

# BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

DECEMBER, 1940.

### (i) GENERAL ANATOMY AND MORPHOLOGY.

**Macroscopic study of nerve supply of stomach.** G. A. G. MITCHELL (*J. Anat.*, 1940, **75**, 50—63).—The sympathetic nerve supply comes chiefly from the coeliac plexus, the fibres accompanying the gastric arteries. Inconstant fibres are derived from the left phrenic, splanchnic nerves, and the thoracic and lumbar portions of the left sympathetic trunk. The nerve from the left phrenic to the right crus of the diaphragm sends a direct branch to the cardiac end of the stomach. The term "hepatogastric nerves" is suggested for branches from the hepatic plexus to the stomach. The splenic plexus occasionally contributes a gastric branch. Plexus gulæ formation is inconstant. The course of the main gastric branches of the anterior and posterior vagal trunks is described. No true anterior or posterior gastric plexus was observed but the coeliac division of the posterior vagal trunk is usually in plexus form. W. F. H.

**Brachial plexus in *Macacus rhesus* compared with man.** R. E. CHASE and C. F. DE GARIS (*Amer. J. Phys. Anthrop.*, 1940, **27**, 223—254).—Data from 150 specimens (300 dissections) are recorded. The classification of variants, of which 14 are listed, is based mainly on the disposition of the components forming the cords. The usual type is formed from roots cervical V to thoracic I inclusive, with various sized contributions from cervical IV and thoracic II. The upper and middle trunks divide proximally into ventral and dorsal divisions; the lower trunk divides more distally. The lateral, medial, and posterior cords bear respective relations to the axillary artery. It is concluded that the plexus symmetry is highly evolved and very stable. Variations in trunk formation exemplify both pre- and post-fixed plexuses. Statistical comparisons are made with the human brachial plexus. W. F. H.

**Cardio-vascular system in viable foetal lamb.** K. J. FRANKLIN, A. E. BARCLAY, and M. M. L. PRICHARD (*J. Anat.*, 1940, **75**, 75—87).—The umbilical veins, portal sinus, and ductus venosus are described. From radiographic and X-ray cinematographic studies it was observed that during placental circulation the umbilical venous inflow and not the portal dominates the picture. The intravenous tubercle is visible in lateral radiographs and its functional importance is indicated. The foramen ovale is regarded as being in the inferior vena cava and not in the right atrium, and the form and function of its valve are detailed. The valve of the inferior vena cava and that of the coronary sinus are not present in the foetal lamb.

Movements of the heart chambers in the intact foetus are described. W. F. H.

**Peculiarities of cerebral blood vessels of opossum: diencephalon, area postrema, and retina.** G. B. WISLOCKI (*Anat. Rec.*, 1940, **78**, 119—137).—Paired arterioles ending in terminal capillary loops supply the paraventricular and supra-optic nuclei. The blood vessels of the posterior lobe and infundibulum of the hypophysis form a rich capillary network in contrast to the looped end-vessels of the hypothalamus proper. The blood supply of the hypophysis is completely independent of the hypothalamic circulation. The optic crest, sub-fornical body, and area postrema possess capillary networks. The rudimentary pineal gland has no special vascularity. The retina contains 8—10 arteries radiating from the optic disc, each forming independent, non-anastomosing vascular units. The terminal capillary loops thus formed end in either the inner or outer granular layer. W. F. H.

**Postural correction in children. Analysis of 48 patients.** L. COZEN (*Arch. Pediat.*, 1940, **57**, 287—294).—96% showed improvement, physically, mentally, or both. C. J. C. B.

**Good and poor years for growth of girls in stature and body-weight.** F. K. SHUTTLEWORTH (*Human Biol.*, 1940, **12**, 280—287). J. D. B.

**Independence of sesamoid and epiphyseal centres of ossification.** R. W. HAINES (*J. Anat.*, 1940, **75**, 101—105).—Histological data indicate that in reptiles, birds, and mammals sesamoid and epiphyseal centres, once developed, retain their nature with little change. W. F. H.

**Case of epiphyseal dysplasia punctularis (stippled epiphyses) without hypothyroidism.** J. A. L. McCULLOUGH and C. G. SUTHERLAND (*Radiology*, 1940, **34**, 131—135). E. M. J.

**Congenital abnormalities of external ear.** H. O. FOUCAR (*Canad. Med. Assoc. J.*, 1940, **43**, 26—27).—A review. C. J. C. B.

**Inverted duodenum.** M. FELDMAN and T. H. MORRISON (*Amer. J. med. Sci.*, 1940, **200**, 69—74).—14 cases are described. C. J. C. B.

**Vinylite resin in preparation of corrosions of anatomical specimens.** W. O. PUCKETT and C. P. NEUMAN (*Anat. Rec.*, 1940, **78**, 105—111).—Corrosions made with a 12.5% vinylite resin solution possess certain advantages over preps. made by older methods. The mass is very fluid, and consequently the finer vascular ramifications are filled and the injection can be carried out at room temp. The preps. are rigid,



urable, and heat-resistant. The solution may be obtained commercially in a variety of colours.

W. F. H.

## (ii) DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

**Early human embryo, with 0.55 mm. long embryonic shield.** T. B. JOHNSTON (J. Anat., 1940, 75, 1—49).—The embryo, designated H.R.I., has a fertilisation age of approx. 15½ days and was at the same stage of development as Grosser's H. Schm. A solid entodermal cord represents the first stage in the development of the allantois. The cloacal membrane is present near the caudal end of the shield. The primordium of the prochordal plate is present and an early stage in the development of Henson's node is described. A precociously developed coelom in the cranial part of the shield appears to communicate caudally with the exocoelom. The shield itself is abnormally curved and this is attributed to abnormal growth induced by the shape of the chorionic cavity.

W. F. H.

**Chimpanzee ovum in early stage of implantation.** C. H. HEUSER (J. Morph., 1940, 66, 155—173).—A detailed account of the structure of a 10-day chimpanzee ovum obtained by the Hartman technique of enucleation of the uterine mucosa. Implantation, at this stage of development, is almost identical with that shown in the Miller ovum and in the recent Hertig and Rock ova. The ovum is buried in the uterine mucosa immediately beneath the epithelium. The trophoblast is differentiated into an inner cellular layer and a broad vacuolated covering zone of plasmoditrophoblast which is closely applied to the uterine stroma. No chorionic villi have appeared. The embryo proper is located at the deeper, or internal, edge of the chorionic cavity. A striking feature is the precocity and abundant growth of the primitive mesoblast which is intimately connected with the cytotrophoblast from which it apparently arises. The first entodermal cells appear early, as in the ova of monkeys and other mammals, but the formation of a yolk-sac is long deferred. The endoderm is a thin layer only one cell thick caudally, but increasing to two cells in thickness anteriorly. Presumably the layer, by multiplication of its cells, will increase in thickness and differentiate into yolk-sac and gut entoderm. A 12-day abnormal ovum is also described.

J. D. B.

**Hæmatopoiesis in young human embryos.** W. BLOOM and G. W. BARTELMEZ (Amer. J. Anat., 1940, 67, 21—53).—Hæmatopoiesis is described in a series of ova starting with the 3rd day stage. Early hæmatopoiesis is almost entirely confined to the yolk-sac. Hæmocytoblasts are predominantly of the large lymphocyte type. In the yolk-sac, hæmocytoblasts give rise to primitive erythrocytes and to a subsequent independent generation of definite erythrocytes. Hæmocytoblasts also give rise to macrophages, giant cells, atypical megakaryocytes, and myelocytes. The definite erythrocytes develop within vessels in the mesenchyme and in the entoderm. Blood-vessel primordia in the chorion, yolk-sac, and body stalk

arise by direct transformation of mesenchyme cells and no evidence for their direct development from cytotrophoblast was found.

W. F. H.

**Extroversion of primitive hind gut.** J. E. MORISON (Arch. Dis. Child., 1940, 15, 105—114).—A case is described of ectopia of the bladder associated with an opening into the bowel from the subumbilical part of the abdominal wall. The mechanism of development of the gut behind the vitelline duct is discussed, and apart from a small blind tube growing into the dorsal mesentery this part of the bowel is considered to be absent. The opening of the primitive hind gut is considered to result from the failure of invasion of the cloacal membrane by mesoderm. This probably resulted from a deficient formation of mesoderm at the hind end of the primitive streak. Atavistic developmental abnormalities of the right kidney are also present. A detailed histological study of the exposed areas suggests that the type of epithelium, other than mucus-secreting, provides no certain criterion for the separation of those parts of ectodermal origin from those of endodermal.

C. J. C. B.

**Experimental intersexuality: effects of oestrogens on antenatal sexual development of rat.** R. R. GREEN, M. W. BURRILL, and A. C. IVY (Amer. J. Anat., 1940, 67, 305—345).—Prenatal treatment with oestrogens produces inhibition and degeneration of the Wolffian derivatives and a moderate degree of persistence and stimulation of Müllerian derivatives in the male embryo. Male development of the urogenital sinus is inhibited and there is partial development in the female direction. Certain minimal doses were necessary for such changes as absence of prostate, presence of nipples, and inhibition of testicular descent but no dosage correlation was established for such changes as absence of portions of the Wolffian and Müllerian ducts. The influences of sex hormones on mammalian sexual development are discussed.

W. F. H.

**Effect of testosterone propionate on early development of reproductive ducts in female sparrow-hawk.** O. E. NELSON and R. M. STABLER (J. Morph., 1940, 66, 277—298).—*Falco sparverius* holds a transitional position in its differentiation of the reproductive ducts and gonads between that of the typical vertebrate condition of fully developed apparatus on the right and left side and that of the typical avian female condition with its ovary and oviduct only on the left side. The general conclusions on the results of injecting testosterone are that the hormone influences both sets of reproductive ducts, that it causes them to develop synchronously, and that the hormone has both feminising and masculinising effects in the dosages used. It apparently supersedes the normal genetic female tendency and drives the organism toward a hermaphroditic condition as far as the reproductive ducts are concerned. Little or no effect was observed on the ovaries.

J. D. B.

**Reproductive system of alligator. VI. Heterosexual structures in female alligator.** T. R. FORBES (Anat. Rec., 1940, 77, 343—365).—The development of the medullary rest, the rete system, and the mesonephric tubules and duct in 3 immature



female alligators of about 3 ft. in total length is described and discussed. It is suggested that an important homology exists between the bilateral medullary rest in the female alligator and the rudimentary right ovary in the fowl. W. F. H.

**Culture *in vitro* of excised embryo of an ophiuroid.** H. B. FELL (Nature, 1940, 146, 173).—Excised embryos of *Amphipholis squamata* were successfully cultured *in vitro* using Föyn's "Erd-schreiber" medium. The method is described.

E. R. S.

**Content and distribution of minerals in human amnion and chorion at term.** B. KROPP (Anat. Rec., 1940, 77, 407—415).—Cytoplasm of the non-placental part of the amnion is rich in minerals but the water-sol. mineral content is generally low. Cytoplasm and nuclei contain little Fe. The minerals in the placental portion of the amnion occur just within the cell membrane. Minerals are absent from cytoplasmic vacuoles and the basement membrane of the amnion. A small amount of SiO<sub>2</sub> is present in the epithelium of amnion and chorion. Decidual and connective tissue cells are rich in water-sol. minerals. The micro-incineration method was employed in the investigation. W. F. H.

**Fate of glucose injected into developing hen's eggs.** O. CANEVAZZI (Arch. ital. Anat. Embriol., 1940, 43, 187—210).—Injection of glucose into either the air chamber or the albumen, or under the blastoderm, increased embryonic mortality; it produced no increase of glycogen in the liver and heart or of glucose in blood or amniotic fluid of the embryos at various stages of development. When glucose was injected into chickens shortly before or after hatching, glycogen (detected histochemically by Best's method) appeared in both liver and heart soon afterwards; the same organs from control animals were glycogen-free. S. O.

