounts which could be grown. A. J. B. G.

Method of detecting simulated monocular bad vision. S. Stenström (*Acta Ophthal.*, 1943, **21**, 237—244).—The two eyes look through polarising glasses at right angles to one another at a test screen in front of which polarising screens at different angles can be placed. The subject, therefore, does not know which, or indeed that either, eye has been occluded. K. T.

Unusual eye findings in identical twins. G. M. Constans (*Amer. J. Ophthal.*, 1944, **27**, 401—403).—Each twin had high compound myopic astigmatism in the right eye and congenital cataract in the

left eye. The mother, who suffered from schizophrenia and latent syphilis, had poor vision with high myopia and cataract. One twin only had a cleft palate. 3 discission operations were performed on his left eye, the first at 3 years of age, but the membrane was leathery and impossible to cut. There was no successful result. The left pupil was fixed and occluded. Discission was attempted on the other twin at 4 years of age but the lens was tough and further surgery was not performed. A few months later there was complete detachment of the retina in the right eye, which eventually became blind. In view of the mother's history the conditions were thought to be congenital and probably inherited. M. G. M.

Ocular tuberculosis. VIII. Increased resistance to reinoculation after recovery from ocular tuberculosis shown by immune-allergic rabbit. A. C. Woods and E. L. Burky (*Arch. Ophthal.*, 1944, **31**, 413—422).—The relation of vascularity to the apparent local increased resistance to re-inoculation and its duration were studied. Two main groups of immune-allergic rabbits were used for the experiments, one in which the rabbits had recovered from ocular tuberculosis of one eye (*A*) and another in which they had recovered from non-tubercular inflammatory disease resulting in vascularisation of one cornea (*B*). When the eyes of specimen rabbits from each group were inoculated with human tubercle bacilli the increased vascularisation of the eyes in *B* did not give increased resistance and the degree of ocular tuberculosis in these eyes was greater than in *A*. The eyes of immune-allergic rabbits of group *A* were also inoculated at intervals for more than a year. Resistance proved to be transient, lasting about 5 months, and had completely disappeared after a year. It was found that tuberculin injections must be continued over a long period in order to desensitise rabbits. The histology of some of the "healed" eyes was studied. (Six photomicrographs.) Eyes 6 weeks after apparent recovery showed active tuberculous inflammation in section while after a year there was scarring but no active cellular infiltration. Eyes with healed secondary tuberculous lesions showed evidence of fresh tuberculous inflammation after fresh inoculation of the animals with tubercle bacilli. It is concluded that the resistance to reinoculation in the experimental rabbit with ocular tuberculosis is a transitory phenomenon, probably dependent on the premobilisation of macrophages. M. G. M.

Treatment of ocular infections with penicillin. G. T. W. Cashell (*Brit. Med. J.*, 1944, I, 420—421).—Penicillin is suitable in cases of acute conjunctivitis and blepharitis usually due to *Staph. aureus*, streptococcus, or pneumococcus, chronic blepharitis, infected corneal ulcers, and perforating corneal injuries. Penicillin may be applied as drops or ointment. The anterior chamber may be irrigated with a solution of the drug. A convenient dosage is 500 units per c.c., or 500 units per g. In acute cases penicillin should be applied at half-hourly intervals for the first 24 hr. and then at 2- and 4-hourly intervals. Good results were obtained and are summarised. I. C.

Ocular syndrome in onchocerciasis. J. G. Scott (*Brit. Med. J.*, 1944, I, 553—554).—Report of two cases with proptosis, œdema of the lid, ciliary flush, and œdema of the optic nerve associated with onchocerciasis. It is suggested that the syndrome was caused by an anaphylactic œdema due to infection with *Onchocerca volvulus*. I. C.

Spontaneous folliculosis of conjunctiva [trachoma] in Grivet and Vervet monkeys (*Lasipyga griseoviridis* syn. *Cercopithecus æthiops* and *L. pygerythrax* syn. *C. pygerythra*) and susceptibility of the Grivet to trachoma virus. J. O. W. Bland (*J. Path. Bact.*, 1944, **56**, 161—171).—The Grivet monkey is susceptible to trachoma and responds to infection by the production of follicles in the fornices of the eyelids. This condition can be transmitted in the Grivet and after four passages the virus still remains virulent for man, in whom it can produce typical trachoma. Inclusion bodies, present in the original inoculum, were not found in any Grivet infected with trachoma. They reappeared, concurrently with clinical trachoma, in men infected from a Grivet after the 4th passage. The reaction of Grivets and Vervets to trachoma cannot be distinguished clinically or histologically from the spontaneous folliculosis from which these monkeys frequently suffer, so that these animals are unsuitable for trachoma research. C. J. C. B.

Conjunctivitis and keratitis of allergic origin. W. O. Linhart (*Arch. Ophthal.*, 1944, **31**, 403—407).—An analysis of 54 cases showed that 23 had allergy in the immediate family, 10 also had relatives with allergic disease, and 20 had previous seasonal symptoms. Eosinophil counts in conjunctival smears varied from 0 to 12% with one of 34%. It is suggested that local ophthalmic tests with the common allergens can be done if necessary with $\frac{1}{10}$ or $\frac{1}{100}$ dilution. The conjunctival and corneal signs in both acute and chronic forms, and their differential diagnosis from other types of conjunctivitis and keratitis and from trachoma, are described. The prognosis was good; only 5 eyes showed visual loss. Desensitisation was performed on every patient, producing improvement in all but six. M. G. M.

Desiccation keratitis. J. E. M. Ayoub (*Brit. J. Ophthal.*, 1944, **28**, 347—355).—The condition occurred amongst troops in the desert in 1942 mostly during June and July, the hottest and driest period, and in men who had been on long drives, exposed to the heat and wind for long periods. Its onset was sudden and occurred during the period of exposure, and was, therefore, probably not a photophthalmia such as snow blindness when there is a latent period between exposure and onset. The eyes became irritable with intense photophobia, lacrimation, and disturbance of vision due to distortion of the retinal reflex. The cornea stained, sometimes in a horizontal band, sometimes in a stippled band or only in a few patches, but always on the "exposed" portion. The probable cause is thought to be drying of the cornea aided by fatigue of the blinking reflex. Goggles had not been worn by any of the cases. The damage to the cornea was only temporary and vision was restored after treatment. M. G. M.

Cornea. VI. Permeability characteristics of excised cornea. D. G. Cogan, E. O. Hirsch, and V. E. Kinsey (*Arch. Ophthal.*, 1944, **31**, 408—412).—The permeability of the cornea was tested with a series of substances to determine whether the barrier properties of the epithelium were indiscriminate, or depended on charge, mol. size, or lipin–water solubility. The substances tested fall readily into 3 groups: (1) those which pass through the stroma more readily than through stroma-epithelium; (2) those passing through stroma and stroma-epithelium with approx. equal facility; (3) those which pass through neither. Corneal permeability cannot be accounted for solely by the pore theory although penetration of various acid dyes through the isolated stroma appears to be in the approx. order of the sizes of their particles. Transfer through the cornea is largely a matter of phase solubility, the epithelium and probably the endothelium being permeable to substances with a fat-sol. phase, the stroma to those with a water-sol. phase, and the whole cornea to those with biphasic solubilities. Water is an exception as it passes through the epithelium. Transfer across the cornea does not differ appreciably in the two directions. The conjunctiva behaves like the corneal epithelium and the sclera like the stroma. A. J. B. G.

Histological investigation of a corneal transplantation. O. von Fieandt (*Acta Ophthal.*, 1944, **22**, 36—43).—A histological description of a corneal transplant which had taken well and remained clear for over 2 years. The corneal tissue was taken 3 hr. after death from an infant which died at birth and all the layers, including Bowman's membrane, were present when the graft was examined. K. T.

Nervous factors in origin of simple glaucoma. O. Lowenstein and M. J. Schoenberg (*Arch. Ophthal.*, 1944, **31**, 384—391).—On applying pupillography to cases of primary simple glaucoma it is found that in all cases in the initial stage, the primary phase of the pupil reaction to light which depends on the functional state of the parasympathetic is more or less preserved and that the secondary and tertiary phases depending on the sympathetic are diminished or absent. The latter feature becomes more pronounced with fatigue. In cases of advanced simple glaucoma the primary phase of pupil reaction may be sluggish, less extensive, or preceded by an abnormally long latent period. In cases of unilateral glaucoma the clinically unaffected eye shows pupillographic disturbances some of which are said to be of purely central sympathetic origin. It is argued that increased intra-ocular pressure is preceded by centrally conditioned pupillary disturbances, and that both form part of a syndrome which includes also local lesions of the receptor and effector organs within the eye. A. J. B. G.

Pupillary reactions of the seemingly unaffected eye in clinically unilateral glaucoma. O. Lowenstein and M. J. Schoenberg (*Arch. Ophthal.*, 1944, **31**, 392—398).—Detailed notes with pupillographic charts of 6 patients, 4 with clinically unilateral primary simple glaucoma, 2 with very early affection of the second eye. Pupillary disturbances are present even in the earliest stages and are always bilateral even when clinically the glaucoma is unilateral. A central nervous factor is always demonstrable in the pupillary aberration which may also be modified by functional changes in the retina or optic nerve or both. It is not suggested that any causal connexion exists between the centrally induced pupil disturbance and the glaucoma, but both may be due to the same genetic factor. In view of the constancy of the changes and their presence when clinical glaucoma cannot be demonstrated, they help in diagnosing a tendency to primary simple glaucoma in the preclinical stage. A. J. B. G.

Effect of age on dark adaptation. G. W. Robertson and J. Yudkin (*J. Physiol.*, 1944, **103**, 1—8).—The final rod threshold of 758 factory workers after 35—40 min. dark adaptation reveals a progressive deterioration of average dark adaptation from 14 to 71 years of age. For an increase of 10 years in age, this deterioration ranges from about 0·10 log unit between 20 and 30 to about 1·15 log unit between 50 and 60 years of age. Published figures for the average decrease in the area of the pupil with age allow the influence of this factor on dark adaptation to be predicted. The predicted deterioration agrees so closely with the experimental findings as to render other explanations superfluous. W. H. N.

Observations on dark adaptation in man and their bearing on the problem of human requirement for vitamin-*A*.—See A., 1944, III, 601.

Cholesterinosis lentis. P. Georgariou and O. Wolfe (*Amer. J. Ophthal.*, 1944, **27**, 394—397).—In cholesterinosis lentis brilliant crystals appear in the posterior cortex irregularly deposited; the condition is unilateral, occurs at any age, and is usually accompanied by an alteration in the lens capsule. It is thought, therefore, that an infiltrative alteration of the ciliary body can cause fatty infiltration of the posterior lens capsule. Secondarily the cryst. masses of lens undergo lipoid degeneration causing the appearance of cholesterol. It is always a secondary cataract brought about by changes outside the cryst. lens. Retinitis, iridocyclitis, uveitis, and cyclitis are the common causes. M. G. M.

Experimental photo-retinitis. J. C. Eccles and A. J. Flynn (*Med. J. Australia*, 1944, **31**, I, 339—342).—Lookouts for aeroplanes in the sun sector or for sun eclipses have suffered retinal lesions entirely thermal in origin and not due to ultra-violet radiation or excessive stimulation of photochemical systems of vision. Experiments were made to find the min. amount of heat required to produce lesions. The eyes of anæsthetised rabbits were submitted to four exposures to sun rays. Most of the lesions were found below the optic disc and optic radiation. The experiments showed that lesions occur whenever the intensity of radiation is sufficiently intense and lasting. P. G.

Rare retinal tumour probably derived from Mueller's fibres. R. H. Orton and R. A. Willis (*J. Path. Bact.*, 1944, **56**, 255—257).—A case report. (3 photomicrographs.) C. J. C. B.

Similarities between exitation phenomena in unstriated muscle and those in retina. I. Singh (*Current Sci.*, 1944, **13**, 152—153).—The author indicates and discusses similarities between exitation phenomena in the retina and those demonstrated in his own work on *Mytilus* muscle. R. H. K.

Theory and measurement of visual mechanisms. XII. Visual duplexity. W. J. Crozier and E. Wolf (*J. Gen. Physiol.*, 1944, **27**, 513—528).—The determination of flicker contours for two further species, viz., a chameleon (*Anolis carolinensis*) and a turtle (*Trionyx emoryi*), is described. Analysis of data obtained with these and many other species shows that: (1) a histologically duplex retina is correlated with a duplex contour, and a simplex retina with a simplex one; (2) the slopes of the curves give no indication in differences of rod or cone fundamental excitabilities. R. H. K.

Architecture of human visual pathway. H. Rønne (*Acta Ophthal.*, 1943, **21**, 137—189).—A detailed description of the course and structure of the optic pathways in man from the retina to the visual cortex, with special reference to macular representation. The experimental methods employed to obtain the information are described. K. T.

Dangers of sulphonamides in ear infections. A. R. Dingley (*Brit. Med. J.*, 1944, I, 747—748).—Reports of three cases pointing to the dangers of delaying surgical intervention when sulphanilamides are not, or have little chance of being, successful. I. C.

Aviators' deafness. R. Heyden (*Acta Otolaryngol.*, 1944, **32**, 164—175).—The injuries to hearing to which aviators are exposed are: (1) those due to rapid and extreme changes of pressure, affecting the Eustachian tube and tympanic membrane; (2) those due to intense noise over long periods; (3) those due to vibrations of relatively high pitch; (4) those due to lowered O_2 tension over long periods. The effects of (3) and (4) are probably insignificant compared with those produced by (1) and (2). Both ears of 125 flying members of the Swedish Air Force were tested separately. Practically no cases of conduction deafness which could be attributed to flying were found but about 30% of the tested ears showed a high-tone nerve deafness referable to the effects of protracted air service. K. T.

Investigation of hearing of deaf and normal individuals on the Jungfrau-joch (3460 m.). L. Rüedi (*Acta Otolaryngol.*, 1944, **32**, 176—188).—5 patients with impaired hearing (3 with otoscerosis, 1 with an inherited nerve deafness, and 1 deaf due to labyrinthitis) and 3 normal controls had their hearing tested, both with tuning forks and audiometer, first in Bern and the next day, 1 hr. after arrival at the Jungfrau-joch. Two more tests were made the day after arrival. There were no differences in hearing in any of the subjects as a result of the change from 543 m. to 3460 m. above sea level. In view of the known effects of lowering the atm. pressure on hearing it is suggested that there is some mechanism in the ear capable of regulating the amount of O_2 reaching the tissues and that this mechanism breaks down at heights over 4000 m. above sea level. K. T.

Mechanism and management of Ménière's syndrome. M. Atkinson (*N.Y. Sta. J. Med.*, 1944, **44**, 489—492).—Good results are reported in 14 cases of the vasodilator group by histamine desensitisation. A course of nicotinic acid treatment, starting with intravenous and ending, via intramuscular, in oral administration, is recommended for the vasoconstrictor group. E. M. J.

Local application of sulphanilamide compounds in laryngectomy. R. C. Ferrari. (*Bol. Inst. Med. Exp., Buenos Aires*, 1942, **19**, 303—308).—The post-operative period is reduced from 45 days to 22 days and the method is most satisfactory. I. C.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Hormones in Crustacea: their sources and activities. F. A. Brown, jun. (*Quart. Rev. Biol.*, 1944, **19**, 32—46). H. L. H. G.

Recent researches in the field of hormones and their application to the manufacture of glandular products in India. B. B. Dey (*J. Indian Chem. Soc.*, 1944, **21**, 1—16).—An address. C. R. H.

Vehicle for intravenous administration of fat-soluble hormones. M. H. F. Friedman (*J. Lab. clin. Med.*, 1944, **29**, 530—531).—"Carvowax 1500" (a polyethylene glycol wax) was safely given intravenously to 12 rabbits in single doses of 1—2 g. per kg. of body wt. 4 dogs were given each 0·5 g. per kg. of the polyglycol and no disturbance was noted in respiration, pulse, or temp. during the period of 4 hr. following; they were in good health 2 months later. This wax was used as a vehicle for androsterone, testosterone, and deoxycorticosterone without untoward results in dogs. C. J. C. B.

Thyroidectomised patients after 10 years. A. H. Noehren (*N.Y. Sta. J. Med.*, 1943, **43**, 1338—1340).—One operative death and 10 subsequent deaths occurred in 100 cases of thyroidectomy reviewed 10 years later; 12 were untreated. The average blood pressure of 14 living patients, which had been 157 mm. Hg pre-operatively, fell to 150 mm. three months later and was 175 mm. after 10 years. The average pulse rate of 70 cases fell from 94 to 79. Of 14 patients with organic heart disease 11 were clinically cured and 3 improved after 10 years. Of 32 married women under 40 years 8 became pregnant, two having 3 and three 2 children. There were 7 palpable occurences in 70 cases examined. E. M. J.

Mental development of congenitally hypothyroid children. Its relationship to physical development and adequacy of treatment. H. Bruch and D. J. McCune (*Amer. J. Dis. Child.*, 1944, **67**, 205—224).—The administration of thyroid successfully restores the growth and development of the congenitally hypothyroid child; the effects on intellectual development are unpredictable. Deterioration of performance quantitatively measurable by psychometric tests may take place when excessive amounts of thyroid are administered. C. J. C. B.

Glands and gland products. III. Chemical assay of desiccated thyroid. B. B. Dey, P. S. Krishnan, and M. Giriraj (*Current Sci.*, 1944, **13**, 94).—Beef thyroid tissue was dried at varying temp. from 27° to 100° in vac. and at atm. pressure. At all temp. the ratio of thyroxine-I to total I was greater in the preps. dried in vac. P. C. W.

Behaviour of ultimobranchial tissue in postnatal thyroid glands: origin of thyroid cystadenomata in rat.—See A., 1944, III, 569.

[Differential diagnosis of] hyperparathyroidism and Albright's syndrome. L. W. Gorham (*N.Y. Sta. J. Med.*, 1943, **43**, 415—418).—Report of a case of Albright's syndrome (osteitis fibrosa cystica, brown pigmented skin spots, and, particularly in females, precocious puberty) and one of neurofibromatosis (von Recklinghausen's disease) affecting bone. E. M. J.

Effect of thyroxine on maximum rate of transfer of glucose and diodrast by renal tubules.—See A., 1944, III, 596.

Influence of pregnancy, *D*-hypervitaminosis, and partial nephrectomy on volume of parathyroid glands in rats. L. Opper and T. Thale (*Amer. J. Physiol.*, 1943, **139**, 406—409).—Pregnancy or partial nephrectomy increased the size of the parathyroid glands in untreated, *D*-hypervitaminotic, or pregnant rats. There was no effect on parathyroid size by *D*-hypervitaminosis. Within the nephrectomy group, there was no difference between animals otherwise untreated, *D*-hypervitaminotic, or pregnant. A. S.

Alloxan diabetes in dogs. R. Carrasco-Formiguera (*J. Lab. clin. Med.*, 1944, **29**, 510—517).—The diabetes produced by alloxan, when mild, may be spontaneously curable. The initial blood-sugar changes brough about in the dog by diabetogenic doses of alloxan are slower in onset and smaller than in the rabbit; none of the three dogs that became diabetic required any antihypoglycæmic treatment for survival. In all the 3 dogs that survived the injection of alloxan for more than 1 day, diabetes, with hyperglycæmia and glycosuria, developed 24 hr. after the injection. C. J. C. B.

Tumefaction of subcutaneous fat following injection of insulin. H. T. Engelhardt and V. J. Derbes (*Amer. J. med. Sci.*, 1944, **207**, 776—781).—A case of localised fat tumefaction following insulin injections is described. The fat resembled normal fats except that the unsaponifiable matter and phosphatides were higher than in normal fat. C. J. C. B.

Insulin-resistance in guinea-pig. E. Frommel, E. Aron, and J. Aron (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 57—58).—The convulsant dose (subcutaneous) of insulin in a male guinea-pig is approx. 200 units per kg. Convulsions appear after 3 hr. A similar blood-sugar level is obtained in 75 min. by intravenous injection of 20 units per kg. Animals kept on a scorbutic diet show the same insulin-resistance. This phenomenon has no particular physiological significance. P. G. M.

Linkage of corpuscular protein molecules. I. Fibrous modification of insulin. D. F. Waugh (*J. Amer. Chem. Soc.*, 1944, **66**, 663).—Heating insulin hydrochloride at pH 2·0—2·5 at 100° for 1 hr. gives fibrils, 7 μ. long and about 200 A. wide. Repeated freezing in CO_2–alcohol reduces the length of the fibrils, which is restored by reheating. The process can be repeated several times. About 20% of the biological activity is destroyed thereby. Insulin mols. are probably united by secondary linkings of non-planar side-chains. R. S. C.

Adrenal glands. N. N. De, K. V. Kamath, and V. Subrahmanyan (*Current Sci.*, 1944, **13**, 101).—*l*-Adrenaline is extractable from beef adrenal glands with a mean yield of 2 mg. per g. of fresh tissue; the max. yield is 3 mg. per g. The method may be as economical as synthesis. P. C. W.

Survival of non-adrenalectomised rats in shock with and without adrenal cortical hormone treatment. D. J. Ingle (*Amer. J. Physiol.*, 1943, **139**, 460—463).—Shock was produced by ligation of the rat's hind limbs for periods up to 150 min. Treatment with adrenal cortical extract, corticosterone, 17-hydroxy-11-dehydrocorticosterone, or 11-deoxycorticosterone acetate did not prolong survival over that of the untreated control group. A. S.

Medullary hormone content of adrenals of white rats subjected to low atmospheric pressure.—See A., 1944, III, 578.

Changes in the adrenal glands of rats following exposure to lowered oxygen tension. A. J. Dalton, E. R. Mitchell, B. F. Jones, and V. B. Peters (*J. Nat. Cancer Inst.*, 1944, **4**, 527—536).—Male Sprague Dawley rats were subjected to lowered O_2 tension corresponding to altitudes of 25,000—27,000 ft. for 4 hr. Immediately following a single exposure the zona fasciculata contained less lipin than normal adrenals. This loss of lipin was prevented if adrenal cortical extracts were injected before exposure. Lipoid droplets appeared in the lipin-free zone 20 hr. after exposure and this appearance was not prevented by cortical extract. Repeated daily exposure for 6 weeks caused hypertrophy of the adrenal but with longer treatment the glands became normal again. E. B.

Effect of temperature on inactivation of adrenaline *in vivo* and *in vitro*. F. A. Fuhrman, J. M. Crismon, G. J. Fuhrman, and J. Field, 2nd (*J. Pharm. Exp. Ther.*, 1944, **80**, 323—334).—The rate of *in-vitro* oxidation of adrenaline by amine-oxidase (from rat liver) decreases with decreasing temp. and can be expressed by the Arrhenius equation. The effect of intravenously injected adrenaline on the acutely denervated nictitating membrane of the anæsthetised cat was determined at rectal temp. of 12·9—42·3°. For a given dose of adrenaline the duration of contractions of the nictitating membrane became progressively longer with decreasing body temp. Regional warming of the liver of hypothermic cats by long-wave diathermy shortened the response of the nictitating membrane. G. P.

Manufacture of gland products (pituitary and thyroid). N. N. De, N. L. Lahiry, and V. Subrahmanyan (*Current Sci.*, 1944, **13**, 100—101).—The wt. of beef pituitaries varies from district to district. The average proportion of posterior lobe to anterior lobe is 1 : 5. Posterior lobe extract prepared from Indian beef hypophysis conforms to the International Standard. Desiccated thyroid prepared according to B.P. methods contained twice as much thyroxine-I as the min. requirements of B.P. standard. P. C. W.

Pituitary, and responses of frog's heart and rectus to acetylcholine. J. H. Welsh (*J. Cell. Comp. Physiol.*, 1944, **23**, 59—67).—The heart of the winter frog is less sensitive than that of the summer frog to concns. of acetylcholine of 10^{-9} or less and more so to concns. of 10^{-8} or more. This difference is largely removed by hypophysectomy, which also reduces the response of the rectus muscle. This response is increased by injections of whole pituitary gland. V. J. W.

Histological observations on anterior pituitary [after treatment with nicotine]. H. W. Voth (*Trans. Kansas Acad. Sci.*, 1943, **46**, 250—259).—Female rats fed with alkaloidal nicotine (0·5—28 mg. per day for long periods) failed to make normal wt. gains but showed increased sexual activity. Comparison of the histology of the anterior pituitary in such rats with normal controls revealed no significant differences. J. D. B.

Rôle of hypophysis in pathogenesis of diseases of adaptation. H. Selye (*Canad. Med. Assoc. J.*, 1944, **50**, 426—432).—A review. C. J. C. B.

Hypophysis of teleost.—See A., 1944, III, 570.

Effects of extracts of hypophysis, thyroid, and adrenal cortex on some renal functions.—See A., 1944, III, 596.

Thiouracil storage in thyroid as affected by thyrotropic hormone and potassium iodide. R. H. Williams, A. R. Weinglass, and G. A. Kay (*Amer. J. med. Sci.*, 1944, **207**, 701—704).—Thyrotropic hormone given with thiouracil is more goitrogenic in guinea-pigs than is thiouracil alone. Thyrotropin descreases the amount of thiouracil stored in the thyroid whilst KI greatly increases the storgage of this substance. C. J. C. B.

Diabetogenic and pancreotropic actions of ox anterior pituitary extract in rabbits. R. F. Ogilvie (*J. Path. Bact.*, 1944, **56**, 225—235).—28 rabbits received daily subcutaneous or intraperitoneal injections of a crude saline extract of fresh ox anterior pituitary gland. 18 showed both glycosuria and ketonuria, 5 glycosuria only, 2 ketonuria only, and 3 neither glycosuria nor ketonuria. Both glycosuria and ketonuria were tansitory despite intensive dosage and repeated treatment. Sugar tolerance and insulin sensitivity were decreased only during the diabetic phase. In injected rabbits there was a hypertrophy of the islets to twice their original size, the no. of islets remaining const. (2 photomicrographs.) C. J. C. B.

XII.—REPRODUCTION.

Intelligence and season of conception. J. A. F. Roberts (*Brit. Med. J.*, 1944, I, 320—322).—There is no difference in the intelligence of winter children compared with that of their summer siblings. There is a tendency for the children of more intelligent parents to be conceived more often in winter. I. C.

Time of human ovulation derived from study of 3 unfertilised and 11 fertilised ova. J. Rock and A. Thertig (*Amer. J. Obstet. Gynec.*, 1944, **47**, 343—356).—The material was obtained during routine examination of surgically removed uteri and ovaries. One of the unfertilised ova was obtained from an ovarian follicle and the other two from the tubes; the fertilised ova were obtained from the uteri. The time at which ovulation occurred was estimated from the condition of the ova, of the endometrium, or of the corpus luteum. The interval between the ovulation and the next expected period was 11·5—17 days; only 3 out of the 14 cases were outside the range 12—16 days. P. C. W.

Intrauterine distribution of ova in rabbit.—See A., 1944, III, 570.

Breeding season in sheep. J. Hammond, jun. (*J. Agric. Sci.*, 1944, **34**, 97—105).—Data on the duration of the breeding season in adult sheep and in lambs are recorded and discussed. R. H. H.

Periodicity and duration of œstrus in zebu and grade cattle. J. Anderson (*J. Agric. Sci.*, 1944, **34**, 57—68).—In zebus and grades, respectively, the average lengths of the diœstrous cycle were 23·03 and 22·42 days and the durations of œstrus 4·78 and 7·40 hr. The cycle was not affected by exposing the animals to additional light at night, or by feeding a supplementary ration. Seasonal variations in both the cycle and œstrus occurred in zebus and to a much smaller extent in grades. A season of increased temp. and sunshine was associated with increased sexual function. R. H. H.

Effect of vitamin-*E* on reproduction in dogs on milk diets. C. A. Elvehjem, J. E. Gonce, jun., and G. W. Newell (*J. Pediat.*, 1943, **24**, 436—441).—Evaporated milk supplemented with Fe, Cu, Mn, and cod-liver oil supports normal growth in dogs but does not allow normal reproduction of the young by females. The administration of 5—25 mg. of α-tocopherol per week and vitamin-*K* and thiamin during the gestation period failed to correct the deficiency. When 40 mg. of α-tocopherol were fed weekly during the gestation period, normal reproduction occurred. C. J. C. B.

Relation of age to reactivity in reproductive tract in rat. D. Price and E. Ortiz (*Endocrinol.*, 1944, **34**, 215—239).—Rats of different ages were injected with 20 i.u. of equine gonadotropin, 0·1 mg. of testosterone propionate, or 1 r.u. (*sic.*) of œstradiol benzoate and the effects on the reproductive tract recorded. Each dose was given as 6 daily injections and the rats were killed 24 hr. after the last injection. Changes in the wt. of the uterus, testis, prostate, seminal vesicles, and coagulating gland were produced by injections begun at birth; ovarian wt. change occurred only with those started between 4 and 10 days of age. The % wt. change increased with age and reached a peak with injections started at 14 days for the testis, 14—18 days for the prostate, and 26 days for the other organs. Precocious histological differentiation was obtained before the age of greatest wt. response. P. C. W.

Denaturation of gonadotropins by urea. F. Bischoff (*J. Biol. Chem.*, 1944, **153**, 31—36).—When human chorionic hormone is in contact with 40% aq. urea, it is rapidly inactivated, the rate being independent of its concn., but a first-order reaction can be assumed only if the reaction product is stable and has less biological activity. If previously partly inactivated by keeping in aq. solution, its subsequent inactivation by urea is still more rapid. Mare serum-hormone is very stable towards urea, while sheep pituitary gonadotropin is inactivated less rapidly than chorionic hormone and the rate is somewhat dependent on concn. E. C. W.

Response of bovine ovary to pregnant mare's serum and horse pituitary extract. S. J. Folley and F. H. Malpress (*Proc. Roy. Soc.*, 1944, **B, 132**, 164—188; cf. Rowlands and Williams, A., 1942, III, 124).—The qual. (multiple ovulation, anovulatory luteinisation, occurrence of hæmorrhagic follicles) and quant. (size, wt., and vol. of follicles) histological changes produced in the ovaries of heifers and cows by subcutaneous injection of the serum (time- and dose-response data obtained) and extract (time-response data obtained) are described. The threshold dose of serum for quant. effects is

1000—2000 i.u. and max. response is elicited at 3000—4000 i.u. The quant. response is not affected by the stage of the œstrous cycle at which injections are given but serum causes ovulation only when injected in the last stage of the cycle. The serum, but not the extract, causes formation of abnormally small corpora lutea and the extract, but not the serum, causes rupture of a single follicle within 1—2 days of injection. W. McC.

Reaction of *Xenopus lævis*, Daudin (South African clawed frog), to human pregnancy serum. S. S. Rosenfeld and V. W. Rosenfeld (*J. Lab. clin. Med.*, 1944, **29**, 527—529).—The South African clawed frog is a suitable animal for the demonstration of gonadotropic hormones. 3 injections of 0·5 c.c. of pregnancy serum at 3- to 4-hr. intervals cause an extrusion of eggs. C. J. C. B.

Absorption of subcutaneously implanted tablets of hexœstrol. S. J. Folley (*Proc. Roy. Soc.*, 1944, **B**, **132**, 142—163).—Measurement of the rates of absorption, by ox, goat, rabbit, rat, pigeon, and guinea-pig, of *meso*hexœstrol from subcutaneously implanted tablets and experiments with tablets *in vitro* show that the tablets contain a rapidly absorbed "labile" component that is quickly lost on implantation or incubation with blood plasma or water. After loss of the labile components, absorption *in vivo* is much slower and follows a linear course, the rate being approx. const., characteristic of the wt. of the tablet, and proportional to its surface area. Possibly the rate is also affected by the encapsulation which likewise occurs. The rate is retarded by the formation of insol. "ghosts," probably scleroproteins, resulting from the interaction of sol. proteins of tissues with the hormone. Tablets immersed in protein solutions also yield "ghosts." Capability to form "ghosts" and occurrence of labile component possibly depend on a common chemical or physical property of the tablets. W. McC.

Ovarian stimulation by œstrogens: effects in immature hypophysectomised rats. P. C. Williams (*Proc. Roy. Soc.*, 1944, **B**, **132**, 189—199; cf. A., 1940, III, 655).—The rapid decrease in wt. of the ovaries that normally results from hypophysectomy is prevented by simultaneous implantation of stilbœstrol. The follicular degeneration which accompanies the decrease in wt. is also partly prevented, but not that in the interstitial cells. When the implantation is effected 17 days after hypophysectomy, the effects are much less pronounced. They are not affected by injection of antigonadotrophic serum sufficient in amount to neutralise the gonadotrophin secreted by the pituitary in the adult rat. Injected œstrone acts in the same way as stilbœstrol but other œstrogens (*e.g.*, dienœstrol) and other methods of administration are ineffective or less effective. The effective doses are very high, but probably not unphysiological. W. McC.

Absorption and detoxification of anæsthetic steroids. H. Selye and H. Stone (*J. Pharm. Exp. Ther.*, 1944, **80**, 386—390).—Progesterone, pregnanedione, and deoxycorticosterone acetate and succinate are equally well absorbed from the peritoneum and intestine of 50-g. partly hepatectomised female albino rats. The rate of absorption of acetoxypregnenolone, testosterone, methyltestosterone, pregnenolone, α-œstradiol, and ethinyltestosterone is slower from the intestine than from the peritoneum. The removal of 75% of the liver of the rats increased their sensitivity to the anæsthetic action of the steroids 4—5 times above that of intact controls. Methyltestosterone is less active as an anæsthetic than testosterone when assayed in partially hepatectomised rats because of the slower absorption of the methylated compound. In intact rats, after oral administration, methyltestosterone is more active than testosterone because the much greater hepatic detoxification of testosterone overcompensates for its more rapid absorption. G. P.

Oral administration of diethylstilbœstrol for prostatism: clinical evaluation. W. Klein and B. Newman (*Arch. Surg., Chicago*, 1944, **48**, 381—387).—Most of 25 patients with enlarged prostate improved after the oral administration of 1—5 mg. of diethylstilbœstrol daily for 5 weeks to 5 months. Enlargement of the mammary gland occurred in 20% of cases. F. S.

Effect of stilbœstrol on puerperal breast engorgement [and lactation]. W. E. Brown and L. G. Grant (*Nebraska Sta. Med. J.*, 1944, **29**, 140—141).—Report of 140 cases. E. M. J.

Comparative fibromatic action of ovarian and urinary œstrogens.—See A., 1944, III, 597.

Ovarian tumours in adult rats following prepuberal administration of œstrogens.—See A., 1944, III, 598.

Measure of persistency of lactation in dairy cattle. T. M. Ludwick and W. E. Petersen (*J. Dairy Sci.*, 1943, **26**, 439—445).—A mathematical formula for the persistency, obtained from 500 records of Jersey, Holstein, and Guernsey cows, is given. N. J. B.

Lipolytic activity of bovine mammary gland tissue. P. L. Kelly (*J. Dairy Sci.*, 1943, **26**, 385—399).—The tissue contains a considerable amount of lipase only after development by pregnancy. The enzyme, which withstands drying by acetone and ether, is not derived from the blood remaining in the excised gland. Glycerol, toluene, or formalin was used as preservative during the incubation period of 2—49 days. The extent of hydrolysis of added substrates and of gland-fat depends to some extent on the preservative used. By indicator methods the pH vals. of the secretory tissue of lactating glands were 3·5—4·0, while those of dry glands were between 4·5 and 6·0. Using the glass electrode the vals. for undeveloped glands were 6·35—7·10. The addition of fatty acids, with or without glycerol, to the fresh or dried defatted tissue was followed, after several days, by a slight decrease in the free fatty acids present. N. J. B.

Rapid method of standardisation of density of bull semen. M. H. Kyaw (*J. Agric. Sci.*, 1944, **34**, 106—109).—A method using Brown's opacity tubes is described. The density of the semen expressed in millions of spermatozoa per ml. is approx. 5 times the opacity standard. The method is suitable for use in insemination centres. R. H. H.

Rapid methods for estimating the number of spermatozoa in bull semen. G. W. Salisbury, G. H. Beck, I. Elliott, and E. L. Willett (*J. Dairy Sci.*, 1943, **26**, 69—78).—The determination of the no. of spermatozoa in bull semen by the photoelectric colorimeter gives results equal in accuracy to those obtained by use of the hæmocytometer. The visual comparison of diluted semen with opacity standards is only slightly less accurate than these. N. J. B.

Change in pH of semen of bull after incubation. J. Anderson (*J. Agric. Sci.*, 1944, **34**, 69—72).—The average decrease in pH of the semen of normal bulls was 0·302±0·027 after incubation at 37° for 1 hr. The pH change was the greater the lower was the initial pH and the higher the initial motility and no. of spermatozoa per cu. mm. The motility after incubation was the less the greater was the decrease in pH. The pH change in conjunction with the initial pH may be used to decide which ejaculates are suitable for storage. R. H. H.

Further studies on survival of spermatozoa in female reproductive tract of bat.—See A., 1944, III, 570.

Relation of hormones to development of Cowper's and Bartholin's glands in opossum.—See A., 1944, III, 571.

XIII.—DIGESTIVE SYSTEM.

[Rœntgenography in] congenital atresia of œsophagus. L. K. Chont and L. J. Starry (*Radiology*, 1943, **40**, 169—174).—Report of 4 cases. E. M. J.

Major motility patterns of child's digestive tract. I. J. Wolman (*Amer. J. med. Sci.*, 1944, **207**, 782—804).—A review of the literature. C. J. C. B.

Structural viscosity and frothing of human saliva.—See A., 1944, III, 611.

Effect of sodium bicarbonate on gastric secretion. W. L. Adams, C. S. Welch, B. B. Clark, D. B. Blair, and J. J. Romano (*Amer. J. Physiol.*, 1943, **139**, 356—363).—50 c.c. of a 1·5 or 2% $NaHCO_3$ solution was given 3 times per day by stomach or a 4% solution was directly given into the Cope gastric pouch in dogs. $NaHCO_3$ increases the secretory activity of the pouch for some hr. following a test meal, with a partial compensatory decrease during later hr. The net results for 24 hr. ranged from insignificant changes to marked increases in some dogs. The "rebound" in gastric acid secretion following $NaHCO_3$ administration, as observed in fractional analysis, results primarily from a shift in secretory activity; the greater part of the acid secretion following a test meal occurs at an earlier period and the amount of acid secreted is increased; the more rapid gastric emptying under $NaHCO_3$ further increases the acid concn. by diminished dilution. A. S.

Permanent metachromatic staining of gastric mucous smears.—See A., 1944, III, 573.