**Chromosome numbers in parthenogenetic frogs.** C. L. PARMENTER (J. Morph., 1940, 66, 241—260).—An account of the chromosome nos. in 559 eggs of *Rana fusca* parthenogenetically developed from eggs with known polar body and cleavage histories. 4 tadpoles (6—8 days old), 2 neurulæ, 5 blastulæ, and 14 abnormal many-celled stages provided material suitable for chromosome counts. The following types were found: 3 pure haploids, 4 haploid-diploids, 1 pure diploid, 3 diploid-triploids. All of the stages developed from eggs which gave off both polar bodies and none was delayed in cleavage. All animals which metamorphosed or lived near to or beyond this time and whose chromosome no. is known were diploid. J. D. B.

**Evidence for polyploidy in hermaphrodite groups of animals.** M. J. D. WHITE (Nature, 1940, 146, 132—133).—There is evidence of polyploidy in the Rhabdocœla, but not in the Pulmonata, and insufficient evidence for Hirudinea and Oligochœta. It is concluded that polyploidy has not occurred in the hermaphrodite animals to such an extent as in the higher plants. E. R. S.

**Linkage and crossing-over in human sex chromosomes.** T. WHITE (J. Genet., 1940, 40,

403—437).—Previous knowledge regarding inheritance of sex-linked congenital night-blindness, myopia, and deuteranopia is discussed. A pedigree exhibiting the transmission of associated night-blindness, myopia, and deuteranopia through seven generations is described. The mode of transmission of the defects indicates that they are sex-linked and originally all located on one X-chromosome. On several occasions they have been separated by crossing-over of the maternal X-chromosomes. An estimate of the cross-over ratio between the genes for night-blindness (with myopia) and deuteranopia is given and a statistical appendix gives full mathematical treatment of the data. W. F. H.

**Significance of diploidy and crossing-over (theory of differential periodicity).** G. F. SLEGGES (J. Genet., 1940, 40, 385—392). W. F. H.

**Modifying *Drosophila* by selection.** W. R. GREEN (J. Morph., 1940, 66, 67—92).—In *Drosophila* rigorous selection of extreme individuals in the population is able to move the succeeding generations in the direction of selection. Since none of the variants individually could be shown to be either dominant or recessive in the ordinary sense of those terms, and none could be made homozygous, it seems that they could not be due to Mendelian factors as ordinarily understood. The results support a hypothesis which accepts two kinds of variations. One, universally present, does not Mendelize and is proportional to the degree of instability of the germ-plasm: this can be increased and directed by selection. The other is limited to organisms reproducing sexually; its nature is determined almost wholly by the genotype constitution of the immediate ancestors. It Mendelizes and cannot be modified and directed by selection beyond the limits set by the possible recombinations of the Mendelian factors involved. J. D. B.

**Hybrid sterility in *Drosophila*.** B. P. KAUFFMAN (J. Morph., 1940, 66, 197—214).—Eggs of hybrid females (crosses between *D. miranda* and *D. proboscidea*), fertilised by sperm of one of the parental species, were deposited but failed to produce larvæ. Cytological study showed that the meiotic divisions are completed and that the male and female pronuclei come to lie side by side. Some of the female pronuclei contain the numerically normal haploid chromosome no. The sterility is interpreted as genic in nature and is probably referable to an effect of the hybrid chromosome complement on the egg cytoplasm prior to fertilisation. J. D. B.

**Immediate effects of 250 r. of X-rays on different stages of mitosis in neuroblasts of grasshopper.** J. G. CARLSON (J. Morph., 1940, 66, 11—23).—Both statistical and observational evidence indicates that middle prophase is the stage most susceptible to the effects of X-rays causing cessation of mitoses. The gradual, simultaneous fall in the nos. of late prophase and metaphase stages after treatment and the simultaneous increase in the nos. of anaphases and early telophases at 45 min. indicate that X-rays alter the rate of change from stage to stage in cells already undergoing mitosis and that this



change in rate differs with the stage of mitosis and with the time elapsing after irradiation. J. D. B.

### (iii) PHYSICAL ANTHROPOLOGY.

**Trend in proportional contribution of socio-economic groups to natality.** A. CROCCO (Human Biol., 1940, 12, 188—202).—A report based on the births in a Maryland county from 1898 to 1938.

J. D. B.

**Prenatal development of hair tracts in primates.** W. BRANDT (Human Biol., 1940, 12, 203—231).—An account of the arrangement of the hair tracts in the foetuses of fourteen primates, including lemuroids, *Tarsius*, platyrrhines, catarrhines, and anthropoid apes. The distribution of hair tracts with reference to the embryological origin of the hair-covered parts is stressed.

J. D. B.

**Blood groups and ageusia in Indians of Northern Alberta.** C. A. MATSON (Amer. J. Phys. Anthropol., 1940, 27, 263—267).—The distribution of blood groups in full-blood Indians differs greatly from that in Blackfoot tribes. Blackfoot and related tribes show a high incidence of *A*, whilst the Cree, Beaver, and Slave Indians are predominantly *O*. Indian tribes show no appreciable difference in taste reactions to *p*-ethoxyphenylthiourea. 90% are tasters.

W. F. H.

**New data on serology of anthropoid apes.** P. B. CANDELLA (Amer. J. Phys. Anthropol., 1940, 27, 209—221).—Data were obtained mainly from tests carried out on the urine from 11 apes (7 gorillas, 3 chimpanzees, and 1 orang). Group *B* is recorded for the first time from the gorilla. This finding renders theories regarding the source of this blood group in African natives and Asiatic apes untenable, as these were based on the assumption that all gorillas belonged to group *A*. Results were confirmed by means of blood tests in two instances. Objections to the complete acceptance of the results of urine tests as a true indication of blood groups in apes are discussed. Implications of the findings on the source of group *B* in African natives and of the source of human blood groups are detailed.

W. F. H.

**Dental hypoplasia and caries in Finnish Lapps.** H. MELLANBY (Brit. Med. J., 1940, I, 682—686).—70 Finnish Lapp children aged 2—14 years shows marked hypoplasia and caries in both deciduous and permanent teeth. Skulls 50—200 years old showed much slighter changes and the difference is attributed to a deterioration of the modern diet. C. A. K.

### (iv) CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

**Development of connective tissue in transparent chambers in rabbit's ear. II.** M. L. STEARNS (Amer. J. Anat., 1940, 67, 55—97; cf. A., 1940, III, 701).—Observations were made over a period of 10 weeks during which actual formation of fibres was noted and the entire course of development and orientation of fibre bundles followed. The intercellular fibres of connective tissue arise extracellularly as a result of fibroblastic activity. Fibroblasts participate in the process by projecting vesicular masses

of cytoplasmic material from their surfaces. These become separated from the main cell and are utilised in the formation of fibrils. Prior to fibre formation the fibroblasts increase in size, and become flattened and striated and joined by broad cytoplasmic connexions. No evidence was found to support the theory that a previous organisation of the intercellular medium determines the orientation of the developing fibres.

W. F. H.

**Mitotic rhythm in epidermis of mouse.** Z. K. COOPER and H. C. FRANKLIN (Anat. Rec., 1940, 78, 1—8).—An analysis of mitotic rate variations in the epidermis of the mouse ear was made over a period of 24 hr. Greatest mitotic activity occurred at 10 a.m. and least activity about 10 p.m. During the day the average no. of dividing nuclei was more than twice that during the night. The peak of mitotic activity during the day contrasts with the condition in man in which it occurs during the night. It is suggested that this is due to the fact that mice are nocturnal animals.

W. F. H.

**Cyclic changes in endocrine cells of renal artery of rabbit.** N. GOORMAGHTIGH (Arch. Biol., 1940, 51, 293—311; cf. A., 1940, III, 386).—An account of the cytology of the afferent smooth muscle cells found in the renal arteries of mammals. Cytological details are given to establish criteria for the identification of the cells and there is a summary of experimental work which suggests that these modified smooth muscle cells may be the source of a protein hypertensive substance appearing on constriction of the renal arteries. A cycle of glandular activity is described in the course of which granules are formed in and discharged from the cells. The cells are found chiefly in the distal extremity of the superficial afferent glomerular arteries.

J. D. B.

**Distribution of chief or pepsin-forming cells in gastric mucosa of cat.** D. T. BOWIE (Anat. Rec., 1940, 78, 9—17).—Observations were made on sections from a complete series of segments of the mucosa along the greater curvature. The pepsinogen granule content varied at different levels; it was scanty in glands near the cardiac orifice, increased to a max. about the middle of the greater curvature, and then decreased gradually towards the pyloric mucosa.

W. F. H.

**Life history and secretion of cells of adrenal cortex of cat.** H. S. BENNETT (Amer. J. Anat., 1940, 67, 151—227).—Histochemical tests to show the distribution of active adrenal cortical sterones are described. Substances similar to active sterones are confined exclusively to cells in the outer fasciculata and evidence is presented to show that the sterones are present only in large osmophilic lipid vacuoles in these cells. The nuclear and cytoplasmic structure, mitochondria, Golgi apparatus, lipid vacuoles, and pigment in the cells of the cortical zones are described and the appearances correlated with histochemical findings. The cortical cells in the adult male from the capsule to the medullary border are arranged in distinct zones termed presecretory, secretory, postsecretory, and senescent, according to their supposed functional activity. This arrangement



does not coincide with Arnold's zoning into glomerulosa, fasciculata, and reticularis based on configuration of cell columns. Changes in the cortex at maturity are described and the differences between male and female adrenals noted and discussed. Adrenal cortical hypertrophy does not necessarily mean increased hormone production. Evidence is presented that the cortex is without innervation. Mechanical and chemical factors involved in the life of cortical cells are discussed. W. F. H.

**Cicatrix of hydatid cyst in liver.** G. BRITES (Fol. anat. Univ. Conimb., 1939, 14, 1—3).—A short account of the histological reaction of the host tissue (human) to a calcified hydatid cyst. A résumé of 41 cases observed in 2184 individuals is appended. W. F. H.

**Cytological studies in *Oenothera* with special reference to relation of chromosomes to nucleoli.** P. N. BHADURI (Proc. Roy. Soc., 1940, B, 128, 353—378).—In all species and hybrids examined, the no. of secondary chromosomal constrictions corresponds with the no. of nucleoli. The correspondence is seen in heterozygous species with high chromosome catenation and in homozygous species with 7 free pairs, indicating that chromosome linkage and ring formation have evolved in the genus at a later stage than the possession of 4 nucleoli. The nucleoli of heterozygous species are unpaired, those of homozygous paired. The somatic cells of some species contain Feulgen-positive prochromosomes. F. B. P.

**Fabric structure of proteins with special reference to cytogenetics.** D. WRINCH (J. Genet., 1940, 40, 359—377).—The part played by the genetic units in directing development and in the process of duplication suggests that they must be highly sp. chemical entities. Direct chemical data concerning their structure are lacking but it seems likely that the leading rôle in duplication can be attributed to some nucleic acid-protein complex. W. F. H.

**Application of trichrome staining methods to embryological technique.** J. S. BAXTER (J. Anat., 1940, 75, 137—140).—The preliminary treatment of the embryos and details in the steps of two trichrome staining methods are given. The methods are specially applicable for the study of later stages in the development of mammalian embryos. W. F. H.

## (v) BLOOD AND LYMPH.

**Simple aid in making a blood smear.** B. SILLS (J. Lab. clin. Med., 1940, 25, 1302).—In the two cover-glass method, manipulation is made more easy by affixing a wax match to one cover-glass. C. J. C. B.

**Changes in bone marrow after death.** H. JEANNERET (Schweiz. med. Wschr., 1940, 70, 351—357).—The first post-mortem changes in sternal bone marrow occur 1—3 hr. after death, beginning with pyknotic changes in the neutrophils and myelocytes. Mitosis disappears in the myeloblasts and erythroblasts. The polymorphonuclear cells disappear within 8—24 hr. Septic conditions accelerate the process of disintegration. A. S.

**Oxygen consumption of human bone marrow.** H. E. BOCK and K. FELIX (Z. ges. exp. Med., 1940, 107, 169—178).—The average  $O_2$  consumption of 1 c.c. of citrated sternal bone marrow is 23 c.c. per hr.; the  $O_2$  consumption per hr. and per mg. of purine-N is 11.85 c.c. The  $O_2$  uptake depends largely on erythropoiesis. A. S.

**Physiological red blood picture during first year of life.** Y. AKERREN (Acta paediatr. Stockh., 1939, 26, 502—507).—A discussion. M. K.

**Mitochondria in sternal puncture smears.** T. UETANI (Nagoya J. med. Sci., 1938, 12, 117—121).—The mitochondria of the erythroblastic series collect around the nucleus; they are numerous in haemoglobin-free cells. They are round or filiform in the myeloblasts; the round forms only were seen in the polymorphs and were few. The longest and biggest forms were seen in the plasma cells. They divide into two groups during the metaphase, lying at first near the poles, later between the chromosomes. E. M. J.

**Megakaryocytes in sternal puncture smears.** T. INDEN (Nagoya J. med. Sci., 1938, 12, 123—125).—Three stages of development are described: megakaryoblasts, megakaryocytes, and naked nuclei. Nuclear substance as well as protoplasm is used in the formation of thrombocytes. Mitosis of megakaryocytes was observed 8 times. E. M. J.

**Takata reaction in erythrocyte and leucocyte emulsions.** T. WATANABE (Nagoya J. med. Sci., 1938, 12, 177—182).—The Takata reaction was positive in 7 of 10 cases of chronic myeloid, and one of chronic lymphatic leukaemia, and 19 of 22 cases of Banti's disease; it was negative in 8 cases of acute myeloid leukaemia. A positive reaction was observed in 10% emulsions of normal erythrocytes (except after heating to 100°), in a leucocyte emulsion, and in erythrocyte emulsions from cases of hypochromic anaemia or after haemorrhage; the reaction became negative after treatment with Fe. E. M. J.

**Differentiation of blood groups  $A_1$  and  $A_2$  by  $\alpha_2$ -(anti-O)-agglutinin in dog sera.** P. DAHR (Klin. Woch., 1937, 16, 204; Chem. Zentr., 1937, i, 3528).—Among sera from 50 animals 3 contained the  $\alpha_2$ -agglutinin and showed a small titre against  $A_1$  blood corpuscles. After absorption with corpuscles of group  $A_1$  and B, these sera still agglutinated only with blood of groups  $A_2$  and O. A. G. P.

**Phytic acid in avian erythrocytes.** S. RAPORT (J. Biol. Chem., 1940, 135, 403—406).—The isolation of Ba and Na phytate from hen's blood and the hydrolysis of the Ba phytate to give inositol are described. Half the org. acid-sol. P of the erythrocytes of hens and other birds is present as phytic acid. The blood of turtles yields a Ba salt, probably of phytic acid. W. McC.

**Differentiation of red blood cells by their pseudohaemoglobin content.** G. BARKAN and B. S. WALKER (J. Biol. Chem., 1940, 135, 803—804).—Pseudohaemoglobin-Fe is higher in cells of low osmotic resistance whilst, in a single blood sample, red cells vary in pseudohaemoglobin content. H. G. R.



**Synthesis of factor V (pyridine nucleotides) from nicotinic acid *in vitro* by human erythrocytes.** H. I. KOHN and J. R. KLEIN (J. Biol. Chem., 1940, 135, 685—689).—The synthesis of factor V from nicotinic acid *in vitro* by human erythrocytes is not a function of the no. of leucocytes present. Synthesis is diminished by the presence of oxalate, absence of glucose, suspension in NaCl, and excessive handling of the cells. C. A. K.

**Measurement of cell volume of blood by cell opacity method.** A. T. SHOHI (J. Lab. clin. Med., 1940, 25, 1325—1332).—A single drop of blood is sufficient to determine the transmission of light (660  $\mu$ .) through a blood suspension in citrate solution. This measurement is directly correlated with the val. for cell vol. determined by the hæmatocrit method. Alteration in size, shape, and structure of erythrocytes causes a deviation from the vals. obtained by the hæmatocrit method, but for nearly normal cells the cell opacity method is more accurate. C. J. C. B.

**Blood preservation.** E. SINGER (Med. J. Austral., 1940, I, 724—729).—The most important changes in human blood stored at 4° were, in the first 2—3 days, increased fragility of the red cells and a loss in complement and antibody content. The qualities of the blood were at least as much dependent on the technique of the collection of the blood as on the preserving fluid and apparatus. F. S.

**Reactions from transfusion of preserved blood.** E. L. DE GOWIN and R. C. HARDIN (Brit. Med. J., 1940, II, 1—5).—Data from 1458 transfusions of stored blood are presented. 10 days' storage with citrate or 30 days' with glucose-citrate mixture are safe limits. No types of reaction seen were distinctive of preserved blood, and there was no increase in their frequency with storage up to the above limits. C. A. K.

**Transfusion of fresh and stored blood.** H. F. BREWER, M. MAIZELS, J. D. OLIVER, and J. VAUGHAN (Brit. Med. J., 1940, II, 48—53).—95 cases who received blood stored for 10—14 days were compared with 58 cases given fresh blood. In acute hæmorrhage clinical results were as good with stored as with fresh blood; in non-acute hæmorrhage stored blood is of less val. than fresh. Hæmoglobin studies showed a greater gain with stored than with fresh blood. Mild reactions were commoner with stored blood, although severe rigors were equally distributed. No severe hæmolytic reactions and no deaths occurred in the whole series. Blood should be warmed to 37° before administration. C. A. K.

**Use of preserved blood.** F. R. EDWARDS and T. B. DAVIE (Brit. Med. J., 1940, II, 73—77).—Blood stored up to 10 days was used in 1364 transfusions. The incidence of most complications increased with the age of the preserved blood. The therapeutic val. in various conditions is discussed. C. A. K.

**Determination of hæmolysis in stored plasma.** R. HUDSON (Lancet, 1940, 239, 10).—The amount of hæmolysis in stored blood plasma is determined by conversion of hæmoglobin into acid hæmatin and

comparing the plasma concn. with that of citrated blood colorimetrically. C. A. K.

**Serological analysis of preserved blood.** H. WILLENEGGER and F. OTTENSOOSER (Schweiz. med. Wschr., 1940, 70, 437—441).—The complement activity of preserved blood diminished rapidly to  $\frac{1}{3}$ — $\frac{1}{4}$  of its original activity after 3 weeks' storage; heparinised blood loses its complement very rapidly. The complement titre was lowest in serum with the highest K content. The agglutinin titre of stored blood remains const. The complement titre of glucose-citrate blood was further diminished by shaking, that of heparinised blood was re-activated. A. S.

**Blood bank at Johns Hopkins Hospital.** M. M. RAVITCH (J. Amer. Med. Assoc., 1940, 115, 171—178).—Technical description. C. A. K.

**Blood preservation and plasma withdrawal.** J. SCUDDER, K. BISHOP, and C. R. DREW (J. Amer. Med. Assoc., 1940, 115, 290).—A container with a narrow centre portion diminishes the area of plasma-cell interface and reduces K and hæmoglobin diffusion. C. A. K.

**Serum-iron in children.** B. VAHLQUIST (Acta paediatr. Stockh., 1939, 25, 302—330).—Determinations of serum-Fe in physiological and pathological conditions were made with the *o*-phenanthroline method of Heilmeyer and Plotner. Spontaneous variations in healthy subjects were observed. Alimentary anæmia is characterised by low serum-Fe. Anæmia in later childhood has identical symptoms with the so-called essential hypochromic anæmia of the adult. In grave chronic infections the decrease in serum-Fe was pronounced. M. K.

**Juvenile gout in a patient suffering from chronic erythronoclastic anæmia; physical state of uric acid in blood and effects of splenectomy.** C. G. LAMBIE (Med. J. Austral., 1940, I, 535—558).—Before splenectomy the plasma-uric acid was 14 mg.-%, of which 25—35% was ultrafilterable. After splenectomy it was 10 mg.-%, of which 100% was ultrafilterable. (2 photomicrographs.) F. S.

**Macrocytic hyperchromic anæmia in children.** J. H. MAGNUSON and B. HAMNE (Acta paediatr. Stockh., 1939, 25, 189—205).—A case of macrocytic hyperchromic anæmia in celiac disease in a girl of 8½ years is reported. M. K.

**Anæmia in acute rheumatic fever in childhood.** G. GEZELIUS (Acta paediatr. Stockh., 1938—1939, 23, 361—375).—The higher is the sedimentation reaction in rheumatic fever, the more pronounced is the anæmia, which disappears when rate becomes normal. Administration of Fe was without effect on the rate. M. K.

**Primary hæmolytic anæmias.** G. FANCONI (Arch. Kinderheilk., 1939, 117, 1—31). M. K.

**Bone changes in hæmolytic anæmia and leukæmia in children.** C. G. TEALL (Brit. J. Radiol., 1939, 12, 142, 601—610).—A radiological study. H. H. K.



**Relation of gastric diseases to blood composition.** K. T. SIMON (*Gastroenterologia*, 1939, 64, 348—374).—A review. H. H. K.

**Treatment of blood disorders. I. Pernicious and other macrocytic anæmias. II. Leukæmia, agranulocytosis, and neutropenia. III. Hæmorrhagic diseases. IV. Polycythæmia, Hodgkin's diseases, and splenic disorders. V. Effects produced by drugs** (*J. Amer. Med. Assoc.*, 1940, 115, 39—44, 126—131, 211—216, 297—302, 379—384).—Reports of conferences at Cornell University Medical College and New York Hospital. C. A. K.

**Treatment of polycythæmia veva.** R. L. HADEN (*Cleveland Clin. Quart.*, 1940, 7, 166—173).—Venesection is performed, repeatedly if necessary, until the total red cell mass, calc. from the blood vol. and hæmatocrit reading, falls to normal. The increase in red cells is not so rapid as after hæmolytic treatment with acetylphenylhydrazine. F. S.

**Treatment of leukæmia and polycythæmia with radioactive phosphorus.** J. H. LAWRENCE (*Radiology*, 1940, 35, 51—59).—Intermittent oral administration of 3—15 mc. of  $^{32}\text{P}$  in the form of Na phosphate in 5 cases of myelogenous and lymphatic leukæmia led to remissions similar to those obtained by X-ray or Ra therapy. Two cases of polycythæmia were also improved with this treatment. E. M. J.

**Influence of goat liver and liver extract on goat-milk anæmia of rats.** J. H. BALDE (*Arch. Kinderheilk.*, 1939, 117, 2, 95—100).—Injection of goat's liver extract has a beneficial effect on goat-milk anæmia of young rats. Anæmia could be prevented by previous administration of raw goat liver. M. K.