Effect of thymoxyethyldiethylamine (929F) and *N*-diethylaminoethyl-*N*-ethylaniline (1571F) on gastric secretion in dogs. G. A. Hallenbeck (*Amer. J. Physiol.*, 1943, **139**, 329—334).—Substance 929F does not inhibit the secretory response of gastric pouches in dogs to histamine or mecholyl. 929F inhibited the responses of Pavlov, Heidenhain, and transplanted pouches to the ingestion of a meat meal. Substance 1571F inhibited the response of Pavlov pouches to a meat meal. A. S.

Stimulation of gastric secretion by neurine. E. F. Williams, jun., C. F. Hoffman, and T. P. Nash, jun. (*Amer. J. Physiol.*, 1943, **139**, 364—365).—Intramuscular injection of neurine bromide in dogs (2·5 mg. per kg. body wt.) stimulates the secretion of fluid and acid by the stomach. The threshold dose of neurine base is 150 times larger than that of histamine but its effect is more prolonged. In the same dose, choline chloride, β-alanine, and glutathione were ineffective. The stimulating effect on gastric secretion of intramuscular yeast extract injection is attributed to its neurine content. A. S.

Treatment of gastroduodenal ulcerative disease with sodium alkyl sulphate. S. J. Fogelson and D. E. Shoch (*Arch. intern. Med.*, 1944, **73**, 212—216).—Na "alkyl" sulphate, a surface-active agent, was well

tolerated by patients who were given 0·2 g. every 2 hr. throughout the day. No toxic effects occurred in experimental animals or men during 7 months' administration of this dose. The survival time of dogs treated according to the Wangensteen technique with massive daily doses of histamine was markedly prolonged by the oral administration of Na alkyl sulphate, which inactivated the pepsin in the stomach and did not alter the acidity. In 26 of 34 patients with intractable gastroduodenal ulcerative disease the symptoms were controlled by Na alkyl sulphate and they were physically restored so that they were accepted by the armed forces or industry.
C. J. C. B.

Electrical responses of human small intestine. F. M. Forster, J. D. Helm, jun., and F. J. Ingelfinger (*Amer. J. Physiol.*, 1943, **139**, 433—437).—The electrical potentials of intact human small intestine are similar to the activity of isolated smooth muscle preps. (fast initial spikes followed by long base line shifts with superimposed intermediate activity). The potentials correlate with mechanical intestinal activity. A. S.

[Vagal and sympathetic innervation in] abnormal distribution of barium in small bowel. M. L. Sussman and E. Wachtel (*Radiology*, 1943, **40**, 128—136).—A review and report of cases. E. M. J.

(A) **Physiological response to enterocrinin considered quantitatively.** R. M. Fink and E. S. Nasset. (B) **Fractionation of enterocrinin preparations.** R. M. Fink (*Amer. J. Physiol.*, 1943, **139**, 626—632, 633—637).—(A) A method for the bioassay of enterocrinin, giving accurate and reproducible results, is described in detail.

(B) Potent preps. were obtained by extracting the intestines with slightly acid 87% alcohol, removal of the alcohol, salting out with NaCl, drying of the NaCl cake, fractionation with acetic acid, propylene glycol, and methylcellosolve, pptn. with picric acid, fractionation with acetone, hot water, and acetic acid, and freeing of enterocrinin from the picrate by pptn. from a dry mixture of acetic acid and HCl. A. S.

Absorption of serum-proteins from intestine of sensitised guinea-pig. L. B. Winter (*J. Physiol.*, 1944, **102**, 484—490).—Horse albumin, globulin, and serum, in the min. amounts required to desensitise the uterus, were injected into the duodenum of guinea-pigs sensitised by the corresponding protein. Examination of the uteri for sensitivity 15 and 30 min. later suggested that intestinal distension of the serum-injected animals might be a factor in the absorption of serum. W. H. N.

Bezoar (hairball) causing intestinal obstruction. R. P. Forbes (*J. Pediat.*, 1944, **24**, 574—576).—A case report. C. J. C. B.

Effect of caffeine and coffee extract on activity of digestive enzymes. F. Walker (*Amer. J. Physiol.*, 1943, **139**, 343—346).—Caffeine (20—40 mg. per 100 c.c. of substrate) *in vitro* has no effect on the saccharogenic action of salivary and pancreatic amylases; it does not affect the digestion of casein by pepsin and trypsin, or of olive oil by pancreatic lipase. Coffee extract does not alter *in vitro* casein digestion by pepsin or trypsin; it increases the rate of digestion of starch by salivary and pancreatic amylases; it retards the digestion of olive oil by pancreatic lipase. A. S.

Dolichocolon and Hirschsprung's disease. A. Moncrieff and T. V. Crichlow (*Arch. Dis. Childh.*, 1944, **19**, 34—36).—A case report.
C. J. C. B.

Pathologic changes associated with pancreatic insufficiency in early life. S. Farber (*Arch. Path.*, 1944, **37**, 238—250).—In 87 infants and children with pancreatic insufficiency post-mortem examination revealed changes in the lungs, upper respiratory tract, liver, gall bladder, and upper alimentary tract similar to those in the pancreas. They are due to a primary alteration in glandular structures, leading to obstruction and loss of function; pancreatic fibrosis is thus a systemic disease with a variety of clinical appearances, the occurrence of which depends on when the obstructive changes occur and which organs are affected. (8 photomicrographs.) C. J. C. B.

Relation of pancreatic achylia to meconium ileus. S. Farber (*J. Pediat.*, 1944, **24**, 387—392).—From the post-mortem examination of 18 patients with meconium ileus, support is obtained for the suggestion of Landsteiner (*Centr. Path.*, 1905, **16**, 903) that in patients with meconium ileus an obstructive lesion of the pancreas is of importance. Pancreatic achylia, which may be anticipated from the histological picture of the pancreas, was demonstrated by absence of tryptic activity in the duodenal draining of one living and one recently dead patient with meconium ileus. *In vitro* and *in vivo* experiments with the altered meconium in that patient showed that this material may be brought into a semifluid or fluid state by the action of dil. saline extracts of pancreas.
C. J. C. B.

Potency of liver extract in stimulating gastric secretion by intravenous injection and by direct lavage. D. B. Butler, A. P. Hands, and A. C. Ivy (*Amer. J. Physiol.*, 1943, **139**, 325—328).—Liver extracts, directly administered to a vagotomised stomach pouch in dogs, have a more potent secretagogue effect than on intravenous injection. A. S.

XIV.—LIVER AND BILE.

Effect of dietary protein on liver-riboflavin and on inactivation of œstradiol by liver. K. Unna, H. O. Singher, C. J. Kensler, H. C. Taylor, jun., and C. P. Rhoads (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 254—256).—When dietary casein of rats was reduced from 18 to 8%, hepatic riboflavin fell from 23·6 to 17·1 μg. per g. in 37—57 days, and to 12·5 μg. per g. in 89—98 days, and œstradiol was no longer inactivated *in vitro* by slices of these livers. Daily administration of 25 mg. of methionine prevented these effects.
V. J. W.

Effect of aromatic compounds on ascorbic acid content of liver in mice. E. L. Kennaway, N. M. Kennaway, and F. L. Warren (*Cancer Res.*, 1944, **4**, 367—376).—3 : 4-Benzpyrene injected in sesame or arachis oil subcutaneously or intraperitoneally, and other carcinogenic compounds (9 : 10-dimethyl-1 : 2-benzanthracene, 1 : 2 : 5 : 6-dibenzanthracene, 1 : 2 : 5 : 6-dibenzphenanthrene, cholanthrene, methylcholanthrene) injected in arachis oil intraperitoneally, caused an increased concn. of ascorbic acid in the liver of mice. Dimethylaminoazobenzene produced a less definite increase, and 3 non-carcinogenic compounds (naphthalene, anthracene, phenanthrene) caused no increase. 1 : 2-Benzanthracene had an effect similar to the carcinogens, whilst 9 : 10-dimethylanthracene gave negative results. The reducing substance estimated in these experiments was identified as ascorbic acid by the use of ascorbic oxidase from marrow. The glutathione of the liver was not affected by 3 : 4-benzpyrene, dimethylaminoazobenzene, or anthracene. In male mice injections of sesame oil subcutaneously or intraperitoneally, and of arachis oil intraperitoneally, cause an increase in liver wt.: addition of carcinogenic hydrocarbons to the oil caused further increase. F. L. W.

Cytological study of diurnal cycle of liver of mouse in relation to storage and secretion.—See A., 1944, III, 520.

Cytological study of effect of trypan-blue on liver of mouse.—See A., 1944, III, 521.

***d*-Amino-acid oxidase, uricase, and choline-oxidase in the livers and in isolated liver cell nuclei of rats bearing transplanted tumours.**—See A., 1944, III, 543.

Diseases of liver and biliary tract. C. H. Greene (*Arch. intern. Med.*, 1944, **73**, 349—363).—A review of liver involvement in various diseases related to the war. C. J. C. B.

Homologous serum jaundice. J. R. Neefe, T. G. Miller, and F. W. Chornock (*Amer. J. med. Sci.*, 1944, **207**, 626—638).—A review, and report of a case following injection of convalescent mumps serum.
C. J. C. B.

Epidemic of common infectious jaundice. K. W. McLeod (*J. Pediat.*, 1944, **24**, 454—469).—100 cases occurring in a home for the feeble-minded are discussed. Preponderant age groups affected were from 10 to 24 years. The incidence of jaundice in the static population was 5 times greater than in the active population. Liver function (galactose tolerance test) was regularly impaired during illness and was still impaired one year after illness in 4 cases.
C. J. C. B.

Cirrhosis of liver : clinical aspects with particular reference to liver function tests. C. J. Watson (*Amer. J. clin. Path.*, 1944, **14**, 129—137).—A general lecture. C. J. C. B.

Fluorescent material (ceroid) in experimental nutritional cirrhosis [of liver]. H. Popper, P. Gyorgy, and H. Goldblatt (*Arch. Path.*, 1944, **37**, 161—168).—A golden-brown fluorescent material is seen in liver from rats with experimental nutritional cirrhosis produced by a diet low in casein (methionine). Its deposition is increased by administration of cystine and prevented by administration of choline alone, of cystine + choline, or of *p*-dimethylaminoazobenzene. The fluorescent material is apparently identical with ceroid; it develops from cells containing fat and is related to the fatty stages in the development of cirrhosis. Ceroid is a pigment which is conc. in the liver cells while the fat disappears and is then taken up by mesenchymal foam cells. In the latter it remains as a lasting sign of the disturbed fat metabolism. (8 photomicrographs.)
C. J. C. B.

Liver insufficiency in toxic goitre and its treatment.—See A., 1944, III, 533.

Recent progress in pharmacology of bile acids. P. de Haen (*J. Amer. Pharm. Assoc.*, 1944, **33**, 161—169).—A review of the chemical nature, metabolism, toxicity, pharmacology, and therapeutic application of bile acids and their salts. (95 references.)
F. O. H.

XV.—KIDNEY AND URINE.

Excretion of diodone by isolated perfused dog kidney. A. Hemingway and A. Schweitzer (*J. Physiol.*, 1944, **102**, 491—495).—The mean plasma extraction ratio of diodone by the perfused isolated dog kidney is 0·62 at plasma-I levels of 1—2·5 mg. per 100 ml. This is lower than similar ratios observed in the explanted kidney, though it can be elevated by lowering the perfusion pressure. It is

suggested that the ability of the renal cells to transfer diodone diminishes during an experiment possibly due to the disappearance of hormonal influences. W. H. N.

Renal function of newborn infants. [Response to post-pituitary anti-diuretic hormones.] H. Heller (*J. Physiol.*, 1944, **102**, 429—440).—Although the urine of infants during the 1st 2 days of extra-uterine life may be hypertonic (possibly due to an observed low intake of fluid), it is much below the average concn. of normal adult urine. During the 3rd day of life the concn. decreases, and the urine of the 4th, 5th, and 6th days is markedly hypotonic. The same degree of hypotonicity is achieved in adults only during water diuresis or diabetes insipidus. Intramuscular injections of posterior pituitary extract which produced a pronounced inhibition of water diuresis in adults have only a slight and fleeting effect on the concn. of the markedly hypotonic urine of newborn infants. This indicates a low sensitivity of the renal tubules to posterior pituitary anti-diuretic hormone. W. H. N.

Specific injurious action of alloxan on pancreatic islet cells and convuluted tubules of the kidney.—See A., 1944, III, 543.

Pathogenesis of renal failure associated with multiple myeloma. Electrophoretic and chemical analysis of protein in urine and blood serum. S. S. Blackman, jun., W. H. Barker, M. V. Buell, and B. D. Davis (*J. clin. Invest.*, 1944, **23**, 163—166).—By both methods of analysis, the Bence-Jones protein behaved like a globulin. Electrophoretically it moved like the β-globulin of normal plasma. The total plasma-protein of the patient was normal, but there was a marked increase in the electrophoretic β-globulin fraction, which was excreted in the urine as Bence-Jones protein. During the period of observation, the concn. of protein in the urine was 0·475—0·744 g.-% and the proportion of Bence-Jones protein 92—100% of the total. In multiple myeloma, as in other forms of Bright's disease, the development of the renal insufficiency which is caused by the pptn. of plasma-proteins within the kidney is determined chiefly by the duration of high concns. of globulins in the urine. C. J. C. B.

Spontaneous glomerulonephritis in mice. A. Kirschbaum (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 280—281).—Glomerulonephritis occurred spontaneously in some individuals of the Strong *NH* strain of mice at ages of 5—18 months. V. J. W.

Method of locating a mobile renal calculus at operation. B. W. Goldstone (*Brit. Med. J.*, 1944, II, 77—78).—Report of a case of mobile renal calculus which gave different symptoms according to its position. To determine the position of a calculus at operation several needles are inserted into the kidney, a radiograph is taken, and an incision made along the line of the needle nearest to the calculus. I. C.

Secretion of urine during dehydration and rehydration. R. A. McCance, W. F. Young, and D. A. K. Black (*J. Physiol.*, 1944, **102**, 415—428).—To study the reaction of the healthy kidney to dehydration, 10 men and 2 women were deprived of water for 3 or 4 days, other conditions being varied, and their inulin and diodone clearances and the excretion of Cl, urea, Na, K, PO_4, etc. determined. Dehydration (4 subjects) did not change glomerular filtration rate or renal plasma flow; urinary changes were therefore due to alterations in tubular activity. The effects of large doses of NaCl, KCl, and urea were similar before and during dehydration. The resulting diureses, even during dehydration, were unexpectedly accompanied by a fall in the total urine/plasma osmotic ratio. A high NaCl intake increased the output of water during dehydration, and was followed by a reduced output of water on the first day of rehydration, indicating that when the urine is very conc. its vol. may depend on the amount of one constituent requiring excretion. The simultaneous fall in concn. of urinary NaCl on this first day of rehydration was accompanied by an increased concn. of urea, and a well-maintained urea clearance, suggesting that a limit to the total osmotic pressure of the urine had previously checked the output of urea. Except for this effect of a high intake of NaCl during dehydration, the output of minerals was not regulated by their plasma concn., but chiefly by other, *e.g.*, endocrine, factors, in conjunction with the total osmotic pressure of the urine or the sum of the urine/plasma ratios of all the urinary constituents, but during dehydration the output of urea varied with its plasma concn., its clearance remaining const. Though below normal, the latter increased during a saline diuresis, showing it to depend on urine vol. when this is low. In unavoidable dehydration the diet should present as few solids as possible for urinary excretion. W. H. N.

Effect of veratrone on urine volume and urea clearance in hypertensive toxæmias of pregnancy. J. R. Willson (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 273—274).—Injection of veratrone (a mixture of *Veratrum* alkaloids) into toxæmic patients, in whom diuresis had been induced by water ingestion, caused a fall of blood pressure from 170 to 100 mm. Hg with marked decreases in urine vol. and urea clearance. V. J. W.

Polyuria produced by deoxycorticosterone acetate. Cortin-like material in urine, active in muscle work test. Endocrine factors in water diuresis and intoxication.—See A., 1944, III, 535.

Case of March hæmoglobinuria. M. Makin (*Brit. Med. J.*, 1944, I, 844).—Case report. Hæmoglobinuria was present only after exercise in the erect position. Spontaneous recovery occurred. I. C.

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

Some principles of reform in medical education. F. M. R. Walshe (*Brit. Med. J.*, 1944, I, 173—176).—A review. I. C.

Thoughts on four years of war surgery—1939 to 1943. P. H. Mitchiner (*Brit. Med. J.*, 1944, II, 37—40).—A review. I. C.

Surgical problems in forward areas. G. Blackburn (*Brit. Med. J.*, 1944, I, 556—557).—A review. I. C.

With the Eighth Army in the field. C. Donald (*Brit. Med. J.*, 1944, I, 710—714, 743—747).—A description of the medical organisation of the Eighth Army during the Africa, Sicily, and Italy campaigns, the problems of evacuation and some general remarks about the trends of field surgery. I. C.

Rôle of creatine in cell growth *in vitro* and its use in wound healing. S. Caspe (*J. Lab. clin. Med.*, 1944, **29**, 483—485).—Tyrode solutions containing 400—800 mg. of creatine per 100 c.c. stimulate the growth of adult mouse bladder epithelium, adult mouse fibroblasts, and human adult connective tissue and fibroblasts. Tyrode solutions containing 100—200 mg. of creatine per 100 c.c. stimulate the growth of chick embryo fibroblasts, rat kidney, and liver epithelium. A simple linear relationship exists between the creatine-induced area outgrowth of all cultures and the untreated tissue controls. Antuitrin-*S* powder dissolved in Tyrode solution to yield a concn. of 400 i.u. per c.c. had no cell-proliferating properties. C. J. C. B.

Effect of cell growth-promoting tissue on healing of experimental cutaneous wounds in rats. I. Local application. E. Auerbach and L. Doljanski (*Brit. J. exp. Path.*, 1944, **25**, 38—45).—Saline extract of adult chicken heart or its alcoholic ppt. and saline extract of 7-day-old chick embryos, which have great growth-promoting powers in tissue cultures, did not reduce the time of healing in healthy experimental wounds in rats when they were applied locally. F. S.

Lipin, sodium, chloride, and nitrogen content of respiratory tract fluid. E. M. Boyd, S. Jackson, M. MacLachlan, B. Palmer, M. Stevens, and J. Whittaker (*J. Biol. Chem.*, 1944, **153**, 435—438; cf. A., 1942, III, 50).—The respiratory tract fluid of rabbit, cat, and dog contains much less lipin than does blood, but the composition (neutral fat, fatty acids, free and esterfied cholesterol, phospholipin) of the lipin is similar to that of the lipin of blood plasma. The average Na and Cl contents of the fluid are 30—40 and 50—70 mg.-%, respectively. The protein- and non-protein-N contents of the fluid of rabbits, cats, and cockerels are less than those of plasma. In rabbits, the protein-N content increases as the day advances and the non-protein-N content fluctuates. In rabbit and cat, d and η of the fluid differ only slightly from the corresponding vals. for distilled water. W. McC.

Water-soluble vitamins in sweat.—See A., 1944, III, 547.

Artificial gills in study of permeability of living membranes. I. Equations representing poisoning and the penetration of oxalic acid through Cellophane membrane. E. Macovski and G. Stan (*Biochem. Z.*, 1942, **310**, 255—280).—The prep. and use of a Cellophane membrane resembling a fish gill are described. The rate of diffusion of oxalic acid through this artificial gill is determined, and it is shown that diffusion follows Fick's law and proves the validity of the "poisoning equations." The relations observed *in vitro* agree in the main with those observed during poisoning of fish. J. N. A.

Comparison of regeneration and respiration rates of *Tubularia*. S. Spiegelman and A. Goldin (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 252—253).—Lowering of pH of medium from 8 to 6·6 decreased O_2 consumption and checked regeneration. V. J. W.

Insects in their relationship to injury and disease in man in Australia. J. B. Cleland (*Med. J. Austral.*, 1944, I, 7—10).—A review. F. S.

XVII.—TUMOURS.

Primary carcinoma of the liver following subcutaneous injection of methylcholanthrene in mice. L. C. Strong (*Arch. Path.*, 1944, **37**, 131—135).—Selection towards resistance to local induction of tumours by methylcholanthrene led to the appearance of 19 cases of primary carcinoma of the liver in 17 mice of the *NHO* descent. Hybrid mice gave rise to many tumours in various parts of the body following the subcutaneous injection of methylcholanthrene. These tendencies could be detected only when the development of tumours of such types as fibrosarcoma, rhabdomyosarcoma, and epidermoid carcinoma at the sites of injection was eliminated or suppressed by genetic selection toward resistance to induction of such local tumours. (4 photomicrographs.) C. J. C. B.

Induction of tumours in guinea-pigs with subcutaneously injected methylcholanthrene. M. B. Shimkin and G. B. Mider (*J. Nat. Cancer Inst.*, 1941, **1**, 707—725).—Of 40 guinea-pigs injected with 20—40 mg. methylcholanthrene dissolved in sesame oil, 29 developed 38 tumours at the site of injections. Among the tumours were 29 fibrosarcomas and 9 liposarcomas. Bone or cartilage was present in 5 tumours. Lung metastases were found in 4 animals. Injection of 40 mg. of methylcholanthrene caused loss of wt. in some guinea-pigs. E. B.

Synergism of leukæmogenic agents in mice. H. S. Kaplan and A. Kirschbaum (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 262—264).—Irradiation with *X*-rays did not increase incidence or accelerate onset of leukæmia induced in *Dba* or *F* strain mice by methylcholanthrene. V. J. W.

Hormonal influences on chemically induced tumours of reproductive system. S. A. Castellano and F. E. D'Amour (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 281—283).—Pellets of methylcholanthrene were implanted in the reproductive organs of rats. Implantation in gonads did not cause tumours; after implantation in the uterus, tumour incidence was increased by administration of stilbœstrol (15 μg. per week) but not by progestin or gonadotropin. Effects of testosterone on males were contradictory. V. J. W.

Developing factors in experimental blastogenesis. J. C. Mottram (*J. Path. Bact.*, 1944, **56**, 181—187).—Mice were painted with 0·02 c.c. of 0·3% benzpyrene in acetone on both flanks on alternate days for 4 days (3 applications) and another 6 mice for 14 days (8 applications). Subsequently, in all 12 animals, the right flanks were painted thrice weekly with 0·3% croton oil in acetone, and the left flanks with acetone. There were no tumours on the left flanks, many on the right; at 20 weeks, after 4 days' painting with benzpyrene, 5 tumours, one malignant; with 14 days' painting, 13 tumours, 2 malignant. Thus very short paintings with benzpyrene are sufficient to produce tumours, if a developing factor is used thereafter. C. J. C. B.

Attempts to induce stomach tumours. II. Action of carcinogenic hydrocarbons on stock mice. P. R. Peacock and A. H. M. Kirby. **III. Effects of (*a*) a residue of cholesterol heated to 300°, and (*b*) $\Delta^{3:5}$-cholestadiene.** A. H. M. Kirby (*Cancer Res.*, 1944, **4**, 88—93, 94—97; cf. A., 1944, III, 349).—II. Stock mice receiving an adequate diet with the addition of 3 : 4-benzpyrene or of 20-methylcholanthrene in solution in olive or cod-liver oil developed papillomas of the forestomach with a tendency to malignant evolution. Unlike the benign gastropapillomatosis associated with dietary deficiencies, the papillomas induced with carcinogenic hydrocarbons tend to be invasive and localised and are not influenced by the addition of large amounts of vitamin-*A* to the diet. The relative vals. of stock mice and inbred lines for investigating the competence of tissues to react to carcinogens are discussed.

III. Rats on an adequate diet fed the residue left from cholesterol heated to 300° after removal of dicholesteryl ether and Δ^4-cholestenone, in amounts of 20 mg. daily for 2 years, showed no tumours of the forestomach or of the glandular zone. $\Delta^{3:5}$-Cholestadiene (25 mg. daily for 2 years) also produced no tumours in either part of the stomach. A description of a large inorg. bladder stone occurring in a rat is given. F. L. W.

Spectrographic analysis of carcinogenic hydrocarbons and metabolites. IV. Elimination of 1 : 2 : 5 : 6-dibenzanthracene from the rat. V. Elimination of 1 : 2 : 5 : 6-dibenzanthracene from the rabbit. R. N. Jones, C. E. Dunlap, and C. J. Gogek (*Cancer Res.*, 1944, **4**, 209—217, 218—226; cf. A., 1942, III, 822).—IV. Spectrographic analyses were made of the organs and excreta of 9 rats injected intraperitoneally with 10 mg. of dibenzanthracene dissolved in tricaprylin. The absorption from the peritoneal cavity was almost complete in 14 days. The fæces contained less than 5·4 mg. of hydrocarbon and about 1·5 mg. of 4′ : 8′-dihydroxydibenzanthracene. Only traces of hydrocarbon or phenolic metabolite were excreted in the urine, and 25% of the hydrocarbon remained in the carcass in an unchanged condition after 14 days. The phenolic metabolite was detected only in the excreta. The greater part of the hydrocarbon was not accounted for and was presumably metabolised to some other product not detected by the analytical methods employed.

V. The metabolism of dibenzanthracene in the rabbit was studied over periods of 4 and 28 days after intraperitoneal injection. The hydrocarbon passes rapidly into the intestinal tract and about 40% can be recovered from the intestinal tract and fæces either as hydrocarbon or as phenolic metabolite. This phenolic metabolite is not identical with the 4′ : 8′-dihydroxydibenzanthracene excreted by the rat. After 16 days the rate of excretion has fallen to low levels and only traces of the hydrocarbon can then be detected in the carcass or excreta. The elimination is thus much more rapid from the rabbit than from the rat. The phenolic metabolite was not detected in the liver or gall bladder. Attempts to obtain phenolic products by the incubation of dibenzanthracene with the intestinal flora of rats or rabbits were unsuccessful. F. L. W.

Fluorescent concentrates from the non-saponifiable fractions of human livers. R. N. Jones and C. D. May (*Cancer Res.*, 1944, **4**, 304—312).—Three procedures are described for the prep. from the non-saponifiable fractions of human livers of neutral oils showing intense blue or blue-green fluorescence. Similar concentrates were obtained from healthy livers, livers of cancer patients showing no liver metastases, and a case of lymphosarcoma and hepatic necrosis. The concentrates obtained by the three different methods all have ultra-violet absorption spectra with a max. or plateau at 2550—2600 A. but neither the ultra-violet nor the fluorescence spectra show fine-banded structures of the type associated with polycyclic aromatic hydrocarbons. The fluorescing component of the concentrate is not affected by N-acid or -alkali and does not react with succinic anhydride, pyridine–SO_3, digitonin, Girard's reagent, maleic anhydride, or aq. $Na_2S_2O_4$. It is absorbed on picric acid from ethanolic solution. F. L. W.

Lymphoid tumours in mice receiving steroid hormones. W. U. Gardner, T. F. Dougherty, and W. L. Williams (*Cancer Res.*, 1944, **4**, 73—87).—The incidence of lymphoid tumours in mice of 7 strains (*A*, *C3H*, *CBA*, *C12I*, *JK*, *C57*, *PM*) as influenced by treatment with a variety of œstrogens (œstradiol benzoate, œstradiol dipropionate, œstrone, œstradiol, equilin benzoate, equilenin benzoate, stilbœstrol, triphenylethylene, 9 : 10-dihydroxy-9 : 10-di-*n*-propyl-9 : 10-dihydro-1 : 2 : 5 : 6-dibenzanthracene, or testosterone propionate) was studied. 11 of 822 control mice (1·34%) had lymphoid tumours at death. Incidence in the different strains varied from 0 to 5%. No differences due to sex or castration of the females were observed. Of 1799 mice of these strains treated with œstrogens 215 (11·9%) acquired lymphomas. Strain incidences were: *C3H*, *CBA*, *PM*, 15%; *C12I*, *JK*, 5%; *A*, *C57*, 2%. Œstrogen-treated females of *CBA* and *C3H* strains showed lymphoma incidence twice that of the males of these strains. This sex difference was reversed in the *PM* and *C12I* strains. The incidence of lymphoid tumours was highest with the largest doses of œstrogens; only 3·4% of 267 *C3H* mice receiving small doses, but 17·9% of 308 treated continuously with large doses, had lymphoid tumours. Intense rather than continuous treatment gave most tumours. All the œstrogens used were equally effective if given in comparable doses. 80% of the lymphomas involved the thymus, spleen, liver, lymph nodes, or other tissues; in 20% thymus and adjacent tissues alone were involved. The tumours grew when transplanted to mice of the same strain. Simultaneous treatment with testosterone propionate and œstrogen reduced the incidence of lymphoid tumours to that of the controls. The incidence in mice treated solely with testosterone was the same as in the controls. F. L. W.

Comparative antifibromatogenic activity of progesterone and related artificial steroids. A. Lipschütz, S. Bruzzone, and F. Fuenzalida (*Cancer Res.*, 1944, **4**, 179—185).—The preventive action of progesterone against abdominal fibroids elicited by α-œstradiol was obvious when only 13—24 μg. of the progesterone was absorbed daily from implanted tablets. The antifibromatogenic quantity of progesterone was less than the amount of the œstrogen absorbed simultaneously. Pregnanedione or *allo*pregnanedione in similar or larger doses did not prevent fibroids. Δ^{16}-Dehydroprogesterone was also inactive in this respect. These three steroids in doses 10—30 times the threshold dose for progesterone show some antifibromatogenic action. F. L. W.

Antifibromatogenic activity of synthetic progesterone in experiments with the 17-caprylic and dipropionic esters of α-œstradiol. A. Lipschütz and J. Grismali (*Cancer Res.*, 1944, **4**, 186—190).—The fibromatogenic action of subcutaneously implanted tablets of the 17-octoate and of the dipropionate of α-œstradiol was prevented by amounts of progesterone not far from, or identical with, those necessary to antagonise the fibromatogenic action of free α-œstradiol. It is suggested that the antagonistic action of progesterone is due to its rendering the reacting tissues unresponsive to œstrogens. F. L. W.

Minimal numbers of anæsthetic treatments with urethane required to induce pulmonary tumours. P. S. Henshaw and M. C. Meyer (*J. Nat. Cancer Inst.*, 1944, **4**, 523—525).—Groups of 20 mice of strain *A* were given 1—5 intraperitoneal injections of 10 c.c. per kg. of 10% urethane in water at weekly intervals. They were killed 4½ months later and the lungs examined for tumours. The no. of lung tumours found increased with the no. of doses. With 4 doses an average of 36 tumours per mouse was found; only one mouse out of 100 treated was found to have no lung tumours. E. B.

Origin of hepatoma *E* of strain *C3H* mice. E. W. Emmart (*J. Nat. Cancer Inst.*, 1944, **4**, 537—538).—The tumour originally occurred in a mouse which had received repeated injections of 10 mg. of 2-amino-5-azotoluene. In the early transplants the tumour grew slowly but it is now transplanted at 4-weekly intervals and has reached the 40th generation in *C3H* mice. E. B.

Carcinogenicity of *p*-dimethylaminoazobenzene in diets containing hydrogenated coconut oil. J. A. Miller, B. E. Kline, H. P. Rusch, and C. A. Baumann (*Cancer Res.*, 1944, **4**, 153—158).—The incidence of hepatic tumours in rats fed *p*-dimethylaminoazobenzene in a synthetic diet containing corn oil was 53—64% at 6 months. When

the corn oil was replaced by hydrogenated coconut oil the tumour incidence never exceeded 8% and in most groups it was zero. This effect persisted when the rats received 25 μg. of pyridoxine and/or 40 mg. of ethyl linoleate daily. Quant. determinations by a method accurate to 1 μg. of the dye showed that the azo-compound was very stable in the diets *in vitro*. Attempts to demonstrate differences in stability of the dye in the digestive tract were unsuccessful. It appears that differences in carcinogenicity observed with the two oils are due to changes within the animal itself. F. L. W.

Production of tumours by tobacco tars. C. M. Flory (*Bol. Inst. Med. Exp., Buenos Aires*, 1942, **19**, 175—217).—Application of tars from the distillation of tobacco at different temp. produced papillomas and carcinomatoid tumours in rabbits and, less readily, in mice. I. C.

Effects of South Wales anthracite coal and of precipitated amorphous silica on lungs of mice. J. A. Campbell (*Brit. J. exp. Path.*, 1944, **25**, 46—55).—Anthracite coal dust did not increase, and bituminous dust only slightly increased, the incidence of lung tumours in mice. Anthracite, bituminous, and SiO_2 dusts produced varying degrees of fibrosis in the lungs and tracheo-bronchial lymph-nodes. F. S.

Chromosome complexity in regenerating rat liver. J. J. Biesele (*Cancer Res.*, 1944, **4**, 232—235).—No new chromosomal complexity not present in control tissues arises in regenerating adult rat liver. Hence the appearance of polytene chromosomes in cancers cannot be a result solely of rapid growth in adult tissues. Proportions of diploid, tetraploid, and octaploid metaphase figures were the same in control and regenerating livers. The enlarged chromosomes of adult rat liver are held to be simple chromosomes, not polytene, because they are only about 50% greater in vol. than liver chromosomes of the new-born rat, and because the enlarged diploid resting nucleus in adult liver does not have an increased no. of plasmosomes. F. L. W.

Mitotic incidence in the first 48 hours of methylcholanthrene epidermal carcinogenesis. H. C. Reller and Z. K. Cooper (*Cancer Res.*, 1944, **4**, 236—240).—24 mice were painted once with methylcholanthrene on the inner surfaces of the ears. Ears were removed from each of 3 mice at 6-hr. intervals for 48 hr. Mitotic counts were made on total mount prep. of the epidermis of the ears. 15,000 nuclei were counted in each ear. At 6 and 12 hr. the mitotic counts were slightly lower than for normals. 18 hr. after painting the count rose above normal and remained above it for the first 48 hr. Methylcholanthrene applied to the skin of the mouse ear stimulates cell division within 48 hr. after application. F. L. W.

Multiple constitution of abnormal ciliates produced by blastomatogenic agents. J. C. Mottram (*Cancer Res.*, 1944, **4**, 241—244).—Measurement of individuals and of micronuclei of normal *Colpidium sp.* and of abnormals produced by blastomatogenic agents showed that the majority were of varying multiple constitution and a few were singles. This confirmed previous findings in which, by selection from abnormal races, clones of apparently normals were produced. The cells of primary tumours are considered from the point of view that the abnormal races of ciliates are equiv. to tumours in multicellular animals, and support for this contention is found. F. L. W.

Inherited susceptibility to spontaneous mammary cancer in mice. J. J. Bittner (*Cancer Res.*, 1944, **4**, 159—167).—The genesis of spontaneous mammary cancer in mice is dependent on a milk agent, inherited susceptibility, and œstrogenic stimulation. The determining effects of these are about equal. The inherited susceptibility is transmitted by males and females of the cancerous line. The data obtained accord with the theory of a single dominant factor. The progeny of cancerous females of the second hybrid generation had a higher incidence of cancer than did the progeny of non-cancerous mothers. The incidence of mammary cancer in the progeny was influenced by the age at which the mothers developed tumours. The litter in which the mice were born influenced the incidence of cancer. The concn. of milk influence may increase with increasing age of the mothers. No intrauterine influence could be demonstrated. A considerable % of the mice of low-cancer or nonsusceptible strain that received the active milk agent developed mammary cancer. The no. of factors transmitted could not be determined but multiple factors are probably involved. F. L. W.

Influence of environmental temperature on the incidence and course of spontaneous tumours in *C3H* mice. E. W. Wallace, H. Wallace, and C. A. Mills (*Cancer Res.*, 1944, **4**, 279—281).—Spontaneous mammary cancer in virgin *C3H* female mice shows the same increased incidence in cool environments that was previously found in virgin *dba* females. These tumours appear 1 month earlier in life and grow faster at 68° F. than at 91° F., although they kill the hot-room animals more quickly. Multiple tumours in this C3H series were 4 times as frequent among the cold-room mice as among the hot-room ones. F. L. W.

Effect of foster nursing on the response of mice to œstrogens. M. B. Shimkin and H. B. Andervont (*J. Nat. Cancer Inst.*, 1941, **1**, 599—605).—Foster nursing has no influence on the response of the vagina to treatment with œstrone. The incidence of mammary tumours following œstrone treatment in *C3H* mice is less if the young mice have been foster-nursed by *C57* black mice. Foster nursing of strain *C* mice by *C3H* mice increases the susceptibility to mammary cancer on treatment with œstrogens. E. B.

Experimental brain tumours. IV. Incidence in different strains of mice. H. M. Zimmerman and H. Arnold. **V. Behaviour in intraocular transplants.** D. Freeman and H. M. Zimmerman (*Cancer Res.*, 1944, **4**, 98—101, 273—278; cf. A., 1942, III, 533).—IV. Intracerebral implantations of methylcholanthrene pellets were made in mice of 6 strains (*C3H*, *ABC* albino, Bagg albino, *C57* black, *A* albino, and *dba*). The first 4 strains yielded an incidence of 50% or better in primary intracranial neoplasms, while the last two were poor. Only 4 of 22 *A* albino mice and 2 of 19 *dba* mice developed intracranial tumours.

V. A technique is described for mice and guinea-pigs for intraocular transplantation of brain tumours. The tumours used were either chemically-induced mouse tumours or those occurring spontaneously in man. The method permits the differentiation of gliomas from non-gliogenous tumours. F. L. W.

Carcinoma of the adrenal cortex in a rabbit. W. C. Hueper and C. T. Ichniowski (*Cancer Res.*, 1944, **4**, 176—178).—Bilateral adrenal cortical tumours, apparently adenocarcinomas derived from adenomas, were found in a male rabbit which had been injected intravenously with 3 ml. per kg. of a 0·5% T-1854 (Evans-blue) solution and which was killed 6 months later. It is considered unlikely that the tumours were elicited directly or indirectly by the dye since none of the numerous animals of other species similarly treated showed any signs of hyperplasia of the adrenal cortex. F. L. W.

Characterisation of an influence affecting growth of transplantable leukæmias in mice. L. W. Law (*Cancer Res.*, 1944, **4**, 257—260).—An influence transmitted in the milk of certain lactating female mice was found to be effective in promoting the growth of 2 transplantable lymphoid leukæmias and a transplantable myeloid leukæmia in normally refractory mice. The susceptibility influence affecting growth of myeloid leukæmia has the following characteristics: (*a*) dialyses through parchment at −4°; (*b*) stable in 50% glycerol for 30 days at −4°; (*c*) heat-stable (85° for 20 min.); (*d*) Seitz filter failed to remove all the influence from an extract; (*e*) desiccation in vac. for 4 hr. at room temp. inactivated mammary gland extract; (*f*) digestion did not inactivate the influence. F. L. W.