**Experiences with purified liver extracts [in anæmia].** W. LÖFFLER and F. KOLLER (*Schweiz. med. Wschr.*, 1940, 70, 557—554).—Liver preps. were treated with acetone and picric acid; the prep. did not give protein reactions. Hepar glandol (Roche) contains 0.1 g. of dry substance per 5 c.c. 5—10 c.c. suffice to change megaloblastic into normoblastic bone marrow. Anaphylactic reactions and local irritation were not observed with the purified preps. A. S.

**Treatment of infantile anæmias caused by iron deficiency with ferrous iron.** E. LORENZ (*Arch. Kinderheilk.*, 1938, 115, 129—137).—"Ferro 66" (prep. consisting of  $\text{Fe}^{++}$  stabilised by vitamin-C) produced in 23 sucklings and infants suffering from various forms of Fe deficiency a considerable increase of hæmoglobin and a slower rise in the red cell count within 2—4 weeks. Dosage was 5 drops twice daily = 50 mg. of Fe. The increase in reticulocyte count was most pronounced on the 7th—10th day of treatment. No side-effects except temporary dyspeptic disturbances in  $\frac{1}{3}$  of the patients were observed. M. K.

**Utilisation of iron and rapidity of hæmoglobin formation in anæmia due to blood loss.** P. F. HAHN, J. F. ROSS, W. F. BALE, and G. H. WHIPPLE (*J. Exp. Med.*, 1940, 71, 731—736).—Radioactive Fe

can be detected in the hæmoglobin of the circulating red cells within 4 hr. after feeding. The absorbed labelled Fe is all converted into hæmoglobin within 4—7 days under standard anæmic conditions, or within 2—3 days if blood formation is accelerated or the Fe dose is small. 47—60% of Fe is absorbed with doses of 1.2 and 4.9 mg. but only 3.2% with a dose of 115 mg. Small single doses are most effective for hæmoglobin formation. No significant difference in Fe absorption has been observed whether a  $\text{Fe}^{++}$ ,  $\text{Fe}^{+++}$ , or org. salt or metallic Fe is used. A. C. F.

**Differentiation between sacromatous and leukæmic lymphocytes in mice.** A. KIRSCHBAUM, W. U. GARDNER, R. NAHIGIAN, and L. C. STRONG (*Yale J. Biol. Med.*, 1940, 12, 473—482).—Lymphosarcomatous cells did not produce generalised lesions when introduced into an extravascular locus; takes were less frequent when the cells were introduced intravenously. Cells of a transplantable leukæmia in the same strain produced systemic disease readily when inoculated by any route. (1 photomicrograph.) F. S.

**"False" positive Paul-Bunnell (heterophile) reaction [in leukæmia].** C. F. KENT (*Amer. J. clin. Path.*, 1940, 10, 576—580).—A case of leukæmia is reported in which the Paul-Bunnell test was strongly positive; superimposed infectious mononucleosis may have been present. C. J. C. B.

**Nature of human leukæmia: evidence from culture of bone marrow cells *in vitro*.** M. C. G. ISRAËLS (*J. Path. Bact.*, 1940, 51, 235—244).—Cells from the bone marrow of patients with various forms of leukæmia cultivated *in vitro* developed in a normal manner. After 2 weeks most of the primitive (embryonic) cells were converted into more mature types. In cases of myeloid leukæmia, myelocytes, metamyelocytes, and young polymorphonuclear cells were predominant and mitosis was still occurring among the myelocytes. In cases of monocytic leukæmia the cultures, after 2 weeks, consisted almost entirely of mature phagocytic monocytes. Small nos. of undifferentiated and differentiated myelocytes present in the marrow of monocytic leukæmia patients developed in the same way as those from myeloid leukæmia patients. A comparison of the properties of the cells of human leukæmia with those of transmissible leukæmia of fowls and rodents suggests that the 2 groups of diseases are not analogous. (18 photomicrographs.) C. J. C. B.

**Motility and chemotaxis of leucocytes in health and disease.** O. T. MALLERY, jun., and M. McCUTCHEON (*Amer. J. med. Sci.*, 1940, 200, 394—399).—Decreased rate of locomotion and less direct approach to bacteria were shown *in vitro* by polymorph leucocytes of acutely ill persons. Leucocytes of some gravely ill patients progressively decline in motility and chemotactic response whilst control leucocytes maintained their activity unimpaired for several hr. C. J. C. B.

**White blood picture during the first year of life.** J. H. MAGNUSSON (*Acta paediatr. Stockh.*, 1938—1939, 23, 14—42).—In 47 children between the ages of 3 weeks and 1 year there was a parallelism



between no. of leucocytes and that of erythrocytes and hæmoglobin content at the same age. M. K.

**White cell count in first year of life.** J. H. MAGNUSON (*Acta paediatr. Stockh.*, 1938—1939, **23**, 259—292).—52 premature children (3 weeks—1 year old) showed, compared with 47 normal children, a low white cell count. M. K.

**Lymphatic reaction in childhood.** R. HERGET (*Arch. Kinderheilk.*, 1939, **117**, 152—180). M. K.

**Familial eosinophilia.** R. C. ATMAR (*J. Amer. Med. Assoc.*, 1940, **115**, 449—450).—Case report. C. A. K.

**Lymphocytic fever.** S. ROSENBAUM (*Jahrb. Kinderheilk.*, 1938—1939, **152**, 117—128).—An endemic disease is described, characterised by undulating fever, swelling of glands, enlargement of liver and spleen, and pronounced lymphocytosis with monocytoïd plasma cells. 59 children, aged up to 2 years, were affected. The disease is distinguished from glandular fever and lymphocytotic angina. It is regarded as a new disease; the illness is transmitted by insect bites. M. K.

**Liberation of sulphuric acids from granules of mast cells in subcutaneous connective tissue after exposure to X- and  $\gamma$ -rays.** B. SYLVÉN (*Acta Radiol. Stockh.*, 1940, **21**, 206—212).—Experiments were performed in rats, which were treated with X- or  $\gamma$ -rays in various doses. All radiation was given on the same area of the skin on the abdomen. At different times after the conclusion of the radiation, pieces of the whole abdominal wall were cut out and prepared for microscopical examination. Results show that after radiation, given in single doses,  $H_2SO_4$  derivatives leave the granules of the mast-cells and spread diffusely in the surrounding connective tissue. H. H. K.

**Thrombocytopenic purpura.** B. K. WISEMAN, C. A. DOAN, and S. J. WILSON (*J. Amer. Med. Assoc.*, 1940, **115**, 8—13).—A review, with good case records showing that splenectomy is the only known effective treatment for thrombocytopenic purpura. C. A. K.

**Essential thrombopenia.** P. LANGERT (*Acta paediatr. Stockh.*, 1939, **26**, 242—257).—Report of a case which was cured by removal of the spleen. M. K.

**Parathyroid hormone in thrombopenic purpura.** D. B. LEVINE and H. MICHELSON (*J. Amer. Med. Assoc.*, 1940, **115**, 360—362).—Parathyroid hormone was successfully used in a case of thrombopenic purpura after splenectomy and other measures had failed to raise the platelet count. C. A. K.

**Action of ascorbic acid in hæmorrhagic diathesis.** L. ARMENTANO (*Z. ges. exp. Med.*, 1940, **107**, 9—25).—Repeated administration of large doses of vitamin-C was without effect in hæmorrhagic diatheses (hæmophilia, thrombopenic purpura). -C has no effect on the thrombocyte count or on blood-clotting time. A. S.

**Vitamin-K and hæmorrhagic disease of newborn.** H. G. PONCHER and K. KATO (*J. Amer. Med. Assoc.*, 1940, **115**, 14—17).—2-Methyl-1:4-naphtha-

quinone, 4-amino-2-methylnaphthol hydrochloride, and solution of 2-methyl-1:4-naphthaquinone in  $NaHSO_3$  were successfully used in 22 cases of hæmorrhagic disease of the newborn. Clinical improvement was rapid and the prothrombin clotting time was reduced to normal within 24 hr. C. A. K.

**Plasma coagulation time as simple test for vitamin-K deficiency.** G. CHENEY (*Amer. J. med. Sci.*, 1940, **200**, 327—337).—A technique for measuring the plasma coagulation time of recalcified oxalated blood plasma, which is a modification of Howell's measurement of prothrombin time, is outlined. No unstable tissue extracts are required. The normal standard of plasma coagulation time was 2—8 min. based on 100 normal individuals. The suitability of the plasma coagulation time as a test for vitamin-K deficiency was shown in a study of the blood of 149 chicks, 85 of which were -K-deficient. C. J. C. B.

**Effect of synthetic vitamin-K (2-methyl-1:4-naphthaquinone) on prothrombin content of normal rabbit's blood.** G. BERGAMI, G. SCOZ, and L. GUZZI (*Boll. Soc. ital. Biol. sperim.*, 1940, **15**, 471—473).—Intramuscular injection of the quinone (in oil) into rabbits diminishes the coagulation time (normal 10—18 sec.) of the blood; the effect, which persists for about 3 days, is most marked with rabbits showing a relatively high coagulation time. F. O. H.

**Prophylactic and curative effect of vitamin-K in hæmorrhagic disease of the newborn.** K. K. NYGAARD (*Acta obstet. Gynec. Scand.*, 1939, **19**, 361—370).—Administration of vitamin-K (50,000 units intramuscularly) immediately after birth prevented the development of the hypotherbinæmia which occurs in the first 5 days of life. In 3 cases of hæmorrhagic disease blood transfusion was successfully replaced by -K. M. K.

**Effect of citrin (vitamin-P) on time of coagulation of blood.** B. ROVATTI (*Boll. Soc. ital. Biol. sperim.*, 1940, **15**, 509—511).—Injection of 50—60 mg. per kg. of citrin (Szent-Györgyi, A., 1938, III, 971) into dogs or rabbits lowers the coagulation time of the blood. F. O. H.

**Determination of coagulation time of blood by Quick's method.** G. BERGAMI, G. SCOZ, and L. GUZZI (*Boll. Soc. ital. Biol. sperim.*, 1940, **15**, 468—471; cf. A., 1936, 1402).—To 0.2 c.c. of thromboplastin prep. (rabbit's brain extracted with 10 vols. of 0.9% NaCl), which is 0.0075M. in  $CaCl_2$  and has been heated at 40° for approx. 1 min., is added 0.1 c.c. of plasma (0.01M. in Na oxalate) and the time for coagulation at 40° is observed; the test is repeated with varying concns. of plasma. F. O. H.

**Inactivation of thrombin by plasma-protein.** J. D. STEWART and G. M. ROURKE (*J. clin. Invest.*, 1940, **19**, 695—700).—Thrombin prepared from ox plasma is rapidly inactivated when incubated with human or ox plasma or horse serum. Thrombin is not inactivated when incubated with fibrinogen solution. Inactivation of thrombin by plasma or serum proceeds exponentially, and plasma samples from different normal individuals or from the same individuals over a period of time yield quantitatively



similar results. The property of inactivating thrombin is resident in a particular fraction of plasma-albumin which is capable of being conc. and may be enzymic in nature. C. J. C. B.

**Clinical study of Weltmann serum coagulation reaction.** S. C. DEES (J. Pediat., 1940, 17, 44—51).—The results of the Weltmann reaction performed on 246 unselected cases agree with previously reported work. The clinical val. of this test is discussed with special reference to its usefulness in diagnosis of early rheumatic fever and in following the progress of rheumatic fever. C. J. C. B.

**Venous thrombosis following the injection of uroselectan B.** F. H. KEMP (Brit. J. Radiol., 1940, 13, 291—292).—Pain and venous thrombosis occur frequently following the intravenous injection of uroselectan B<sub>1</sub> or like preps. An account is given of the principal clinical features. H. H. K.

**Therapeutic use of anticoagulants.** H. DYCKERHOFF and H. VOSKUHLE (Z. ges. exp. Med., 1940, 107, 313—320).—15 mg. of thiosulphate prevent the coagulation of 2 c.c. of blood *in vitro*. Intravascular clotting is not prevented by thiosulphate or by citrate. A. S.

**Action of heparin and toluidine-blue on blood coagulation.** W. GRUNKE (Z. ges. exp. Med., 1940, 107, 306—312).—Toluidine-blue has with increasing concn. an increasing anti-coagulant action. The anticoagulant action of heparin is augmented by small amounts of toluidine-blue which have no anticoagulant action themselves. The heparin action cannot be wholly prevented by addition of the dye. Heparin combines with prothrombin and toluidine-blue. A. S.

**Clinical application of plasma viscosity determination with description of a pipette viscosimeter.** B. H. Y. T'ANG and S. H. WANG (Chinese Med. J., 1940, 57, 546—555).—A simple viscosimeter is described capable of giving results for the relative viscosity of small plasma samples to the second decimal. Normal vals. for human plasma containing 10% of Na citrate are 1.50—1.71. In active pulmonary tuberculosis the viscosity is increased parallel with the severity of the condition and corresponds with the change in sedimentation rate; it is also increased in most other tubercular infections. Particularly in mild cases the viscosity val. is frequently a better index of activity than the sedimentation rate. W. J. G.

**Intravascular determination of  $p_H$ .** E. WEBER and H. SELBACH (Z. ges. exp. Med., 1940, 107, 257—266).—Intravascular determination of  $p_H$  with a metal oxide needle electrode is accurate only in sufficiently wide vessels with const. conditions of vascular wall and blood flow. The  $p_H$  of liver vein blood in rabbits decreases by 0.12 in evipan-ether anaesthesia. A. S.

**Fungistatic power of serum.** S. M. PECK, H. ROSENFELD, and A. W. GLICK (Arch. Dermat. Syphilol., 1940, 42, 426—437).—Whilst serum may have fungistatic power, there is no increase in fungistasis in patients who have dermatophytids as compared with controls. There is no relation between the

degree of fungistasis and the strength of reaction to the trichophyton test. Inactivation of the serum by heating at 56° for 20 min. increased fungistasis in 6 out of 35 samples of serum. Injections of trichophyton had no effect on the fungistatic power of serum or decreased it. Guinea-pig serum has fungistatic power. Ascitic fluid is only moderately fungistatic. Vesicle fluid from dermatophytids has no fungistatic action. Fluid from vesicles from a patient with epidermolysis bullosa showed a strong fungistatic action, although the blood showed none. C. J. C. B.

**Administration of antireticular serum in general and local surgical infection.** J. ISTSCHENKO and M. LEBEDEVA (J. méd., Ukraine, 1939, 9, 779—787).—Intramuscular injection of 0.5—1 c.c. of antireticular serum has a favourable general effect on the patient. Monocytes, lymphocytes, and eosinophils increase 2—24 hr. after the injection. In generalised infection the cytotoxic serum tends to localise the process. M. K.

**Formation of protective serum enzymes following injection of proteins.** N. B. MEDVEDEVA (J. méd., Ukraine, 1939, 9, 687—702).—Injection of cytotoxic antireticular serum causes the formation of protective enzymes in the serum of adult animals. Anti-muscular serum produces only temporarily protective enzymes. Anti-hepatic serum produces enzymes in all organs except the kidney. M. K.

**Beneficial action of antireticular cytotoxic serum in various diseases.** J. DINERMAN (J. méd., Ukraine, 1939, 9, 773—777).—0.2—0.5 c.c. of antireticular serum (1:10), injected first at intervals of 4—5 days, later monthly and every 2 months into cancerous patients, benefited most of them. Increase of monocytes by 15—20% and disappearance of regional metastases were observed. Antireticular serum accelerated ossification in bone fractures. In lupus erythematosus and tubercles, and also trophic ulcers, disappeared after prolonged treatment with antireticular serum. M. K.

**Rapid method for isolation of kersin from Gaucher spleen.** I. A. KAYE (J. Lab. clin. Med., 1940, 25, 1117—1118).—Kersin was removed completely and in a pure state by drying the spleen with plaster of Paris and extracting the dried organ with hot 95% alcohol. The alcohol on cooling deposited a bulky white ppt. of kersin. C. J. C. B.

**Water content of plasma and corpuscles and plasma : corpuscle ratio after X-irradiation.** L. PROVENZALE (Boll. Soc. ital. Biol. sperim., 1940, 15, 460—462).—The water content of plasma and corpuscles of rabbits increases, whilst the corpuscular vol. tends to diminish, on X-irradiation for 30 min. F. O. H.

**Blood-water.** C. P. WOFFORD, E. P. McCULLAGH, and D. R. McCULLAGH (Cleveland Clin. Quart., 1940, 7, 191—196).—A simple method for determining the water content of blood is described. There was no correlation between water content and vol. index, colour index, total red cell count, hæmoglobin, or blood vol. Considerable variations from the normal water content (78—80%) were found in individual



patients from day to day which could not be correlated with other findings. F. S.

**Change of circulating blood volume after blood transfusion and infusion of gum saline in normal and splenectomised rabbits.** T. TAKENOUTI (Tohoku J. exp. Med., 1940, 37, 517—529).—Infusion of 20 c.c. of blood per kg. body-wt. increases circulating blood vol., plasma and red cell vol. more in splenectomised than in normal animals. Infusion of 20 c.c. of 6% gum saline per kg. body-wt. decreases circulating blood vol. and red cell vol. more in normal than in splenectomised rabbits. H. H. K.

**Hyperglobulinæmia in granuloma inguinale.** A. E. TAUSSIG and M. SOMOGYI (J. Lab. clin. Med., 1940, 25, 1070—1071).—The euglobulin vals. are mainly affected. C. J. C. B.

**Serum-proteins in multiple myelomatosis.** R. A. KEKWICK (Biochem. J., 1940, 34, 1248—1257).—Myelomatosis sera belong to two groups: one shows the same components as normal serum but with an increased  $\gamma$ -globulin fraction, whilst the other shows several components (up to 5) including an increased  $\beta$ -globulin fraction. Electrophoretic measurements demonstrate qual. differences from normal globulins in the increased globulin fractions, and the carbohydrate : N ratio is generally raised. P. G. M.

**Separation of serum-albumin and -globulin.** E. MACLAY and A. E. OSTERBERG (Proc. Staff Mayo Clin., 1940, 15, 600—601).—1 c.c. of serum is added to 15 c.c. of 23%  $\text{Na}_2\text{SO}_4$  solution in a 50-c.c. centrifuge tube and mixed thoroughly. 6 c.c. of ethyl ether are added and the mixture is stirred vigorously with a glass rod for 30 sec. The tube is capped to avoid loss of ether and centrifuged at 2200 r.p.m. for 10—15 min. After centrifuging the tube is slanted so that the tightly packed globulin layer, floating on the  $\text{Na}_2\text{SO}_4$  solution, is separated from the walls of the tube. A pipette is inserted through the ether layer along the lower wall of the tube and 10 c.c. of centrifugate are withdrawn for determination of total N by the macro-Kjeldahl method. Albumin is then calc. by the usual method. Globulin is calc. by subtracting the albumin val. from total serum-protein. H. H. K.

**Induction of [serum]-protein denaturation with ultra-violet irradiation.** P. RONDONI (Schweiz. med. Wschr., 1940, 70, 561—562).—Ultra-violet irradiation of serum produces substances which accelerate the denaturation of fresh serum by ultra-violet rays, as shown in step-photometric experiments. A. S.

**Biuret reaction in determination of serum-proteins. I. Production of stable colour related quantitatively to the protein concentration. II. Measurements made by Duboscq colorimeter.** H. W. ROBINSON and C. G. HOGDEN (J. Biol. Chem., 1940, 135, 707—725, 727—731).—I. Serum-proteins are pptd. by trichloroacetic acid and dissolved in 3% NaOH. 20% aq.  $\text{CuSO}_4$  is added and the resultant biuret colour analysed spectrophotometrically. The density at 5600 A. is related linearly to the protein-N determined by the Kjeldahl method. Other concns.

of NaOH and  $\text{CuSO}_4$ , and direct addition of  $\text{CuSO}_4$  without pptn. of protein, are unsatisfactory. Rabbit, dog, and human serum-proteins exhibit the same biuret colour val.

II. The Duboscq colorimeter can be used in the above method for colour comparison with dil. rabbit serum as standard. The results are in agreement with Kjeldahl determinations. E. M. W.

**Determination of total serum-proteins, serum-albumin, and serum-globulin.** I. KRAUS (J. Lab. clin. Med., 1940, 25, 1300—1301).—A modification of Campbell's method (A., 1937, III, 290) is described. C. J. C. B.

**Relation between administration of diet and glutathione content of arterial and venous blood.** M. OGAWA (J. Agric. Chem. Soc. Japan, 1940, 16, 641—648; cf. A., 1940, III, 602).—The arterial blood of rabbits contains less reduced and more oxidised glutathione than does venous blood. The oxidised glutathione in arterial blood increases considerably immediately after feeding but returns to normal during 10—12 hr. whilst the amounts of oxidised and reduced glutathione in venous blood are not appreciably affected. J. N. A.

**Glutathione in anæmias.** C. SRIKANTIA, C. K. RAO, and T. P. ROW (Proc. Indian Acad. Sci., 1940, 11, B, 257—266).—The venous blood of 40 patients (erythrocyte count  $0.51$ — $5.03 \times 10^6$ ) contained reduced glutathione 11.96—48.9, oxidised glutathione traces—19.63 mg.-%, and hæmoglobin 2.3—14.8%. The data suggest a relationship between hæmoglobin and blood-glutathione. Erythrocyte-glutathione increases during anæmia, especially ankylostomiasis. F. O. H.

**[Serum] non-protein-nitrogen. I—III.** P. LARIZZA (Z. ges. exp. Med., 1940, 107, 53—69, 70—86, 87—97).—I. The serum non-protein-N increase in hyperazotæmic renal diseases consists of 73—37% of urea-N; the 26—63% of non-urea-N consists of amino-N 6.71%, uric acid-N 2.9%, total creatinine-N 3.8%, polypeptide-N 8.2%, and 5.0% of unknown composition. Urea-N 54.7% and non-urea-N 45.3% were found in red cells; the non-urea-N consists of amino-N 10.7%, uric acid-N 5.5%, creatinine-N 5.4%, polypeptide-N 14.7%, and 9% of unknown nature.

II. The abs. vals. of non-protein-N are normal in serum and red cells of patients suffering from liver diseases. Serum-urea-N is lowered, that of the red cells increased; therefore, the non-urea-N fraction of the serum is increased, that of the erythrocytes is diminished. Uric acid-N and amino-acid-N are increased in serum and red cells.

III. Urea-, uric acid-, polypeptide-, and creatinine-N are increased in serum of patients suffering from adrenal insufficiency. Urea-, creatine-, and creatinine-N are increased in the red cells of patients with pernicious anæmia. Diabetes insipidus shows an increase in urea-, amino-acid-, and polypeptide-N in red cells and of uric acid- and creatinine-N in serum. Red cell uric acid-N is increased in essential hypertension. The non-protein-N fractions, apart from creatine-N, are increased in pneumonia. A. S.



**Blood-polypeptides during experimental traumatic shock.** L. GANGITANO (Boll. Soc. ital. Biol. sperim., 1940, 15, 444—447).—The binding of the hind limbs of rabbits for 3—10 hr. increases blood-polypeptides. F. O. H.