Chromophobe adenoma-like lesions of the rat hypophysis Frequency of the spontaneous lesions and characteristics of growth of homologous intraocular transplants. J. A. Saxton and J. B. Graham (*Cancer Res.*, 1944, **4**, 168—175).—Chromophobe adenoma-like lesions of the hypophysis were found in 92 of 362 albino rats of the Yale strain. Only 2 lesions occurred in rats less than 1 year of age. The lesions increased in frequency with advancing age and were present in 60% of male rats and in 30% of females 600 and more days old. The size of the lesions varied from microscopic nodules to large masses weighing up to 367 mg. The lesions were composed of cells with vacuolated chromophobic cytoplasm and large oval nuclei in which the chromatin formed coarse granules. Similar lesions were found in 3 of 83 male rats of the Sherman strain between 1 and 3 years, and in 1 of 9 male Wistars of the same ages. Homologous intraocular transplants of the adenoma-like tissue from two lesions in male Yale rats were successfully made; including all generations, growth of transplants occurred in 21 of 42 recipients. It is concluded on the basis of the behaviour of transplants that the larger adenoma-like lesions are true neoplasms. F. L. W.

Cancer. VIII. Stilbœstrol and certain steroids in relation to tumour growth resistance. J. W. Howard, L. T. Janzen, and W. T. Salter (*Cancer Res.*, 1944, **4**, 337—344).—The effectiveness of œstrone, diethylstilbœstrol, and progesterone in inhibiting the growth of implanted sarcoma 180 was compared. In certain strains œstrone is effective in both males and females; in such strains stilbœstrol is effective in females but not in males. Progesterone is not effective. In certain substrains having a high incidence of spontaneous tumour these œstrogens are ineffective, even though the corresponding low-tumour substrains showed beneficial results. F. L. W.

Effect of various factors on the Harding–Passey melanoma of the mouse. K. Sugiura (*Cancer Res.*, 1944, **4**, 282—288).—The following conclusions are drawn concerning the Harding–Passey mouse melanoma. Variations in age of the host have no influence on transplantation. Suckling mice are suitable for continued growth of the melanoma. The growth of transplants in suckling animals neither shortened nor lengthened the lives of the hosts. Castration in males and females did not affect growth of the neoplasm. The growth capacity of the neoplasm is completely destroyed by immersion in a buffer solution at pH 4 or 10, and at pH 5 or 9 partial inhibition occurs. At pH 6, 7, or 8 no inhibition was observed. Dehydration in the frozen state completely destroyed the viability of the melanoma. The growth is not filterable. Grafts grew equally well in *C57* black, *dba*, *C3H*, agouti, and in Rockland, Bagg, Swiss, and Paris albino mice. F. L. W.

Relations to chick tissues of tumours produced by the yolk injection technique. R. E. Hungate, A. Taylor, and R. C. Thompson (*Cancer Res.*, 1944, **4**, 289—292).—Investigation of the relationship of egg-grown tumours to the chick tissues shows that the implantation and growth depend on the injected tumour cells making contact with the chick mesoderm. Cells injected into the yolk of the 4—5-day egg can make this connexion on the edge of the mesoderm since the endoderm does not then enclose the yolk. The greater is the no. of implanted tumour cells, the larger is the neoplasm produced. Forcible injection and frequent rotation of the egg help in giving max. implantation. F. L. W.

Is cancer a communicable disease? L. Gross (*Cancer Res.*, 1944, **4**, 293—303).—The available data on accidental or intentional inoculation of human cancer are reviewed and the appearance of tumours in several members of the same or successive generations in man is discussed. The conclusion is suggested that human cancer may be similar to that observed in mice and may be communicable from one generation to another. Since milk is a factor responsible for the transmission of mammary cancer in mice it is suggested that the women of families with any malignant tumours in their ancestry refrain entirely from nursing their progeny. Artificial feeding should be substituted from birth, at least for one generation. F. L. W.

Inhibitors occurring in Rous no. 1 sarcomas. J. G. Carr (*Brit. J. exp. Path.*, 1944, **25**, 56—62).—The non-filterability of recurring and slow-growing Rous tumours is always associated with the presence in the tumours of serum antibody to the Rous no. 1 virus. The antibody causes a reduction in the amount of virus obtained from tumour extracts by forming floccules of virus and antibody which are lost in the prep. of cell-free extracts, and by neutralisation of the virus remaining in suspension. F. S.

Studies on the purification and properties of the rabbit papilloma virus protein. W. R. Bryan and J. W. Beard (*J. Nat. Cancer Inst.*, 1941, **1**, 607—673).—The virus was obtained from glycerol extracts of warts removed from rabbits trapped in Kansas or from warts produced in captive cottontail rabbits. After removal of coarse material the virus was deposited by centrifuging at 40,000 *g* for 1 hr. The concn. of virus was followed by observation in an optical ultracentrifuge using light of 2300—2700 A. The sedimentation const. of the virus S_{20} is 260×10^{-13} cm./dynes sec. Chemical analysis of the pure material indicated that it was a protein with acetone-sol. material 3·2%, P 1, S 2·2, and ash 2·5%. The virus is sol. in 0·05M-salt but is pptd. if the salt concn. is lowered to 0·005M. The isoelectric point is about pH 5·0. It is stable between pH 3·0 and 7·5. The infectivity was determined from the mean time required to induce papillomata after rubbing the virus into the scarified skin of domestic rabbits. This time was shown to vary with the log of protein concn. and the relationships of the "50% infectious point," incubation period, and protein concn. were investigated statistically. The 50% infectious unit, 0·00441 μg., corresponded to about 94×10^6 mols. of virus and with this dose the mean incubation period was 26 days. The data are considered in relation to similar data on vaccinia virus and myxoma virus obtained by Parker. They suggest that the relationship is due to variation in response of the host rather than to the chance of a single virus mol. causing infection. The purified virus fixes complement in the presence of sp. immune serum. Each unit of complement was fixed by 0·95±0·06 μg. of virus protein. On heating at 50—65° infectivity was lost much more rapidly than complement-fixing capacity. At higher temp. the proteins coagulated. A large no. of experiments were carried out to determine the neutralisation of virus by antisera in different proportions and the results examined mathematically. With a large excess of virus the serum had no detectable effect and the effects obtained with different ratios are related so that y g. (free virus) $= Az^2 - Bzx + Dz + Ex - F$, where z is the log of the serum dilution, x the log of virus dilution, and A, B, C, D, E, and F are consts. for a particular serum. It is probable that the combination of virus and antibody actually occurs in the rabbit tissue. (40 graphs.) E. B.

Ascorbic acid content of liver in mice. E. L. Kennaway, N. M. Kennaway, and F. L. Warren (*Cancer Res.*, 1944, **4**, 245—250).—The mean concn. of ascorbic acid in the liver was found to be higher in mice of three high-cancer lines (*dba*, *C3H*, *RIII*), and in the males of the low-cancer *CBA*, than in the females of the *CBA* line and in both sexes of the low-cancer line *C57*, and of two other low-cancer breeds (buff *MRC* and stock). F. L. W.

Effects of a low-lysine diet on the growth of spontaneous mammary tumours in mice and on the nitrogen balance in man. R. A. Kocher (*Cancer Res.*, 1944, **4**, 251—256).—The rate of normal growth in mice, and the rate of growth of spontaneous mammary carcinoma, can be retarded for short periods by a diet deficient in lysine. Growth is resumed at normal rate on addition of lysine. When the lysine-deficient diet is fed to tumour mice for a considerable period the inhibiting effect on growth wears off and the neoplasm resumes rapid growth. Diets deficient in lysine do not offer any promise as a therapeutic measure in man. F. L. W.

Metabolism of pyruvate by normal and leukæmic white cells. J. C. Abels, F. L. Jones, L. F. Craver, and C. P. Rhoads (*Cancer Res.*, 1944, **4**, 149—152).—From 65 to 100% of the thiamin present in both normal and leukæmic white cells exists in the form of co-carboxylase. Nevertheless, those enzyme systems that are known to utilise cocarboxylase as a co-enzyme could not be demonstrated in either normal or leukæmic cells. Qual. and quant. differences were found in the utilisation of pyruvate by normal and leukæmic white cells. Normal cells utilise less pyruvate and convert more into lactate than do the leukæmic cells. This abnormality is not due simply to the apparent youth of the neoplastic cells. F. L. W.

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. V. R. Khanolkar and R. G. Chitre (*Cancer Res.*, 1944, **4**, 128—133).—The effect of foster nursing on the esterase activity of serum and livers of a high-mammary-cancer strain (*C3H*) and a low-cancer strain (*C57*) was investigated. Reciprocal foster nursing resulted in a change in the esterase activity of the serum of these mice. The esterase activity in the high-mammary strain diminished on foster nursing by low-cancer mothers, while the esterase activity in the low-cancer strain was increased by foster nursing by high-cancer mothers. No change was observed in liver-esterase. F. L. W.

Components of normal and neoplastic tissues. V. Relative arginase activity of certain tumours and normal control tissues. J. P. Greenstein, W. V. Jenrette, G. B. Mider, and J. White (*J. Nat. Cancer Inst.*, 1941, **1**, 687—706).—The arginase activity of tissue extracts decreased with dilution except for extracts of liver and a *C57* × *A* strain mammary tumour in which activity increases with dilution over a certain range. The exceptions are due to the high concn. of enzyme in those tissues. In dil. solutions the apparent activity of all extracts varied with the cube root of enzyme concn. Livers of mice with tumours and regenerating livers had the same high arginase activity as normal liver. Moderate amounts were present in hepatomas, mammary tumours, mouse lymphomas, salivary glands, lung, and kidney. Homoarginine is hydrolysed by liver extract but not by tumour extracts. E. B.

Peptidase activities of the cathepsins of normal rat tissue and Jensen rat sarcoma. M. E. Maver, J. M. Johnson, and J. W. Thompson (*J. Nat. Cancer Inst.*, 1944, **1**, 675—686).—Cathepsins of Jensen sarcoma, kidneys, livers, and spleens from normal and from sarcoma-bearing rats were all able to digest hæmoglobin, *dl*-leucylglycylglycine, glutamylanilide, carbobenzyloxy-*dl*-glutamylglycine ethyl ester, glutathione, peptones, and peptic digests of Jensen sarcoma globulin. The tumour-cathepsin had no sp. activity and there was no evidence of hydrolysis of peptides containing unnatural forms of amino-acids. In general hydrolysis was most rapid under reducing conditions. E. B.

Phenomenon of local skin reactivity to *Serratia marcescens* (*B. prodigiosus*). Immunological relationships between *S. marcescens* culture filtrates and Shear polysaccharide. G. Schwartzman (*Cancer Res.*, 1944, **4**, 191—195).—Filtrates of cultures of *S. marcescens* in a simple synthetic medium and their concentrates are capable of eliciting the phenomenon of local skin reactivity. The phenomenon-producing principles are closely related to or identical with the factors capable of inducing hæmorrhages and regressions of mouse tumours. The chemical treatment employed by Shear brings about concn. and purification of the active principles without alteration in the antigenic specificity as shown by the immunising val., the pptn., and the neutralising reactions of the materials. F. L. W.

Chemical treatment of tumours. IX. Reactions of mice with primary subcutaneous tumours to injections of a hæmorrhage-producing bacterial polysaccharide. M. J. Shear and A. Perrault (*J. Nat. Cancer Inst.*, 1944, **4**, 461—476).—Two thirds of mice bearing sarcomas induced with benzpyrene died after injection of a dose of 200 units of hæmorrhage-producing polysaccharide from *Serratia marcescens* although this dose killed no normal mice. The polysaccharide produced hæmorrhage regularly in induced sarcomas. By giving a small dose and then increasing doses it was possible to increase the resistance of mice to the toxic action of the polysaccharide. Doses tolerated by mice with small tumours caused death of mice with large tumours. The degree of hæmorrhage induced varied with the dose but more hæmorrhage was caused by the same dose in large tumours than in small tumours. Tumour tissue generated during treatment was generally resistant to further treatment. Treated mice often died either from breakdown products of tumours or from growth of portions of tumour which escaped destruction. E. B.

Effect of exercise on growth of a mouse tumour. H. P. Rusch and B. E. Kline (*Cancer Res.*, 1944, **4**, 116—118).—Albino mice were subjected to periods of forced exercise for a period preceding and following inoculation with a transplantable fibrosarcoma. The rate of growth of the tumours was compared with that of a control series growing in mice receiving the same calory equiv. of food but not subject to forced exercise. The exercised mice gained less wt. and the rate of tumour growth was less than in the controls. F. L. W.

Comparative studies on the radiosensitivity of normal and malignant cells in culture. II. Delayed lethal effect. L. Doljanski, G. Goldhaber, and L. Halberstaedter. **III. Inhibitory effect of *X*-rays on cell outgrowth.** G. Goldhaber, L. Doljanski, and L. Halberstaedter (*Cancer Res.*, 1944, **4**, 106—109, 110—112; cf. A., 1942, III, 535).—II. The delayed lethal dose of *X*-rays for rat sarcoma cells cultivated *in vitro* is 2000 r. This is less than half the equiv. dose for chicken normal fibroblasts, the proliferative capacity of which is irreversibly checked only after irradiation with 5000 r.

III. The min. dose of *X*-rays that causes appreciable inhibition of growth rate in an irradiated sarcoma cell culture is 500 r. The corresponding rate for normal chicken fibroblasts is 2500 r.

F. L. W.

Clinical effects of aldehyde bisulphites in patients with cancer. I. The administration of heptaldehyde bisulphite to patients with inoperable mammary carcinoma metastatic to bone. J. C. Abels, N. Treves, J. Herrmann, H. O. Singher, C. J. Kensler, and C. P. Rhoads. **II. Administration of heptaldehyde bisulphite to patients with lymphomas.** H. O. Singher, J. C. Abels, L. F. Craver, and C. P. Rhoads (*Cancer Res.*, 1944, **4**, 438—443, 444—446). I. The daily oral administration of from 1 to 12 g. of heptaldehyde bisulphite for from 20 to 231 days to 11 patients with mammary cancer which had metastasised to the bones did not alter the expected course of the disease. The continuous intravenous administration of the compound in amounts close to toxic levels did not influence the course of the disorder in any of 3 cases.

II. The intravenous administration of heptaldehyde bisulphite to patients with neoplastic lymphomatous disorders had no significant effect on their clinical course or on the microscopic appearance or respiratory activity of involved lymph nodes. F. L. W.

Metabolic studies in patients with cancer of the gastrointestinal tract. XIII. Effect of glycine on urinary excretion of creatine and creatinine, especially by patients with cancer of the gastrointestinal tract. J. C. Abels, C. W. Kupel, G. T. Pack, and C. P. Rhoads (*Cancer Res.*, 1944, **4**, 145—148).—Intravenous injection of glycine to normal subjects and to patients with benign gastrointestinal disorders was followed by increased urinary excretion of creatine and creatinine. Similar treatment of 25 cases of gastrointestinal cancer and hepatic cirrhosis did not increase the output of these substances in 21 cases. Simultaneous ingestion of choline failed to increase the output of creatine and creatinine in these cases. The failure of glycine to increase output of creatine and creatinine in the urine of patients with gastrointestinal cancer may be due to the coexisting hepatic insufficiency. F. L. W.

Possibilities of improved therapy for cancer patients. C. Voegtlin (*J. Nat. Cancer Inst.*, 1941, **1**, 585—598).—A lecture discussing education, diagnosis, radiation therapy particularly using neutrons and the cyclotron, and the protection against high-energy radiations. Various methods which might be used in systemic cancer therapy include feeding deficient diets, and injection of tissue and bacterial extracts and other substances. E. B.

Evaluation of breast-cancer therapy as a guide to control programmes. J. W. Hawkins (*J. Nat. Cancer Inst.*, 1944, **4**, 445—460).—Analysis of records of 3105 patients treated for cancer of the breast indicate that (when correction is made for the stage of the disease) age, sex, colour, and duration of the disease are not correlated with survival rates. If the disease is confined to the breast or the breast and axillary lymph node the optimal treatment is radical mastectomy. Additional *X*-ray therapy gives increased post-operative survival in cases where an axilla is involved. It is suggested that all women should be taught to palpate their own breasts in order to facilitate early diagnosis. E. B.

Plasma acid phosphatase in carcinoma of prostate and effect of stilbœstrol treatment. J. Watkinson, G. E. Delory, E. J. King, and A. Haddow (*Proc. Biochem. Soc.*, 1944, **38**, xxx—xxxi).—The high level of plasma-phosphatase (optimum pH 4·9) in patients suffering from carcinoma of the prostate with bone metastases returns to normal after stilbœstrol treatment. The clinical condition also improves. Normal semen contains large amounts of the enzyme, but there was little in that of a eunuchoid subject. P. G. M.

Experimental study of the lateral spread of epidermoid (squamous cell) carcinoma in man, and the reaction of such a lesion to the wound-healing stimulus. A. Brunschwig and T. F. Thornton (*Cancer Res.*, 1944, **4**, 515—518).—Bisection of a squamous-cell carcinoma in a human patient with the production of a cutaneous defect adjacent to the portion of the tumour remaining *in situ* revealed: (*a*) lack of stimulation of the carcinoma along the incised margin; (*b*) healing of the cutaneous defect from the normal skin borders, with no evidence of retention of purposeful (healing) proliferation in the malignant epithelium; (*c*) continuous lateral spread of the carcinoma at the margins of the growth that were undisturbed by operative trauma. F. L. W.

Cutaneous carcinoma. IV. Analysis of 20 cases in negroes. R. Schrek (*Cancer Res.*, 1944, **4**, 119—127).—A detailed analysis of 20 coloured male patients with cutaneous carcinoma is given and a review of the literature. Carcinoma of the exposed skin is much less frequent in coloured than in white persons, but carcinoma of the covered skin has the same incidence. In the white race cutaneous carcinoma is more prevalent in the southern than in the northern states; in the coloured race the incidence is not affected by geographical factors. White men have a higher incidence of cutaneous carcinoma than white women; in the coloured race no sex difference was observed. Many cutaneous carcinomas in coloured patients developed in a pre-existing scar or in a chronic inflammatory lesion. Scars and chronic inflammatory lesions are important ætiological factors in carcinoma of the exposed and covered skin in coloured races and also of carcinoma of the covered skin in the white race. F. L. W.

Racial distribution of cancer. I. Epithelial tumours of the skin, lip, and breast. R. Schrek (*Cancer Res.*, 1944, **4**, 433—437).—Carcinoma of the exposed skin and of the lip, and keratosis of the skin is relatively rare in coloured races. Carcinoma of the covered skin has approx. the same occurrence in whites and negroes. Cancer of the male breast is much more frequent in coloured races. There is little difference in the incidence of cancer of the female breast. F. L. W.

Oral cancer in Bombay, India. A review of 1000 consecutive cases. V. R. Khanolkar (*Cancer Res.*, 1944, **4**, 313—319).—Differences in the distribution of oral cancer according to site between communities in Bombay and between similar data at other hospitals are discussed. F. L. W.

Selective differentiation of tissues by means of filtered ultra-violet light. L. Herly (*Cancer Res.*, 1944, **4**, 227—231).—An attempt was made by means of the primary fluorescence evoked in tissues by filtered ultra-violet light to differentiate benign lesions from malignant disease of the breast. Over 200 operative specimens of pathological breast tissue were examined: one error was made as against one made by the frozen section method. Characteristic specimens of various types of breast lesions were photographed in filtered ultra-violet light (illustrated by colour plate). F. L. W.

The Cancer Congress of Guadalaraja (Mexico). F. Duran-Reynals (*Cancer Res.*, 1944, **4**, 197—198).—A brief report of the first cancer congress held in the Republic of Mexico, Oct. 31—Nov. 6, 1943. F. L. W.

Incidence of primary carcinoma of the lung with special reference to its increase. P. E. Steiner (*Arch. Path.*, 1944, **37**, 185—195).—From 1902 to 1941 primary carcinoma of the lung was noted in 126 of 5515 necropsies performed by the Department of Pathology of the University of Chicago. The incidence of carcinoma of the lung expressed as % of all tumours slightly increased in males but not in females. The increase was less than that shown for two types of tumours used as controls, namely, carcinoma of the colon and intracranial tumours, but greater than that for two other control types, carcinoma of the pancreas and stomach. A change in the nature of patients admitted to the hospitals could easily account for the slight apparent but not real increase in primary carcinoma of the lung. C. J. C. B.

Plasmocytoma of lung. J. Gordon and G. Waler (*Arch. Path.*, 1944, **37**, 222—224).—A case report. (5 photomicrographs.) C. J. C. B.

Endometriosis of lungs. J. E. Hobbs and A. R. Bortnick (*Amer. J. Obstet. Gynec.*, 1940; **40**, 842—843).—Intravenous injection of a suspension of endometrium into rabbits caused the development of endometrial transplants in the lungs. The transplants invade the pulmonary parenchyma, respond to pregnancy by decidual reactions, and are stimulated to proliferate by stilbœstrol injections. P. C. W.

Carcinoma of lung in 10-year-old negro boy. B. Halpert and P. E. Russo (*Arch. Path.*, 1944, **37**, 290—293).—A case report. C. J. C. B.

Mesothelioma of pleura. A. V. Postoloff (*Arch. Path.*, 1944, **37**, 286—289).—A case report. (4 photomicrographs.) C. J. C. B.

Fibroadenoma of lung. R. W. Scarff and F. J. S. Gowar (*J. Path. Bact.*, 1944, **56**, 257—258).—2 cases of tumour of the lung with the appearance of an intracanalicular fibroadenoma of the breast are described. (4 photomicrographs.) C. J. C. B.

Calcified epithelioma. B. Highman and G. E. Ogden (*Arch. Path.*, 1944, **37**, 169—174).—The 12 specimens of calcified epithelioma described were gathered from 24,185 consecutive surgical specimens. The tumours were composed of masses of epithelium supported by connective tissue trabeculæ that were continuous with a capsule. The most characteristic feature was eosinophilic degeneration of the epithelium. (6 photomicrographs.) C. J. C. B.

Spindle and giant cell sarcoma arising from unidentified precordial bodies. D. Symmers (*Arch. Path.*, 1944, **37**, 180—184).—A case report. (5 photomicrographs.) C. J. C. B.

Case of plasma-cell myelomatosis with a large renal metastasis and widespread renal tubular obstruction. C. R. Newns and J. L. Edwards (*J. Path. Bact.*, 1944, **56**, 259—261).—A case of plasma-cell myelomatosis with metastases in the subcutaneous tissue and a large deposit in one kidney is described. The renal tubules con-

tained many casts and associated giant cells of foreign-body type. (7 photomicrographs.) C. J. C. B.

Struma ovarii. S. Cohn and J. I. Kushner (*Amer. J. Obstet. Gynec.*, 1944, **47**, 421—422).—A case is described. P. C. W.

Blood vessels of myomatous uterus. R. L. Faulkner (*Amer. J. Obstet. Gynec.*, 1944, **47**, 185—197).—The uterine blood vessels were injected with neoprene and the organ was subsequently cleared by the Spalteholz method or the surrounding tissue digested with acid. Most myomas consist of a mass of proliferating arteries with few or no veins in their substance. The frequent arteriolar tufts indicate that there is a rich capillary bed connecting these with the peripheral veins. There were free arteriovenous anastomoses in 4 of 60 specimens examined but these were probably caused by operative injury. P. C. W.

Fibromyoma angiomatosum of uterus. G. H. Gardner (*Amer. J. Obstet. Gynec.*, 1940, **40**, 822—831).—Three tumours are described which are distinguished from other fibromyomas and appear to be potentially malignant. P. C. W.

Carcinoma of cervix after supravaginal hysterectomy. C. A. Bohney (*Amer. J. Obstet. Gynec.*, 1940, **40**, 780—790).—An analysis of 67 cases with the conclusion that the disease proceeds similarly to the disease in cases where the fundus is retained. P. C. W.

Functional and growth characteristics of struma ovarii. L. A. Emge (*Amer. J. Obstet. Gynec.*, 1940, **40**, 738—750).—Two cases are reported and the literature is reviewed. It is estimated that 5—6% of ovarian strumas produce thyrotoxicosis. P. C. W.

Cancer of vulva. F. J. Taussig (*Amer. J. Obstet. Gynec.*, 1940, **40**, 764—779).—An analysis of 155 cases. P. C. W.

Carcinoma of body of uterus. N. F. Miller (*Amer. J. Obstet. Gynec.*, 1940, **40**, 791—803).—Analysis of 183 cases. P. C. W.

Primary cancer of Fallopian tube. K. H. Martzloff (*Amer. J. Obstet. Gynec.*, 1940, **40**, 804—821).—A case is described and discussed. P. C. W.

Carcinoma of ovary. F. A. Pemberton (*Amer. J. Obstet. Gynec.*, 1940, **40**, 751—763).—An analysis of 149 cases. P. C. W.

Arachnoidal fibroblastoma (meningioma) with metastases to the liver. J. B. Halblet (*Arch. Path.*, 1944, **37**, 216—221).—A case report. C. J. C. B.

Pinealoma : its relationship to teratoma. D. S. Russell (*J. Path. Bact.*, 1944, **56**, 145—150).—By histological examination of 5 cases it is concluded that the pinealoma is really an atypical teratoma. (20 photomicrographs.) C. J. C. B.

Frequency and course of cancer in diabetics. F. Ellinger and H. Landsman (*N.Y. Sta. J. Med.*, 1944, **44**, 259—265).—An incidence of 3·04% in 1280 diabetics is reported. The average lifetime after onset of cancer symptoms was 3·8 years and varied from 4·6 in mild to 0·9 years in severe diabetes. E. M. J.

Pain-alleviating material [for cancer cases].—See B., 1944, III, 218.

Antifibromatogenic action of dehydrocorticosterone.—See A., 1944, III, 590.

Interrelationships in general nitrogen metabolism.—See A., 1944, III, 604.

Effect of long-continued administration of an œstrogen. Time factor in tumorigenic action of œstrogens.—See A., 1944, III, 594.

Paralysis of divergence due to cerebellar tumour.—See A., 1944, III, 583.

Meigs' syndrome : hydrothorax and ascites in association with fibroma of ovary.—See A., 1944, III, 592.

XVIII.—ANIMAL NUTRITION.

Nutritional œdema in a vegetarian. J. M. Holmes (*Brit. Med. J.*, 1944, I, 620).—Case report. I. C.

Famine œdema in prisoners of war. D. S. Stevenson (*Brit. Med. J.*, 1944, I, 658—660).—Discussion of cases occurring in prisoners of war in Germany and attributed to low protein content in the diet. I. C.

Nutritional requirements in inanition. I. Ability of single foodstuffs to prolong survival. II. Effect of mineral and vitamin supplements on survival of animals on single foods. L. E. Holt, jun., and C. N. Kajdi (*Johns Hopkins Hosp. Bull.*, 1944, **74**, 121—141, 142—151).—I. By feeding rats single foodstuffs and determining survival times it is shown that nutritional requirements in inanition may be quite different from those in normal growth. Difficulty is experienced in adapting to a high-protein diet because the utilisation of protein requires construction of new tissue. Such a high-protein-adapted animal survives longer than one on carbohydrate or fat, indicating, in the latter, a deficiency of some factor present in protein. Rats fed carbohydrate alone showed gradual loss of appetite, commencing usually towards the end of the first week and continuing progressively until death, and occurring at identical times and rates whether fat or carbohydrate was fed, suggesting depletion of a factor required for the utilisation of both. Protein diets required most water, carbohydrate next, and fat least. Marked differences were noticed with survival times between different carbohydrates. Glucose, fructose, maltose, sucrose, and invert sugar were good and lactose, pentoses, sugar alcohols, and galactose poor. Water requirements on galactose were enormous because needed for urinary excretion. Differences in survival times on different fats were explained only in part by chemical constitution.

II. Vitamin-B_1 deficiency develops earlier in inanition than deficiency of other -*B* factors or of minerals. Evidence of still earlier depletion of some factor (undiscovered accessory factor or protein component of some enzyme not synthesised in absence of protein) concerned in the utilisation of carbohydrate and fat is given by failure of appetite as early as the 3rd or 4th day. T. F. D.

Improved dentition of 5-year-old London school children. M. Mellanby and H. Coumoulos (*Brit. Med. J.*, 1944, I, 837—840).—19% of the children had teeth of perfect or nearly perfect structure in 1943 compared with 8% in 1929. 33% had very defective teeth compared with 58% in 1929. In 1943 22% of the children were caries-free compared with about 5% in 1929. These improvements may be due to changes in feeding habits and especially to the introduction of the cheap milk scheme and to the wartime food policy. I. C.

Legumes in the diet of the Nyasaland African.—See B., 1944, III, 182.

Feeding values of green lucerne and lucerne hay. Compositions and nutritive values of Tanganyika feeding-stuffs.—See B., 1944, III, 183.

Simplified diets for the guinea-pig. V. A. Kuiken, R. H. McCoy, M. O. Schultze, and C. G. King (*J. Nutrition*, 1944, **27**, 385—394).—Guinea-pigs survive and grow at a reduced rate for long periods on simplified diets containing 5% of crude vitamin concentrates. The basal diet containing equiv. amounts of protein, carbohydrate, fat, and minerals is not adequate when supplemented with known vitamins and the necessity of two unknown dietary essentials is indicated. Commercial casein contains one factor which is not present in vitamin-free casein, the other being present in rice polish concentrate, brewer's yeast, liver extract powder, skim milk powder, and dried grass. H. G. R.

Comparative value of pollen and pollen substitutes. II. Bee bread and soya-bean flour. M. H. Haydak (*J. Econ. Entom.*, 1940, **33**, 397—399).—The development of young bees was retarded when fed on a flour processed from steamed dehulled soya beans containing 22% of fat. In general, the no. of bees reared was lower in colonies fed with soya-bean flour alone, and greater than that in controls given a soya-bean flour–skim milk mixture, although the wts. of all emerging bees were fairly const. Bee colonies fed pollen substitutes generally had a higher mortality than did the controls. A. A. M.

Nutritional aspects of high-extraction wheaten flours. T. Moran (*Canad. Med. Assoc. J.*, 1944, **50**, 505—508).—A review. C. J. C. B.

Feeding value of yeast-proteins. H. Fink (*Woch. Brau.*, 1944, **61**, 1—5).—30 white rats were fed on a diet, 15% of the protein content of which consisted of wheat- and rye-proteins, and was kept const.; the remaining 85% was varied, and the effects on the growth curves were noted. When milk-protein in this portion was completely substituted by yeast-protein, the food was readily eaten by the rats, but the animals' wt. fell off at once, the growth rate fell by approx. 50%, and some of them died in less than 180 days from deterioration of the liver. Inclusion of 2% of cystine in the diet restored the growth curve to normal. Yeast provides readily digestible protein in a highly conc. form; to obtain its full val. small quantities of cystine or keratin should be added to the diet. J. G.

Physiological nutrient value of yeast-protein. A. Bickel (*Biochem. Z.*, 1942, **310**, 355—377).—Feeding experiments on men, rats, and pigs were carried out with fresh and dried brewer's yeast, xylose yeast, and preps. obtained from these by alkaline extraction and subsequent pptn. of the extracts with acid alcohol. In all cases there is an increase in fæcal residue and N content. Liver-glycogen is unaffected by a diet of dried yeast, as is the case with a casein diet, whilst yeast-protein preps. produce a rise. All these products form a valuable source of protein both for human and animal nutrition. P. G. M.

Dietary protein and physical fitness in temperate and hot environments. G. C. Pitts, F. C. Consolazio, and R. E. Johnson [with J. Poulin, A. Razoyk, and J. Stachelek] (*J. Nutrition*, 1944, **27**, 497—508).—Variation in the level of dietary protein (75—150 g. per day) had no effect on performance of work in hot–dry and hot–moist environments, and physical fitness under temperate conditions was unchanged. Metabolism while reclining and standing did not differ according to the protein level though it was slightly lower

while marching on the low-protein level. Minor changes in body wt. with a max. during the high-protein period and no significant changes in the plasma-protein level were observed. H. G. R.

Clinical [feeding with] enzymic digest of casein. A. F. Hartmann, H. J. Lawler, and C. S. Meeker (*J. Pediat.*, 1944, **24**, 371—386).—The use of amino-acid solutions either orally or parenterally prevents or reduces loss of body-protein by children who cannot derive adequate nutrition from natural foods taken by mouth. When combined with glucose and vitamins it makes possible complete parenteral feeding over long periods. With glucose and "buffer" solution, it is of val. on resuming enteral feedings in dysentery, "parenteral" diarrhœa, peritonitis, and postoperative conditions. The technique is described. Severe dehydration or the presence of a very low plasma-protein or a poor peripheral circulation after hydration is a contraindication to the subcutaneous administration of any solution of crystalloids such as the "amigen" glucose mixtures. They tend to remain locally where injected and to withdraw water from the blood and tissues. C. J. C. B.

Comparative nutritive value of fats. IV. Negative effect of different fats on fertility and lactation in the rat. H. J. Deuel, jun., E. Movitt, and L. F. Hallman [with E. Brown] (*J. Nutrition*, 1944, **27**, 509—513).—No differences were observed in the fertility of male or female rats receiving diets from 21 days of age of mineralised skim milk powder fortified with fat-sol. vitamins together with butter, margarine, maize, cottonseed, olive, peanut, or soya-bean oil. These diets were equally efficient in promoting lactation as judged by the wt. of rats weaned at 14 or 21 days. H. G. R.

Effects of potassium iodide on skeletal tissues of growing mice.—See A., 1944, III, 517.

Vitamins.

Unidentified factor(s) in yeast and liver essential to the cure of achromotrichia in dogs on synthetic diets. D. V. Frost and F. P. Dann (*J. Nutrition*, 1944, **27**, 355—362).—Growing pups fed synthetic diets and receiving thiamin, riboflavin, nicotinamide, pantothenate, pyridoxine, and choline orally or by injection responded equally well to both types of administration. They developed achromotrichia and decreased growth of hair in 2—11 months. This was not relieved by inositol, *p*-aminobenzoic acid, or biotin but was cured with concurrent general improvement in body tone and in the blood picture by yeast, liver paste, or the liver extract fraction insol. in 70% aq. alcohol. H. G. R.

Influence of various chemicals and vitamin deficiencies on excretion of glucuronic acid in rat.—See A., 1944, III, 550.

Vitamin requirements of lactose-fermenting and certain other yeasts.—See A., 1944, III, 559.

Vitamin content of prunes as affected by storage and other factors.—See B., 1944, III, 182.

Vitamin losses in commercially produced dehydrated vegetables: cabbage, potatoes, carrots, and onions.—See B., 1944, III, 162.

Vitamin-*A* and -*D* in treatment of colds. C. W. Crampton (*N.Y. Sta. J. Med.*, 1944, **44**, 162—166).—150,000 units of vitamin-*A* + 15,000 units of -*D* (as cod-liver oil concentrate) were given on the first day divided into 3 equal doses, a third of this dose on the second, and two thirds on the third day in 112 cases of the "common cold." 30% were cured within 24 hr. and 52% in a few days. E. M. J.

Vitamin-*A* absorption test in cases of giardiasis. C. P. Katsampes, A. B. McCoord, and W. A. Phillips (*Amer. J. Dis. Child.*, 1944, **67**, 189—193).—Infection with *Giardia lamblia* in children seriously interfered with the absorption of vitamin-*A*. After the parasites were eliminated by treatment with quinacrine hydrochloride, the health of the patients and their ability to absorb -*A* were much improved. In patients with cœliac disease, treatment with quinacrine hydrochloride did not improve -*A* absorption. C. J. C. B.

Vitamin-*A* and the toxic action of dibenzanthracene on the tissues.—See A., 1944, III, 542.

Absorption of carotene. R. J. Shaw and H. J. Deuel, jun. (*J. Nutrition*, 1944, **27**, 395—401).—The rate of absorption of carotene by rats is proportional to the dose fed, the val. calc. as i.u. being practically identical with those previously found for vitamin-*A* (Reifman *et al.*, A., III, 1944, 43) in spite of two thirds of the carotene in the higher doses being in suspension. The concn. reaches a max. in the gut wall at 12 hr. and considerable amounts remain there at 42 hr. though all has been removed from the lumen. The amounts of fat and carotene absorbed may be correlated and the limiting factor is the transference through the intestinal wall, absorption from the lumen being more rapid. H. G. R.

Carotenoid content of milk fat fractions.—See B., 1944, III, 161.

Nature of carotenes in lucerne.—See A., 1944, III, 568.

Absence of rapid deterioration in men doing hard physical work on a restricted intake of vitamins of the *B* complex. A. Keys, A. Henschel, H. L. Taylor, O. Mickelsen, and J. Brozek (*J. Nutrition*, 1944, **27**, 485—496).—Normal young men were maintained on rigidly controlled diet, physical work, and exhaustive tests with restricted intake of the vitamin-*B* complex. The vitamin intake and limitation were without effect on all the functions measured (comprehensive clinical examination, objective tests covering endurance, anaërobic work, speed, co-ordination, and muscle strength) and of the variables measured only the vitamin excretion in the urine reflected the intake. H. G. R.

Intracellular symbiosis and vitamin requirements of insects. M. Blewett and G. Fraenkel (*Proc. Roy. Soc.*, 1944, **B**, **132**, 212—221).—Untreated larvæ of *Sitodrepa panicea* and *Lasioderma serricorne* grow very much better on food (*e.g.*, white flour) deficient in *B*-vitamins than do larvæ freed from their intracellular symbionts. When the diet (*e.g.*, wholemeal flour + yeast) is rich in *B*-vitamins there is no such difference in growth rate. The growth of untreated *Lasioderma* larvæ is only slightly or not at all retarded by omitting thiamin, riboflavin, nicotinic acid, pyridoxine, or pantothenic acid from a synthetic diet containing the pure *B*-vitamins. These vitamins, except thiamin, may similarly be omitted from the diet of untreated *Sitodrepa* larvæ. Since the treated larvæ of both species fail to grow in the absence of any of these vitamins, it is concluded that the symbionts supply *B*-vitamins. Both species possibly require also unidentified growth factors. W. McC.

Vitamin-*B* complex studies on dehydrated meats.—See B., 1944, III, 182.

Riboflavin and thiamin requirements of children of pre-school age. H. Oldham, F. Johnston, S. Kleiger, and H. H. Arismendi (*J. Nutrition*, 1944, **27**, 435—446).—The 1-hr. fasting excretions and the 4- and 24-hr. test dose returns of thiamin and riboflavin correlate well with each other and with the intake, but the blood-thiamin does not agree with the intake and with other tests of nutritional status and is a less reliable test for determination of nutritional status. The riboflavin requirement was fixed at the lowest level giving a steady excretion and the thiamin requirement at an average daily excretion of 20% of the intake, decided increases in the fasting 1-hr. excretion and test dose returns, and blood levels of at least 7·0 μg. per 100 c.c. Intakes of 0·50 mg. of thiamin and riboflavin per 1000 kg.-cal. satisfy these requirements. The return in 4 hr. of 20% of a test dose of riboflavin and of 12% of a test dose of thiamin or fasting 1-hr. excretion of 9 μg. of riboflavin and 6 μg. of thiamin is indicative of satisfactory nutritional status. H. G. R.

Vitamin-B_1 nutrition in surgical patients as determined by the blood level of pyruvic acid. I. Hepatic disease. II. Thyroid disease. III. Renal disease, neoplastic disease, and infection. H. A. Davis and F. K. Bauer (*Arch. Surg. Chicago*, 1944, **48**, 185—189, 190—192, 193—196).—I. In 27 of 32 patients suffering from various forms of hepatic disease the blood levels of pyruvic acid varied between 1·5 and 4·25 mg. per 100 c.c., whereas in a control series of patients the range of vals. was 0·5—1·3 mg. per 100 c.c. The reduction of hepatic function was the most significant ætiological factor probably by diminished capacity to phosphorylate vitamin-B_1.

II. The pyruvic acid blood levels in 7 cases of non-toxic goitre varied from 0·45 to 1·3 mg.-% and in 16 cases of toxic goitre the range was 1·45—3·5 mg.-%. The blood level in toxic goitre could be reduced by the administration of I.

III. Renal disease even when associated with severe failure of renal function was not accompanied by an increase of pyruvic acid in the blood in 11 patients. The blood-pyruvic acid was increased in 14 of 19 patients with malignant disease and was especially associated with fever and nutrition. Of 38 cases of various infections 18 had increased pyruvic acid blood levels. F. S.

Vitamin interrelationships. III. Influence of sub-optimum doses of thiamin on urinary excretions of riboflavin. B. Sure (*J. Nutrition*, 1944, **27**, 447—452).—Chronic thiamin deficiency in rats is accompanied by considerable losses of riboflavin in the urine, uncomplicated by body tissue catabolism. H. G. R.

Rôle of thiamin in synthesis of fatty acids from carbohydrate precursors. G. E. Boxer and D. Stetten, jun. (*J. Biol. Chem.*, 1944, **153**, 607—616).—Rats were fed on a high-carbohydrate, fat-free diet. Lack of aneurin led to a decreasing intake of food, a fall in body wt., and a decrease in deposition of fatty acids. The latter were calc. by adding D_2O to the diet, and analysing the isotope in the body fats. The decreased fatty acid synthesis was due to lack of food intake rather than to sp. action of aneurin. The fact that the saturated fatty acids were richer in D than were the singly unsaturated acids indicated that saturated acids are the primary products of fatty acid synthesis in rats. D was nearly equally distributed in both halves of the fatty acid mols. D found in tyrosine must have been introduced during a process of deamination and reamination. J. F. M.

Chemical determination of thiamin and cocarboxylase in biological material. B. Alexander (*J. Biol. Chem.*, 1943, **151**, 455—465).—Thiamin vals. are reported for animal tissues, 2 prepared cereals, and human fæces, assayed by the Prebluda–McCollum method. Most of the aneurin in animal tissue is phosphorylated.

The concn. of aneurin in animal tissue and fæces can be increased by injection of the vitamin. R. L. E.

Vitamin content of bee foods. II. Vitamin-B_1 content of royal jelly and bee bread. M. H. Haydak and L. S. Palmer (*J. Econ. Entom.*, 1940, **33**, 396—397).—On the basis of the curative dose for convulsions in rats, royal jelly had a vitamin-B_1 activity of about 9 and bee bread 6·4 μg. of thiamin chloride per g. of dry matter. A. A. M.

Influence of level of thiamin intake on susceptibility of mice to poliomyelitis virus.—See A., 1944, III, 566.

Tissue-thiamin in hæmorrhagic shock.—See A., 1944, III, 526.

Cultivation *in vitro* of *B. lepræ* with thiamin culture medium.—See A., 1944, III, 563.

Vitamin-B_1 and riboflavin in brewing.—See B., 1944, III, 158.

Riboflavin and allied deficiencies. H. S. Stannus (*Brit. Med. J.*, 1944, II, 103—105, 140—144).—A review of the history and symptoms of vitamin-B_2 deficiency. It is suggested that the condition is the result of a capillary derangement owing to lack of adequate supply of riboflavin. I. C.

Riboflavin content of food served in Royal Air Force messes. T. F. Macrae, E. C. Barton-Wright, and A. M. Copping (*Biochem. J.*, 1944, **38**, 132—135).—Representative samples of all the meals served at 9 R.A.F. Stations were assayed for riboflavin by the rat growth and microbiological methods. Agreement between the two methods was good. The average daily intake for men (4 stations) was 2·0 mg., and for women (5 stations) 1·8 mg. Since no signs of riboflavin deficiency appeared in any of these subjects, the daily requirement for adults is probably not more than 2 mg. R. L. E.

Congenital malformations induced in rats by maternal nutritional deficiency. VI. The preventive factor. J. Warkany and E. Schraffenberger (*J. Nutrition*, 1944, **27**, 477—484).—The congenital malformations (A., 1943, III, 191) are prevented by supplements of riboflavin but not affected by thiamin hydrochloride, niacin, pyridoxine, or Ca pantothenate. If the purified maternal diet contains the vitamin-*B* complex as pure substances the malformations appear when riboflavin is omitted. H. G. R.

Destruction of riboflavin in milk by sunlight. W. J. Peterson, F. M. Haig, and A. O. Shaw (*J. Amer. Chem. Soc.*, 1944, **66**, 662—663).—Milk in pint milk-bottles loses its riboflavin rapidly on exposure to sunlight, *e.g.*, 27—54% in 1 hr. Degradation ceases if the milk is subsequently kept cold in the dark. R. S. C.

Ariboflavinosis as probable cause of vernal conjunctivitis.—See A., 1944, III, 529.

Nicotinic acid in products of commercial rice milling and in rice varieties.—See B., 1944, III, 181.

Microbiological aspects of riboflavin. Bacterial oxidation of riboflavin to lumichrome.—See A., 1944, III, 561.

Effect of pyridoxine on tumour growth.—See A., 1944, III, 542.

Pantothenic acid deficiency in dogs. R. H. Silber (*J. Nutrition*, 1944, **27**, 425—433).—First symptoms in pups are an erratic, decreasing appetite and a decrease in urinary pantothenic acid, growth and food intake showing parallel decreases prior to collapse after 2 months. A delayed effect on appetite is observed in older dogs; urinary pantothenic acid decreased slightly but is essentially normal after 3 months' depletion since the requirement of older dogs is lower. The concn. of pantothenic acid in blood and tissues of depleted dogs is below that of controls dosed with large amounts of Ca pantothenate but significantly low levels are found only in liver, muscle, brain, and blood compared with normal dogs. Repeated oral dosage with Ca pantothenate increases tissue levels above normal and has a delaying effect on the progress of subsequent depletion. Fatty livers were the only pathological changes observed, particularly in depleted pups but also in control dogs on the same diet supplemented with Ca pantothenate unless they receive dried ox liver in addition. Spasticity of the hind quarters is observed during the last week of the deficiency. H. G. R.

Identification of folic acid as one of unknown dietary essentials for guinea-pigs. D. W. Woolley and H. Sprince (*J. Biol. Chem.*, 1944, **153**, 687—688).—A folic acid-free prep. of liver extract was not sufficient to maintain the growth of guinea-pigs on an otherwise vitamin-complete diet, but when folic acid concentrate or the pure acid was added growth was resumed. Therefore folic acid is regarded as GPF1, GPF2 being cellulose and protein, and GPF3 being in the Pb acetate-C prep. from liver extract (cf. A., 1942, III, 703). J. F. M.

Vitamin-B_{10} and -B_{11} and their relation to "folic acid" activity. G. M. Briggs, jun., T. D. Luckey, C. A. Elvehjem, and E. B. Hart (*J. Biol. Chem.*, 1944, **153**, 423—434; cf. A., 1943, III, 753).—Methods for partial separation of "folic acid" (*i.e.*, the two factors necessary for growth of *Streptococcus lactis* R and *Lactobacillus casei*), vitamin-B_{10} and -B_{11} are described. -B_{10} and -B_{11} are not identical with *p*-aminobenzoic, ascorbic, thymus-nucleic acid, or thymine (although these have some growth-promoting or feather-forming activity) or with *dl*-lysine, *l*-tryptophan, asparagine, glutamine, xanthine, guanine, uracil, adenine, xanthopterin, adenylthiomethylpentose or *d*-glutamic, *l*-aspartic, pimelic, yeast-nucleic, adenylic, or *m*-aminobenzoic acid. Liver-ash, Co, B, Si, Ni, Mo, and Al have no -B_{10} or -B_{11} activity. -B_{10} and -B_{11} are insol. in org. solvents, heat-stable, stable to hot alkali, but inactivated by hot acid and wholly or partly inactivated by H_2O_2 and HNO_3. "Folic acid" activity is not identical with anti-anæmia activity and does not seem to be essential for growth and health of the chick. W. McC.

Folic acid. I. Concentration from spinach. II. Adsorption. III. Chemical and physiological properties. IV. Absorption spectra—See A., 1944, II, 244.

Survey of vitamin-*C* level in wartime in pregnant women. A. A. Craig, F. J. W. Lewis, and D. Woodman (*Brit. Med. J.*, 1944, I, 455—457).—Under wartime conditions the degree of saturation with vitamin-*C* in a group of 40 pregnant women varied widely but was on the low side. There is a marked seasonal variation, the subjects becoming more saturated from June to October. While there is no evidence that the low degree of saturation was accompanied by ill health, it appears that anæmia and spongy gums in pregnant women have increased during the war. I. C.

Variations in ascorbic acid according to season, temperature, and sunlight. E. Frommel and M. Loutfi (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 30—33).—Ascorbic acid in organs of the guinea-pig was at a min. in February, and increased gradually until October. The max. increase (20 times) occurred in the adrenals, and the min. (3 times) in the heart. The max. sunlight (315 hr.) and mean temp. (18°) occurred in June. No observations were made in July, August, or September. P. G. M.

Carbohydrate metabolism and vitamin-*C*. E. Frommel, E. Aron, and J. Aron (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 58—62).—Guinea-pigs on a scorbutic diet exhibit first a hyperglycæmic period with a mean increase of 25 mg. of glucose per 100 c.c. during the first 5 days and, secondly, a hypoglycæmic period in which the phenomenon is progressive up to death of the animal and which coincides with the disappearance of cellular ascorbic acid. These phenomena are unaffected by administration of insulin, glucose, adrenal cortical hormone, or vitamins-*B*. P. G. M.

Bioassay of antiscorbutic substances. Assays of dehydroascorbic acid, 2-ketogulonic acid, and iron ascorbate. Effectiveness of oral and parenteral administration of ascorbic acid. B. S. Gould and H. Shwachman [with J. F. Lenney] (*J. Biol. Chem.*, 1943, **151**, 439—453).—Under standard conditions, there is a crit. daily intake for guinea-pigs of 0·225 mg. of ascorbic acid, below which a sharp fall in the level of plasma alkaline phosphatase occurs. This forms the basis of a 5-day curative assay, following a depletion period of 18—25 days. By this method, dehydro-*l*-ascorbic acid and Fe ascorbate were found to have 80% of the activity of ascorbic acid, *d-iso*ascorbic acid 5—7%, and *d*-glucoascorbic and 2-ketogulonic acids no activity. There is a probable loss of 27% when ascorbic acid is given orally, compared with subcutaneous or intraperitoneal injection. R. L. E.

Mechanism of protective action of ascorbic acid in anaphylactic shock in guinea-pigs. E. Frommel, E. Aron, and J. Aron (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 22—26).—Ascorbic acid does not inhibit the liberation of histamine, which is characteristic of anaphylactic shock, although intravenous injection of large doses, like injection of aq. 14% NaCl, decreases the sensitivity to a subsequent anaphylactic reaction. Percortin does not inhibit development of fatal symptoms of shock in guinea-pigs that have been deprived of ascorbic acid. P. G. M.

Ascorbic acid and anaphylactic shock of isolated organs. E. Frommel, E. Aron and J. Aron (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 26—30).—Ascorbic acid does not abolish the Schultz–Dale reaction in isolated organs, even when their vitamin-*C* content is a max. Horse serum containing 1% of ascorbic acid destroys 1—2 μg. of histamine per c.c. in 30 min. at 37°, provided that essential co-enzymes are also present. P. G. M.

Action of vitamin-*C* in respiration of living cells. P. Joyet-Lavergne (*Compt. rend.*, 1942, **215**, 306—308).—The respiration of some animal cells is increased by vitamin-*C*. Normally the cells have sufficient -*C* and it is only where a deficiency occurs that this action is apparent. H. G. R.

Ascorbic acid in rat leprosy. R. O. Prudhomme (*Ann. Inst. Pasteur*, 1943, **69**, 215—218).—The liver, spleen, and adrenals of rats infected with *Mycobacterium lepræ muris* contained more ascorbic acid than those of normal rats. The local lesions contained an average of 0·65 mg. of ascorbic acid per g., being surpassed only by the adrenals, which contained 1·0 mg. per g. The injection of 0·03 g. of ascorbic acid every 3 days for 45 days favoured the growth of the local lesions but had no influence on generalisation of the infection. F. S.

Ulcerative stomatitis associated with avitaminosis in Malta. E. Lapira (*Brit. Dent. J.*, 1943, **74**, 257—260).—An outbreak of ulcerative stomatitis followed a period of continuous air raids and vitamin deficiency. The main deficiency was probably in -*C* as supported also by a series of cases in which ascorbic acid or fruits were given. I. C.

Intradermal test for vitamin-*C* sub-nutrition. L. B. Slobody (*J. Lab. clin. Med.*, 1944, **29**, 464—471).—A 4-mm. intradermal wheal is made with N./300-dichlorophenol-indophenol solution and the time of disappearance of the blue colour noted. Of 59 patients with blood-vitamin-*C* levels below 0·3 mg.-%, the skin test times were more than 14 min. in 54. In 10 children with -*C* deficiency, the blood levels fell, and the skin test times became prolonged. The skin test times were then reduced to normal following administration of ascorbic acid. A skin test time of more than 14 min. suggests definite unsaturation, 9—13 min. mild unsaturation, and less than 9 min. a normal -*C* content. C. J. C. B.

Case of methæmoglobinæmia [treated with ascorbic acid].—See See A., 1944, III, 523.

Possible relationship between vitamin-*C* and calcification.—See A., 1944, III, 517.

Effect of *l*-ascorbic acid on epithelial sheets in tissue cultures.—See A., 1944, III, 521.

Sources of vitamin-*C*. II. Alberta native fruits.—See B., 1944, III, 182.

Ascorbic acid content of 39 varieties of snap beans.—See A., 1944, III, 567.

Effect of time and temperature of storage on vitamin-*C* retention in canned citrus juices.—See B., 1944, III, 163.

Is the production of experimental rickets bound specifically with lack of equilibrium between calcium and phosphorus in the diet? R. Lecoq (*Compt. rend.*, 1942, **215**, 330—332).—Experimental rickets is not consistently produced in rats by increasing the P content of the ration with Na_2HPO_4. Substitution of Na_2HPO_4 by Na citrate or, better, $NaHCO_3$ produces rickets rapidly and constantly. H. G. R.

Healing of renal rickets [treated with calcium and vitamin-*D*]. W. Sheldon (*Arch. Dis. Childh.*, 1943, **118**, 194—196).—The case of a boy aged 4 years with chronic nephritis and renal rickets is recorded, in whom the bones underwent complete healing with treatment with alkalis, Ca, and large amounts of vitamin-*D*. C. J. C. B.

Calcium and phosphorus absorption in breast-fed infants and its relationship to bone decalcification (rickets). N. L. Wake (*Med. J. Austral.*, 1944, I, 27—30).—There was no significant difference in the mean absorption of Ca and P between 10 infants showing defective calcification of the long bones and 12 infants with normal calcification. F. S.

Action of vitamin-*D* on incisor teeth of rats consuming diets with high or low Ca : P ratio. J. T. Irving (*J. Physiol.*, 1944, **103**, 9—26).—The object was to follow the action of curative doses of vitamin-*D* on dietary rickets, using as indicator the progress of dentine formation in the rat incisor from the pulp outwards. Rachitogenic diets with normal (1·8), high (4·4), and low (0·29) Ca : P ratios, but otherwise the same, were given. Three sets of observations were made on each group, the effect of (*a*) a single dose of 9·2 i.u. of -*D* 10 days before killing, (*b*) single doses of 1·15 to 30 i.u. 10 days before killing, (*c*) 18·4 i.u. followed by varying periods before killing. A dose of NaF furnished a reference line in the dentine in some experiments. The Ca : P = 1·8 diet yielded normal bone ash, but slight malcalcification of the teeth. Addition of -*D* produced completely normal calcification, the effect being visible after 24 hr. The optimal dose was 0·5 i.u. per day. The Ca : P = 4·4 diet yielded frank rickets and malcalcified teeth. -*D* did not affect the previously formed matrix, but new dentine was calcified and with doses of 18·4 i.u. the effect was seen after 24 hr. as against 5 or more days in bone. The duration of the effect of a single dose varied with log dose. The Ca : P = 0·29 diet yielded a lowered bone ash, but epiphyses of normal appearance. -*D* caused resumption of calcification in the very badly calcified teeth, including dentine laid down as long as 3 days previously. The action of 18·4 i.u. was detectable in 30 hr. These results are discussed in relation to current theories of tooth formation and -*D* action. A special type of dentine is probably formed by low-Ca : P diets. The action of -*D* is not restricted to its effect on intestinal absorption. W. H. N.

Response of turkey poults and of chicks to different forms of vitamin-*D*. H. R. Bird (*J. Nutrition*, 1944, **27**, 377—383).—On the basis of the bone ash a given no. of A.O.A.C. chick units of vitamin-*D* from irradiated 7-dehydrocholesterol and irradiated animal pro-vitamin were 2·29 and 1·83 times as effective for poults during the first 4 weeks of life as the same no. of A.O.A.C. chick units from U.S.P. Reference cod-liver oil No. 2. H. G. R.

Efficacy of vitamin-*D* from different sources for turkeys. R. V. Boucher (*J. Nutrition*, 1944, **27**, 403—413).—The vitamin-*D* efficacy of irradiated 7-dehydrocholesterol and an irradiated animal sterol was greater (approx. 2 : 1) than that of U.S.P. Reference cod-liver oil No. 2. Sardine oil fortified with fish-liver oils was more efficacious than Reference cod-liver oil but gave a response curve more like that of cod-liver oil than of the irradiated products. H. G. R.

Testis in vitamin-*E*-deficient guinea-pigs. Protracted effect of single dose of *dl*-α-tocopherol acetate on testes of rats on vitamin-*E*-deficient diet.—See A., 1944, III, 538.

Influence of vitamin-*K* preparations on blood pressure in hypertensive rats.—See A., 1944, III, 527.

Vitamin-*P* activities of citrus fruits, rose-hips, black-currants, and some fruit products and concentrates. A. L. Bacharach and M. E. Coates (*J.S.C.I.*, 1944, **63**, 198—200).—Biological assays of oranges and lemons have shown them to be rich sources of vitamin-*P* activity, which is, in contradistinction to ascorbic acid, distributed more or less uniformly through peel and juice. Black-currant purée undergoes no loss of -*P* activity on storage for 18 months in the refrigerator or for part of that time at room temp. Rose-hip syrups and dried concentrates had activities of the order that would be expected from previous determinations on the freshly gathered fruits.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Determination of basal metabolism on out-patients. J. D. Robertson (*Brit. Med. J.*, 1944, I, 617—619).—No significant difference was found in two determinations of the basal metabolic rate taken on the same day, but there was a significant fall on the second day compared with the first. In normal subjects and patients with thyrotoxicosis readings were taken for 6 or 7 days; the reading of the second day was found to be reliable. After some exercise or under ambulatory conditions a rest of 20—30 min. is sufficient to reproduce basal conditions. A satisfactory and accurate reading can be obtained on out-patients; living in hospital is not necessary. I. C.

"*Q*" notation for expressing metabolic activities in tissue slices. S. J. Bach (*Biochem. J.*, 1944, **38**, 156—159).—The arginase activity of liver is used to study the time–wt. relations of tissue-slice metabolism. The activity is not proportional to the wt. of liver tissue or to time of incubation, if this exceeds 20—30 min. The dry wt. of tissue slices may decrease by up to 50% during incubation to 1 hr. It is considered that the wet wt. of tissue is a sounder basis for calculation. Comparisons of *Q* (= metabolic output per unit wt. per hr.) are valid only if wt. of tissue and time of incubation are kept reasonably const. R. L. E.

Enzyme system of phosphorylation coupled with respiration.—See A., 1944, III, 558.

Brain metabolism during electronarcosis.—See A., 1944, III, 528.

Associative dynamic effects of protein, carbohydrate, and fat. E. B. Forbes and R. W. Swift [with A. G. Buckman, J. E. Schopfer, and M. T. Davenport] (*J. Nutrition*, 1944, **27**, 453—468).—Supplementary feeding of protein, carbohydrate, or fat to albino rats at planes of nutrition above maintenance increases heat production from the kind of nutrient fed. Glucose spares protein and fat, beef protein spares carbohydrate and fat, but lard spares only protein. Glucose and beef-protein increase heat production from carbohydrate and protein and spare fat; glucose and lard increase heat production from carbohydrate and spare protein and fat while beef-protein and lard increase heat production from protein and spare carbohydrate and fat. All three supplements fed together spare fat and increase heat production from carbohydrate and protein. When fed as supplements to a complete diet sufficient for maintenance the dynamic effects are beef-protein 32%, glucose 20%, and lard 16% of its gross energy whilst those of mixtures of protein, carbohydrate, and fat are less than 16%. The observed dynamic effects of carbohydrate and protein is 12·5, of carbohydrate and fat 35, of protein and fat 54, and of carbohydrate, protein, and fat 22% less than the calc. val. The dynamic effects of diets are thus not the additive dynamic effects of the components. H. G. R.

Effect of dietary choline on rate of turnover of phosphatide-choline. G. E. Boxer and D. Stetten, jun. (*J. Biol. Chem.*, 1944, **153**, 617—625).—In rats fed with choline containing ^{15}N, the half time for the replacement of phosphatide-choline by dietary choline is about 6 days, and approx. 3·9 mg. per day of phosphatide-choline is replaced by dietary choline. On a choline-free diet, the isotopic concn. in the body-choline dropped, more rapidly in the liver than in the carcass. The half time for phosphatide-choline is then 18 days, and the daily replacement 1·3 mg. There is no fall in total body-phosphatide. J. F. M.

Nucleic acids and tissue growth. J. N. Davidson and C. Waymouth (*Nutr. Abs. Rev.*, 1944, **14**, 1—18).—A review.

Mechanism of fatty acid oxidation. S. Weinhouse, G. Medes, and N. F. Floyd (*J. Biol. Chem.*, 1944, **153**, 689—690).—*n*-Octoic acid containing 5·5% of ^{13}C in the carboxyl group was incubated with rat liver slices, and the acetoacetic acid so formed decomposed into

acetone and CO_2 by heating. The isotope content of each fraction was determined. The results showed that the acid had been broken down according to the β-oxidation–condensation theory. J. F. M.

Effect of adrenalectomy on absorption of short-chain fatty acids and their triglycerides.—See A., 1944, III, 534.

Reversibility of carbohydrate and other changes in rats shocked by clamping technique. R. E. Haist and J. I. Hamilton (*J. Physiol.*, 1944, **102**, 471—483).—Secondary shock was produced in rats by arresting the circulation in the hind-limbs for 12—15 hr. by clamping, and then removing the clamps. Death occurred in 84 rats after an average of 3½ hr. Liver-glycogen is lower than in clamped and unclamped controls. Sugar by stomach tube leads to considerable glycogen storage in the liver of both sets of controls, but not of the shocked animals. The blood-sugar of the latter remains high, and insulin reduces it without improving glycogen storage. Loss of fluid into the released limbs occurs and is complete in 1 hr. Although reclamping after this interval traps this fluid in the damaged limbs, the procedure enables the rats to recover and store glycogen when glucose is administered. Local loss of fluid is therefore not the fundamental factor in shock, but some change in the anoxic tissues occurs which affects the activity of tissues elsewhere. Severe O_2-want also diminishes the storage of liver-glycogen after the giving of glucose. The reversibility of extensive changes in the shocked rats is pointed out. W. H. N.

Mechanism of oxidative processes. LIII. Biological degradation of acetic acid. H. Wieland and C. Rosenthal (*Annalen*, 1943, **554**, 241—260).—O_2 consumption by rabbit kidney in presence of acetoacetate exceeds that noted in a blank experiment by about 10—12%, rising to more than 40% when oxalacetate is also present; the latter alone causes only 6—9% increase. The substances appear to condense to a procitric acid from which citric acid is obtained by hydrolysis. The acid is best isolated by use of rabbit rather than ox kidney. In presence of Ba ions up to 80% of acetoacetate used is converted in presence of oxalacetate and kidney into citric acid determined as pentabromoacetone. In the absence of org. material it has never been found possible to isolate from acetoacetate and oxalacetate a product converted by Br into pentabromoacetone. Citric acid is produced by the kidney from acetoacetate, oxalacetate, or acetate singly but in far smaller amount than in the combined system, acetoacetate–oxalacetate. Under the same conditions the yield of citric acid from oxalacetate and pyruvate in O_2 in presence of kidney exceeds that from oxalacetate–acetate but is usually only 30—50% at most 70% of that obtainable from acetoacetate–oxalacetate. Degradation of acetic acid in the kidney appears therefore to proceed through acetoacetic acid, which unites with oxalacetic acid to a "procitric acid," possibly citroylacetic or acetylcitric acid, less probably citroylcitric acid, which then undergoes hydrolysis. The same process appears to occur in heart muscle but probably not in the liver. It is not impossible that the complete degradation of carbohydrate at any rate in kidney and heart follows this course and does not involve the condensation of pyruvate with oxalacetate. More probably, pyruvate is used through acetoacetate in the synthesis of citrate. It remains uncertain whether the formation of citric acid from acetate in yeast occurs through acetoacetate. More probably the yeast utilises a variant in which acetic acid condenses with an aldehyde. The intermediate CHRAc·CHO, corresponding to acetoacetate, combines with oxalacetate to a procitric acid which is hydrolysed to the aldehyde CHR·CHO and citric acid. An explanation of the observation of Sonderhoff *et al.* (A., 1937, II, 365; 1938, II, 428) that a dideuterated succinic acid is obtained from trideuteroacetic acid by yeast can be based on the hypothesis that proaconitic acid is the first stage in the degradation of procitric acid. If it is true that the degradation of carbohydrates takes place through acetoacetic acid, the occurrence of the latter in the urine of diabetic patients shows that the enzyme responsible for the synthesis of procitric acid is not functioning. The union of oxalacetate with acetoacetate is a simple additive reaction which occurs in the kidney tissue only in presence of O_2. Practically no synthesis is observed in N_2 and in air less citric acid is produced than in O_2. The enzymic synthesis is therefore coupled with an aërobic process which depends on the concn. of O_2; its nature is unknown. Similar observations are made with yeast; in anaërobic experiments no formation of citric acid from acetate and oxalacetate is observed. (See also C., 1944, Part 4.) H. W.

Destruction of acetic acid by beating heart.—See A., 1944, III, 525.

Tissue-aldehydes ["plasmal"] and their reaction with amines. K. A. Oster and M. G. Mulinos (*J. Pharm. Exp. Ther.*, 1944, **80**, 132—138).—The staining of tissue-aldehydes ("plasmal" of Feulgen *et al.*) with fuchsin–H_2SO_3 in the tissues of rats, guinea-pigs, rabbits, cats, and dogs is described. "Plasmal" is liberated from "plasmalogen" by the action of acid or $HgCl_2$. Experimental diuresis, dehydration, or unilateral nephrectomy in rats did not alter the distribution of "plasmal" in the kidney. The liver parenchyma does not contain aldehydes probably because of the action of xanthine oxidase, which renders the tissue-aldehydes unstable. Kidney slices incubated with milk-xanthine oxidase at pH 6—7 for 18 hr. showed no staining of "plasmal." "Plasmal" liberated from "plasmalogen" will combine at pH 2—5 with compounds which have a primary amino-group on benzene ring and will not stain with fuchsin–H_2SO_3. These amines include the isomerides of aminophenol, aminobenzoic acid, and toluidine. Sulphanilic, arsanilic, and anthranilic acids, mapharsen, sulphanilamide, sulphathiazole, sulphapyridine, *dl*-β-phenylethylamine, naphthylamine, and benzidine also form condensation products with tissue-aldehydes. G. P.

Study of dehydration by means of balance experiments. D. A. K. Black, R. A. McCance, and W. F. Young (*J. Physiol.*, 1944, **102**, 406—414).—Two men, deprived of fluid and fed on a known diet for 3 and 4 days respectively, each lost 3500 ml. of body-water, of which 2000 probably came from the cells and the rest from extracellular fluid. The plasma vol. was not reduced. K was excreted preferentially to Na, which rose in concn. in the plasma. K fell more in the plasma than in the cells, where its loss did not keep pace osmotically with that of water. A loss of cell-protein, insufficient to correspond to the loss of cell-K, was indicated by increased urea production. The osmotic pressure of the body rose. Death from dehydration is more likely to be due to a rise of osmotic pressure than to the retention of any one substance. W. H. N.

Retention of radioactive phosphorus when administered in different chemical forms. S. Warren and R. F. Cowing (*Cancer Res.*, 1944, **4**, 113—115; cf. A., 1944, III, 544).—Small amounts of radioactive $MgNH_4PO_4$ and also H_3PO_4 of high sp. activity may be safely administered to patients intravenously if dissolved in 250—350 ml. of 0·85% NaCl and 5% glucose. The retention of ^{32}P was independent of the type of compound used. In the use of the dibasic Na salt and of H_3PO_4 one instance of poor retention was encountered in each case. F. L. W.

Calcium, phosphorus, iron, and nitrogen balances in pregnant women. W. J. Dieckmann, F. L. Adair, H. Michel, S. Kramer, F. Dunkel, B. Arthur, M. Costin, A. Campbell, A. C. Wensley, and E. Lorang (*Amer. J. Obstet. Gynec.*, 1944, **47**, 357—368).—553 patients were divided into 4 groups: control; with addition of extra Ca, P, and Fe to the diet; with addition of vitamins-*A* and -*D*; with addition of the minerals and vitamins. Serum-Ca, -P, and -protein were within normal limits in all groups, as were hæmatocrit and hæmoglobin vals. There was no evidence that -*D* shortened the length of labour. The dietary additions increased maternal wt. P. C. W.

Metabolism of radio-iodine in thyroids of rats exposed to high or low temperatures.—See A., 1944, III, 533.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Penicillin. G. F. Schmitt (*Amer. J. med. Sci.*, 1944, **207**, 660—678).—A review of the literature for 1943. C. J. C. B.

Laboratory control of penicillin treatment. L. P. Garrod (*Brit. Med. J.*, 1944, I, 528—530).—An account of the problems encountered with notes on the sensitivity of various organisms to the drug. I. C.

Relative toxicity of six salts of penicillin. H. Welch, D. C. Grove, R. P. Davis, and A. C. Hunter (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 246—248).—Order of increasing toxicity based on equiv. of cation used is Na, NH_4, Sr, Ca, Mg, and K for both salts of penicillin and acetates. Based on mg. of cation the order is Na, Sr, NH_4, Ca, K, and Mg for salts of penicillin, and Na, Sr, NH_4, K, Ca, and Mg for acetates. Thus the toxicity is primarily due to the cation used. V. J. W.

Simplified procedures for ascertaining concentration of and susceptibility to penicillin. A. R. Thomas, jun., M. Levine, and G. R. Vitagliano (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 264—267).—Solutions of penicillin, delivered by 4-mm. Pt loop on the flat surface of a culture, give circles of inhibition which are const. to 0·5 mm. Areas of these circles are proportional to concn. or vol. of penicillin, and inversely proportional to resistance of organism used, and these vals. can be read off from a standard curve of reference. V. J. W.

Local application of penicillin in soft-tissue lesions. J. N. Barron and O. T. Mansfield (*Brit. Med. J.*, 1944, I, 521—523).—Penicillin has been given locally in cases of infected skin lesions, abscess cavities, acute spreading cellulitis, and superficial wounds with skin loss. Early application is desirable; an efficient technique must be found to bring penicillin into contact with the infected zone; many wounds containing slough or sequestra resist penicillin; together with surgical treatment penicillin is valuable in the treatment of wounds infected with sensitive organisms. I. C.

Local treatment of breast abscess with penicillin, D. B. Fraser (*Brit. Med. J.*, 1944, I, 523—524).—Instillation of penicillin, following aspiration or surgical drainage, quickens recovery. I. C.

Penicillin in treatment of diseases of skin. I. A. Roxburgh, R. V. Christie, and A. C. Roxburgh (*Brit. Med. J.*, 1944, I, 524—528).—The treatment of 75 cases of skin disease by local application of

penicillin is described. Penicillin is valuable in sycosis barbæ, impetigo, blepharitis, and in some cases of chronic eczema and otitis externa. I. C.

Use of crude penicillin filtrate for local treatment. J. M. Alston (*Brit. Med. J.*, 1944, I, 654—656).—Report of 24 cases treated with crude *Penicillium* filtrate containing 4—10 units of penicillin per c.c. Results suggest that in many acute and chronic infections local application of crude filtrate might take the place of purified Ca salt of penicillin. I. C.

Experiences in systemic administration of penicillin. H. V. Morgan, R. V. Christie, and I. A. Roxburgh (*Brit. Med. J.*, 1944, I, 515—516).—Advantages and disadvantages of intramuscular injection and of intravenous and intramuscular drip transfusion of penicillin are described. Using the bone marrow route, it was most difficult to run more than one pint of fluid through the sternum; drip transfusion into the bone marrow of the tibia may be of val. I. C.

Surgery and penicillin in mandibular infection. R. Mowlem (*Brit. Med. J.*, 1944, I, 517—519).—Penicillin is unlikely to produce bacteriological control in presence of sequestra or unfavourable surgical conditions, and is therefore not a substitute for adequate surgery. Penicillin has been used in 4 cases in which infection was anticipated or was causing early reaction; immediate bacteriological and clinical control was obtained. In 16 cases of osteomyelitis of the jaw, treatment consisted of extensive surgical removal of the bone, insertion of two small-bored tubes in which 1000 units of penicillin are introduced every 24 hr., and closure of the wound without drainage. Recovery occurred in about 30 days. I. C.

Penicillin in bone infections. I. M. Robertson (*Brit. Med. J.*, 1944, I, 519—521).—In 6 cases of acute hæmatogenous osteomyelitis penicillin was used locally or systemically together with surgical treatment with good results, especially when treatment was started early; in one case penicillin alone (760,000 units) brought about complete recovery in 60 days. In 8 cases of chronic hæmatogenous osteomyelitis, and 7 cases of osteomyelitis after compound fractures, local application of penicillin failed, probably owing to mechanical difficulties in securing continuous application of the drug, inaccessibility of infected bone, and presence of sequestra. In a group of miscellaneous cases (mainly chronic sinuses) involving especially soft tissues local penicillin was useful. I. C.

Penicillin in battle casualties. J. S. Jeffrey and S. Thomson (*Brit. Med. J.*, 1944, II, 1—4).—An account of the use of penicillin in the Italian campaign. Local penicillin–sulphathiazole powder (2000—5000 units per g.; average amount 2 g.) was insufflated after trimming and excision of soft-tissue wounds, which were then sutured. Good results and control of the infection were obtained. Instillation after suture controlled Gram-positive infections. In chest wounds, after closing the sucking wound, 15,000 units were instilled in forward areas, and at the base hospital 60,000 units were instilled after every aspiration. Systemic therapy alone does not bring about a sufficient concn. of the drug. In open fractures (especially of the femur) systemic penicillin gave varying results. Penetrating wounds of the knee-joint do very well with local instillation of penicillin (1250—2500 units twice daily for 4 days). Systemic treatment is advised for compound fractures, gas gangrene, and in infections of amputation stumps. Head injuries, eye injuries, and burns are well treated with local insufflation or instillation. I. C.

Effect of certain salts on activity of sulphacetamide. B. D. Pinck, G. L. Morton, and M. R. Mattice (*J. Lab. clin. Med.*, 1944, **29**, 462—463).—The presence of Na citrate (4%) in a medium containing sulphacetamide nullifies the antibacterial behaviour of the sulphonamide and permits free development of *E. coli*. The citrate alone does not inhibit the growth of these organisms. The bacteriostatic potency of the drug is not impaired by Na acetate or Na lactate. C. J. C. B.

Potentiated chemotherapeutic action of sulphathiazole and quinine. B. K. Harned, R. E. Miller, M. Wiener, and N. P. Watts (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 234—235).—Sulphathiazole and/or quinine ethyl carbonate (0·3%) was added to the diet of mice before and after inoculation with culture of *Strep. hæmolyticus*. Survival rates were sulphathiazole + quinine 76%, sulphathiazole 57%, quinine 2%, no drug 10%. V. J. W.

Influence of sulphadiazine on plasma-lipins in pneumonia. A. V. Stoesser (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 278—280).—In 6 children with pneumococcal pneumonia, and treated with sulphadiazine, plasma-cholesterol esters rose to normal within 24 hr. of the return to normal temp. The treatment forestalled any drop in total fatty acids and phospholipins which react more slowly to acute infections than do the cholesterol esters, and their I vals. remained const. throughout. V. J. W.

Staphylococcal septicæmia treated with sulphadiazine. H. Bathurst Norman (*Brit. Med. J.*, 1944, I, 183).—Report of a case in which sulphathiazole was ineffective. I. C.

Meningococcal jaundice [cured with sulphathiazole]. C. Crawford (*Brit. Med. J.*, 1944, I, 325).—Case report. I. C.