**Determination of calcium in serum.** P. MULLER (Nederl. Tijds. Geneesk., 1937, 81, 352—355; Chem. Zentr., 1937, i, 3528).—Ca may be pptd. completely without removal of proteins. Deproteinisation leads to high results, probably through copptn. of amino-acids. A. G. P.

**Bile acid concentration in human serum.** A. GIGON and M. NOVERRAZ (Schweiz. med. Wschr., 1940, 70, 522—524).—The concn. of bile acids in human serum varied in different diseases between 0.1 and 22 mg. per 100 c.c., using a Pulfrich photometer. Vals. below 1 mg.-% are considered normal. Normal serum-bile acid vals. and increased bilirubin concns. were found in sera of patients suffering from hæmolytic jaundice. A. S.

**Determination of cocarboxylase in blood.** F. SCHLENK, B. LINDBERG, and S. TINGSTAM (Arkiv Kemi, Min., Geol., 1940, 13, A, No. 21, 11 pp.).—The only method of cocarboxylase determination applicable to blood is that of Auhagen (A., 1933, 427) which, however, is not delicate. Healthy human blood contains 0.05—0.25 µg. of cocarboxylase per c.c. This val. is frequently increased slightly by intravenous injection of 1000—2000 µg. of aneurin. In disease, the val. does not differ appreciably from the healthy val. Methods of preparing blood for the determination are described. W. McC.

**Seasonal study of iodine content of blood of birds.** E. L. CLARKE and E. M. BOYD (J. Biol. Chem., 1940, 135, 691—695).—The mean I content of the blood of pigeons, chickens, and man is 0.0042, 0.0041, and 0.0071 mg. per 100 ml., respectively. The I content shows no significant seasonal variation in birds. E. M. W.

**Photo-electric micro-determination of potassium in blood plasma by chloroplatinate precipitation.** R. M. TENERY and C. E. ANDERSON (J. Biol. Chem., 1940, 135, 659—669).—K is determined in 0.3 c.c. of blood plasma by the chloroplatinate pptn. method (A., 1939, III, 222) and the photo-electric measurement of K iodoplatinate. E. M. W.

**Assay method for pantothenic acid in human blood.** S. R. STANBERY, E. E. SNELL, and T. D. SPIES (J. Biol. Chem., 1940, 135, 353—354).—The method of Pennington *et al.* (A., 1940, III, 915) is applied to human blood. Low vals. are found in cases of pellagra, beriberi, and riboflavin deficiency. R. L. E.

**Influence of citric acid milk on serum-calcium and -inorganic phosphorus.** S. A. SIWE (Acta paediatr. Stockh., 1939, 26, 460—464).—Citric acid milk initially increases serum-Ca. -P is unaffected. M. K.

**Fasting exercise blood-sugar curve: guide for therapy in diabetes mellitus.** W. S. REVENO (J. Lab. clin. Med., 1940, 25, 1057—1062).—A test for

gauging the severity of diabetes is described consisting in making 3 blood-sugar determinations at 3-hourly intervals on the fasting ambulatory patient. The resulting curves fall into 3 groups: (1) a continuous decline from the initial val., all vals. being little above normal; (2) a continuous decline from the initial val., with all levels considerably above normal; and (3) no continuous descent, with at least one of the last 2 readings above the initial val. The first 2 groups are mild diabetics who are readily controlled by diet alone or combined with a single dose of protamine-Zn-insulin. The 3rd group are severe diabetics controlled only with more than one dose of insulin. Of 50 diabetics studied, 15 fell in the first group, 19 in the second, and 12 in the third. C. J. C. B.

**Effect of X-radiation on blood-sugar in hypertrophy of thymus gland in infants.** C. FUMI (Boll. Soc. ital. Biol. sperim., 1940, 15, 426—427).—The blood-sugar level is diminished for 2 months by X-irradiation of the thymus region. F. O. H.

**Fasting blood-sugar values in children with normal metabolism.** H. RITTER (Arch. Kinderheilk., 1939, 117, 225—234).—The blood-sugar content, measured at hourly intervals during the morning in 40 children (1—12 years), showed an average fluctuation of 17 mg.-%. No connexion between fluctuation and age was found. The average vals. were lower than those of adults. The blood-sugar content was higher in the older children. Some children with very low blood-sugar vals. did not have hypoglycæmic manifestations. M. K.

**Hypoglycæmic convulsions in children.** H. HUNGERLAND (Arch. Kinderheilk., 1939, 117, 132—138).—A case of spontaneous hypoglycæmia in a 4-year-old child is reported. Liver biopsy showed great accumulation of glycogen. M. K.

**Blood-sugar studies on golfers.** P. MICHAEL (J. Amer. Med. Assoc., 1940, 115, 286—287).—Blood-sugar studies in 30 male golfers showed that after an average lunch the blood-sugar dropped to hypoglycæmic levels between the 9th and 15th holes, when the standard of play was also at its lowest. C. A. K.

**Regulation of blood-sugar after stomach operations.** T. STRAATEN and M. HÜNERMANN (Arch. klin. Chir., 1939, 195, 62—105). H. H. K.

**Interaction of hypoglycæmia and anoxia.** E. GELLHORN and A. PACKER (Amer. J. Physiol., 1940, 129, 610—617; cf. A., 1940, III, 125).—In unanæsthetised rabbits brief periods of anoxia (inhalation of 7% O<sub>2</sub> for 15 min.) antagonise the hypoglycæmic effect of insulin and cause a quicker recovery of the blood-sugar to normal val. Prolonged anoxia leads to an aggravation of the hypoglycæmia and a progressive fall of the blood-sugar curve. Liverglycogen is not depleted in animals subjected to insulin and prolonged anoxia, and the adrenal glands show normal adrenaline val. The failure of prolonged anoxia to bring about a recovery of the blood-sugar curve is attributed to the inability of adrenaline to liberate glucose from the liver. M. W. G.



## (vi) VASCULAR SYSTEM.

**Cardiovascular dynamics.** S. BROWN, J. E. MCCARTHY, and A. FINE (Radiology, 1940, 35, 290—303).—A description of kymographic appearances in health and disease. E. M. J.

**Effect of cold on rate of denervated heart in non-anæsthetised dogs.** M. WADA and K. FUZII (Tohoku J. Exp. Med., 1940, 37, 505—516).—Excessive cooling increased and later decreased rate of denervated heart with fall of body temp. The slowing of the heart was slight in animals with intact adrenal glands as compared with those of adrenalectomised dogs. Blood pressure remained at a high level except in the adrenalectomised animals. H. H. K.

**Electrocardiographic studies on dying patients.** R. FRITZSCHE (Schweiz. med. Wschr., 1940, 70, 516—519).—E.c.g. were obtained up to 37 min. after cessation of breathing; there are complicated interference dissociation rhythms and multifocal extrasystoles. A. S.

**QRS pattern of diagnostic value in electrocardiogram.** W. A. SODEMAN and H. T. ENGELHARDT (Amer. J. med. Sci., 1940, 200, 337—341).—A QRS pattern is described which occurred in patients with heart disease in the absence of any other electrocardiographic evidence of heart disease. C. J. C. B.

**Developing tank for electrocardiograms.** A. WALDMAN (J. Lab. clin. Med., 1940, 25, 1085—1085). C. J. C. B.

**Heart rate and intracranial pressure.** O. G. EDHOLM (J. Physiol., 1940, 98, 442—445).—Preventing the rise of blood pressure (cat) produced by a raised intracranial pressure does not abolish the cardiac slowing associated with raised intracranial pressure. The latter stimulates the vagus centre directly. J. A. C.

**Left-sided so-called aortic ventricle, a rare malformation of the heart.** G. CRAMER and E. PUSCHEL (Arch. Kinderheilk., 1939, 117, 45—56).—Pathological and clinical report of a case. M. K.

**Respiratory arrhythmia of heart in diphtheria.** A. NADRAI (Jahrb. Kinderheilk., 1938—39, 152, 35—51). M. K.

**Para-arrhythmia in scarlet fever.** P. VON KISS (Arch. Kinderheilk., 1939, 117, 120—132).—E.c.g. in a case of scarlet fever showed para-arrhythmia (or interference dissociation). Three different autonomous rhythms were observed: auricular, ventricular, and supraventricular. M. K.

**Heart block in scarlet fever.** P. VON KISS and R. MARTYN (Arch. Kinderheilk., 1938, 115, 168—176).—Report of a case. M. K.

**Extrasystoles in scarlet fever.** P. VON KISS and J. ROMHANYI (Arch. Kinderheilk., 1938, 115, 226—232).—E.c.g. records in 2 cases. M. K.

**Permanent heart block in diphtheria.** P. VON KISS (Jahrb. Kinderheilk., 1938—39, 152, 347—350).—Report of a case in a 14-year-old boy. M. K.

**Symptomless pericarditis.** E. L. RUBIN and M. H. PAPPWORTH (Brit. J. Radiol., 1938, 11, 671—675).—2 cases of chronic pericarditis are recorded, neither of whom had any cardiac symptoms. H. H. K.

**Congenital cardiac disease.** E. MANNHEIMER and P. J. NORDENFELT (Acta paediatr. Stockh., 1938—39, 23, 200—221).—Report of 4 unusual types of congenital cardiac defect and e.c.g. findings. M. K.

**Capillary resistance in German measles.** T. KERNAN (Arch. Kinderheilk., 1938, 115, 242—244).—Capillary resistance in 35 cases was lowest during the first 3 days of the rash; a gradual increase occurred until the 7th day. M. K.

**Vitamin-P and capillary resistance.** G. HORNE and H. SCARBOROUGH (Lancet, 1940, 239, 66—68).—Vitamin-P increased the capillary resistance, estimated by suction pressure, in 1 case of toxic purpura and 1 case of toxic erythema both produced by anti-syphilitic treatment. C. A. K.

**Variation of blood pressure with brief voluntary muscular contractions.** E. JACOBSON (J. Lab. clin. Med., 1940, 25, 1029—1037; cf. A., 1939, III, 362; 1940, III, 633).—Experiments were conducted on 11 subjects with normal blood pressure and on 4 with chronic hypertension, all of whom relax well on request. In an individual otherwise relaxed, successive contraction of a muscle group for several min. and then relaxing completely for similar periods is frequently accompanied by a corresponding rise and fall of systolic and diastolic pressure. No rise in pressure may occur if the patient is not initially well relaxed. The addition of marked contraction in other regions (e.g., if he contracts muscles in the lower limbs or elsewhere at the same time as he clenches his fist) promotes a further rise in blood pressure. C. J. C. B.

**Peripheral circulation in man.** K. MATTHES, F. GROSS, and H. GÖPFERT (Z. ges. exp. Med., 1940, 107, 228—246).—Pulsations in fingers and toes were recorded, using a photo-electric cell, in various cardiac and vascular disturbances. A. S.

**Central carotid sinus syndrome.** P. H. ROSSIER, M. DRESSLER, and R. SIMMEN (Schweiz. med. Wschr., 1940, 70, 563—570).—Attacks in various patients are described, consisting of nausea, vertigo, and unconsciousness, which could be reproduced, after administration of atropine, by pressure on the carotid sinus; this procedure was ineffective after anaesthesia of the carotid sinus area. A. S.

**Physiology and pathology of capillaries in man.** O. MÜLLER (Schweiz. med. Wschr., 1940, 70, 365—369, 617—621).—Normal capillary function and the rôle of the capillaries in a variety of pathological conditions are discussed. A. S.

**Effects of anaesthesia on the blood supply to hypothalamus.** A. E. LAIDLAW and M. A. KENNARD (Amer. J. Physiol., 1940, 129, 650—658).—Focal changes in the state of the capillaries in the central nervous system of cats and monkeys following the administration of anaesthetics can be observed after intravascular injection of India ink and gelatin.