Sulphapyridine as prophylactic against cerebrospinal meningitis. F. C. Gray and J. Gear (*S. Afr. Med. J.*, 1941, 139—140).—Sulphapyridine, administered in doses of 3 g. per day for two days to troops of a camp where there was an outbreak of cerebrospinal fever, diminished the no. of carriers from 22·8% to nil. It is considered to be useful as a prophylactic measure when there is an epidemic in a community. I. C.

Sulphonamide therapy in the mine native labourers. D. Ordman (*Proc. Transvaal Mine Med. Off. Assoc.*, 1943, **23**, 25—32).—A comparison of the incidence and mortality rates from several diseases from 1934 to 1942. Meningococcal meningitis death rate has decreased from 74% to 16%; pneumococcal meningitis death rate from 100% to 64%; other non-tubercular meningitis from 76% to 26%; influenza without pulmonary complications from 0·13% to 0·01%; acute and chronic bronchitis from 0·21% to 0·04%; pleurisy from 2·05% to 0·73%; bronchopneumonia from 14% to 9%; lobar pneumonia from 12% to 1·5%. The val. to the mining industry of the treatment with sulphonamides is stressed. I. C.

Action of sulphonamides against *Treponema recurrentis*. F. Hawking (*Brit. J. exp. Path.*, 1944, **25**, 63—67).—In mice infected with *Tr. recurrentis* and fed on a diet containing 1·5% of sulphapyridine or sulphathiazole, the infection was completely suppressed, or its intensity was much diminished. Sulphanilamide, sulphadiazine, sulphamethazine, sulphacetamide, sulphaguanidine, pyridine-3-sulphonamide, aminopyridine sulphate, and acetylsulphapyridine had little or no therapeutic action. The antispirochætal action was not antagonised by *p*-aminobenzoic acid or nicotinamide, and appeared to depend on the pyridine and thiazole rings rather than on the *p*-aminobenzenesulphonamide groups. F. S.

Newer procedures in laboratory diagnosis and therapy in the control of bacillary dysentery. A. V. Hardy and J. Watt (*Amer. J. Publ. Health*, 1944, **34**, 503—509).—A review, particularly of the val. of sulphonamides in this condition. C. J. C. B.

Conservative management of acute osteomyelitis [and use of sulphonamides]. J. B. L'Episcopo and E. D. Hagerty (*N.Y. Sta. J. Med.*, 1943, **43**, 853—856).—Report of 27 cases treated by infusions of saline and glucose to combat dehydration, repeated blood transfusions of 150—350 c.c., sulphonamides according to the organism found by aspiration of the abscess, local rest and heat, and occasional delayed surgical drainage. There was one death and the average hospital stay was 6·1 months. E. M. J.

Sulphamethazine therapy. W. McDermott, D. R. Gilligan, C. Wheeler, and N. Plummer (*N.Y. Sta. J. Med.*, 1944, **44**, 394—397).—In 27 cases with normal renal function receiving 6 g. of sulphamethazine daily the average free blood val. was 1·8—17·4 mg.-%, the total blood val. was 6·2—17·6 mg.-%, and acetylation 1—74%. Crystalluria was present in 5 cases, one of which also had hæmaturia, and all of these had high blood and urinary acetylation vals. One case showed a rash and fever, another also had leucopenia, one leucopenia only. Clinical results in sulphanilamide-susceptible infections were poor where the free blood-level was low. 34 cases were treated in all and there were 2 deaths. E. M. J.

Local application of sulphonamides to experimental staphylococcus infections. F. W. Hartmann (*J. Bact.*, 1944, **47**, 259—271).—The local application of sulphanilamide, Na sulphapyridine, and Na sulphathiazole had no influence on the rate of healing of staphylococcal cutaneous infections in rabbits. F. S.

Danger of cutaneous reactions to sulphonamides. D. Bloom (*N.Y. Sta. J. Med.*, 1943, **43**, 1499—1508).—A review and report of 2 cases of bullous eruption following an oral and a cutaneous administration of sulphonamide, one of them resembling pemphigus vulgaris. E. M. J.

Chemotherapy in tropical medicine. A. J. Ewins (*J.C.S.*, 1944, 351—355).—A review of the development of chemotherapy against trypanosomiasis, kala-azar, bilharziasis, and malaria. G. P.

Action of atabrine on electrocorticogram. E. P. Pick and J. Hunter (*J. Pharm. Exp. Ther.*, 1944, **80**, 354—361).—After intraperitoneal or intravenous injection of atabrine (5—12 mg. per kg.) to cats anæsthetised with nembutal, the rapid waves of the electrocorticogram disappeared and only slow waves of low potential remained. Similar observations were made in pithed frogs. 2—3 mg. of atabrine injected into the thoracic lymph sac of normal frogs abolished the righting reflexes and caused either a reversible paresis or an irreversible paralysis of the extremities. G. P.

Antimalarial drugs. Excretion of atabrine in the urine of human subjects. F. E. Kelsey, F. K. Oldham, E. H. Dearborn, M. Silverman, and E. W. Lewis (*J. Pharm. Exp. Ther.*, 1944, **80**, 383—385).—The excretion of atabrine in the urine by 4 subjects, who received 100 mg. of the drug per day for 45 days, rose slowly to 6—11% of the daily dose and was not complete in 55 days. G. P.

Antimalarial drugs. Preparation and properties of a metabolic derivative of quinine. F. E. Kelsey, E. M. K. Geiling, F. K. Oldham, and E. H. Dearborn (*J. Pharm. Exp. Ther.*, 1944, **80**, 391—392).—25 g. of quinine hydrochloride were incubated at 38° for 5 hr. with

2 kg. of ground rabbit liver suspended in 8 l. of Ringer–Locke solution to which 0·1% glucose and $NaHCO_3$ were added. The isolation of a cryst. derivative of quinine (no analysis given), m.p. 251° (corr.), mol. wt. 370, from the incubation mixture and its solubilities are described. G. P.

Chloroiodohydroxyquinoline and di-iodohydroxyquinoline : animal toxicity and absorption in man. N. A. David, N. M. Phatak, and F. B. Zener (*Amer. J. trop. Med.*, 1944, **24**, 29—33).—The oral LD_{50} for chloroiodohydroxyquinoline (Vioform) is about 175 mg. per kg. in the guinea-pig and about 400 mg. per kg. in kittens. The other amœbacide, Diodoquin, is occasionally lethal in doses of 50—200 mg. per kg. In normal human subjects the oral administration of therapeutic amounts of either drug causes a rise in blood-I. F. S.

History, chemistry, toxicity, and anti-bacterial properties of water-soluble chlorophyll derivatives as therapeutic agents. L. W. Smith (*Amer. J. med. Sci.*, 1944, **207**, 647—654).—The literature is reviewed. The water-sol. derivatives of chlorophyll administered subcutaneously or intravenously had no toxic effects in animals or man. Bacteriological studies suggest interference with the oxidation–reduction mechanism of bacterial respiration as explaining the bacteriostatic effects noted in the use of water-sol. chlorophyll derivatives clinically, and experimentally in animals, in the treatment of infected surface wounds. C. J. C. B.

[External] use of 30—50% sulphur in petrolatum in dermatoses. E. W. Abramowitz (*N.Y. Sta. J. Med.*, 1943, **43**, 746—752).—Report of cases suggesting that this type of application of S may be useful in even more acute inflammatory conditions. E. M. J.

Amines related to epinephrine. Amines of the "eprocaine" type.—See A., 1944, II, 295.

Sensitivity of leech *Diplobdella brasiliensis* to acetylcholine. J. R. Valle (*Mem. Inst. Butantan*, 1941, **15**, 17—25).—This leech is sensitive to concns. of acetylcholine of $1 : 3 \times 10^8$. Adrenaline and histamine are ineffective. Pilocarpine, muscarine, Ba, and nicotine caused tonic contractions. Atropine did not antagonise the action of acetylcholine, and KCl caused contractions in concns. of 1 : 20,000. I. C.

Copper sulphate–nicotine sulphate solution and phenothiazine compared as anthelmintics for lambs. J. P. Willman and D. W. Baker (*Cornell Vet.*, 1943, **33**, 365—368).—The two anthelmintics were of equal val. in expelling *Hæmonchus contortus*; phenothiazine was more efficient against *Ostertagia circumcincta* and *Nematodirus spathiger*, and both mixtures were without effect on *Trichostrongylus* spp. and *Cooperia* spp. E. G. W.

Phenothiazine poisoning in pigs. J. W. Britton (*Cornell Vet.*, 1943, **33**, 368—369).—Symptoms of toxicity occurred in all of a group of 64 pigs (45—60 lb. body wt.) given phenothiazine (a single dose of 11·7 g. per animal with the food). Symptoms included posterior paralysis, inco-ordination, circling and stupor, and prolapse of the rectum. All pigs recovered rapidly and were normal within a week. The animals were affected with necrotic enteritis when the drug was given and this may have caused increased absorption from the intestine. E. G. W.

Cathartic action of senna, aloes, cascara, and bile salts in mice. L. W. Hazleton and K. D. Talbert (*J. Amer. Pharm. Assoc.*, 1944, **33**, 170—173; cf. A., 1942, III, 481).—A method for evaluating cathartic activity in mice, based on the fæcal staining of filter-paper, is not satisfactory for extracts of aloe or cascara. Fluid extracts of senna progressively deteriorate on storage. No tolerance appears to be acquired on frequent dosage of cathartics in mice. Na cholate is the only bile salt of those examined that, when taken orally in non-toxic doses, induces cartharsis; the threshold cathartic dose is approx. 20 mg. per mouse. No correlation exists between surface tension and cathartic action or between choleretic and cathartic activities. F. O. H.

Histamine tolerance. R. Katzenstein (*Yale J. Biol. Med.*, 1944, **16**, 325—331).—Tolerance to histamine in dogs was developed by daily, repeated, intravenous injections of increasing quantities of the drug. The tolerant dogs had only mild and transitory reactions to amounts of histamine that would cause prostration or death in unprepared dogs. There was also an absence of the morbid changes associated with histamine poisoning. The histamine tolerance was not associated with adrenal cortical hypertrophy, with greater urinary content of 17-ketosteroid, or with adaptation to low atm. O_2. F. S.

Inhibition of histamine effects by compounds of histamine, histidine, and arginine. M. Rocha e Silva (*J. Pharm. Exp. Ther.*, 1944, **80**, 399—408).—Compounds of histamine in which the NH_2 group is blocked but the NH group of the glyoxaline ring is free, as in acetyldehydrophenylalanyl-, benzoyl-*l*-tyrosyl-, and acetyl-*dl*-phenylalanyl-histamine hydrochloride, are pharmacologically inactive (cf. A., 1944, III, 211) whilst they are capable of preventing the effect of histamine on guinea-pig intestine *in vitro*. Histidine monohydrochloride, benzoyl-*l*-argininеamide, benzoyl-*l*- and hippurylnitro-*l*-arginine possess similar antihistamine effects. It is suggested that the pharmacological activity of histamine depends on its free NH_2 group, but its anchoring to tissues on its free NH group. As all the antihistamine compounds tested have a free NH group, it is inferred that their antihistamine property is due to the competition of this NH group with the similar group of histamine for the chemoreceptors of the tissues. G. P.

Effects of age, sex, castration, and interval of time after parturition on tolerance to, and detoxification of, pentobarbital sodium in rats. H. G. O. Holck and D. R. Mathieson (*J. Amer. Pharm. Assoc.*, 1944, **33**, 174—176; cf. A., 1943, III, 138).—With rats given increasing doses of pentobarbital Na until death intervenes, the 1- and 2-month-old rats and practically all the adult males, but only 25% of the adult females, develop tolerance. Adult males generally develop tolerance more rapidly than do the females. Castration in males tends to lower the ability to develop tolerance, whilst spaying of 2-month-old females increases the ability to detoxify the barbiturate once tolerance has developed. With pregnancy, the increased ability to develop tolerance persists during the period of lactation, but disappears 8 weeks after parturition. F. O. H.

Spasmolytic and local anæsthetic action of esters of 9 : 10-dihydroanthracenecarboxylic acid and related compounds. G. Lehmann and P. K. Knoefel (*J. Pharm. Exp. Ther.*, 1944, **80**, 335—342).—Out of a series of 21 basic esters of polynuclear carboxylic acids the β-diethylaminoethyl esters of xanthene-9-carboxylic acid and of 9 : 10-dihydroanthracene-9-carboxylic acid were the most powerful spasmolytics. The latter is especially active against spasm of smooth muscle induced by histamine and is capable of preventing histamine-death of guinea-pigs. Both compounds have also local anæsthetic action as tested on the rabbit's cornea. The intraperitoneal LD_{50} for mice of the first compound was 0·25 and that of the second 0·15 g. per kg. G. P.

Ineffectivness of sodium succinate in control of barbiturate anæsthesia. H. A. Lardy, R. G. Hansen, and P. H. Phillips (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 277—278).—Experiments of Soskin and Taubenhaus (A., 1943, III, 834) are repeated but not confirmed. V. J. W.

***cyclo*Propane for dental surgery in children.** K. B. Pinson (*Brit. Med. J.*, 1944, I, 588—589).—From the experience gained in 500 cases the new method used has proved safe and simple. Vomiting was rather frequent. I. C.

Ætiology and treatment of convulsions during anæsthesia. W. N. Kemp (*Brit. Med. J.*, 1944, I, 448—450).—Convulsions occurring during administration of general or local anæsthetics are mainly due to interference with or inhibition of cerebral cell respiration. The causal factors may be anoxæmia, or tissue anoxia due to alkalæmia and acapnia, or the toxic action of the anæsthetic drug inhibiting tissue respiration. The main treatment is prophylactic; emergency treatment can be carried out with 5% CO_2 + 95% O_2, intravenous Na pentothal, intravenous infusion of glucose–saline, or other symptomatic measures. I. C.

Death following use of local anæsthetics in transcricoid therapy. V. J. Derbes and H. T. Engelhardt (*J. Lab. clin. Med.*, 1944, **29**, 478—482).—5 cases due to cocaine or pontocaine are described. Allergy is considered the probable cause. C. J. C. B.

Effect of nicotinic acid on post-operative vomiting. W. W. Mushin and H. M. Wood (*Brit. Med. J.*, 1944, I, 719—720).—Nicotinic acid has no effect on the incidence of post-operative vomiting when given pre- and/or post-operatively. I. C.

Analgesia in obstetrics. J. F. Donnelly (*Amer. J. med. Sci.*, 1944, **207**, 804—811).—A review of recent literature. C. J. C. B.

Pethidine as an obstetric analgesic. B. Gallen and F. Prescott (*Brit. Med. J.*, 1944, I, 176—179).—Pethidine proved an effective obstetric analgesic, the analgesia having been complete or satisfactory in 60% of cases; 5% failed to obtain any relief from the drug. It is satisfactorily administered in the following ways: (*a*) initial dose (100 mg.) intramuscularly, repeated after 1 hr. with a chloral–bromide–opium mixture or with scopolamine; (*b*) 100 mg. of pethidine intravenously, followed after 1 hr. by 100 mg. intramuscularly, with or without scopolamine (1/150 grain). Intravenous pethidine produces analgesia in 5—10 min.; intramuscular pethidine in 15 min. Analgesia lasts for 3—4 hr.; 400 mg. can be given in 24 hr. Pethidine has an antispasmodic action on the cervix. There was no increase of instrumental deliveries or of complications. Reactions in the mother were: vomiting, temporary rise of blood pressure, dizziness, tingling of limbs, dryness of the throat. In the babies, 9% required resuscitation; there were no deaths and no neonatal morbidity. I. C.

Obstetric analgesia with pethidine. W. Spitzer (*Brit. Med. J.*, 1944, 1, 179—181).—Pethidine hydrochloride by mouth (25 mg. repeated half-hourly for 2 doses, or 50 mg. with occasional 25 mg. added) produced analgesia in 20—30 min. 17% of cases were greatly relieved, 72% had good relief, 10% no relief. In 3 mothers transient vomiting and bradycardia occurred; in 2 babies there was transient depression of heart sounds and in 5 a mild degree of

asphyxia. Pethidine shortens the labour, possibly by relaxing the cervix. I. C.

Continuous caudal anæsthesia [in obstetrics]. F. R. Irving, C. A. Lippincott, and F. C. Meyer (*N.Y. Sta. J. Med.*, 1943, **43**, 1023—1029).—Report of 218 cases using the catheter method of introducing the anæsthetic into the caudal canal, and 1·5% metycaine, 0·25% pontocaine, 1·25—1·5% monocain, or 2% novocaine in physiological saline. There were 29 cases of fœtal distress, most common in the metycaine series. There was a sustained fall in blood pressure in all these, and in some, but less than 50%, of the cases of fœtal distress with the other anæsthetics used. One of 2 cases of stillbirth, and none of 3 cases of neonatal death, was attributed to the anæsthesia. E. M. J.

Simplified method of continuous caudal analgesia [in obstetrics]. J. A. Miller (*N.Y. Sta. J. Med.*, 1944, **44**, 497—499).—A 2-inch rubber tube closed flatly at one end and having a metal adapter on the other to fit on the caudal needle is used, packed around with cotton wool and made immovable by strapping into the gluteal fold. The anæsthetic is injected into the flat end of the tube, which remains accessible. E. M. J.

One hundred cases of continuous caudal analgesia. C. O. McCormick, C. P. Huber, J. F. Spahr, and C. F. Gillespie (*Amer. J. Obstet. Gynec.*, 1944, **47**, 297—311). P. C. W.

Use of continuous caudal analgesia. C. B. Lull (*Amer. J. Obstet. Gynec.*, 1944, **47**, 312—326). P. C. W.

Continuous drip caudal anæsthesia. N. Block (*Amer. J. Obstet. Gynec.*, 1944, **47**, 331—334). P. C. W.

Relationship of maternal ether anæsthesia and inauguration of fœtal respiration. W. C. C. Cole and D. M. Kimball (*Nebraska Sta. Med. J.*, 1943, **28**, 200—203).—There was an increase from 4 to 32% in babies taking longer than 3 min. to start breathing when the mothers received anæsthesia only in the first and second stage and 3rd stage anæsthesia of over 15 min. duration. The % of babies breathing within 30 sec. fell, and those breathing within 30—60 sec. and 1—3 min. increased likewise in all the groups having 3rd stage anæsthesia of up to 5, 5—10, 10—15, and over 15 min. E. M. J.

Anæsthesia in horses and swine. A. G. Danks (*Cornell Vet.*, 1943, **33**, 344—346).—In both horses and swine intravenous injection of a mixture of chloral hydrate (12%) and $MgSO_4$ (6%) gave satisfactory anæsthesia. The solution was injected slowly until the required degree of anæsthesia was obtained. Intravenous injection of pentobarbital Na in the horse gave complete anæsthesia with a dosage of 1 grain per 15 lb. and hypnosis with 1 grain per 25 lb. body wt. Recovery from the anæsthesia occurred in 18—120 min. whereas animals receiving chloral hydrate may be unable to stand for some hr. Pentobarbital Na, given either intravenously or by the peritoneal cavity (1 grain per 5 lb. body wt.), gave satisfactory anæsthesia in pigs. E. G. W.

Analgesic effect of morphine alone and in combination with *d*-amphetamine. F. R. Goetzl, D. Y. Burrill, and A. C. Ivy (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 248—250).—Simultaneous administration of *d*-amphetamine increases the analgesic and counteracts the narcotic effect of morphine in mice, as shown by sensitiveness to pinching of the tail. V. J. W.

Relation of drug addiction to autonomic nervous system : [effect of morphine on] peripheral blood flow. C. K. Himmelsbach (*J. Pharm. Exp. Ther.*, 1944, **80**, 343—353).—The resting blood flow to the hands of morphine addicts and post-addicts is subnormal, while that of marihuana (non-opiate) users is normal. Morphine and demerol increase the blood flow to the hands. In one patient with sympathetic paralysis in the right upper extremity morphine failed to increase the blood flow to the affected hand, but had the usual effect on the normal left hand. G. P.

Morphine-like properties of diphenylethylamine and related compounds. E. C. Dodds, W. Lawson, and P. C. Williams (*Proc. Roy. Soc.*, 1944, **B**, **132**, 119—132).—A more detailed account of work previously abstracted (A., 1943, III, 763). β-Hydroxy-αβ-diphenylethylamine was the most promising, from the clinical point of view, of the substances tested; it gives complete relief from pain in doses of 200—400 mg. every 4 hr. (For new compounds see A., 1944, II, 293.) H. B.

Hypovitaminosis-*C* and antineuralgic medication. E. Frommel and M. Loutfi (*Arch. Sci. phys. nat.*, 1944, **26**, [v], *Suppl.*, 41—44).—Of the drugs tested, aniline is the most toxic and lowers the ascorbic acid content of guinea-pig tissues to the greatest extent; dehydroascorbic acid disappears from the tissues. Acetanilide and antipyrine have less effect on the ascorbic acid level and, in the latter case, dehydroascorbic acid does not disappear. Pyramidone more resembles aniline, and dehydroascorbic acid disappears from many organs. P. G. M.

Intravenous barbiturates in treatment of hysteria. C. Lambert and W. L. Tees (*Brit. Med. J.*, 1944, II, 70—73).—Various barbiturates were tried in the treatment of 126 cases of hysteria but no better results were obtained than with other psychotherapeutic methods, and there were no important differences in the effects produced. The phase of light narcosis was most suitable for psychotherapy. I. C.

Motion [sea-]sickness remedies. J. M. Vallance (*Manufg. Chem.*, 1944, **15**, 202—205, 221).—The ætiology of sea- (or similar motion-) sickness is considered and the various drugs used in formulating prophylactics or remedies therefor are discussed. E. L.

Pharmacology. I. *Aletris farinosa*. C. L. Butler and C. H. Costello (*J. Amer. Pharm. Assoc.*, 1944, **33**, 177—183).—Aq. extracts of the roots and rhizome, buffered at pH 7·5, depress the isolated rat's uterus when the concn. is above 0·02%. The extracts antagonise the stimulating effect of pitocin. When tested on isolated uterine tissue of guinea-pig and rabbit, the results are inconsistent, the predominant action being stimulation. A depressant effect is produced in cat's uterus (nembutal anæsthesia or decerebrated), especially during œstrus. F. O. H.

Effect of sodium ascorbate on survival of animals poisoned by lead, mercury, phosphorus, arsenic, and barium. E. Frommel and M. Loutfi (*Arch. Sci. phys. nat.*, 1944, [v], **26**, *Suppl.*, 37—40).—Na ascorbate in doses of 0·1—0·2 g. per kg. protects guinea-pigs from poisoning by Pb, Hg, As, and Ba. It has no effect on P poisoning. P. G. M.

[Properties and pharmacology of] dihydroxypropyl bismuthate. L. M. Wheeler, R. A. Kuever, E. G. Gross, and R. Nomland (*J. Amer. Pharm. Assoc.*, 1944, **33**, 156—158).—Dihydroxypropyl bismuthate, $OH{\cdot}CH_2{\cdot}CH(OH){\cdot}CH_2{\cdot}O{\cdot}BiO_2$, m.p. 240—245° (decomp.), is prepared by treating glycerol with $NaBiO_3$ at 52—55°, neutralising with citric acid, and fractionally pptg. with alcohol. It is water-sol., the aq. solution (pH 6·8) slowly decomp. on boiling. The 50%-lethal dose orally in rabbits is 1 g. of Bi per kg. and intramuscularly 34—40 mg. per kg. It gives stable solutions in serum. Methods of analysis are outlined. When administered orally, 2% of the Bi is excreted in the urine in rats and up to 20% in men. Clinical results in syphilis are promising. F. O. H.

Detoxification of organic arsenical compounds. V. Additional detoxicants for quinquevalent arsenicals. J. H. Sandground (*J. Pharm. Exp. Ther.*, 1944, **80**, 393—398).—All 3 isomerides of aminobenzoic acid, its methyl, hydroxy-, and nitro-analogues, benzoic acid, phenylacetic acid (and its *p*-amino-derivative), phenylpropionic acid, acetanilide, mandelic acid, benzyl succinate, benzoylglycine (and its *p*-amino-derivative), *N*-phenylglycine, nicotinic acid, nicotinamide, and *O*-acetylsalicylic acid afford 70—100% protection to rats against LD_{90+} doses of arsanilic acid or carbarsone. Esterification annuls the detoxicating property of aromatic acids. Sulphanilic acid and sulphanilamide have no detoxicating properties (cf. A., 1943, III, 764, 765, 835). G. P.

Cadmium poisoning. P. Ross (*Brit. Med. J.*, 1944, I, 252—253).—A report on 23 cases of cadmium poisoning. I. C.

Treatment of *Latrodectus* (black widow spider) poisoning. R. Gajardo-Tobar, and E. Vildosola (*Rev. Soc. argent. Biol.*, 1944, **20**, 12—20).—Anti-latrodectus serum, prepared in the National Bacteriological Institute of Buenos Aires, was injected in 6 patients with severe symptoms. One dose of 5 c.c. gave remarkable relief in 1 hr. with total recovery in 3 hr. J. T. L.

Pharmacological action of venom of *Latrodectus mactans* and other *Latrodectus* spiders. R. R. L. Sampayo (*J. Pharm. Exp. Ther.*, 1944, **80**, 309—322).—The venom, extracted from the cephalothorax, has a powerful excitatory effect on the sympathetic and central nervous systems. Injected intravenously it increases the blood pressure; this effect is not influenced by atropine, but is augmented by cocaine, and is abolished by Fourneau 933. The rise in blood pressure occurs after removal of the adrenals, of all abdominal viscera, after decapitation and extirpation of the carotid sinus, or after cutting the vagi. It causes contraction of the nictitating membrane and dilatation of pupils, but not after removal of the superior cervical ganglion. It decreases the vol. of the spleen, but has no effect on the smooth muscles of bronchioles, intestine, or uterus. Tachyphylaxis is observed after repeated injections of the venom. Antivenom serum was obtained by immunising a horse; this injected intravenously prevents or abolishes the poisonous effects of the spider venom. The symptoms of poisoning from the bite of *L. mactans* are described. G. P.

Toxicopathologic studies on *S*-methyl*iso*thiourea. W. C. Hueper and C. T. Ichniowski (*Arch. Path.*, 1944, **37**, 253—263).—The min. lethal intravenous and oral doses of *S*-methyl*iso*thiourea sulphate were determined in dogs, cats, rabbits, and rats; the rabbits were least and the rats most resistant. A neutralised solution of *S*-methyl*iso*thiourea given intragastrically is more toxic than an acid solution and produces in rats hydrothorax, hydropericardium, and inflammatory and hæmorrhagic changes in the stomach and intestine. *S*-Methyl*iso*thiourea does not cause degenerative intimal or medial changes in the aorta and other large arterial vessels in rabbits, although it produces an apparently hypothyroid hypercholesterolæmia and is a vasoconstrictor. The hyperplastic, hyperthyroid follicular changes of the thyroid gland were of mild degree. Repeated

intravenous injection of *S*-methyl*iso*thiourea may lead to marked retention of glycogen in the liver cells as in von Gierke's disease. (6 photomicrographs.) C. J. C. B.

Fate of polyvinyl alcohol introduced intraperitoneally in rats. R. H. K. Foster and L. Jenkins (*Arch. Path.*, 1944, **37**, 279—281).—Polyvinyl alcohol after being intraperitoneally injected in rats is slowly deposited in the kidneys and slowly eliminated. Small doses are completely eliminated in a few weeks. Large doses require a longer time for max. deposition and elimination. Appetite and growth are not affected by massive doses of 0·5—1·0 g. per kg. intraperitoneally. C. J. C. B.

Effects of some common poisons in sucrose solutions on chemoreceptors of the housefly, *Musca domestica*, L. C. C. Deonier (*J. Econ. Entom.*, 1938, **31**, 742—745).—The chemoreceptors of the proboscis were generally more sensitive to chemical poisons than were those on the tarsi. Proboscis responses were initiated by tarsal stimulations with M-sucrose containing $HgCl_2$ (0·5%). The proboscis chemoreceptors did not respond to 0·05% $HgCl_2$ but 0·025% of $HgCl_2$ affected the feeding of houseflies. NaF (3·5%), Na_2SiF_6 (0·5%), As_2O_3 (1·84 g. per 100 c.c.), and less than 0·25% of H_3AsO_4 did not inhibit feeding. $HgCl_2$ (5%) inhibited the tarsal chemoreceptors and prevented subsequent stimulation of the proboscis with sucrose solutions, but recovery occurred after 1—5 hr. in some flies. A. A. M.

Chemical warfare. J. R. Wood (*Amer. J. Publ. Health*, 1944, **34**, 455—460).—A chemical and toxicological review. C. J. C. B.

Tonic action of strychnine. W. F. Anderson (*Brit. Med. J.*, 1944, I, 360—361).—A review. I. C.

Toxic effects of propamidine, with special reference to the treatment of burns. J. W. Allen, F. Burgess, and G. R. Cameron (*J. Path. Bact.*, 1944, **56**, 217—223).—Toxic doses of propamidine dihydrochloride intravenously or subcutaneously in goats, rabbits, guinea-pigs, rats, or mice produce extensive liver damage, less severe and inconst. renal injury, and sometimes pulmonary œdema. Large amounts of propamidine dihydrochloride jelly (water-sol. base) can be rubbed into the skin of normal rabbits and guinea-pigs without ill effects. Risks of absorption from thermal burns treated with propamidine ointment are not great, although occasionally enough propamidine may be absorbed to give liver necrosis. Propamidine isethionate subcutaneously is no more toxic than the dihydrochloride and, when applied to normal or burnt skin, absorption does not occur and internal organs are not damaged. (3 photomicrographs.) C. J. C. B.

Heat and mustard gas burns. A. R. Koontz (*Arch. Surg., Chicago*, 1944, **48**, 284—299).—There was no difference in course or histology between heat burns and mustard gas burns in dogs or goats. (62 photomicrographs.) F. S.

Untoward effects of various substances recommended for burns or wounds. R. D. Baker (*Arch. Surg., Chicago*, 1944, **48**, 300—304).—There was no necrotising effect on the exposed muscle of the rat's abdominal wall when isotonic solution of NaCl, petrolatum, boric acid ointment, or motor oil was applied. White soap, ether, and benzene had a slight necrotising effect involving the superficial muscle fibre layer, whilst hexylresorcinol, 50% H_2O_2, 50% aq. solution of medicinal soft soap, and 95% alcohol produced necrosis involving the superficial 2—3·5 layers. 10% tannic acid and 10% $AgNO_3$ damaged muscle to a depth of 6—9 layers of muscle fibres. (6 photomicrographs.) F. S.

"Cellophane" for treatment of burns. J. Farr (*Brit. Med. J.*, 1944, I, 749—750).—After cleansing of the burnt area sulphonamide ointment is applied; the affected area is wrapped in Cellophane and compressed with cotton wool. Satisfactory results were obtained in 10 cases. I. C.

Diagnosis and treatment of lesions due to vesicants. W. E. Chiesman (*Brit. Med. J.*, 1944, II, 109—112).—A review. I. C.

Treatment of gas gangrene. J. D. MacLennan and M. G. Macfarlane (*Brit. Med. J.*, 1944, I, 683—685).—The death rate was lowest among those casualties of the Central Mediterranean Force who received within 6 hr. of diagnosis both surgical treatment and an intravenous dose at least 50,000 units of polyvalent antitoxin. There is some evidence for the val. of antitoxin as a prophylactic. I. C.

Experiments on scabies prophylaxis. K. Mellanby (*Brit. Med. J.*, 1944, I, 689—690).—Scabies prophylaxis is not practicable, but frequent examinations by experienced personnel will reveal numerous cases and diminish the no. of contacts. I. C.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

[Apparatus for recording of work performance and spontaneous activity of rats.] Influence of thiamin deficiency on work performance of rats. M. Kniazuk and H. Molitor (*J. Pharm. Exp. Ther.*, 1944, **80**, 362—372).—An apparatus for recording the work performance of swimming rats is described: the max. load which the animal can carry without sinking is recorded. This load is automatically adjusted to the waning strength of the animal. A cage for recording spontaneous activity of the rats is also described; this consists of an antenna (insulated metal sheet) placed in the centre of the cage and connected to a capacity relay, the latter operating an electromagnetic counter. Thiamin deficiency resulted in a rapid and marked deterioration of the work performance of rats, but administration of thiamin restored promptly this impairment. Reduction of food intake without thiamin deficiency was not accompanied by a decrease in work performance. Administration of thiamin, even in large doses, to non-deficient animals did not improve their work performance. G. P.

New technique for application of dust-laying oils to hospital bedclothes. F. C. Harwood, J. Powney, and C. W. Edwards (*Brit. Med. J.*, 1944, I, 615—616).—A technical note. I. C.

XXII.—RADIATIONS.

Experimental Roentgen injury. I. Effects on the tissues and blood of *C3H* mice produced with single small whole-body exposures. II. Changes produced with intermediate-range doses and a comparison of the relative susceptibility of different kinds of animals. III. Tissue and cellular changes brought about with single massive doses of radiation. IV. Effects of repeated small doses of *X*-rays on blood picture, tissue morphology, and life span in mice. P. S. Henshaw (*J. Nat. Cancer Inst.*, 1944, **4**, 477—484, 485—501, 503—512, 513—522).—I. Mice given a single dose of 50 r. of *X*-rays developed leucocytosis in 2—4 hr. and leucopenia in 8—12 hr. Reduction of spermatogonia and primary spermatocytes in the testis occurred 1 week after irradiation and reduction of secondary spermatocytes occurred a week later. The tubules recovered in 4—6 weeks. Destructive changes were also seen in lymph nodes, spleen, and intestinal mucosa.

II. Male mice and guinea-pigs were given doses from 50 to 400 r. The lethal dose for guinea-pigs was about 200 r. and for mice 400—450 r. Dead animals had congestion of the lung, petechial hæmorrhages, and ulceration of gastrointestinal mucosa and atrophy of lymphoid tissue and bone marrow. The effect produced is dependent on the amount of injury to the stem cells of regenerative tissues. The course of the changes in lymph nodes, bone marrow, and testis is illustrated.

III. Application of 50,000 r. caused death of rabbits and guinea-pigs in 3—6 hr. and of mice in 24—48 hr. following a distinctive form of shock, in which temp. rose to as high as 43·4°. The treatment caused slight hæmoconcn., rapid destruction of leucocytes, hyperæsthesia, intermittent seizures, and cyanosis. Post-mortem examination showed considerable destruction of almost all tissues with degeneration of nuclei and cytoplasm. Local application of large doses to the testis resulted in rapid changes in the exposed organ and delayed effects such as hæmorrhage in the lung.

IV. Mice were given daily doses of 5, 10, 15, 20, and 25 r. until they died. They survived from 17 to 36 weeks according to the dose administered. Although mice receiving large daily doses died earlier, they had greater total doses than did mice on low daily doses. The fall in leucocyte level and the damage to lymph nodes, spleen, bone marrow, and testis varied in a general way with the level of the daily dose. E. B.

Radiotherapy of ectopic calcification. E. Millington (*Brit. Med. J.*, 1944, II, 148—149).—Note on the technique with report of three cases. I. C.

Dwarfism associated with microcephalic idiocy and renal rickets [result of *X*-rays]. S. J. Glass (*J. clin. Endocrinol.*, 1944, **4**, 47—53).—A case is reported. *X*-Irradiation of the maternal pelvis during pregnancy was the probable cause. P. C. W.

Fallacies in soft tissue placentography. C. Moir (*Amer. J. Obstet. Gynec.*, 1944, **47**, 198—211).—The *X*-ray opacity of the placenta is indistinguishable from that of amniotic fluid. The dark band surrounding the fœtus in radiographs of the maternal abdomen is due to fœtal subcutaneous tissue. The placental shadow observed in such radiographs is thicker than the normal thickness of the placenta and can be indented by external pressure; it is concluded that what other authors have regarded as the shadow of the placenta is really the shadow of the placenta and amniotic fluid. P. C. W.

Preparation of iodine-containing *X*-ray contrast substances.—See A., 1944, II, 295.

Local *X*-irradiation of mouse embryos *in utero*. A. Raynaud and M. Frilley (*Compt. rend.*, 1943, **217**, 54—56).—The technique described renders possible brief irradiation (1—3 min.) of localised areas of the mouse embryo with high doses of *X*-rays. 29 out of 72 embryos given doses of 5000—40,000 r. to the head area survived to parturition. 12—13-day embryos were used. P. G. M.

Biological effects of *X*-rays as a function of intensity. A. A. Bless (*Proc. Nat. Acad. Sci.*, 1944, **30**, 118—121).—Wheat seeds were subjected to doses of *X*-radiation up to 1000 r. at intensities ranging

from 25 r. per min. to 5000 r. per min. The effect on the subsequent growth of the shoot was directly correlated with the total dose and was unrelated to the intensity. F. S.

Effect of long ultra-violet and near visible radiation on eggs of nematodes *Enterobius vermicularis* and *Ascaris lumbricoides*. M. F. Jones and A. Hollaender (*J. Parasit.*, 1944, **30**, 26—33).—The energy necessary in the 3500—4900 A. range to kill these eggs was 50—200 × 10^7 ergs per sq. cm., approx. 1000 times that necessary for *E. vermicularis* at λλ below 3000 A. F. S.

Primary action of *X*- and ultra-violet rays on *B. paradysenteriæ Y6R*. R. Latarjet (*Ann. Inst. Pasteur*, 1943, **69**, 205—214).—The % mortality curve of this organism when subjected to 665—20,000 r. of *X*-radiation was consistent with the theoretical exponential curve when one effective hit is sufficient to prevent the multiplication of a bacillus. The target or sensitive vol. was calc. to be 1·3 × 10^{-16} c.c. When the organism was subjected to 45—675 ergs of ultra-violet radiation per cu. mm. the mortality curve was consistent with the sigmoidal curve for 5 hits, the energy required being of the same order as for *X*-radiation. The sensitive vol., however, was calc. as only 6·2 × 10^{-18} c.c. The factors contributing to this difference are discussed. F. S.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Permeability of living membranes. IX. Calculation of toxicity constants by method of least squares. E. Macovski (*Biochem. Z.*, 1942, **310**, 313—324).—A theoretical discussion of the application of the method to equations previously given (A., 1939, III, 784), with one example. The advantages over earlier methods are stressed. P. G. M.

Problems of the transmission of light through tissues and some other media. D. S. Evans (*Phil. Mag.*, 1944, [vii], **35**, 300—314).—The absorption of light in an idealised biological tissue, in which the blood vessels are replaced by sets of parallel tubes, is calc. The absorption depends on the total vol. of blood present, and not on its distribution between blood vessels of various sizes. The effects of scattering at the surface of the tubes, and of vol. scattering within the media, are also considered. H. J. W.

Precipitation titration of gelatin. B. Jirgensons (*Biochem. Z.*, 1942, **310**, 325—334).—Solutions of gelatin or its degradation products were titrated with acetone to turbidity. The amount of acetone required is inversely proportional to mol. wt., and there is a linear relation between the log of concn. of protein material and precipitability. The presence of even small quantities of acid causes aggregation and a fall in η, with pptn. by smaller vols. of acetone, whilst larger amounts of acid effect a disaggregation with resulting stretched-chain mols. that require less acetone for pptn. P. G. M.

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. W. Haarmann and E. Frühauf-Heilmann (*Biochem. Z.*, 1941, **309**, 32—41).—$Na_2S_2O_3$, NaCNS, thiourea, KCN, proteins (*e.g.*, ovalbumin), peptone, and cystine (but not other NH_2-acids) counteract the inactivation of pancreatic diastase by $AgNO_3$. Ag being de-ionised. Malt diastase is more sensitive (greater affinity for Ag) to the action of Ag than is pancreatic diastase, its inactivation not being counteracted by NaCNS, thiourea, NH_2-acids, proteins, and peptone. KCN acts only after forming complexes with Ag. $Na_2S_2O_3$, even in great excess, counteracts the inactivation only incompletely (cf. A., 1944, II, 208). W. McC.

Structure of the collodion membrane and its electrical behaviour.—See A., 1944, I, 223.

Protoplasmic viscosity and sensitivity to *X*-rays.—See A., 1944, III, 557.

XXIV.—ENZYMES.

Mechanism of enzyme action. W. G. Crewther (*J. Proc. Austral. Chem. Inst.*, 1944, **11**, 82—87).—Enzyme–substrate relationships are critically reviewed. I. A. P.

Inhibition in enzyme systems. V. Relation between vitamins and anti-vitamins. H. von Euler, L. Ahlström, I. Petterson, and S. Tingstam (*Arkiv Kemi, Min., Geol.*, 1943, **17**, **A**, No. 8, 14 pp.; cf. A., 1944, III, 217).—The action of lactic acid dehydrogenase in presence of cozymase is inhibited by salicylate, the extent of inhibition increasing as the cozymase concn. decreases. The extent is increased by adding a second inhibitor (citrate, sulphanilate, *p*-aminobenzoate). Pantothenate has no inhibitory effect and does not increase the effect of salicylate. The slight inhibitory effect of succinate is increased by sulphanilate. Quinol and pyrogallol act like salicylate but are less powerful. Salicylate also acts as inhibitor in the ætiozymase system (decarboxylation of pyruvic acid in presence of added cocarboxylase), its effect being increased by acetaldehyde, which is likewise an inhibitor. The extent of the inhibition by salicylate in this case does not increase proportionately as the cocarboxylase concn. decreases. The results suggest that "anti-vitamins" (inhibitors) act by displacing co-enzymes from their attachment to the apo-enzyme mol. or by attaching themselves to a group in the apo-enzyme not occupied by co-enzyme. W. McC.

Aneurin inactivation by the Chastek paralysis factor. Inhibition of aneurin inactivation. R. R. Sealock and R. L. Goodland (*J. Amer. Chem. Soc.*, 1944, **66**, 507—510).—Inhibition of aneurin activity by the Chastek principle is proved to be enzymic (cf. A., 1943, III, 664) because it is prevented by metals and by some substances resembling aneurin chemically. Many substances cannot be investigated because they interfere with the method of determination, but positive results are obtained for $CuSO_4$, $ZnCl_2$, $FeCl_3$, KCN, NaF, Na_2SO_4, iodoacetic acid, cysteine, 3-*o*-aminobenzyl-4-methyl-, 4-methyl-3-β-aminoethyl-, 3-β-phthalimidoethyl-4-methyl-, and (slight) for 4-methyl-3-ethyl- and 3-phenyl-4-methyl-thiazolium chloride, 4-amino-2-methyl-5-bromomethyl- and -5-ethoxymethyl- and 4-amino-2-methyl-5-sulphomethyl-pyrimidine; 3-*o*-nitrobenzyl-4-methyl-, 2 : 4-dimethyl-3-ethyl-, 3 : 4-dimethyl-5-β-hydroxyethyl-, and 3-phenyl-2 : 4-dimethyl-thiazolium chloride have no effect. Activity of the org. substance depends on resemblance of the group attached to the N to the similar group of aneurin. For the *o*-aminobenzyl compound the graph relating % reduction in activity with log concn. is sigmoid. The % inhibition depends on the ratio of aneurin and Chastek principle concns. Analysis of the velocity determinations by the method of Lineweaver and Burk (A., 1934, 558) shows that the *o*-aminobenzyl compound acts as competitor with aneurin for the enzyme of the Chastek principle. R. S. C.

***d*-Amino-acid oxidase, uricase, and choline-oxidase (*a*) in the livers and in isolated liver cell nuclei of rats bearing transplanted tumours, (*b*) in two transplanted rat tumours and in isolated nuclei of tumour cells.**—See A., 1944, III, 543.

Action of lipoxidase on the oxidation of elæostearic acid. H. Süllmann (*Helv. Chim. Acta*, 1944, **27**, 789—793; cf. A., 1944, III, 365).—Observations on the rate of absorption of O_2 appear to indicate that the oxidation of elæostearic acid is accelerated to some extent by enzyme preps. containing lipoxidase but the ready autoxidisability of the acid somewhat obscures the results. The path through secondary oxidations does not lead to clear conceptions. H. W.

Measurement of tyrosinase catecholase activity. II. Catecholase activity based on the initial reaction velocity. W. H. Miller, M. F. Mallette, L. J. Roth, and C. R. Dawson (*J. Amer. Chem. Soc.*, 1944, **66**, 514—519).—The chronometric method (A., 1942, III, 418) is applied to the initial stages of the oxidation of pyrocatechol by tyrosinase. Whereas impure enzyme preps. are relatively stable, purer preps. suffer severe inactivation during the first few min. Thus, other methods of determining tyrosinase activity give low results. The reaction rate follows the equation, $Q = at/(b + t)$, in which Q = amount of *o*-benzoquinone formed in time t and a and b are consts. Methods of calculating a and b and thence determining enzyme activity are explained. R. S. C.

Effect of tyrosinase on phenethylamine derivatives. L. O. Randall and G. H. Hitchings (*J. Pharm. Exp. Ther.*, 1944, **81**, 77—83).—The initial rate of oxidation of a series of phenethylamine derivatives catalysed by tyrosinase (prepared from mushrooms) up to the consumption of 50 μl. of O_2 per mol. of amine was a linear function of time at pH 7 and 30°. The primary and *sec.* derivatives of any series were oxidised more rapidly than the *tert.* or quaternary derivatives. The 3 : 4-dihydroxyphenethylamines were oxidised more rapidly than the 2 : 3-dihydroxy-derivatives or adrenaline. The 4-hydroxyphenethylamines were oxidised more rapidly than the 3-hydroxy-derivatives. The 2-hydroxy- and unsubstituted phenethylamines and the *N*-substituted 3-hydroxy-derivatives were not oxidised at all. There was no correlation between rate of oxidation and the physiological activity of the compounds. G. P.

Tyrosinase in parthenogenetic grasshopper eggs.—See A., 1944, III, 519.

***l*-Amino-acid oxidase of *Proteus vulgaris*.** P. K. Stumpf and D. E. Green (*J. Biol. Chem.*, 1944, **153**, 387—399).—*Proteus vulgaris* contains an enzyme which catalyses oxidative deamination of norleucine, phenylalanine, leucine, tryptophan, methionine, tyrosine, norvaline, histidine, arginine, *iso*leucine, and α-aminobutyric acid, the rates of reaction being in this order. The enzyme has marked chemical and stereochemical specificity. It attacks only the *l*-forms of the amino-acids, and oxidation is unaffected by presence of the *d*-isomerides. β-Hydroxy-, dicarboxy-, and diamino-acids (except arginine), proline, hydroxyproline, cysteine or cystine, glycine, and phenylglycine are not attacked. The most significant difference between this enzyme and the *l*-amino-acid oxidase of rat kidney is that for each mol. of amino-acid oxidised only 1 atom of O is utilised and 1 mol. of keto-acid and NH_3 are formed. No H_2O_2 is produced. The cell-free enzyme is prepared by disintegration of the cell by supersonic vibrations, and the activity is associated with insol.

particles which sediment effectively only in fields greater than 3000 *g*. The cell-free enzyme solution is stable for a long time at 0°, but 78% activity is lost after 5 min. at 55°, and the enzyme is completely destroyed after 5 min. at 60°. The optimum pH is 6·8; stability decreases with decrease of pH. There is no loss of activity after prolonged dialysis against neutral buffer or pptn. with $(NH_4)_2SO_4$. AsO_3''', F', N_3', iodoacetate, and sulphathiazole have no effect on activity; 0·01M-HCN causes 88% inhibition of oxidation of the reduced enzyme by O_2, but does not affect reduction of the enzyme by the substrate. Extremely small amounts of capryl alcohol cause complete inhibition both aërobically and anaërobically. 0·01M-Benzoic acid does not inhibit, whilst $Ag^{\cdot}$, $Cu^{\cdot\cdot}$, and $Hg^{\cdot\cdot}$ are toxic in low concn. The equiv. of the *Proteus* enzyme is present in *Aërobacter aërogenes* and *Pseudomonas pyocyaneus*, but not in *Escherichia coli*, *Strep. hæmolyticus*, *Diplococcus pneumoniæ*, *Salmonella paratyphi*, *B. subtilis*, *Staph. aureus*, and *Sarcina lutea*. (See also A., 1944, II 289.) J. N. A.

Purified milk peroxidase. H. Theorell and Å. Åkeson (*Arkiv Kemi, Min., Geol.*, 1943, **17**, **B**, No. 7, 6 pp.; cf. Elliott, A., 1932, 1165).—Approx. 2% of the lacto-peroxidase of milk is isolated, after removal of fat, by pptg. fractionally with $(NH_4)_2SO_4$, heating at 70° for 15 min., dialysing, re-pptg. with basic Pb acetate, again dialysing, adding acetate buffer (pH 5·9), and subjecting to electrophoresis at pH 5·9. The yield is approx. 0·2 g. per 100 l. of milk. Until the electrophoresis stage is reached, the enzyme is accompanied by a red compound, possibly a conversion product of the enzyme, having an absorption band at 480 mμ. Lacto-peroxidase, which resembles albumin and is not pptd. isoelectrically, is a hæmin–protein compound (Fe content 0·0755%) having absorption max. at 413 and 280 mμ. It is reduced by $Na_2S_2O_4$, the green product being re-oxidised by air, and yields a hæmochromogen with NaOH + $Na_2S_2O_4$ + pyridine. It also yields a CN- and a F-compound. With H_2O_2 it yields two compounds according as the mol. ratio H_2O_2 : Fe is low (*e.g.*, 1 : 1) or high (*e.g.*, 10 : 1). A modification of the purpurogallin test shows that its purpurogallin val. is 71·5. With a small proportion of H_2O_2 + guaiacol, it yields tetraguaiacoquinone by a unimol. reaction. In presence of H_2O_2 it oxidises I' and it acts as an aërobic oxidase on dihydroxymaleic acid. W. McC.

Erythrocyte catalase. K. Agner (*Arkiv Kemi, Min., Geol.*, 1943, **17**, **B**, No. 9, 10 pp.).—Cryst. catalase (activity val. 100,000, Fe content 0·0087%) free from ferritin and biliverdin is obtained from defibrinated horse blood, after removal of hæmoglobin, by pptn. with alcohol, dissolution in water, re-pptn. with $(NH_4)_2SO_4$, re-dissolution in water, dialysis against PO_4''' buffer at pH 6·8, and electrophoresis. The material has absorption bands at 626, 525, and 500 mμ., the corresponding pyridine hæmochromogen having bands at 557·2 and 525 mμ. All the Fe of the material is present as hæmin. When acetate is substituted for PO_4''' as buffer the brownish-red colour changes to brownish-green and activity decreases, probably because an inactive form of the enzyme is produced. All the catalase of the blood occurs in the erythrocytes. W. McC.

Manometric measurement of esterase activity of cobra venom. F. Bovet and D. Bovet (*Ann. Inst. Pasteur*, 1943, **69**, 309—312).—With acetylcholine as substrate in const. concn. the relationship of CO_2 released to time was a straight line, the speed of hydrolysis corresponding to the concn. (1/1000—1/50,000) of added venom. With const. venom concn. the speed of the reaction was independent of the concn. (1/250—1/40,000) of acetylcholine. There was no latent period and the speed was unaffected by temp. or by Ca or K. Esterase action was destroyed by 1/5000 of $KMnO_4$, heating, 0·5 p.p.m. of eserine, and by 1/1000 of methylene-blue. F. S.

Effect of barbiturates on choline-esterase in different tissues.—See A., 1944, III, 553.

Assay of ribonucleinase in biological material. J. A. Bain and H. P. Rusch (*J. Biol. Chem.*, 1944, **153**, 659—667).—The enzyme was determined by the liberation of CO_2 from $NaHCO_3$–CO_2 in Warburg manometers, the products of the reaction being more acid than the original nucleic acid. The enzyme (optimum pH approx. 7·5) is inhibited up to 50% by 0·001M-$Cu^{\cdot\cdot}$ and -$Zn^{\cdot\cdot}$. Details of a method for correcting for CO_2 retention are given. Various normal and tumour tissues of rat were assayed. Pancreas had 16·7, spleen 2, kidney 1·6, submaxillary and lung 0·98, liver and muscle 0·3—0·4, and tumour tissues 0·5—1·06 units. J. F. M.

Peptidases of intestinal mucosa. E. L. Smith and M. Bergmann (*J. Biol. Chem.*, 1944, **153**, 627—651).—A *l*-leucine-aminoexopeptidase was purified from aq. extracts of pig's intestinal mucosa by acetone pptn. followed by $(NH_4)_2SO_4$ fractionation. A 34-fold purification was obtained, with a yield of 31%. Incubation of the purified enzyme with $Mn^{\cdot\cdot}$ for 24 hr. led to a 95% loss of activity, although both $Mn^{\cdot\cdot}$ and $Mg^{\cdot\cdot}$ activate the purified enzyme with short incubation. The enzyme was partly inactivated by incubation with cysteine. Prolidase was purified by acetone pptn. followed by lyophilisation of the mother-liquor and then dialysis. Another method in which the initial pptn. was by Pb acetate, the enzyme being in the supernatant fluid, gave a better yield. Dialysis followed by fractional $(NH_4)_2SO_4$ pptn. led to a prep. 30 times as active as the original. This enzyme was activated by $Mn^{\cdot\cdot}$, but not by $Mg^{\cdot\cdot}$, and inhibited by $Co^{\cdot\cdot}$, $Cu^{\cdot\cdot}$, or $Zn^{\cdot\cdot}$. First-order velocity coeffs. were obtained for hydrolyses by this enzyme. A glycine-imidoendopeptidase, which was not activated by $Mn^{\cdot\cdot}$, and other peptidases was also obtained. From pig's kidney was obtained an enzyme that, activated by cysteine, hydrolysed a proline peptide. (For new substrates, see A., 1944, II, 290.) J. F. M.

" *d*-Peptidase " in growing parts of old plants. IV. E. Bamann and O. Schimke (*Biochem. Z.*, 1942, **310**, 302—310; cf. A., 1944, III, 287).—The activities of *d*- and *l*-peptidase in various parts of asparagus and flowering barley are determined. Asparagus shoots contain the greatest amount of *l*-peptidase. In presence of $MnCl_2$, the activity is increased by approx. 50%, whilst in presence of cysteine + $MnCl_2$ there is a decrease in activity in sections from the tip of the shoot, but an increase with lower sections. The top of the shoot also exhibits max. *d*-peptidase activity, whilst lower sections contain less enzyme. Activation by $MnCl_2$ is greater than with *l*-peptidase, whilst cysteine has no pronounced effect. The activity of *d*-peptidase is greater in the ears than in the nodes on the stem of flowering barley. J. N. A.

Kinetics of hydrolysis of muscle-proteins by proteases. I. A. Smorodincev and V. P. Shigalov (*J. Appl. Chem. Russ.*, 1943, **16**, 227—233).—Meat can be hydrolysed for soup cubes etc. by enzymes more rapidly than by acid. 1 g. of beef digested with 0·01% pepsin solution in HCl at pH 1·5—2 gives in 60 min. at 37° 10—17 mg. of amino-N; this amount does not rise on further digestion. A subsequent digestion with pancreatin at pH 8·2 at 37° raises amino-N to 22—67 mg. within 1 hr.; the rate of reaction increases by a factor of 2—2·5 when the concn. of pancreatin increases from 0·5% to 1%, but an increase to 2% is less effective. Erepsin applied either after, or together with, pancreatin accelerates the reaction but little. The rate of digestion in the first 10—15 min. is so much greater than that in the second part of the reaction that no reaction order is satisfied; but the second part alone can be represented by the Schütz–Borisov equation or by reactions of zero or first order. This complicated kinetics is probably due to measuring amino-N instead of the unhydrolysed protein. J. J. B.

Activation of ficin. T. Winnick, W. H. Cone, and D. M. Greenberg (*J. Biol. Chem.*, 1944, **153**, 465—470).—The protease activity of cryst. ficin, activated by cysteine, HCN, or H_2S, is not appreciably diminished by removing the activator (cysteine by dialysis, HCN or H_2S by evacuation) anaërobically. When dialysis is aërobic, almost all activity is lost but most of it is restored by treatment with activator. Most of the activity lost by treatment with $KMnO_4$ is also restored by treatment with activator. These findings and measurements of oxidation–reduction potential indicate that ficin is active in reduced form and inactive when oxidised. CN' and SH compounds have no co-enzymic function but protect the enzyme from oxidation or inactivation by heavy metal. W. McC.

New proteolytic enzyme of papain class in plants. W. G. Jaffé (*Rev. Brasil. Biol.*, 1943, **3**, 149—157).—A new proteolytic enzyme has been prepared from the sap of the bush *Tabernamontana grandiflora*. It belongs to the papain class and is 10 times as powerful as papain. The sap collected in July contains a natural activator and the enzyme is therefore not activated by the usual papain activators. The sap collected in April is devoid of natural activators and activated by HCN, cysteine, etc. $Na_2S_2O_3$ acts as an activator of papain and of the new enzyme. I. C.

Combination of potato virus *X* and tobacco mosaic virus with pepsin and trypsin. A. Kleczkowski (*Biochem. J.*, 1944, **38**, 160—167).—Pepsin combines with casein, potato virus *X*, and heat-denatured tobacco mosaic virus, which are all substrates, but not with the undenatured tobacco virus, which is not a substrate for peptic action. The pepsin–potato virus complex is still infective. Invertase does not combine with or attack any of these proteins. More trypsin combines with the tobacco virus, which is not a trypsin substrate, than with potato virus *X*, which is. The infectivity of the tobacco virus is reversibly inhibited by this combination, and the trypsin is protected from spontaneous inactivation at pH 7. Trypsin and invertase adsorbed on charcoal can be set free by casein; adsorbed invertase is set free by the tobacco virus but not by sucrose. R. L. E.

Plasma coagulation and fibrinogenolysis by prostatic fluid and trypsin.—See A., 1944, III, 539.

Action of α- and β-amylase. W. B. Wragge (*J. Proc. Austral. Chem. Inst.*, 1944, **11**, 88—91).—A review. I. A. P.

Elevation of uterine β-glucuronidase activity by œstrogenic hormones.—See A., 1944, III, 538.

Isolation and crystallisation of enolase. O. Warburg and W. Christian (*Biochem. Z.*, 1942, **310**, 384—421).—Enolase, the enzyme that converts 2-phosphoglyceric acid into phosphopyruvic acid, is obtained from extracts of dried brewer's yeast. Dried yeast is extracted with water at 38° and centrifuged, and the extract is

cooled to 0°. Addition of 0·5 vol. of cold acetone produces a ppt. which is discarded, and addition of a further 0·5 vol. of acetone ppts. the enzyme, which is collected and extracted with water. Insol. material is discarded and the supernatant fluid is acidified with N-acetic acid to pH 4·76. The enzyme is fractionally pptd. by alcohol at 0°, the active fraction is extracted with water, insol. material is discarded, and the extract is again fractionally pptd. by alcohol at 0°. The enzyme is then pptd. from the clarified aq. solution by yeast-nucleic acid solution at pH 4·5. The nucleic acid is removed from a solution of the complex weakly acid to litmus by protamine sulphate, the pH falling to 4·6. The supernatant liquid is adjusted to pH 6·2 and again clarified. The solution is made 5% in $MgSO_4,7H_2O$, kept at 38° for 17 hr., and then heated at 53° for 15 min. The ppt. is removed and the supernatant fluid is dialysed against 0·001N-aq. NH_3. The solution is clarified and freeze-dried, yielding 2·67 g. of product of 50% purity per kg. of dried yeast. A second dialysis against aq. alcohol at 0° for 7 days gives a product of 75% purity (P 0·2%) in a yield of 0·14% of original dried yeast. Details are given for the prep. of the cryst. $HgSO_4$ complex in needle form, starting from the product of 50% purity. This salt is inactive but, on dissolution in CN′-containing ammoniacal aq. $(NH_4)_2SO_4$, and addition of further $(NH_4)_2SO_4$, the free enolase protein is pptd.; this can be activated by Mg salts. The removal of Hg is more complete if the aq. $(NH_4)_2SO_4$ solution is dialysed. Low concns. of Zn and Mn salts are more effective than Mg in activating enolase protein. Inhibition of the activity of the Mg–enolase complex by F′ is due to preferential combination of Mg with F′.

P. G. M.

Phosphatases of red blood corpuscles active in acid media (acid phosphatases). J. Roche, N. van Thoai, and J. Baudoin (*Compt. rend.*, 1942, **215**, 386—387).—Anuclear red corpuscles (ox and rat) contain two phosphomonoesterases with optimum pH of 5·5 and 4·1. The enzyme with optimum at pH 4·1 is destroyed spontaneously when the corpuscles are stored for several days at 2° (type A_3 of Folley and Kay), whilst the other is more stable (type A_4). $Mg^{··}$ and $Mn^{··}$ inhibit the A_3 enzyme and activate the A_4, the effect of $Mn^{··}$ being more marked. The type A_4 enzyme is activated by ascorbic acid, glutathione, and cysteine, whilst the A_3 enzyme is activated by the thiols but inhibited by ascorbic acid. The corpuscles contain two pyrophosphatases with optimum pH 5·4 and 4·1, activated by $Mg^{··}$ and ascorbic acid, and separated from the phosphomonoesterases by adsorption on kaolin. The red corpuscles are the only animal cells containing type A_4 phosphomonoesterase.

H. G. R.

Effect of castration and testosterone propionate on "alkaline" and "acid" phosphatases of kidney, liver, and intestine of mouse. C. D. Kochakian and R. P. Fox (*J. Biol. Chem.*, 1944, **153**, 669—674).—The phosphatases of the liver and intestine of mice were not affected either by castration or by testosterone implantation. The kidneys decreased in size as a result of castration; the total "alkaline" phosphatase also decreased, although the amount per g. did not. The total "acid" phosphatase decreased slightly, whilst the amount per g. increased. Testosterone treatment led to hypertrophy of the kidney, a large decrease in "alkaline" phosphatase, and an increase in "acid" phosphatase. There was more "alkaline" phosphatase in the tissues of the older than in the younger mice.

J. F. M.

Fluoride inhibition of phosphatase with acid optimum pH. W. Kutscher and H. Wüst (*Biochem. Z.*, 1942, **310**, 292—301).—Inhibition of acid phosphatase by F′ is due to competition between F′ and the substrate for the enzyme. It appears that F′ and the substrate unite with the enzyme at the same point of attack, and the extent of inhibition depends on the affinity of the substrate for the enzyme. Acid phosphatase has a greater affinity for phenyl phosphate than it has for β-glycerophosphate and hence F′ inhibits hydrolysis of β-glycerophosphate more readily than that of phenyl phosphate. It is suggested that a metallic atom if present in the enzyme mol. might serve as the place of attack by F′ or of attachment to the substrate. The inhibitions of acid phosphatase and of glycolysis of muscle by F′ are compared and discussed.

J. N. A.

Differentiation of pyrophosphatases and alkaline phosphomonoesterases. J. Roche, N. van Thoai, and J. Durand (*Compt. rend.*, 1943, **217**, 119—120).—After prolonged dialysis of the enzyme preps., $Ca^{··}$, $Mg^{··}$, and $Mn^{··}$ activate the monoesterases to a greater extent than the pyrophosphatases, whilst $Fe^{··}$ and $Zn^{··}$ activate the latter and inhibit the former. The differences observed seem to be due rather to the presence of sp. co-enzymes and varying content of active metal ions than to any fundamental constitutional differences.

P. G. M.

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

Combined bios-growth substance in *Boletus edulis*. J. Dagys and P. Bluzmanas (*Ber. deut. bot. Ges.*, 1943, **61**, 49—66).—The dried material, after removal of sol. matter by washing with water or alcohol, yields a further quantity of yeast growth-substance by treatment with N-HCl, NaOH, or pepsin. The liberated growth-substance is sol. in water or 87% alcohol but not in ether, is resistant to oxidation by H_2O_2, pptd. by Pb acetate, and is adsorbed by animal C. It is probably pantothenic acid or a related substance.

A. G. P.

Biochemistry of wood-rotting fungi. IV. Metabolic products of *Trametes suavolens* (Linn.), Fr. J. H. Birkinshaw, A. Bracken, and W. P. K. Findlay (*Biochem. J.*, 1944, **38**, 131—132; cf. A., 1940, III, 262).—The mycelium and metabolism solution of the fungus grown on aq. malt extract contain methyl anisate and small amounts of anisaldehyde. Traces of anisic acid, possibly due to atm. oxidation, are also present.

R. L. E.

Nature of the antibiotic substances produced by *Aspergillus fumigatus*. S. A. Waksman and W. B. Geiger (*J. Bact.*, 1944, **47**, 391—397).—Of the three antibiotic substances produced by *Aspergillus fumigatus* fumigatin is the least active, fumigacin (helvolic acid; Chain *et al.*, A., 1943, III, 917) is more active, and gliotoxin is the most active. Gliotoxin also acts on a greater no. of bacteria than fumigacin, including various Gram-negative bacteria. Fumigacin, because of its lower toxicity to animals, offers the greatest promise as a chemotherapeutic agent, but it is far less active than penicillin.

F. S.

Strain specificity and production of antibiotic substances. III. *Penicillium notatum-chrysogenum* group. S. A. Waksman and H. C. Reilly (*Proc. Nat. Acad. Sci.*, 1944, **30**, 99—105).—Penicillin was produced by several strains of *P. notatum*, by *P. janthinellum* and *spinulosum*, and by *Aspergillus flavus*. Some cultures produced max. penicillin in stationary cultures whereas others required submerged conditions for max. production. Most cultures produced a second antibiotic factor which was active only in the presence of glucose in the case of the *P. notatum* strains. Aspergillic acid, the second antibiotic produced by *A. flavus*, was independent of glucose.

F. S.

Rapid accurate method for testing penicillin production by different strains of *P. notatum*. S. A. Waksman and H. C. Reilly (*J. Bact.*, 1944, **47**, 308—309).—20-ml. portions of a suitable agar medium are placed in test-tubes of 18 mm. diameter, giving an agar column of 77 mm. The *Penicillia* to be tested are sown on the surface and the penicillin content of the agar is tested by placing plugs of the agar on the surface of nutrient agar sown with the test organism.

F. S.

Carbon utilisation and carbohydrase activity of *Phymatotrichum omnivorum*. L. M. Blank and P. J. Talley (*Amer. J. Bot.*, 1941, **28**, 564—569).—The best C sources for *P. omnivorum* were glucose, fructose, and mannose or compounds from which the fungus could obtain these. Utilisation of polysaccharides depended on the ability of the organism to hydrolyse them and on the rate at which hydrolysis occurred. The amount of growth produced by the fungus was affected in some cases by the method of sterilising (autoclave, alcohol) the nutrient materials.

A. G. P.

Chemical control of conjugation in *Zygosaccharomyces*. W. J. Nickerson and K. V. Thimann (*Amer. J. Bot.*, 1941, **28**, 617—621).—A pure culture of *Zygosaccharomyces* which conjugated only sparingly did so to a much greater extent when grown in mixed culture with *Aspergillus niger*. The latter produces a conjugation-promoting substance which is sol. in 90% alcohol but not in acetone or $CHCl_3$. The active substance had a similar effect on two other species of *Zygosaccharomyces*.

A. G. P.

Biological synthesis of cell material by yeast. H. Fink (*Biochem. Z.*, 1942, **310**, 311—312).—*Torula* yeast grows on a medium containing 1·5—2·0% of P_2O_5 (on dry basis) instead of 4—6% of P_2O_5 as normally used. The amounts of protein and vitamin-B_1 in the yeast grown on the two media are practically the same, but the ash content of the yeast on the low- is 50% less than that of the yeast on the high-P_2O_5 medium.

J. N. A.

Effect of certain salts on enzyme activity [in fermentation]. J. M. Azua (*Tecnoquím.*, 1944, **3**, No. 20, 6, 8—10).—Na_2S and Na_2SO_3 accelerate the fermentation of glucose by yeast. Na_2SeO_3 behaves similarly at concns. below 2·7 p.p.m. Na_2TeO_3, Na_2HAsO_3, $NaVO_3$, Na_2SeO_4, Na_2Se, and Na_2SO_4 have an inhibitory action on fermentation. Salts of Se and Te deposit Se and Te in the yeast cells during the reaction. $(NH_4)_2SO_4$ has no appreciable effect on the fermentation or on the action of Na_2SeO_3.

F. R. G.

Action of chemical carcinogenic agents on yeasts. Arsenic. P. Beraud (*Ann. Inst. Pasteur*, 1943, **69**, 230—237, 275—286, 349—357).—*Saccharomyces* grown on a medium containing Na arsenate or arsenite (0·005M.) develop new strains which differ morphologically from the parent strain and have varying rates of growth. When As-habituated strains are transferred to normal media they grow more rapidly, have a smaller dry wt. per organism, and contain less glycogen than normal strains; after a few passages in normal media they return to normal. The As-habituated strains are more sensitive to ultra-violet radiation. In the first passage in arsenate respiration and fermentative activity are increased but with arsenite they are diminished, although in both cases multiplication is greatly diminished. On the other hand, arsenite-treated yeast in normal medium

shows increased multiplication with unchanged respiration and reduced fermentation. There is thus no relation between respiration and rate of multiplication. Increase in the latter appears to be due to the cell requiring less energy because it does not accumulate reserve material or because of its diminished size. (2 photomicrographs.) F. S.

Yeast in nutrition.—See A., 1944, III, 545.

Electrical conductivity as a method for investigating yeast suspensions. Conductivity of yeast suspensions.—See B., 1944, III, 178.

Histoplasmosis. P. R. Beamer, E. B. Smith, and H. L. Barnett (*J. Pediat.*, 1944, **24**, 270—279).—A case in a male infant, 11 months of age, is described. Lesions were found in the lungs, liver, spleen, adrenal glands, kidneys, colon, appendix, bone marrow, lymph nodes, and blood vessels. Macroscopically visible colonies of *Histoplasma capsulatum* were observed in blood agar plates (incubated aërobically at room temp.) on the 4th day following inoculation with blood taken from the heart at autopsy. Yeast-like forms of the fungus were observed in blood films prepared post-mortem. *H. capsulatum* is resistant to drying and to low temp. (5—8°) but is destroyed in milk by heating at 62—63° for 20 min. Guinea-pigs, normal and vitamin-*C*-deficient, could not be infected by oral feedings with large no. of organisms. C. J. C. B.

Biological examination of sea- and fresh-water with black and white plankton cell. R. Kolkwitz (*Ber. deut. bot. Ges.*, 1943, **61**, 3—12).—Use of appropriate cells with light or dark ground for examination of plankton and tripton is described. A. G. P.

Conservation of cultures of protozoa at room temperature. H. Meyer and M. X. de Oliveira (*Rev. Brasil. Biol.*, 1943, **3**, 341—343). I. C.

Amœbiasis : study of cases admitted to Philadelphia hospital during last 5 decades. R. S. Diaz-Rivera and E. A. Rasberry (*Amer. J. med. Sci.*, 1944, **207**, 754—759).—Although the incidence of the disease in Philadelphia has been estimated at 5—10%, only 32 cases were diagnosed at the Hospital of the University of Pennsylvania during the last 5 decades. 5 of these were diagnosed during the last 6 months. C. J. C. B.

Laboratory aids in diagnosis of malaria. E. Denhoff and B. C. Piper (*J. Lab. clin. Med.*, 1944, **29**, 518—524).—A review of field methods. C. J. C. B.

Visceral leishmaniasis (kala-azar) in an adult contracted in Malta. F. E. Lipscomb and M. O. J. Gibson (*Brit. Med. J.*, 1944, I, 492—493).—Case report. I. C.

Rat-bite fever. C. M. Witzberger and H. G. Cohen (*Arch. Pediat.*, 1944, **61**, 123—133).—Comparison of the spirochætal (Sodoku) and bacillary (Haverhill fever) forms, with illustrative case reports. C. J. C. B.

Substitutes in culture media. V. B. McMahon (*J. Bact.*, 1944, **47**, 400—402).—A substitute for meat infusion is soya beans, 500 g. washed and soaked in 2000 ml. of distilled water overnight, boiled 1 hr., made up to 1 l., and filtered if necessary. Another substitute for meat is a fish liquor, known as B. G. Concentrate, a vac.-conc. extract, and a by-product of fish meal. 50 g. are mixed with 1 l. of distilled water, adjusted to pH 7·4, boiled for 15 min., and filtered through paper; 3 g. of NaCl are added and the medium is autoclaved. A substitute for tomatoes for media for *Lactobacillus acidophilus* is 40 g. per l. of diastatic malt secured from a brewery. F. S.

Papain digestion of cooked meats : application to the preparation of a new culture medium. C. Belin (*Ann. Inst. Pasteur*, 1943, **69**, 305—307).—225 g. of boiled meat (veal, beef, or horse-flesh) in 1 l. of water with 2 g. of papain (titre 200) are held at 54—55° for 24 hr. with occasional shaking. The filtrate contains 125—150 g. of the meat in hydrolysed form and as a bacteriological peptone is superior to the commercial preps. If the mixture is held at lower temp. there is multiplication of bacteria with production of amino-acids. Higher temp. diminish the duration of fermentation and raising temp. rapidly to 100° or to 80° in 1 hr. yields no peptone. F. S.

Vitamin content of ingredients of microbiological culture media. J. L. Stokes, M. Gunness, and J. W. Foster (*J. Bact.*, 1944, **47**, 293—299).—If the various peptones, meat extracts, etc. in current use are used singly or in some combinations in concns. of 1—2%, the resultant media may be deficient in thiamin, riboflavin, pantothenic acid, pyridoxine, and *p*-aminobenzoic acid but not in nicotinic acid, biotin, or folic acid. Such deficiencies may be remedied by proper combinations of the different ingredients or by the addition of liver or yeast concentrates or synthetic vitamins. F. S.

Time and temperature guide for inspissating culture media. A. Hambleton (*J. Lab. clin. Med.*, 1944, **29**, 526).—A simple "slide rule" apparatus is described by which the temp. at the start of inspissation is set opposite the actual time of the day; from then on it indicates the temp. which the inspissator should have at any time until the batch is complete. C. J. C. B.

Identification of acetylmethylcarbinol [acetoin] in culture media by the corresponding osazone and sensitisation of Lemoigne's method. Production of acetylmethylcarbinol in culture media : importance of oxidation–reduction factors. R. Pirot, M. Bourgain, and J. Dufau-Casanabe (*Ann. Inst. Pasteur*, 1943, **69**, 313—315, 315—319).—The sensitivity of Lemoigne's method for the Voges–Proskauer reaction (A., 1920, ii, 198) is increased 6 times by adding to the formed dimethylglyoxime a Fe^{II} salt (0·05 g. per 100 of Fe) instead of a Ni salt. This method gives a yellow, orange, or red colour according to the dimethylglyoxime content. A simpler and more sensitive test is the formation of a characteristic osazone by heating at 37° for 30 min. a mixture of equal vols. of culture medium and phenylhydrazine reagent. Another test is the production of a lemon colour by the addition of a few crystals of *o*-phenylenediamine and 1 c.c. of H_2SO_4 to 1 c.c. of culture medium previously distilled as in Lemoigne's method. Acetylmethylcarbinol can be detected in 24 hr. in cultures of *Aerobacter* in the medium described by O'Meara (*J. Path. Bact.*, 1931, **34**, 401), in which 0·7% of fumaric acid is incorporated. In absence of oxidation–reduction factors it is produced slowly. Fumaric acid cannot be replaced by quinol or ascorbic acid. F. S.

Effect of sodium azide on microbic growth and respiration. I. Action on microbic growth. II. Action on bacterial catalase. III. Effect on gas metabolism of *B. subtilis* and *Ps. pyocyanea* and influence of pyocyanine on gas exchange of pyocyanine-free strain of *Ps. pyocyanea* in presence of sodium azide. IV. Effect on glucose fermentation and lactic acid production by streptococci and lactobacilli. H. C. Lichstein and M. H. Soule (*J. Bact.*, 1944, **47**, 221—230, 231—238, 239—251, 253—257).—I. Na azide in concns. of 0·01—0·03% in infusion agar was bacteriostatic for Gram-negative bacteria. Streptococci, pneumococci, anaërobes, and lactobacilli were resistant to 0·03%. Some facultative anaërobes were more sensitive to Na azide when cultured in the absence of free O_2.

II. Na azide in concns, of 0·01—0·02% markedly inhibited the catalase activity of suspensions of washed bacteria. The inhibition was reversible, the reversibility diminishing with increased time of exposure to the chemical. The inhibition of catalase in proliferating cells was similar, with the exception of *Ps. pyocyanea*. Attempts to demonstrate the presence of peroxide in plain broth and Na azide broth cultures of bacteria were unsuccessful.