In barbiturate anaesthesia numerous dilated capillaries are seen in the supraoptic and paraventricular nuclei of the hypothalamus; after ether relatively few capillaries are patent and these appear constricted. The capillaries of the cortex are more dilated by ether than by barbiturates. M. W. G.

**Blood pressure in infancy.** K. FRÖHLICH (Jahrb. Kinderheilk., 1938—39, 152, 52—71).—No relation was found between scarlet fever or diphtheria and raised blood pressure. In 38 out of 527 children, *i.e.*, in 5.3%, essential hypertension was found. M. K.

**Vascular "spider" associated with cirrhosis of liver.** A. J. PATEK, jun., J. POST, and J. C. VICTOR (Amer. J. med. Sci., 1940, 200, 341—347).—The vascular spider, associated with disease of the liver, has the physiological characteristics of an artery. This has been demonstrated by studies on direction of blood flow, pulsations, contractility, intravascular pressure, and pharmacological reactions. In serial sections the histological characteristics of 2 lesions were those of an artery and its arteriolar branches. In 5 others they resembled, in a magnified form, the arterial segment of an arteriovenous anastomosis. However, the branches of these vessels are continued into capillaries and are not directed into veins. C. J. C. B.

**Rupture of mycotic aneurysm of ductus Botalli and roentgenological diagnosis of dilated duct in suckling.** S. SCHEEF (Arch. Kinderheilk., 1939, 117, 234—243). M. K.

**Radiographic demonstration of circulation through heart in adult and foetus, and identification of ductus arteriosus.** A. E. BARCLAY, J. BARCROFT, D. H. BARRON, and K. J. FRANKLIN (Brit. J. Radiol., 1939, 12, 505—517).—Circulation of the blood through the heart of the adult and the foetus is demonstrated by the analysis of X-ray cinematographic films recording the passage of injections of radio-opaque media. In the adult, the blood from both venæ cavæ passes through the right side of the heart and the pulmonary arteries to the lungs and thence through the left side of the heart into the systemic circulation. In the foetus, the whole of the superior caval blood is seen to pass into the right ventricle and out through the pulmonary valve into the pulmonary trunk; it then passes partly into the pulmonary arteries and partly via the ductus arteriosus, into the descending aorta. As the brachio-cephalic artery leaves the aorta proximal to the entry of the ductus arteriosus, the superior caval blood does not pass to the coronary system, the head, and fore-limbs. The inferior caval blood has a double course through the heart. The main part goes through the foramen ovale to the left auricle and ventricle, and passes out into the aorta and coronary and brachio-cephalic arteries. Hence, the heart and brain are given preferential treatment with respect to the supply of oxygenated blood coming from the placenta. On the other hand, a minor part of the inferior caval blood passes with the superior caval flow into the right ventricle and out into the pulmonary arteries and, via the ductus arteriosus, into the descending aorta. H. H. K.

**Control of blood flow through intestine as studied by effect of adrenaline.** R. H. GOETZ (Quart. J. Exp. Physiol., 1939, 29, 321—332).—A new photo-electric method of improved accuracy for measuring intestinal vol. changes is described. In the anaesthetised (urethane) cat, simultaneous measurements of blood pressure, intestinal vol., blood flow through the skin, and respiration rate contradict the view that adrenaline exerts its most powerful constrictor action on the intestinal vessels or that adrenaline constricts the intestine in only 35% of all experiments. The effect of adrenaline on the intestinal vessels depends on the applied dose. Small doses increase the vol. only; larger doses cause a transient decrease followed by a prolonged dilatation. No relation between the effect of adrenaline on the intestinal vol. and the blood pressure response was detected. Adrenaline acts as a blood distributor and not as a blood pressure augmentor. T. S. G. J.

**High blood pressure in diphtheria.** J. FROMM (Arch. Kinderheilk., 1939, 117, 198—211).—14% of 182 children showed increase of blood pressure during diphtheria. Later re-examination of these children revealed hypertension only in 3 children. M. K.

**Early diagnosis of thrombo-angiitis obliterans and arteriography with ethyl tri-iodostearate.** W. KLOSTERMEYER (Beitr. klin. Chir., 1939, 170, 477—506).—Use of the drug is advocated. H. H. K.

**Periarteritis nodosa.** G. HERLITZ (Acta paediatr. Stockh., 1939, 25, 134—138).—Periarteritis nodosa could not be transferred to guinea-pigs by von Hann's method (2 c.c. of whole blood from the patient's vein were injected intraperitoneally into 2 guinea-pigs and 2 c.c. of serum into 2 others). M. K.

**Acrocyanosis [treatment by sympathectomy].** N. W. BARKER and G. S. BAKER (Proc. Staff Mayo Clin., 1940, 15, 601—604).—A case is reported which presented the typical clinical phenomena of acrocyanosis of the hands and in which cervico-thoracic sympathectomy resulted in striking clinical improvement with almost complete disappearance of the objective phenomena. H. H. K.

**Experimental shock.** C. H. BEST and D. Y. SOLANDT (Canad. Med. Assoc. J., 1940, 43, 206—209).—A lecture. C. J. C. B.

**Celiac ganglionectomy for Raynaud's disease.** G. CRILE (Cleveland Clin. Quart., 1940, 7, 163—165).—Further report of a case 3 years after bilateral ganglionectomy (*ibid.*, 1937, 4, 184), showing complete recovery. F. S.

**Relation of arteriosclerosis to function of gonads.** T. MATUSITA (Japan. J. Med. Sci., IV, 1940, 12, Proc., 38—39).—5 g. of water-free lanoline was given daily to normal and castrated female rabbits. Blood pressure vals. were higher in operated than in control animals. Serum-cholesterol, especially the bound form, was raised during the first 2 weeks of the lanoline diet in the castrated animals. Atheromatous changes were found in the intima of the aorta and cholesterol deposits in the centre of the liver lobules, in the walls of the central spleen arteries,



and in the adrenal cortex. The morphological changes were also more pronounced in castrated animals. H. H. K.

**Lesions of larger vessels following renal artery constriction.** M. C. WINTERITZ and L. L. WATERS (Yale J. Biol. Med., 1940, 12, 451—458).—Unilateral or bilateral renal artery constriction by clamps or ligation in dogs, resulting in hypertension, progressive azotæmia, and death within 3—8 days, is associated with necrotising, hæmorrhagic mural lesions of the larger blood vessels. Necrosis of smooth muscle occurs variably in all coats and the vasa vasorum frequently show necrosis of their walls. These changes are similar to the vascular lesions in malignant nephrosclerosis in man. (8 photomicrographs.) F. S.

**Intrathoracic aneurysms.** P. KERLEY (Brit. J. Radiol., 1939, 12, 158—162). H. H. K.

**Cardiac aneurysm.** J. PARKINSON, D. E. BEDFORD, and W. A. R. THOMSON (Brit. J. Radiol., 1939, 12, 129—149). H. H. K.

**Liberation of renin by perfusion of kidneys following reduction of pulse pressure.** K. G. KOHLSTAEDT and I. H. PAGE (J. Exp. Med., 1940, 72, 201—216).—Blood flow, urine secretion, and O<sub>2</sub> consumption are well maintained in isolated dogs' kidneys perfused with defibrinated blood with a controlled circuit. Urea clearance in this prep. is approx. half normal for the intact kidney. Blood collected from this prep. with added renin or renin-activator shows no vaso-constrictor properties. If the pulse pressure is reduced by constricting the renal artery, impairment of urea clearance and urine flow occurs and O<sub>2</sub> consumption is slightly decreased. Renal venous blood collected from this prep. after 1 hr. of perfusion causes intense vaso-constriction when perfused with renin-activator through an isolated rabbit's ear. The dog's hind leg under similar conditions does not give rise to these changes in the venous blood. A. C. F.

**Development of hypertension.** E. A. HINES (J. Amer. Med. Assoc., 1940, 115, 271—274).—The incidence of hypertension in 1522 patients was studied 10 or 20 years after the initial blood pressure reading. Patients who showed a systolic blood pressure of 140—160 mm. Hg or a diastolic pressure of 85—100 mm. Hg on the first occasion developed hypertension much more frequently than those with lower pressures, even though the rise was purely nervous in origin. C. A. K.

**Severe peripheral arteriosclerosis in extremities.** G. F. PETERSEN (Acta Radiol. Stockh., 1940, 21, 21—31).—In one case the patient was a woman, 34 years old, with hyperparathyroidism; in the other a working man, aged 63, with hypernephroma. Roentgen and histological examination showed typical calcification of the media. H. H. K.

**Increased sensitivity of arterial muscle in pre-hypertensive phase of experimental renal hypertension.** E. OGDEN, L. T. BROWN, and E. W. PAGE (Amer. J. Physiol., 1940, 129, 560—564).—Arterial hypertension was produced in rabbits by partial

ligation of one renal artery and heterolateral nephrectomy, or partial ligation of both renal arteries; 12 control rabbits were treated by unilateral or bilateral nephrectomy, or by partial ligation of the aorta below the renal arteries. After partial constriction of the renal arteries, and before or with the earliest rises in blood pressure, there is a marked increase in the pressor response to 0.25 unit of pitressin (intravenous). None of the control animals showed hypertension or hypersensitivity to pitressin. The hypertensive animals gave abnormal pressor responses to noise and fright. M. W. G.

**Composition of mammalian pericardial and peritoneal fluids; passage of foreign proteins from the blood stream into these fluids.** F. W. MAURER, M. F. WARREN, and C. K. DRINKER (Amer. J. Physiol., 1940, 129, 635—644).—The average protein content of the pericardial fluid from 34 dogs was 1.7%, from 7 rabbits, 2.1%, 4 monkeys, 1.7%, 2 cats, 2.4%, 1 rat, 2.1%, 2 hens, 3.5%, 2 ducks, 2.5%. The average protein content of the peritoneal fluid from 11 dogs was 2.6%, 5 rabbits, 1.5%. Albumin/globulin ratios from some dogs and rabbits showed little similarity to the ratios in the serum of the same animals. Fibrin was present in both fluids. The Cl content of these fluids and of serum showed ratios which compared closely with theoretical ratios calc. on the assumption of a Donnan equilibrium. The protein in these fluids may be derived from the blood by simple diffusion across the blood vascular membrane. M. W. G.

## (vii) RESPIRATION AND BLOOD GASES.

**Agensis of lung.** H. L. STOKES and C. J. O. BROWN (Med. J. Austral., 1940, I, 49—50).—Report of a case. F. S.

**Ventilograph: improved recording ventilometer and its applications.** P. REICHERT and H. ROTH (J. Lab. clin. Med., 1940, 25, 1091—1095).—A new and improved model of the ventilograph, a means of graphically recording the pulmonary ventilation with closed-circuit recording spirometers of the Benedict-Roth type, is described, and its applications in the field of research and clinical medicine are discussed. C. J. C. B.

**Acclimatisation to carbon dioxide. Chemical and cellular changes in blood.** A. T. MILLER, jun. (Amer. J. Physiol., 1940, 129, 524—531).—Dogs exposed to atm. containing 1.5—5.0% of CO<sub>2</sub> for 1—4 weeks showed a mild uncompensated acidosis with a decline in CO<sub>2</sub>-combining power, a transfer of Cl from plasma to erythrocytes, and a decrease in whole blood-Cl. The ratio of cell-/plasma-HCO<sub>3</sub>' increased. Erythrocyte count and hæmoglobin concn. increased after a latent period. The bone marrow origin of this increase was indicated by a rise in reticulocyte count, negative influence of splenectomy, and absence of hæmoconcn. Administration of 35% O<sub>2</sub> with the CO<sub>2</sub> had no effect on erythrocyte increase. The total leucocyte count increased greatly but there was no change in the differential count. M. W. G.