III. There was a marked inhibition of O_2 consumption and a reduction in growth in the presence of 0·05% Na azide for *Ps. pyocyanea* and 0·003% for *B. subtilis*. The resulting R.Q. at these concns. suggested that the respiration of the bacteria was entirely anaërobic. The increase in the R.Q. of a pyocyanine-free strain of *Ps. pyocyanea* was annulled by the addition of pyocyanine, which apparently acted as an O_2 transfer catalyst.

IV. Na azide in concns. of 0·005—0·02% in glucose extract broth had no effect on the utilisation of this sugar by two strains of streptococci. The yields of lactic acid from glucose were slightly higher in the presence of Na azide. In the presence of these same concns. of Na azide the proportion of glucose consumed was 30% by *L. casei* and 43% by *L. fulleri*. The yields of lactic acid from the glucose consumed were not decreased. F. S.

Combined bacteriostatic activity of sulphanilamide and azochloroamide on streptococci in *in vitro* and *in vivo* studies. F. M. Skelton (*J. Bact.*, 1944, **47**, 273—275).—In combination, sulphanilamide in concn. of 1/1000 and azochloroamide in concn. of 1/100,000 were as effective in preventing the growth of *Strep. agalactiæ* in beef broth as sulphanilamide alone at 1/500 and azochloroamide at 1/30,000. The treatment of bovine mastitis with combined sulphanilamide and azochloroamide gave unsatisfactory results. F. S.

Bactericidal and bacteriostatic actions of *p*-aminobenzenesulphonamide and *p*-hydroxylaminobenzenesulphonamide, with special reference to their suppression by *p*-aminobenzoic acid. J. W. McLeod, A. Mayr-Harting, and N. Walker (*Brit. J. exp. Path.*, 1944, **25**, 27—37).—The capacity of *p*-aminobenzoic acid to neutralise sulphanilamide bacteriostasis decreases in proportion to the *in vitro* sensitiveness of the bacterium under examination. Where the *p*-aminobenzoic acid neutralisation of sulphanilamide effect is marked there is also considerable neutralisation of *p*-hydroxylaminobenzenesulphonamide effect. F. S.

Structure and activity of sulphanilamides. F. G. Bordwell and I. M. Klotz (*J. Amer. Chem. Soc.*, 1944, **66**, 660—661).—Contrary to the theory of sulphonamide activity of Kumler *et al.* (A., 1944, III, 294), the resonance with separation of charge is greater in the undissociated mol. than in the anion. Thus, sulphanilamide has absorption max. at 2600 A. in neutral and at 2500 A. in alkaline solution. Also, *p*-aminostyrene-ω-sulphonamide is almost inactive *in vitro*. R. S. C.

Mode of action of sulphonamides.—See A., 1944, III, 551.

Antibacterial and toxic action of acridine derivatives.—See A., 1944, III, 552.

Influence of soaps and similar substances on disinfecting power of phenols.—See B., 1944, III, 187.

Chemical inhibition of growth of fish-spoilage bacteria.—See B., 1944, III, 182.

Current progress in sterilisation of air. S. Mudd (*Brit. Med. J.*, 1944, II, 67—70).—Respiratory disease is responsible for more than one third of the total no. of person-days lost to American industry by disability. Hence the importance of sterilising the air of enclosed spaces which is the principal vehicle of respiratory infection. The main means of air sterilisation, ultra-violet radiation and germicidal vapours of NaOCl and propylene and triethylene glycol, are reviewed. I. C.

Control of dust-borne streptococcal infection in measles wards. J. Wright, R. Cruickshank, and W. Gunn. (*Brit. Med. J.*, 1944, I, 611—614).—An investigation on the control of dust-borne infection from hæmolytic streptococcus was carried out in two measles wards of identical design. In the " test ward " the floor alone was oiled and subsequently bed-clothes, patients' garments, and all other woollen and cotton articles were treated with emulsions of technical white oil. In the " control ward " no anti-dust measures were taken. In both wards air was sampled for total bacteria and for hæmolytic streptococci during bed making and sweeping. Type 6 streptococcus was adopted as indicator organism for cross-infection since it accounted for 90% of the cross-infections and middle-ear complications after admission. When the floor alone was oiled in the test ward the cross-infection rate, the middle-ear complication rate, and the no. of hæmolytic streptococci in the air were about the same in the two wards. When full anti-dust measures were taken in the test ward the mean hæmolytic streptococcus count in the air was reduced by 97·5%; the mean bacterial count was 91% less and the mean hæmolytic streptococcus count 98% less than in the control ward; type 6 cross-infection rate was 18·6% in the test ward and 73·3% in the control ward; middle-ear complications were 2·8% and 14·3% in the test and control ward. Streptococcal infections occurred in spite of sulphonamide prophylaxis; type 6 strain is sulphonamide-resistant *in vitro*. I. C.

Oiled floors to control respiratory infection. P. H. R. Anderson, J. A. Buchanan, and J. J. MacPartland (*Brit. Med. J.*, 1944, I, 616—617).—In an Army unit where the barrack floors were oiled with spindle oil at regular intervals the average rate of respiratory infections was 7 per 1000 men as against 38 per 1000 men in a unit living under comparable conditions in barracks where the floors were not oiled. In winter time no major outbreak of respiratory infection appeared in the oiled floor unit; in the control unit there was an outbreak of almost epidemic proportions. I. C.

Prevention of cross-infection in children's wards. N. M. Jacoby (*Arch. Dis. Childh.*, 1944, **19**, 26—28).—The most important factor is bed isolation. Full practical details are given. C. J. C. B.

Use of glycol vapours for bacterial control in large spaces.—See A., 1944, III, 557.

Effect of ultra-violet radiation (Knott technique) on bacteria and their toxins suspended in human blood and appropriate diluents.—See A., 1944, III, 557.

Nutrition of enterococci. C. F. Niven, jun., and J. M. Sherman (*J. Bact.*, 1944, **47**, 335—341).—All of 19 enterococci required pantothenic acid, nicotinic acid, pyridoxine, and biotin. 17 strains required riboflavin, whereas only 7 required folic acid. 14 of the 19 cultures grew in a medium containing 13 amino-acids, the min. combination found for one strain of *Strep. zymogenes*. There was no difference in the nutritive requirements of the four enterococcus species. F. S.

Apparatus for studying respiration of *Azotobacter* in relation to energy involved in nitrogen fixation and assimilation. J. M. Fife (*J. Agric. Res.*, 1943, **66**, 229—248).—A differential calorimeter (described) allows simultaneous measurement of the heat and CO_2 liberated by a bacterial culture over the range of O_2 partial pressures from 0·001 to 1·0 atm. Vigorous aëration combined with rapid mechanical stirring ensures adequate O_2 supply and effective removal of the CO_2 formed. *Azotobacter*, even in old cultures, produced the max. amount of heat possible from the O_2 utilised. R. H. H.

Oxidation of alcohols by non-sulphur photosynthetic bacteria. J. W. Foster (*J. Bact.*, 1944, **47**, 355—372).—70 strains of non-S purple photosynthetic bacteria all capable of utilising various alcohols for the photosynthetic reduction of CO_2 were isolated by sp. enrichment culture techniques. One strain oxidised a no. of *sec.* alcohols to the corresponding ketones, meanwhile stoicheiometrically assimilating CO_2 in the light. Another strain, *Rhodospirillum* sp., oxidised only primary alcohols, the formation of an adaptive enzyme being necessary when the organism had been cultivated in the absence of alcohol. F. S.

Decomposition of allantoin by intestinal bacteria. E. G. Young and W. W. Hawkins (*J. Bact.*, 1944, **47**, 351—353).—Allantoin in nutrient broth was decomposed by *Bact. coli*, *Aerobacter aerogenes*, and *Proteus vulgaris*, and very slightly or not at all by *B. mesentericus*, *Lactobacillus bulgaricus*, *Strep. fæcalis*, *Strep. hæmolyticus*, and *Staph. aureus*. F. S.

Degradation of organic acids by bacteria. III. Aërobic decomposition of acetic acid by *B. turcosum*. W. Franke and H. Rudloff (*Biochem. Z.*, 1942, **310**, 207—221; cf. A., 1938, III, 153).—Acetic acid is oxidised 3—5 times as rapidly as is succinic acid by *B. turcosum*. The optimum pH vals. for oxidation of acetate and succinate are 7·6 and 5·8, respectively, and oxidation is unaffected by variation of $[O_2]$. Part of the acetic acid is completely oxidised, but 33—50% is probably converted into carbohydrate. The ratio of assimilation to oxidation is unaffected by time, temp., or concn. of bacteria. Assimilation is decreased or inhibited in old cells or cells poisoned by iodoacetate. Although succinic acid is oxidised at a slower rate, it may still be an intermediate in the oxidation of acetic acid, because the cell walls may be less permeable to dicarboxylic acids. J. N. A.

Decomposition of histamine and nicotine by bacteria. H. Bucherer and C. Enders (*Biochem. Z.*, 1942, **310**, 222—224).—By repeated inoculation into a medium containing nicotine (2 c.c.), KH_2PO_4 (2 g.), $MgSO_4$ (0·6 g.), and $FeSO_4$ (0·08 g.) in tap-water (1 l.) and finally by use of nicotine–agar medium, three obligate aërobes, which decompose nicotine, are isolated from soil. By a similar technique using a medium containing histamine (5), $CaCO_3$ (5), KH_2PO_4 (0·5), and $MgSO_4$ (0·6 g.) in tap-water (1 l.), a Gram-negative organism is isolated from slime. This organism, which decomposes histamine and forms a green pigment, resembles those of the *fluorescens–pyocyaneus* group. Autolysis, alternate freezing and thawing, or extraction with glycerol does not yield cell-free extracts with histaminase activity. *B. pyocyaneus*, but not *B. fluorescens liquefaciens* and *B. fluorescens nonliquefaciens*, decomposes histamine. J. N. A.

***Butyribacterium*, new genus of Gram-positive, non-sporulating anaërobic bacteria of intestinal origin.** H. A. Barker and V. Haas (*J. Bact.*, 1944, **47**, 301—305).—The butyric acid fermentation of the proposed type species, *B. rettgeri* nov. spec., differs from similar fermentations of anaërobic spore formers by the absence of H_2, the larger yields of volatile acids, and the smaller yields of CO_2. (1 photomicrograph.) F. S.

Carbohydrate utilisation by hydrocarbon bacteria. F. H. Johnson and H. W. Schwarz (*J. Bact.*, 1944, **47**, 373—378).—*Bact. aliphaticum* Tausz was able to use as source of C and energy for growth in a basal medium of inorg. salts 19 out of 32 carbohydrates tested. Considerable acid was produced from glucose and to a smaller extent from some of the other carbohydrates and related substances. No detectable change of pH was observed with some carbohydrates that supported abundant growth. In 1% peptone cultures, the reaction always became alkaline with the growth of the organisms, and was either unaffected or reached a slightly less alkalinity in the presence of an utilisable carbohydrate. F. S.

Enzyme formation and polysaccharide synthesis by bacteria. II. Polysaccharide formation by *Rhizobium radicicolum* strains. H. G. Bray, E. Schlüchterer, and M. Stacey (*Biochem. J.*, 1944, **38**, 154—156).—The polysaccharides produced by 4 strains of *R. radicicolum* were examined. The best method of prep. was that using Cellophane to keep the bacterial growth and polysaccharide produced separate from the agar medium. R. L. E.

Bacteriological examination of water.—See B., 1944, III, 171.

Optical isomerides of butane-$\beta\gamma$-diol produced by fermentation. G. E. Ward, O. G. Pettijohn, L. B. Lockwood, and R. D. Coghill (*J. Amer. Chem. Soc.*, 1944, **66**, 541—542).—Fermentation of grain mash substrates by *Aerobacter aerogenes* yields butane-$\beta\gamma$-diol, m.p. (anhyd.) 25° or (+5H_2O) 16·8°, $[\alpha]^{25}$ +1·0°, n^{25} 1·4384, η^{25} 118·0 (cf. Böeseken *et al.*, A., 1928, 1113). Distillation of the diol yields most of the optically active form in the first, and the *meso*-form in the later, fractions. Use of *Bacillus polymyxa* gives an isomeric butane-$\beta\gamma$-diol, m.p. 19°, $[\alpha]^{25}$ −13·0°, n^{25} 1·4307, η 41·0, forming no hydrate. R. S. C.

Sickness records of nurses in a general hospital. J. Wright (*Brit. Med. J.*, 1944, I, 585—588).—Among the nursing personnel at University College Hospital during the years 1936—1938 pyogenic infections and upper respiratory tract infection accounted for 60% of all sicknesses. Of the pyogenic infections whitlows were 40%. 22 illnesses longer than 100 days occurred; 5 were pulmonary tuberculosis and one tuberculosis of the ileum. I. C.

Quantitative precipitation of anti-anthrax and normal sera by different solutions of agar. A. M. Staub and P. Grabar (*Ann. Inst. Pasteur.*, 1943, **69**, 268—274).—To eliminate substances pptd. by agar from an antiserum it is necessary to use an autoclaved agar solution without formol, or preferably washings from the surface of autoclaved glucose broth agar in which case formol may be used as a preservative. The pptn. of these substances by agar also ppts. part of the sp. anti-polysaccharide in an anti-anthrax serum. Certain normal horse and dog sera ppt. abundantly with agar solutions. F. S.

A bacteriolysin from a strain of *Bact. coli*. A. Guelin (*Ann. Inst. Pasteur*, 1943, **69**, 382—384).—Filtrates of cultures of a strain of *Bact. coli* contain a substance capable of lysing cultures of another strain of *Bact. coli* and *Bact. paradysenteriæ* Y6R. The substance is

thermostable, sp. for certain bacteria, and is not transmissible. It is not formed but can act in the absence of Ca. It acts only on living organisms in active growth. F. S.

Nutritional requirements of *Clostridium acidi-urici*. H. A. Barker and W. H. Peterson (*J. Bact.*, 1944, **47**, 307—308).—*Cl. acidi-urici* grew well in an inorg. salt mixture with 0·3% of uric acid and 0·05% of Na thioglycollate. During growth at least 3 growth factors, riboflavin, vitamin-B_c (folic acid, eluate factor), and biotin, were synthesised. F. S.

Dehydrogenating properties of certain pathogenic obligate anaërobes. K. Guggenheim (*J. Bact.*, 1944, **47**, 313—321).—62 substrates, including org. acids, alcohols, carbohydrates, amino-acids, urea and its derivatives, and other org. N compounds, were tested for their ability to be activated as H donators by *Cl. botulinum*, *Cl. parabotulinum*, and *Cl. welchii*. The most active donators were lactic acid, pyruvic acid, glutaric acid, ethyl alcohol, glycerol, fructose, galactose, raffinose, *d*-alanine, leucine, serine, valine, aspartic acid, glutamic acid, lysine, asparagine, phenylalanine, and creatine. The effect of KCN, urethane, As, F′, Cu, Mn, and Fe on dehydrogenases of *Cl. botulinum* for 15 substrates was investigated. HCN generally inhibited, As always stimulated, urethane and F′ sometimes inhibited. All the heavy metals inhibited in high concns. Cu inhibited at M./25,000. Mn and Fe inhibited at higher concns., the sp. concns. varying with each substrate. Below the inhibiting threshold Mn stimulated in 7 substrates and Fe in 11. The significance of catalysis by heavy metals in the inhibitory effect of CN′ is emphasised. F. S.

Anaërobic bacteria in oysters. A. R. Prevot and M. Raynaud (*Ann. Inst. Pasteur*, 1943, **69**, 378—380).—4 strains of *Cl. welchii*, 1 *Inflabilis sanguicole*, 1 *Cl. septimum*, and a new species, *Inflabilis setiensis*, were isolated from 6 of 12 oysters collected from near Marseilles. F. S.

Antidiphtheritic immunity. J. Planet do Amaral (*Mem. Inst. Butantan*, 1941, **15**, 383—389).—Of 517 vaccinated children only 4 presented local and general reactions. The Kellogg-positive children were 18·1% After three months the antitoxin titre was high in all cases examined. Diphtheritic antitoxin is innocuous and antigenically efficient. I. C.

Schick reaction in recently confined women and their infants. G. P. Wright and W. M. Clark (*Brit. Med. J.*, 1944, II, 146—148).—A statistical analysis. I. C.

Simplified formula for production of diphtheric toxin of high potency (50 Lf). O. Bier (*Rev. Brasil. Biol.*, 1943, **3**, 325—329). The prep. of a medium on which a strong diphtheric toxin (30—50 Lf) may be regularly obtained is described. I. C.

Semi-commercial method of concentration and purification of diphtheria toxin. M. Faure (*Ann. Inst. Pasteur*, 1943, **69**, 334—348).—After neutralisation, the culture medium is conc. by vac. distillation at 35°. The inactive proteins are pptd. by $\frac{1}{3}$-saturated solution of $(NH_4)_2SO_4$ and the toxin is then pptd. by $\frac{2}{3}$-saturated $(NH_4)_2SO_4$, which is then separated by dialysis. By this method the average increase in the relation of toxin units to N is 6·8 times. F. S.

Nitrite-nitrogen test for *Bacillus larvæ*. C. E. Burnside (*J. Econ. Entom.*, 1940, **33**, 405—408).—Two spore-bearing bacteria culturally and morphologically distinct from *B. larvæ* and from each other gave a positive NO_2'-N test indistinguishable from that of *B. larvæ* in a medium containing carrot extract, the NO_2' being stored in the medium for at least six weeks. Since positive tests were obtained with other contaminated cultures when vegetative cells of *B. larvæ* were absent, the detection of NO_2' should not be considered as conclusive for the presence of *B. larvæ*. A. A. M.

Use of liver extract as enrichment factor for the growth of gonococci. E. Alture-Werber (*J. Bact.*, 1944, **47**, 399—400).—Abundant growth of *N. gonorrhœæ* was obtained when 25 ml. of 1% aq. extract of liver extract powder (Armour), sterilised by Seitz filtration, and 5 ml. of citrated hæmolysed horse blood were added to 100 ml. of proteose glucose agar base. F. S.

Growth requirements of *Neisseria gonorrhœæ*. R. G. Gould, L. W. Kane, and J. H. Mueller (*J. Bact.*, 1944, **47**, 287—292).—Several strains of gonococci grew on a medium consisting of glutamic acid, histidine, glucose, starch, glutathione, Mg and Fe salts, phosphates, NaCl, and agar. Growth was greatly stimulated by the addition of casein hydrolysate or meat infusion. Evidence was obtained that starch protected the gonococcus against the inhibitory effect of certain samples of agar. (Cf. A., 1944, III, 617.) F. S.

Effectiveness of penicillin or *Listerella*.—See A., 1944, III, 550.

Bacterial autolysis. Progressive disintegration of *Mycobacteria*. R. Laporte (*Ann. Inst. Pasteur*, 1943, **69**, 262—267).—Colonies of *Mycobacteria* undergo progressive autolysis over a period of months with progressive loss of wt. The products liberated are sol. polysaccharides and proteins with allergic activity and insol. proteins of high mol. wt. responsible for antigenic and sensitising activity. These disintegration products may account for the gradual evolution of the tissue changes in tubercular infections. (2 photomicrographs.) F. S.

Influenzal meningitis. S. S. Lamm and B. H. Shulman (*J. Pediat.*, 1944, **24**, 408—416).—15 cases of *H. influenzæ* meningitis are reported with 9 recoveries. Sulphapyridine, rabbit anti-influenzal serum, and blood transfusions were given. C. J. C. B.

Successful [treatment of] influenzal meningitis [with type-specific serum]. M. Birdsong, W. W. Waddell, jun., and B. W. Whitehead (*Amer. J. Dis. Child.*, 1944, **67**, 194—198).—7 of 8 cases recovered. C. J. C. B.

Case of meningitis in premature infant due to proteolytic Gram-negative bacillus. B. H. Shulman and M. S. Johnson (*J. Lab. clin. Med.*, 1944, **29**, 500—507).—A case cured by sulphathiazole is reported. C. J. C. B.

Typing meningococci directly from cerebrospinal fluid. C. D. Cox (*Amer. J. clin. Path. Tech. Sect.*, 1944, **8**, 35).—The procedure recommended is similar to that used in the Neufeld test on sputum. C. J. C. B.

Immunisation with combined diphtheria and tetanus toxoids (aluminium hydroxide adsorbed) containing *Hæmophilus pertussis* vaccine. J. J. Miller, jun., J. B. Humber, and J. O. Dowrie (*J. Pediat.*, 1944, **24**, 281—289).—2 injections of $Al(OH)_3$-adsorbed diphtheria and tetanus toxoids with 20 billion *H. pertussis* vaccine produced satisfactory immune responses with respect to diphtheria and tetanus, but the dose of *H. pertussis* vaccine was below optimal. C. J. C. B.

Hyperimmune whooping-cough serum. A. C. McGuinness, J. G. Armstrong, and H. M. Felton (*J. Pediat.*, 1944, **24**, 249—258).—Hyperimmune whooping-cough serum obtained from donors immunised with phase I pertussis vaccine was employed in passive immunisation of 308 infants and children subsequent to exposure to whooping cough and in the treatment of 442 patients with whooping cough following the onset of paroxysms. The serum helped in the prevention and treatment of the disease. C. J. C. B.

Cultivation and preservation of *Diplococcus pneumoniæ* and *Mycobacterium tuberculosis* in market eggs. A. J. Gelarie (*J. Lab. clin. Med.*, 1944, **29**, 532—535).—The ordinary fresh non-fertile market egg is a suitable medium for the cultivation and preservation of pneumococci and tubercle bacilli. Transmission to animals was successful with material from eggs at room temp. up to 8 weeks after inoculation with pneumococci without loss of virulence or type-specificity. C. J. C. B.

Hyaluronidase production by pneumococci. H. J. Humphrey (*J. Path. Bact.*, 1944, **56**, 273—275):—Hyaluronidase production by 81 strains of pneumococcus isolated from successive cases of pneumonia was studied. There was no correlation between the amount of hyaluronidase produced and the clinical virulence, or between enzyme production and type. Organisms of type I rarely produced hyaluronidase. C. J. C. B.

Encephalo-meningitis due to pneumococcus type 1. M. J. Wilmers (*Arch. Dis. Childh.*, 1944, **19**, 29—31).—A case report. C. J. C. B.

Order of fixation of different components of complement to the antigen–antibody complex. O. Bier and E. Trapp (*Rev. Brasil. Biol.*, 1943, **3**, 331—336).—Ppts. of pneumococcus polysaccharide III, and anti-pneumococcus III serum remove completely 3 complement components (C_1, C_2, C_4) from suspension. Inactivation of C_1 and C_2 by heating at 56° for 30 min. inhibits the fixation of C_4. There is no fixation of C_2 or C_4 when the end-piece had been obtained from a CO_2-pptd. fraction. In a red cells–hæmolytic serum complex, hæmolysis does not occur when red cells are incubated with complement lacking C_4. Sensitised red cells added to NH_3-inactivated serum do not hæmolyse. From this evidence it is concluded that the order of the different parts of the complement is at first C_1, C_2, C_4, and then C_3. I. C.

Coagulase production by staphylococci on solid medium. J. B. Penfold (*J. Path. Bact.*, 1944, **56**, 247—250).—The addition of plasma to agar provides a medium which will differentiate coagulase-positive from -negative staphylococci. 94% of coagulase-positive cocci give opacity rings in the medium around the colonies. In 6% the plates gave results which were more easily read than the tube tests. None of the coagulase-negative strains showed any opacity around the colonies although 40% had some opacity underneath. C. J. C. B.

Lung abscess in relation to the influenza epidemic. E. Davis (*Brit. Med. J.*, 1944, I, 416—417).—Out of 17 cases of influenzal pneumonia there were 5 cases of lung abscess of which three were fatal. *Staph. aureus* is mainly concerned. Sulphanilamides were not beneficial. I. C.

Nutrition of *Streptococcus lactis*. C. F. Niven, jun. (*J. Bact.*, 1944, **47**, 343—350).—All of 21 strains required pantothenic acid, nicotinic acid, and biotin. 18 strains required thiamin, whereas only 6 required riboflavin. All grew without added folic acid and pyridoxine, but the latter stimulated growth. A min. of 14 amino-

acids was necessary for prompt growth. All cultures grew without added tryptophan. All required glutamine and asparagine for the initiation of growth. *Strep. cremoris* had similar nutritive requirements. F. S.

Effect of sulpha drugs on growth of *Streptococcus viridans*. W. Bierman, G. Schwartzman, and S. I. Rosenberg (*J. Lab. clin. Med.*, 1944, **29**, 454—461).—The inherent resistance to sulphanilamide and other sulpha compounds of a strain of *Str. viridans* isolated from a human case of subacute bacterial endocarditis remained unchanged under both favourable and adverse conditions of cultivation *in vitro*. C. J. C. B.

Production of filterable infectious agent from α-streptococci. E. C. Rosenow (*Amer. J. clin. Path.*, 1944, **14**, 150—167).—A filterable infectious agent was produced from neurotropic streptococci isolated from the nasopharynx and the stool of a patient ill with postoperative bronchopneumonia and persistent hiccup. It first produced encephalitis or polioencephalitis in mice only. After successive passages through mice it produced polioencephalitis in both mice and monkeys. After several passages through monkeys it lost its virulence for mice and produced typical poliomyelitis in monkeys. The experimental infectious agent resisted glycerolation and passed through filters in a manner similar to that of " natural " poliomyelitis virus. Monkeys that had recovered from paralytic poliomyelitis after inoculation with the experimental agent resisted inoculations of " natural " virus and homologous and heterologous experimental strains of the infectious agent, and monkeys that had recovered from paralytic poliomyelitis induced with " natural " virus were immune to the experimental infectious agent. (27 photomicrographs.) C. J. C. B.

Rheumatic fever. Pathogenesis and therapy in relation to streptococcal toxin injury. J. J. Robinson (*Arch. Pediat.*, 1944, **61**, 6—19).—Rheumatic fever is the result of an autogenous antigen–antibody reaction involving connective tissue-collagen and streptococcal toxin. Young albino rabbits given a sterile erythrogenic filtrate of the NY-5 hæmolytic streptococcus by daily subcutaneous injections for a long time showed many lesions typical of human streptococcal disease and some cardiac lesions like those found in human rheumatic fever. Typical, uncomplicated rheumatic fever was not produced. (6 photomicrographs.) C. J. C. B.

Outbreak of puerperal sepsis due to a single type of hæmolytic streptococcus. M. Kenny and M. Barber (*Brit. Med. J.*, 1944, 809—811).—A report; the infection was spread directly or indirectly from a lavatory seat. I. C.

Hæmolytic streptococci in the dust of hospital wards, and their relationship to infection. Report to the Medical Research Council. D. G. ff. Edward (*J. Hygiene*, 1944, **43**, 256—265).—Investigations were made in two hospital wards for 26 weeks. The dust from the floor of each ward was examined weekly for hæmolytic streptococci which were classified serologically. The no. of organisms per g. of dust varied greatly from week to week, but the average no. for the period was much the same in both wards, viz., 2·5 and 3×10^5. No conclusive evidence was found of the infection of patients from the dust. Swabs were taken at intervals from patients and staff; the types found in the infections and in the dusts did not always correspond. D. D.

Formation of trimethylamine from choline as characteristic of *Shigella alkalescens*. A. J. Wood and F. E. Keeping (*J. Bact.*, 1944, **47**, 309—310). F. S.

Agglutinability of *Bact. shigæ*. H. Schutze (*J. Path. Bact.*, 1944, **56**, 250—253).—Hypoagglutinable strains are rendered more agglutinable by growth at 20—26°, heating their saline suspensions at 100° for ½ hr. or at 60° for 1 hr., or by adding up to 0·5% of phenol. Strains which were more resistant to agglutination showed a higher precipitinogen content in their diethylene glycol extract. C. J. C. B.

New medium for the differentiation of salmonella and paracolon organisms. O. Felsenfeld and V. M. Young (*Amer. J. clin. Path., Tech. Sect.*, 1944, **8**, 26—27).—A medium permitting the differentiation of salmonella-like paracolon bacilli and of salmonellæ, containing 1% each of lactose and sucrose and 0·5% of salicin in 0·3% agar, is described. C. J. C. B.

Milk-borne outbreak of gastro-enteritis due to *Salmonella Dublin*. P. L. Sutherland and F. M. Berger (*Brit. Med. J.*, 1944, I, 488—490).—An outbreak of milk-borne gastro-enteritis due to *S. Dublin* is described, affecting 162 people; there were no deaths. The source of infection was an apparently healthy cow excreting large nos. of the organisms in the dung. The carrier cow was identified by the agglutinin content of its milk; normal cows do not possess any agglutinins for *S. Dublin*. I. C.

Tetanus after head injury in an immunised subject. W. Lewin (*Brit. Med. J.*, 1944, II, 11—12).—Case report after administration of tetanus toxoid 3 years previously. I. C.

Filtration of *Mycobacterium tuberculosis* and *M. stercusis* through gradocol membranes. M. A. Soltys and A. W. Taylor (*J. Path. Bact.*, 1944, **56**, 173—180).—Viable elements of each organism capable of growth on artificial media or of producing severe generalised disease in experimental animals were constantly demonstrated in filtrates drawn through membranes of pore diameter 2·0 and 1·5 μ. *M. tuberculosis* (bovine type) could pass a membrane of pore diameter 1·0 μ. in 5 of 8 instances. The methods employed were unable to detect viable elements in filtrates drawn through membranes of pore diameter 0·7 μ. C. J. C. B.

Tubercular adenopathy in young children. I. I. Kaplan (*Arch. Pediat.*, 1944, **61**, 119—122).—A short review. C. J. C. B.

Pleural effusions in guinea-pigs following inoculation of tubercle bacilli into the mediastinum. F. van Deinse (*Ann. Inst. Pasteur*, 1943, **69**, 1—12).—The inoculation of human or bovine tubercle bacilli into the mediastinum of guinea-pigs, besides giving lesions comparable with those after intravenous inoculation, caused pleural effusions that appeared within 1—10 days. Tubercle bacilli were not detected in the fluid but cultures and guinea-pig inoculation were positive in 80% of cases. F. S.

Specific tuberculosis immunity during infection. H. J. Corper and L. M. Cohn (*Yale J. Biol. Med.*, 1944, **16**, 333—339).—When appropriate amounts of viable avirulent human tubercle bacilli were injected subcutaneously within 1 week before infection with virulent human tubercle bacilli there was a retardation of the infection. The addition of avirulent bacilli to intracutaneous injections of virulent bacilli caused an enhanced local reaction at first, followed by a great diminution of visceral tuberculosis. F. S.

Enzymic degradation of tuberculin. A. Tiselius and A. Grönwall (*Arkiv Kemi, Min., Geol.*, 1943, **17**, **A**, No. 13, 11 pp.).—Dried tuberculin (mol. wt. approx. 10,500, nucleic acid and polysaccharide contents, 1·2 and 5·9% respectively) digested with cryst. pepsin at pH 2 and 3·5 and 35° yields a product having about 10% of the activity of the original material, approx. 11—12 peptide linkings being broken. Digestion with cryst. trypsin and chymotrypsin at pH 8·2 and 35° causes much greater degradation, the products, chiefly dipeptides, being inactive. W. McC.

Chronic human carrier of *Bact. typhi-murium* treated by cholecystectomy. H. Burt (*J. Path. Bact.*, 1944, **56**, 209—215).—Excretion of the organism ceased after cholecystectomy. The gallbladder was the seat of marked pathological changes. The organism was isolated both from the mucosa and from gallstones. C. J. C. B.

Food poisoning due to *Bact. typhi-murium* (*anaërogenes*). B. R. Sandiford (*J. Path. Bact.*, 1944, **56**, 254—255).—A case report. C. J. C. B.

Prognostic value of laboratory investigations in typhoid fever. S. S. Bhatnagar (*Brit. Med. J.*, 1944, I, 417—419).—A prognostic classification of typhus cases on the basis of the titre of Vi antibody and *O* agglutinins. I. C.

Unsuccessful efforts to dissociate antigen–antibody complexes by amino-acids solutions. M. Macheboeuf, M. Viscontini, and M. Raynaud (*Ann. Inst. Pasteur*, 1943, **69**, 376—378).—Solutions of the constituent amino-acids of serum-globulins failed to detach, by mass action, sp. agglutinins fixed by paratyphoid bacilli. F. S.

Immunochemistry of *Vibrio choleræ*. I. Quantitative study of the precipitation of the carbohydrate–lipin antigen by specific rabbit antisera. II. Components of cholera toxin. J. Gallut and P. Grabar (*Ann. Inst. Pasteur*, 1943, **69**, 250—253, 307—309).—I. Pptn. of a rabbit serum prep. against the carbohydrate–lipin complex (c.-l.) extracted from *Vibrio choleræ* with the sp. antigen from the same strain gave an antibody : antigen ratio of 0·19—0·27 in the zone of equivalence. When a toxin from another strain of vibrio was used as antigen the ratio, antibody : c.-l. contained in the toxin was only 0·06—0·07. The sp. antigen, c.-l., contained in the toxin would therefore have fewer groupings capable of combining with the antibody.

II. Pptn. reactions with absorbed antitoxic sera and toxin showed that the toxin contained only c.-l. as antigen. Fresh toxin gave slightly heavier ppts. than isolated c.-l. but ppts. became lighter with ageing of the toxin. Fresh toxin therefore probably contains a complex c.-l. which is later split to a simple c.-l., comparable with isolated c.-l., and a substance not pptd. by sp. antiserum. F. S.

Bacteriophages in the water of the Marne. A. Guelin (*Ann. Inst. Pasteur*, 1943, **69**, 219—229).—There was a parallelism between variations in content of *Bact. coli* and bacteriophages active against that organism both up-stream and down-stream from a lateral canal subject to pollution. The relative amount of bacteriophage to *Bact. coli* was greater down-stream, indicating that bacteriophage was the more sensitive indicator of pollution. F. S.

Electron microscope studies of bacteriophage of *Salmonella pullorum*. M. R. B. Baylor, J. M. Severens, and G. L. Clark (*J. Bact.*, 1944, **47**, 277—281).—In meat extract at 37·5° phage adsorption is well advanced at 3 min. The phage particles appear as rounded bodies, 40—45 mμ. in diameter, without tails. (15 electron micrographs.) F. S.

Lack of homogeneity in bacterial suspensions as cause of error in titration of bacteriophage. P. Nicolle (*Ann. Inst. Pasteur*, 1943, **69**, 13—16).—To avoid errors arising from this source in the plaque method of titration, the phage suspension should be sown first on the agar surface with a spreader and the bacterial suspension spread 10 min. later with a spreader. F. S.

Tissue cultures for virus investigations in the field. M. Sanders and C. H. Huang (*Amer. J. Publ. Health*, 1944, **34**, 461—466).—Small amounts of embryonic tissue in 2 ml. of serum ultrafiltrate remained viable at least 35 days at 25°±7°, for at least 4 weeks at 37°, and 3 weeks at at 4—6°. Numerous cultures can be made from one chick embryo and no manipulation of the cultures is necessary for the periods designated. The addition of sulphadiazinc mixtures has a slightly toxic effect on the tissues, but the drugs may be used as bacteriostatic agents so that contaminated specimens may be tested for virus content. C. J. C. B.

Negative results in studies of epidemic diarrhœa, nausea, and vomiting of unknown cause. H. A. Reimann, A. H. Price, and J. H. Hodges (*Proc. Soc. Exp. Biol. Med.*, 1944, **55**, 233—234).—In an epidemic among adults, no virus could be isolated from the stools which was able to cause toxic symptoms by oral, intranasal, or rectal administration to mice, or by intranasal inoculation in calves. V. J. W.

Ultrafiltration of "normal corpuscular bodies." J. C. Levaditi and P. Grabar (*Ann. Inst. Pasteur*, 1943, **69**, 241—244).—Ultrafiltration of the virus-like bodies which can be isolated by differential centrifugation from the normal chorioallantoic membrane of the chick embryo gave a diameter of 200—300 mμ. The filtration end-point gave a smaller diameter in Hartley's broth than in a buffer solution at pH 7·2. F. S.

Measurement of size of virus of foot-and-mouth disease by α-radiation. P. Bonét-Maury (*Ann. Inst. Pasteur*, 1943, **69**, 22—26).—The dose of α-radiation required to reduce the infective titre of a membrane filtrate of this virus to 10% was calc. as 600 μcd. per c.c. from an inactivation curve. From the previously published formula (A., 1943, III, 851), the diameter of the virus was 20—40 mμ. F. S.

Determination by an indirect method of the diameter and the sedimentation constant of the virus of foot-and-mouth disease. P. Lepine and J. Giuntini (*Ann. Inst. Pasteur*, 1943, **69**, 257—261).—Ultracentrifugation gave a diameter of 14 mμ. or 19 mμ., assuming the sp. gravity of the virus to be 1·3 or 1·17 respectively, and a sedimentation const. of $S_{20} = 33 \times 10^{-13}$. F. S.

Problems of infective hepatitis. L. J. Witts (*Brit. Med. J.*, 1944, I, 739—743).—Infective hepatitis is one of the most important diseases in the Mediterranean theatre of war. No sp. prophylaxis or treatment is known; mortality is low. The virus is spread either by droplets or through excreta and flies. I. C.

Epidemic of infective hepatitis in Gloucestershire. J. S. Cookson (*Brit. Med. J.*, 1944, 687—689).—The epidemiological features and a clinical account are given and discussed. I. C.

Interference between inactive and active viruses of influenza. I. Incidental occurrence and artificial induction of the phenomenon. II. Factors influencing the phenomenon. W. Henle and G. Henle (*Amer. J. med. Sci.*, 1944, **207**, 705—733).—In passing allantoic fluid infected with the virus of influenza *A* or *B* to chick embryos by the allantoic route, conc. inocula frequently produced less virus than more dil. ones. This inhibition was due to accumulation of inactive virus in the allantoic fluid interfering with the propagation of the active agent on subculture. Correspondingly, artificial inactivation of the virus by heating to 56° or ultra-violet irradiation for short periods increased this inhibitory effect. Attempts were made to obtain non-infectious virus with the interfering property largely intact, and to test the interference by the inactive virus with a known amount of the active agent. Ultra-violet irradiation of dialysed allantoic fluid gave interfering preps. which frequently fulfilled these requirements. Primary infection of such irradiated virus into the allantoic sac of the chick embryos, followed by inoculation of active virus within periods up to 24 hr., prevented the propagation of the active agent. Injection of 0·01—0·005 ml. of irradiated virus (allantoic fluid) into the allantoic cavity suppresses formation of hæmagglutinin from a subsequent inoculation of active test virus. The concn. of test virus does not influence the results. No differences in interfering property were noted between irradiated allantoic fluids derived from virus cultures incubated for 24, 48, 72, or 96 hr. However, the interfering property in the earlier harvests (younger embryos) was more susceptible to destruction by ultra-violet light. The interfering injection could be given as early as 96 hr. before the test virus and up to 3 hr. afterwards and produce extensive interference. When injected 24 hr. after the active virus, no protection was noted. Flushing of the allantoic sac with more than 100 ml. of saline solution following the injection of irradiated virus to remove free hæmagglutinins did not eliminate the interference. The protection of susceptible cells occurs very rapidly, since injection of the irradiated virus into the egg during flushing also prevented active virus from multiplying when injected 24 hr. later. Survival of active virus in irradiated preps. may sometimes be demonstrated only after dilution or prolonged irradiation of the allantoic fluid. Both steps decrease the interfering property and permit small quantities of surviving active virus to propagate. C. J. C. B.

Chemical analysis of influenza viruses *A* (*PR8* strain) and *B* (Lee strain) and pig influenza virus. A. R. Taylor (*J. Biol. Chem.*, 1944, **153**, 675—686).—The influenza virus *A*, pig influenza virus, and influenza virus *B* had total lipin, 24, 24, 23; phospholipin 11·3, 10·67, 11·23; cholesterol 7, 5·7, 3·7; and carbohydrate 12·5, 10·0, 13·1%, respectively. The carbohydrate vals. were unexpectedly high, and only about 25% could be present bound in the nucleic acid. The lipin appeared to be an integral part of the virus mol. J. F. M.

Cutaneous reaction to influenza viruses. W. I. B. Beveridge and F. M. Burnet (*Med. J. Austral.*, 1944, I, 85—89).—The intradermal inoculation of a 1/10 dilution of unheated or boiled allantoic fluid infected with influenza virus *A* or *B* produced a cutaneous reaction in most adults and in some children. Partial purification of the virus did not diminish its capacity to produce the reaction. In adults, the size of the reaction bore no relation to the serum antibody titre. Among 31 children tested 18 had positive reactions and all but one of these had also positive serological reactions. Many children who gave a positive serological reaction failed to give the appropriate skin reaction. It is suggested that allergy to the virus may play a part in resistance to infection and, when infection occurs, in the production of symptoms. F. S.

Human serum treatment of atypical pneumonia. E. M. Solomon (*J. Lab. clin. Med.*, 1944, **29**, 493—499).—Cases of atypical pneumonia which did not receive convalescent serum displayed fever lasting 5—11 days, which dropped to normal by lysis. Convalescence was prolonged, lasting (average) 39 days. In 9 out of 10 patients treated with convalescent "virus pneumonia serum" the temp. fell to normal by crisis, and the convalescent period fell to 22 days. These patients responded to 1 dose of 250 c.c. of serum. C. J. C. B.

Poliomyelitis in British and American troops in Middle East. J. R. Paul, W. P. Havens, and C. E. Van Rooyen (*Brit. Med. J.*, 1944, I, 841—843).—The virus was isolated from stools in 9 out of 10 fatal cases. Negative findings were obtained in 5 non-fatal cases of typical poliomyelitis and in 20 atypical cases. Grivet and vervet monkeys are highly susceptible to experimental infection with the virus. I. C.

Virus protein of polyhedral disease of silkworms. II. Distribution of sulphur and alanine content. P. Desnuelle and C. C. Tan (*Ann. Inst. Pasteur*, 1943, **69**, 248—250; cf. A., 1944, III, 621).—The polyhedra contain 3·3% of methionine and 0·67% of cystine, of which 0·1% is in the form of cysteine. These amino-acids account for all the S present. The alanine content is 4·4%. F. S.

Paralytic rabies. S. V. Love (*J. Pediat.*, 1944, **24**, 312—325).—Review and report of a case. C. J. C. B.

Effect of proteolysis of rabies virus. P. Remlinger and J. Bailly (*Compt. rend.*, 1942, **215**, 389).—The virulence of the rabies virus can be increased and its effects prolonged by the presence of 0·1% of ascorbic acid, indicating that destruction of the virus in the body is primarily due to proteolytic enzymes of the tissues. H. G. R.

Measurement of the virus of pseudorabies by ultra-filtration and ultracentrifugation. P. Lepine, J. C. Levaditi, P. Grabar, and J. Giuntini (*Ann. Inst. Pasteur*, 1943, **69**, 238—241).—Ultrafiltration gave a diameter of 110—112 mμ. and ultracentrifugation a diameter of 68 mμ. or 110 mμ., assuming the sp. gravity of the virus as 1·3 or 1·16 respectively. F. S.

Experimental infections with spotted fever virus in some Caviidæ. J. Travassos and A. Vallejo (*Mem. Inst. Butantan*, 1941, **15**, 73—85).—Spotted fever virus may be found in the circulating blood of experimentally infected *Cavia aperea* and *Hydrochoerus capybara* for longer than 11 days. Some animals, however, did not respond to experimental inoculations, suggesting that they had suffered from a previous natural infection. Naturally infected animals have never been isolated so far, but these animals may be concerned with the endemic occurrence of spotted fever in the rural districts of San Paolo. I. C.

Adaptation of a cane rat (*Zygodontomys*) to the laboratory and its susceptibility to virus of yellow fever. M. Bates and J. M. Weir (*Amer. J. trop. Med.*, 1944, **24**, 35—37). F. S.

(A) Allergic vaccinal lesions in the rabbit during incubation of the primary lesion. (B) Development of resistance to neuro-vaccine in the central nervous system. Gastinel and R. Fasquelle (*Ann. Inst. Pasteur*, 1943, **69**, 319—320, 375—376).—(A) From the 4th day after a primary cutaneous inoculation with virulent vaccinia virus the skin reacts to living or dead virus with an accelerated allergic response.

(B) In the rabbit the central nervous system becomes resistant to neuro-vaccine 4—6 days after cutaneous inoculation. F. S.

Genera of plant viruses. H. H. McKinney (*J. Washington Acad. Sci.*, 1944, **34**, 139—154).—The literature is reviewed. A scheme of classification is proposed and described. R. H. H.

Preparation of the nucleoprotein of potato Y-virus. G. Melchers (*Ber. deut. bot. Ges.*, 1943, **61**, 89—90).—The fresh (unfrozen) plant material is minced and treated with 5% aq. NaCl at 0° overnight. The separated press juice is neutralised (pH 6·9) with NaOH and centrifuged. The supernatant liquid is ultracentrifuged (1·5 hr. at 25,000 r.p.m.). In this way 30 mg. of pure infective protein was obtained from 1 kg. of fresh material. A. G. P.

Chemical nature of syphilitic antigen. E. Fischer, R. D. de Fischer, and R. Boné (*Ciencia*, 1943, **4**, 153—155).—The syphilitic antigen occurs in two forms, which may be distinguished by extraction with 80% alcohol and light petroleum. I. C.

Persistence of falsely positive serologic tests for syphilis in non-syphilitic infections. A. E. Taussig (*J. Lab. clin. Med.*, 1944, **29**, 473—477).—If the patient has recently had an acute infection of any kind, the Wassermann and a pptn. test should be repeated after one or two months. If the test is still positive, the reaction is not due to the infection and is probably indicative of syphilis. Rarely, false positive reactions which fluctuate from week to week and from month to month occur not due to infection. Here, weekly tests if not constantly positive may reveal the patient as not syphilitic. A falsely positive c.s.f. has not as yet been reported. In doubtful cases, Kahn's verification test may be employed, although as yet its results must be interpreted with reserve. C. J. C. B.

Incidence and causes of discrepancies in results of serological tests for syphilis. F. M. Berger and P. L. Sutherland (*J. Path. Bact.*, 1944, **56**, 237—245).—Wassermann and Kahn tests were carried out on over 15,000 sera. About the same no. of sera reacted in each test, but ⅓ of all reacting sera reacted in the Wassermann or Kahn test only. Absorption experiments showed that the same reacting substance was responsible for the complement fixation, flocculation, and agglutination reactions. Most of the reacting substance was contained in the CO_2-sol. fraction of serum, whereas complementoid substances were mainly in the CO_2-insol. fraction. The Wassermann test is capable of giving a positive reaction with much less syphilitic antibody than the Kahn test. The high inherent sensitivity of the Wassermann test may, however, be decreased by complementoid substances in the patient's serum or low fixability of complement. Because of these factors certain syphilitic sera gave a negative Wassermann and a positive Kahn reaction. The estimation of the hæmolytic power of complement did not give any information about its fixability. Excess of natural hæmolysin in the patient's serum is a rare cause of false negative Wassermann reactions. False negatives due to zone phenomena were not observed. C. J. C. B.

Falsely doubtful and positive reactions in the serology of syphilis. J. A. Kolmer (*Amer. J. Publ. Health*, 1944, **34**, 510—525).—A general review of the literature. C. J. C. B.

(A) **Loaiasis and onchocerciasis : a new antigen for their diagnosis by skin test.** (B) ***Filariasis bancrofti* : its diagnosis by immunological tests with antigen derived from *Litomosoides carinii*.** J. T. Culbertson, H. M. Rose, and C. R. Demarest (*Amer. J. Hyg.*, 1944, **39**, 152—155, 156—162).—(A) An antigen prepared by extraction of the cotton rat filarial worm *L. carinii* gave skin reactions in two patients with loaiasis and two with onchocerciasis. Of 40 normal persons, 38 gave no reaction and of 2 positives, one had reacted previously to *T. spiralis* antigen and the other developed symptoms of elephantiasis.

(B) Of 81 men tested with *L. carinii* antigen after they had lived for about one year in an area where *W. bancrofti* was endemic, 66 gave immediate skin responses. Sera from 77 men of this group were tested for precipitins; 58 were positive. By the complement fixation test 59 were positive. Immunological tests are useful in early diagnosis of filariasis as antibody appears in the blood before the parasites can be recovered in the microfilariæ stage. B. C. H.

Trichinella skin tests in patients in general hospitals and tuberculosis sanatoria. S. F. Horne and G. T. Harrell (*Amer. J. med. Sci.*, 1944, **207**, 759—765).—The incidence of positive intradermal reactions to commercial trichinella antigen in North Carolina was 10% in 700 hospitalised patients. The incidence found by skin test was greater than that found in routine autopsies in this area. Patients with active tuberculosis in 2 sanatoria gave a higher % of positive reactions (14·3%) than did those without tuberculosis (7·1%) in 2 general hospitals. This was statistically significant. C. J. C. B.

Immunologic studies in insulin resistance.—See A., 1944, III, 536.

Relation between immunity, reticuloendothelial system, and antithrombin.—See A., 1944, III, 523.

Multiple antigens for active immunisation. Study Committee on Multiple Antigens (*Amer. J. Publ. Health*, 1944, **34**, 452—454).—The Committee summarise very shortly the present plans for immunisation against diphtheria, pertussis, tetanus, and smallpox. C. J. C. B.

Attempted purification of antibodies by specific methods. H. Svensson (*Arkiv Kemi, Min., Geol.*, 1943, **17, A**, No. 5, 8 pp.; cf. Meyer and Pic, A., 1936, 748).—Experiments with serum-protein coupled with *p*-aminobenzoic acid and purified by isoelectric pptn. show that partial purification of antibodies is achieved by adsorbing on active C or floridin and eluting with 0·1N-acetic acid. In some cases, a similar result is obtained by electrophoresis. W. McC.

[Formation of antigenic protein complexes with a] homologue of dimethylazobenzene. R. W. Linton and L. D. Smith (*J. Franklin Inst.*, 1942, **234**, 286—288).—The acid chloride of *p*-dimethylamino-*p'*-carboxyazobenzene (from the corresponding carboxylic acid and SO_2Cl_2) reacts with horse or ox serum to give antigenic complexes. The injection of rabbits and mice with the horse-serum complex results in formation of an antibody against the dye. F. O. H.

Quantitative study of precipitin reaction of ovalbumin with homologous rabbit antiserum. I. Soluble components of the inhibitory zone and their precipitation with alcohol. P. Grabar and J. Oudin (*Ann. Inst. Pasteur*, 1943, **69**, 195—204).—The addition of alcohol to supernatant fluids of sp. ppts. in saline medium causes pptn. of part of the water-sol. components in the zone of excess antibody. The precipitin reaction in an alcohol medium, after passing a max. at a higher antigen : antibody ratio, also shows a zone of inhibition. The antigen–antibody complex can therefore be divided into 3 fractions, one insol. in water, one sol. in water and insol. in alcohol, and one insol. in both. This may be due to differences in the reacting antibodies or differences in the proportions of antigen in the complex. F. S.

Torantil (histaminase) in urticaria following serum administration. J. A. Toomey, F. M. Kriete, and H. C. Epstein (*J. Pediat.*, 1944, **24**, 290—292).—Histaminase neither prevents nor ameliorates the serum sickness which follows the administration of meingococcus antitoxin (horse). C. J. C. B.

Rôle of acetylcholine in anaphylactic process. S. Farber, A. Pope, and E. Landsteiner, jun. (*Arch. Path.*, 1944, **37**, 275—278).—Saline extracts of cardiac, pulmonary, and intestinal tissues of normal and of sensitised guinea-pigs, prepared with and without eserine, were examined for acetylcholine content. Pieces of the organs of the sensitised guinea-pigs were shocked *in vitro* by Schild's method (*J. Physiol.*, 1937, **90**, 34P). The no. of positive responses and the amount of acetylcholine liberated were no greater with the shocked pieces of lungs and intestines than with the normal controls. Histamine was demonstrated with regularity in the shocked pieces of lungs. In 10% of the extracts of normal heart acetylcholine was demonstrated. C. J. C. B.

Use of histamine in allergic conditions.—See A., 1944, III, 557.

Sensitivity to liver extracts. J. G. McSorley and L. S. P. Davidson (*Brit. Med. J.*, 1944, I, 714—716).—Intramuscular liver therapy may result in almost every type of allergic reaction, but the commonest form is flushing, tachycardia, erythema, and localised urticaria. Reactions may be mild or very severe with bronchospasm, vomiting, rigor, hyperpyrexia, nasal and ocular discharges, substernal pain, collapse, and angioneurotic œdema. Although skin reactions may be positive in patients who do not show any reaction to parenteral liver therapy, their degree in general bears some relation to the severity of the general sensitisation and resulting reactions. Desensitisation is possible and the technique is outlined. I. C.

***Beta vulgaris*, var. *maritima*, important unknown cause of pollenosis in southern Buenos Aires.** L. Herraiz-Ballestero and J. V. Monticelli (*Rev. Soc. argent. Biol.*, 1944, **20**, 8—11).—This Chenopodiacea gives large quantities of pollen from the last days of October to the first fortnight in December. Skin tests with the pollen gave 68·9% positive reactions in 150 cases of pollenosis. J. T. L.

XXVI.—PLANT PHYSIOLOGY.

Phosphates and osmosis. L. Plantefol (*Compt. rend.*, 1943, **217**, 83—84).—Experiments with solutions of phosphates and membranes of *Laminaria flexicaulis* indicate that osmosis is not strictly proportional to the osmotic pressure of the solution. It is closely related to the degree of hydration of the membrane. P. G. M.

Relations between water-permeability and electric charge in membrane models and in living plant cells. L. Brauner and M. Brauner (*Rev. Fac. Sci. Istanbul*, 1943, **8, B**, 264—310).—Evidence is presented to show that the water-permeability of hydrophilic membranes is controlled by two factors : the electrostatic valve effect of the diaphragm which is determined by intensity of the electrokinetic potential at the pore walls, and the mechanical filter effect which parallels the degree of swelling of the membrane gels. The electrostatic effect preponderates in permeable membranes, the ultrafilter effect in dense ones; the two principles are operative both in non-living membrane models and in living protoplasts. R. H. H.

Solar radiation and growth of sugar beet in Gotland. T. E. Aurén (*Arkiv Bot.*, 1943, **30, A**, No. 15, 48 pp.).—Relations between the character of solar energy and CO_2 assimilation are examined. In calculation of energy relationships the heat of polymerisation of sugar to starch or cellulose is negligible. During growth of sugar beet, sugar formation is proportional to the amount of radiant energy received up to but not beyond the stage when the total sugar per beet is 80—85 g. Subsequent increase in sugar content is less uniform and is probably affected by translocation of sugar from the diminishing leaf area. The efficiency of transformation of energy in sugar production is greater in later than in earlier stages of growth. A. G. P.

Effect of photoperiod on rice varieties grown in the field. H. M. Beachell (*J. Agric. Res.*, 1943, **66**, 325—340).—In general, varieties subjected to a daily 10-hr. photoperiod headed before the controls and varieties under the split-day treatments (morning or afternoon covering) headed at about the same time as or later than the controls. R. H. H.

Differential effect of nutrient solutions on size of various parts of maize seedlings grown in dark. J. H. Kempton (*J. Agric. Res.*, 1943, **66**, 183—228).—Ca salts stimulated elongation of the mesocotyl, whereas all except Ca salts stimulated leaf growth at the expense of the mesocotyl. The dry wt. of the roots was reduced by Ca but unaffected by the other salts. In the complete nutrient solution at 32·2° the max. amount of dry matter had been translocated 7 days after planting, whilst at 20·6° translocation rate was still increasing after 10 days. R. H. H.

Effect of nutrient solution concentration on growth of *Marchantia polymorpha*. P. D. Voth (*Bot. Gaz.*, 1943, **104**, 591—601).—Optimum growth of *M. polymorpha* occurred in 0·0033M-mineral nutrients having osmotic pressure 0·21 atm. Nutrients of high salt concn. tended to kill growing tips and produce translucent thalli and to hasten maturity. Low salt concn. favoured the formation of anthocyanin. A. G. P.

Nitrogen nutrition of onion.—See B., 1944, III, 174.

Nutrition of radish.—See B., 1944, III, 147.

Factors affecting the dry weight of *Chlorella vulgaris*. V. G. Lilly and L. H. Leonian (*Amer. J. Bot.*, 1941, **28**, 569—572).—Dry matter production by *Chlorella* on mineral salt media was increased by addition of glucose and to a smaller extent by that of malic acid. The effect of glucose + malic acid was greater than the sum of the effects of the two substances used separately. *Chlorella* probably reduces KNO_3 to NH_3 which, in presence of malic acid, yields aspartic acid, a very favourable source of N for the alga. A. G. P.

Formation of carbohydrate during germination of castor beans. J. Houget (*Compt. rend.*, 1942, **215**, 387—388).—During germination, the fatty reserves of the seed are converted into sucrose, which is then split into glucose and fructose. These sugars are absorbed by the cotyledons and distributed to the seedling and utilised for growth, the surplus being converted into starch. H. G. R.

Rôle of pyrenoids in algæ and of vacuoles in plastids of higher plants and in fungi. S. R. Bose (*Bot. Gaz.*, 1943, **104**, 633—638).—In *Chlorophyceæ* having pyrenoids starch is synthesised around the pyrenoids. In starch-free diatoms oil is first formed around the pyrenoids. Green filaments of *Spirogyra* in the vegetative stage accumulate starch but not oil. When grown on media containing fatty acids and glycerol, however, oil is synthesised around the pyrenoids and within the starch sheath. In unhealthy filaments and in those undergoing decomp. oil is formed from starch around the pyrenoids both inside and around the starch sheath. In plants lacking pyrenoids pinkish vacuoles within the plastids probably contain the enzymes concerned in the synthesis of food reserves. A faint pinkish stain is observed in the centres of pyrenoids. A. G. P.

Synthetic activity of [plant] embryo. I. Formation of ascorbic acid and carotenoids in etiolated wheat seedlings. H. K. Barrenscheen, J. Pany, and E. Srb (*Biochem. Z.*, 1942, **310**, 285—291).—The ascorbic acid content of various kinds of wheat grain is approx. 16 μg. per g. of dry grain. After germination, the embryo contains at least 10 times this amount. In some wheats, the reduced form of ascorbic acid, and in others the dehydro-form, predominates. The carotene content of various wheats is 8·0—8·4 μg. per g. of dry grain. The ratio of carotene to xanthophyll in resting seeds is approx. 1. After germination in the dark, the carotenoid content increases to approx. 273 μg. per g. of dry embryo and the ratio of carotene to xanthophyll increases to approx. 1·5. After short illumination, there is an increase in carotenoids, mainly carotene, and a corresponding increase in the amount of chlorophyll. When 7-day seedlings are illuminated for 7 hr., the chlorophyll content increases from 0 to 350 μg. per g. of dry seedling. J. N. A.

Synthetic activity of embryos. II. Carotenoid and chlorophyll formation in etiolated wheat germ. K. H. Barrenscheen, J. Pany, and E. Srb. **III. Methylation of guanidoacetic acid [glycocyamine] to creatine in etiolated wheat germ. Part I.** K. H. Barrenscheen and J. Pany. **IV. Part II.** D. Gigante (*Biochem. Z.*, 1942, **310**, 335—343, 344—349, 350—354).—II. The theoretical importance of the increase in NH_3 content with const. amide- and amino-acid-N, which occurs as germination proceeds, is discussed. The I-combining power of light petroleum extracts, which is a measure of carotenoid formation, is unchanged during germination and exposure to light. Protochlorophyll is not involved as a precursor of chlorophyll in wheat germ.

III. Etiolated wheat germ synthesises creatine from guanidoacetic acid at optimal pH 7. Thyroxine enhances the effect.

IV. A method is described for determination of creatine in plant extracts (cf. C., 1944, Part 4). Glycine is not involved in methylation of guanidoacetic acid in wheat germ. Contrary to the findings of Davenport *et al.* (A., 1938, III, 320), guanidoacetic acid is appreciably adsorbed on permutite, and cannot be separated from creatine in this manner. P. G. M.

Heritable relation of wax content and green pigmentation of lint in upland cotton. C. M. Conrad and J. W. Neely (*J. Agric. Res.*, 1943, **66**, 307—312).—The F_1 population was intermediate green with wax content between that of the parents (green- and white-lint). Green lint and high wax content were closely associated in samples from the backcross F_2, and F_3 phenotypes. R. H. H.

Fat content of diatoms. T. Barg (*Ber. deut. bot. Ges.*, 1943, **61**, 13—27).—Fat production in diatoms is more marked in unsuitable environments, which may include presence of sugar. Fat commonly accumulates in the cell lumen and in the case of *Pinnularia viridis* and *Nitzschia putrida* may fill ⅔ of the available vol. During rapid fat formation no accumulation of other cell constituents occurs: vacuoles become deformed and cell sap disappears from affected cells. Such cells are not plasmolysable and do not stain with neutral-red. In plastid-bearing diatoms fat is formed mainly within the plastid. In *Pinnularia* and *Synedia*, extra-plastid fat is formed. The distribution and site of formation of fat in numerous species are examined. A. G. P.

Evidence for carotenoid-sensitised photosynthesis in the diatom *Nitzschia closterium*. H. J. Dutton and W. M. Manning (*Amer. J. Bot.*, 1941, **28**, 516—526).—Quantum yields of photosynthesis (O_2 evolved per quantum absorbed) are determined in violet, red, blue, and green light. At 5461 and 4358 A. approx. 50% of the total light absorption is effected by carotenoid pigments; at 4960 A. the pigments accounted for 90% of the light absorbed. Such absorbed light is utilisable in photosynthesis. At high light intensities absorption by chlorophyll alone suffices to produce a max. rate of photosynthesis. Carotenoid photosynthesis probably involves the same enzyme system as does that by chlorophyll. A. G. P.

Products of photosynthesis. H. Burström (*Arkiv Bot.*, 1943, **30, B**, No. 8, 7 pp.).—Young wheat leaves do not assimilate NO_3' in darkness; this is not due to lack of carbohydrate. In mature leaves the primary products of photosynthesis are sugars and proteins (or their precursors). In protein formation the N-free structural units are formed at the expense of or instead of sugars. At low intensities of light formation of sugar and of protein proceed independently, probably through separate photochemical mechanisms; at high light intensities which do not limit assimilation of CO_2 protein synthesis limits sugar formation. A. G. P.

Carbon assimilation and respiration of large polyploid [plants]. M. G. Stålfelt (*Arkiv Bot.*, 1943, **30, A**, No. 12, 15 pp.).—Cells of polyploid forms of several species and hybrids are larger in size and in nos. than in diploids. Polyploids have thicker leaves, smaller surface area per unit fresh wt., and higher water content. Assimilation and respiration per unit fresh wt. are smaller than in diploids. Assimilation by polyploids per unit dry wt. and leaf area is not appreciably different from that of diploids. A. G. P.

Energy yield during assimilation of carbon dioxide. C. Kopp (*Biochem. Z.*, 1942, **310**, 191—206).—Data are given for respiration and assimilation of CO_2 by *Chlorella pyrenoidosa* during irradiation with white light of intensity 300—53,300 lux at 10°, 20°, and 30°. With low light intensity, assimilation is practically the same at each temp., but with increase in intensity, max. assimilation is first attained at the higher temp. Max. assimilation occurs at 10°, 20°, and 30° with light intensities of 12,000, 24,000, and 28,000 lux, respectively. Respiration and assimilation are also determined at 10° and 20° during irradiation with light of λ 650 mμ. The amount of energy converted into chemical energy is greatest at 10°. Most of the sunlight irradiating the alga is reflected or transformed into heat, but at low intensity the utilisation, calc. from the amount absorbed by the alga, is approx. 50%. J. N. A.

Presence of growth-inhibiting substances in potato tubers and the production of growth-promoting substances in wound surfaces. T. Hemberg (*Arkiv Bot.*, 1943, **30, B**, No. 7, 8 pp.).—During the extraction of auxin from potato peel an ether- and water-sol. growth-inhibiting substance was obtained and separated from auxin by its slower diffusion through agar. The proportion of the inhibitor in the potato increased with that of auxin during sprouting. Acid growth-promoting substances develop at the cut surface of tubers

on exposure to air and increase as the surface dries. A neutral growth-promoting substance, which does not give the *Avena* test, is simultaneously formed. A. G. P.

Effects of growth-regulating substances on a parthenocarpic fruit. H. E. Clark and K. R. Kerns (*Bot. Gaz.*, 1943, **104**, 639—644).—Pineapple plants were sprayed with α-naphthylacetic acid after the differentiation of floral primordia. High concns. of the growth-substance increased the size and wt. of ripe fruit but not the no. of fruitlets, and also increased the size of peduncles, which were difficult to separate from the fruit. With the high concn. of growth-substance used (0·05%) ripening of the fruit was delayed and the growth of slips and suckers partly inhibited. Low concns. of α-naphthylacetic acid stimulated the growth of dormant slip buds. A. G. P.

Growth factors necessary for culture of carrot tissues. P. Nobécourt (*Compt. rend.*, 1942, **215**, 376—378).—Glucose and β-indolylacetic acid are necessary factors in the medium previously described (A., 1937, III, 498). Neither β-indolylpropionic acid nor tryptophan can replace β-indolylacetic acid, whilst cysteine hydrochloride is dispensable. H. G. R.

Physiological action of metals at a distance. The buckwheat test, a highly sensitive trace indicator of radioactive elements. W. Schmidt (*Ber. deut. bot. Ges.*, 1943, **61**, 75—80).—In buckwheat seedlings a negative curvature was produced by Ra placed near and a positive curvature when placed at a distance (3 m.). U salts have a similar action. The effect is largely due to β-radiation. Curvature produced in seedlings grown in Zn containers is probably due to radiotropic effects. A. G. P.

Liberation of virus, together with materials that inhibit its precipitation with antiserum, from solid leaf residues of tomato plants suffering from bushy stunt. F. C. Bawden and N. W. Pirie (*Brit. J. exp. Path.*, 1944, **25**, 68—80).—After the sap has been expressed from minced tomato leaves infected with tomato bushy stunt virus, the solid residues contain as much virus as the sap. The virus can be liberated by treating the residues with trypsin and then passing through a roller mill. Extracts of the milled fibre contain some virus combined with chromoprotein to form a non-pptg. antigen. F. S.

XXVII.—PLANT CONSTITUENTS.

Spectrographic detection of elements in plants. R. J. Ambrosis (*Rev. Fac. Cienc. Quím., La Plata*, 1942, **17**, 231—237).—The ashes of 14 fruits and vegetables contained Al, Mn, Cu, Mg, Ca, Ba, Fe, K, Zn, Si, P, Na, Sr, and Ni. F. R. G.

Phytochemical study of *Potentilla anserina* and *P. argentea*. M. Wolfred and L. Fischer (*Amer. J. Pharm.*, 1944, **116**, 184—189).—Air-dried powdered *P. anserina* and *P. argentea* have the following respective constituents: total ash 3·09 and 1·99; reducing sugar 2·79 and 3·44; sucrose 1·20 and 1·57; starch 3·30 and 3·79; pentosans 8·34 and 13·9; protein 6·19 and 9·0; tannin 10·76 and 3·1; crude fibre 15·42 and 18·08%. Alkaloids are absent, but glucosides are detectable. Tormentol, m.p. 225—226°, was isolated in respective yields of 0·12 and 0·08%, but did not yield urethane derivatives. Both drugs contain mixed tannins which yield pyrogallol and pyrocatechol on pyrolysis, protocatechuic acid and phloroglucinol on alkali fusion, and gallic acid, ellagic acid, glucose, and a red phlobaphen on hydrolysis by dil. HCl at 100°. P. G. M.

Phytochemistry of *Argemone hispida*. T. O. Soine and O. Gisvold (*J. Amer. Pharm. Assoc.*, 1944, **33**, 185—188).—The following were isolated from the ground, mixed, air-dried stems, leaves, seed pods, and roots: sterol fraction, m.p. 115—124°, $[\alpha]_D^{22}$ +112·79° in $CHCl_3$ (acetate, m.p. 113—119°; dibromide, m.p. 103—116°); a sterolin, m.p. 263—264° (decomp.) (acetate, m.p. 164—164·5°), hydrolysed to a sterol, m.p. 136° (acetate, m.p. 124—126°), and a sugar (osazone, m.p. 207°); an *alkaloid*, $C_{17}H_{13-15}(OH)(OCH_3)_3N$, m.p. 238°, $[\alpha]_D^{24}$ −77·47° in $CHCl_3$ (*benzoate*, m.p. 124—125°), sol. in ether; an alkaloid, having a catechol grouping and insol. in ether; an *alkaloid*, $C_{17}H_{13}(OCH_3)_4N,0{\cdot}5H_2O$, m.p. 152·5—153°, $[\alpha]_D^{24}$ −214·22° in ethyl alcohol, −187·93° in $CHCl_3$ [*picrate*, m.p. 242—245°; *styphnate*, m.p. 247—249°; *methiodide*, m.p. 273—274° (decomp.)], sol. in ether; an alkaloid fraction, m.p. 84—124°, insol. in ether. F. O. H.

Triterpene group. XI. Non-saponifiable matter of *Lactucarium germanicum*.—See A., 1944, II, 270.

Constitution of belmacamgenin and belmacamdin.—See A., 1944, II, 271.

Monoterpene alcohols and acids present as esters in French oil of lavender.—See A., 1944, II, 267.

Alcohols, hydrocarbons, and oxides of the sesquiterpene series from French oil of lavender.—See A., 1944, II, 268.

Preparation of crystalline ascorbic acid from walnut extracts.—See A., 1944, III, 548.

Vitamin-B_1 content of the millets *Eleusine coracana*, *Sorghum vulgare*, whole wheat, and rice stored underground.—See A., 1944, III, 547.

Total extraction of free auxin and auxin precursor from plant tissue. G. S. Avery, jun., J. Berger, and B. Shalucha (*Amer. J. Bot.*, 1941, **28**, 596—607).—The "multisolvent" method (alcohol, $CHCl_3$, water) of extracting auxin from dormant maize endosperm yielded the equiv. (*Avena* test) of 7 mg. of indolylacetic acid per kg. By repeated extraction with alcohol for 27 weeks 2·7 mg. was obtained and similar treatment with water yielded 5 mg. By heating a suspension of the tissue at pH 9—10 for 15 min. at 100° a yield of 60—70 mg. resulted, probably due to hydrolysis of the precursor of auxin under alkaline conditions. Thus 90% of the total auxin occurs as inactive precursor. The precursor is sol. in water but not in ethyl ether, benzene, light petroleum, or $CHCl_3$, is slightly sol. in alcohol, dioxan, and pyridine, and very sol. in methanol. Its mol. wt. is less than 13,000. A. G. P.

Fish poisons from *Ichthyomethia piscipula*. I. A. Russell and E. A. Kaczka (*J. Amer. Chem. Soc.*, 1944, **66**, 548—550).—The root-bark or root-wood of *I. piscipula* (L.), A. Hitchc., yield to water, methyl alcohol, acetone, or ethyl alcohol resins which are toxic to fish. Light petroleum extracts first a mixture, whence removal of wax by ether yields rotenone, and then *ichthynone*, $C_{23}H_{20}O_7$, m.p. 203—204°, α 0, which contains 2 OMe but no alcoholic or phenolic OH, cannot be dehydrated, yields a *dibromide*, m.p. 234—235°, *hydrazone*, m.p. 215—217°, *phenylhydrazone*, m.p. 195—200° (decomp.), and *tetrahydro*-compound, m.p. 233—234°, and is fatal to goldfish in water at 1 : 10^6. R. S. C.

Total and thiocarbimide sulphur content of rape seed at various stages of maturity. E. André and M. Kogane-Charles (*Compt. rend.*, 1942, **215**, 327—328).—Total S decreases with increasing maturity of the seed as the oil content increases: thiocarbimide-S comprises about 3% of the total S. 7—13% of the total S which is non-thiocarbimide-S is volatile and is removed with the oil during solvent extraction of the seeds. H. G. R.

Fats and phosphatides in grass.—See B., 1944, III, 163.

Sulphhydryl groups of wheat flour.—See B., 1944, III, 180.

Proteins of various tree seeds. A. P. Lund and W. M. Sandstrom (*J. Agric. Res.*, 1943, **66**, 349—355).—Acorns are low in protein content, ironwood seeds higher, and elm seeds very high. The water-sol., saline-sol., alcohol-sol., alkali-sol., and residual N of each seed meal are recorded. American elm and ironwood seeds contain albumin, globulin, and glutelin, acorns only glutelin. The individual amino-acid contents of the proteins are reported. R. H. H.

Hypericin, the photodynamic pigment of *Hypericum perforatum*. H. Brockmann, F. Pohl, K. Maier, and M. N. Haschad (*Annalen*, 1942, **553**, 1—52).—Colorimetric determinations show that hypericin is present in all parts of *H. perforatum* but chiefly in the yellow petals. Its concn. is the same in the leaves and stems of young and mature plants. It is present in smaller amount in *H. hirsutum* and *H. crispum*. It is present in solution in the dark red cell sap of pH about 4·6, its solubility, which greatly exceeds that of the isolated pigment, being ascribed to the simultaneous presence of basic plant materials. Pure hypericin is insol. in fatty oils which can extract it from the plant. No indications of the presence of further similar pigments in *Hypericum* have been observed. Small concn. of pigment and short irradiation cause hæmolysis of red blood corpuscles after some time whereas this occurs during irradiation if higher concns. and longer irradiation are employed. Administration of hypericin to white mice or rats followed by exposure to light causes rapid fall in body temp. followed by death. (See also A., 1944, II, 300.) H. W.

Sterls of *Calycanthus floridus*.—See A., 1944, II, 301.

Alkaloids from *Zephyranthes texana*, *Cooperia pedunculata*, and other Amaryllidaceæ and their toxicity to *Phymatotrichum omnivorum*. G. A. Greathouse and N. E. Rigler (*Amer. J. Bot.*, 1941, **28**, 702—704).—The presence of lycorine is demonstrated in *Z. texana* and *C. pedunculata*. The latter also contains a second alkaloid, probably ψ-lycorine. Lycorine prevents the growth of *Phymatotrichum omnivorum*. In roots and bulbs of Amaryllidaceæ alkaloids are located largely in exterior tissue and occur in amounts sufficient to explain the immunity of the plants to attack by *P. omnivorum*. A. G. P.

Alkaloids of lycopodium. V. *Lycopodium obscurum*, L.—See A., 1944, II, 281.

Chemical examination of root of *Centaurea behen*.—See A., 1944, II, 284.

Quinua (*Chenopodium quinoa*).—See B., 1944, III, 181.

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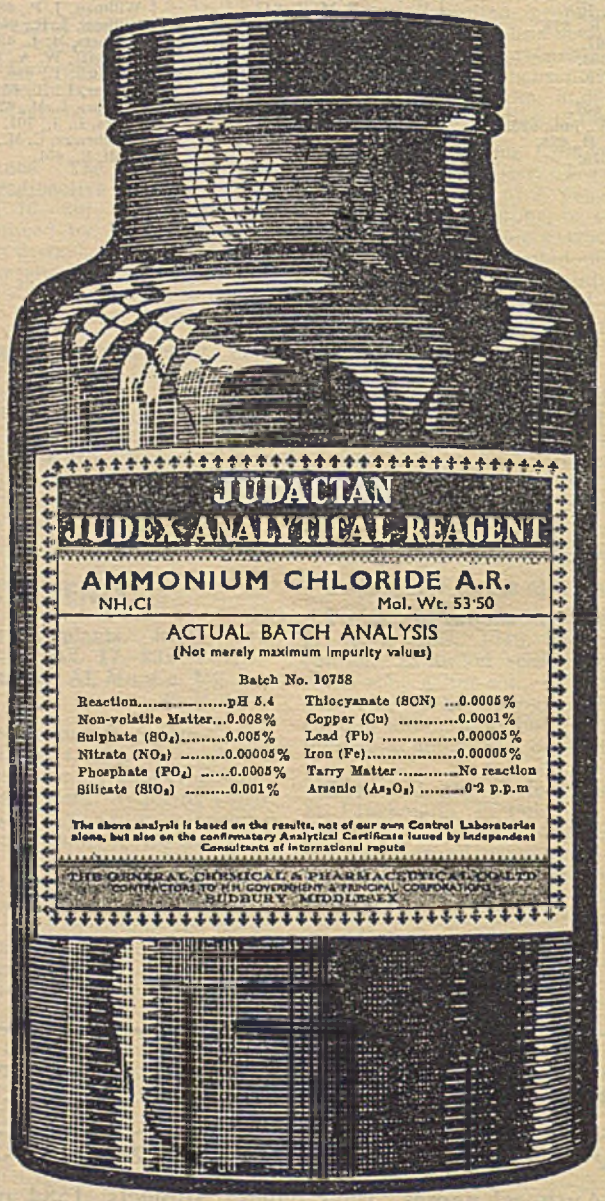

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