**Auto-inhalation carbon dioxide therapy.** R. P. HARBORD (Brit. J. Anæsth., 1939, 17, 13—15).—An apparatus depending for its action on the principle of re-breathing is described. It consists of a face mask which is separately connected by means of a rubber T-piece to a length of tubing on the one side and to a rubber bag of fine consistency on the other. The tube is open to the air at its distal end. There are no valves and no resistance to the free passage of air. When used the patient's dead space is increased and a certain amount of expired air containing 4.1% of CO<sub>2</sub> is inhaled. H. H. K.

**Apnoea due to mechanical stimulation of central vagus in barbiturate-treated animals.** R. MARRI (Boll. Soc. ital. Biol. sperim., 1940, 15, 492—494).—Veronal increases the inhibitory effect of the stimulation on the respiratory centre in rabbits. F. O. H.

**Carbon dioxide test of sensitivity of respiratory centre.** R. MEIER and R. MÜLLER (Schweiz. med. Wschr., 1940, 70, 694—697).—Rabbits under urethane anæsthesia breathed mixtures containing 7.5% of CO<sub>2</sub>, 20% of O<sub>2</sub>, and 72.5% of N<sub>2</sub>. The stimulating effect of CO<sub>2</sub> on respiration is increased by intravenous injections of coramin (30—60 mg. per kg. body-wt.) or picrotoxin (0.5 mg. per kg.); it is diminished by strychnine (0.375 mg. per kg.). The drugs did not produce convulsions. If CO<sub>2</sub> does not stimulate breathing in deep anæsthesia, coramin restores the sensitivity of the respiratory centre to CO<sub>2</sub>. A. S.

**Voice changes with mixture of helium and oxygen.** W. B. DUBLIN and M. M. D. WILLIAMS (Proc. Staff Mayo Clin., 1940, 15, 586—588).—The change in voice which occurs on breathing He-O<sub>2</sub> mixture consists in a variation in overtones. The frequency of the fundamental vibrations remains the same. H. H. K.

**Helium-oxygen mixtures for alleviation of tubal and sinus block in compressed air workers.** J. W. CROSSON, R. R. JONES, and R. R. SAYERS (U.S. Publ. Health Repts., 1940, 55, 1487—1496).—A description is given of another entity encountered in compressed-air work known as "ear block," more properly termed tubal or sinus block. The theory of the mechanism of "block" and its alleviation by means of He is explained. A new and simple apparatus as designed by the U.S. Bureau of Mines laboratories is presented for the relief of tubal and sinus block by administration of 80% He and 20% O<sub>2</sub>. C. G. W.

**Medical aspects of the air force.** R. W. RYAN (Canad. Med. Assoc. J., 1940, 43, 316—320).—A lecture. C. J. C. B.

**Infantile bronchial asthma.** J. CIRLEA and L. BOGDAN (Arch. Kinderheilk., 1939, 116, 65—68).—Bronchial asthma in a 3- and a 7-weeks-old suckling is reported. Treatment by desensitisation with Paspas-vaccine was effective. M. K.

**Bronchial calibre changes in bronchiectasis.** J. GREENFIELD (J. clin. Invest., 1940, 19, 723—728).—The calibre changes in the bronchi of normal individuals, and in cases of "wet" and "dry"

bronchiectasis, were studied by the method of Heinbecker (*ibid.*, 1927, 41, 459). The unaffected bronchi were dilated in inspiration and constricted in expirations. The affected bronchi in the "wet" cases, however, did not change in calibre. The affected bronchi and bronchioles in the case of bronchiectasis made "dry" retained their ectatic state and likewise did not change in calibre at the extremes of respiration. Well-established bronchiectasis then appears to be irreversible. C. J. C. B.

**Treatment of acute attacks of bronchial asthma by intravenous injection of aminophyllin.** H. A. CARR (J. Lab. clin. Med., 1940, 25, 1295—1299).—22 persons with severe bronchial asthma received a total of 78 injections of aminophyllin. 20 gave almost immediate favourable response, 2 responded less well. 8 were long-standing asthmatics who had been unsuccessfully treated with adrenaline injections. 12 persons received aminophyllin alone for their present attack with almost immediate favourable response. All cases were to varying degrees refractory to adrenaline; 8 showed minor toxic symptoms. No other untoward effects were noted. C. J. C. B.

(A) **Gas tensions in tissues.** (B) **Estimation of gas tensions in tissues by gas depot method.** E. W. SIBREE (Med. J. Austral., 1940, I, 429—434, 788—796).—(A) A review.

(B) A sampling tonometer is used in which dead space is eliminated, and a method of introducing gas samples into a micro-analyser is given. The technique makes possible the collection of gas from human or animal tissues and the analysis of large or small samples of gas without loss of vol. F. S.

**Artificial pneumoperitoneum in pulmonary tuberculosis.** J. P. McINTYRE (Edinb. Med. J., 1940, [iv], 47, 687—692).—The technique and observations on 11 cases are reported. H. S.

**Hæmorrhage from intercostal arteries into pleural cavity.** W. LOSSEN (Beitr. klin. Chir., 1939, 170, 416—421).—2 cases are reported. H. H. K.

**Negative intrapleural pressure.** D. BURNS (J. Physiol., 1940, 98, 26P).—The pleural surfaces remain in opposition because the force tending to cause separation of the surfaces is minute compared with the tensile strength of water. J. A. C.

**Idiopathic spontaneous pneumothorax.** H. S. VAN ORDSTRAND (Cleveland Clin. Quart., 1940, 7, 178—183).—Analysis of 49 cases. F. S.

**Carbon monoxide poisoning.** H. G. BECK, W. H. SCHULZE, and G. M. SUTER (J. Amer. Med. Assoc., 1940, 115, 1—8).—Clinical cases of chronic CO poisoning with symptoms due to cerebral and cardiac damage are reported. C. A. K.

**Case of carbon monoxide poisoning in child.** B. WOLLEK (Arch. Kinderheilk., 1939, 117, 257—260). M. K.

**Dyspnoea.** H. S. D. GARVEN (Chinese Med. J., 1940, 57, 449—463).—A lecture in applied physiology. W. J. G.



## (viii) MUSCLE.

**Oxidative recovery heat of frog's muscle.** D. K. HILL (J. Physiol., 1940, 98, 454—459).—With improved technique (cf. A., 1940, III, 567) the time course of oxidative recovery heat production is determined at 0°. Following a 12-sec. tetanus this heat production is half complete in 7 min. at  $p_H$  7.2 and in 12 min. at  $p_H$  6. J. A. C.

**Anaerobic recovery heat of frog's muscle at 0°.** D. K. HILL (J. Physiol., 1940, 98, 460—466).—The early stages of the recovery heat production are unaffected when lactic acid formation is prevented. Under "alactacid" conditions, following the first tetanus (12 sec. duration) in  $N_2$  the recovery heat may be entirely negative; after the 3rd there may be an early negative followed by a positive phase and after the 9th there is solely a positive phase. In every case the heat production is complete in 5—10 min. Under normal conditions there is, in addition, a slow phase of heat production attributable to lactic acid formation; this phase has indefinite onset and continues for at least 30 min.; the total heat evolved in this 2nd phase is only about 5% of the initial heat and there is doubt about the accuracy with which it has been measured. J. A. C.

**Hydrogen-ion concentration changes in frog's muscle following activity.** D. K. HILL (J. Physiol., 1940, 98, 467—479).—Changes in  $p_H$  are followed by the method of  $CO_2$  exchange, using a differential volumeter. Greater accuracy is attained by working at 0°. Changes of  $p_H$  during the tetanus cannot be followed by this method. When  $O_2$  usage is permitted or in other circumstances when lactic acid is not formed (e.g., anaerobically at  $p_H$  6) alkaline changes only are observed; these accompany the breakdown and resynthesis of phosphocreatine and the time courses of these processes can be deduced. At  $p_H$  7 with  $O_2$  uptake inhibited by CN' the production of lactic acid is not complete for more than 1 hr.; it is half complete in 15 min. When the activity  $O_2$  uptake is inhibited by Na azide (the resting  $O_2$  uptake being unaffected) the time course of formation of lactic acid is dependent on the duration of tetanus; if the latter is reduced below a crit. val. no lactic acid is formed. J. A. C.

**Myoglobin.** A. ROSSI and L. TRAVIA (Boll. Soc. ital. Biol. sperim., 1940, 15, 484—485).—Cryst. myoglobin (Theorell, A., 1932, 1054) has a const. Fe content of 0.34%. Tabulated data for the N distribution show differences from those of haemoglobin, especially in cystine, arginine, and lysine. F. O. H.

**Creatine content of muscle in human disease.** J. F. CORSARO, G. K. MANGUN, and V. C. MYERS (J. Biol. Chem., 1940, 135, 407—410).—The average creatine contents of rectus abdominis, psoas major, and sternocleidomastoid muscles of 74 autopsy cases were 405, 402, and 388 mg.-%, respectively, the low val. for the sternocleidomastoid muscle being probably due to its higher content of connective tissue. The vals. were high in uræmia with creatine retention, bronchopneumonia, and tuberculosis, and low in malignancy, acute inflammation, and uræmia with heart failure. W. McC.

**Creatine, phosphorus, and potassium content of human cardiac and voluntary muscle.** G. H. MANGUN and V. C. MYERS (J. Biol. Chem., 1940, 135, 411—414).—The average contents of the left and right ventricles and pectoralis major muscles of 13 healthy persons (accident and homicide autopsy cases) were creatine 203, 165, 443; P 194, 160, 201; and K 285, 219, 328 mg.-%, respectively. In 8 of these persons, the average water and fat contents were 80.8, 82.3, 76.2, and 0.35, 1.28, 1.68%, respectively. The vals. for creatine, P, and K in the ventricles tend to increase with increase in heart wt. W. McC.

**Potential difference accompanying wave of activity [in tissue].** H. E. ROAF (J. Physiol., 1940, 98, 28—29P).—An explanation is given of the triphasic changes (Craib) obtained when a wave of activity passes an electrode. J. A. C.

**Triphasic electrical changes [in skeletal muscle].** H. E. ROAF (J. Physiol., 1940, 98, 29—30P).—These can be obtained with muscle suspended in air (confirming Hoffmann) just as when immersed in a large vol. of electrolyte. J. A. C.

**Origin of congenital wry neck.** H. ABELS (Jahrb. Kinderheilk., 1938—1939, 152, 4—34).—It is attributed to intrauterine postural deformity. M. K.

**Origin of congenital wry neck.** H. ABELS (Jahrb. Kinderheilk., 1938—1939, 152, 96—116).—Varying reactions of muscles damaged by intrauterine pressure are discussed. Familial weakness of tissues has been observed. M. K.

**Deoxycorticosterone in myasthenia gravis.** R. C. MOEHLIG (J. Amer. Med. Assoc., 1940, 115, 123—125).—A case of very severe myasthenia gravis was successfully treated with deoxycorticosterone acetate given by injection and as subcutaneous pellets. C. A. K.

**Antagonism between hyperthyroidism and myasthenia gravis.** L. VAN BOGAERT (Schweiz. med. Wschr., 1940, 70, 501—502).—Symptoms of myasthenia gravis in a patient suffering from Graves' disease were considerably aggravated after thyroidectomy. A. S.

**Nutritional muscle dystrophy and sex hormones.** S. MORGULIS and C. E. RICHARDS (Endocrinol., 1940, 27, 522—523).—In rabbits maintained on a diet producing muscular dystrophy (Physiol. Abs., 1937, 22, 177) the dystrophy was not prevented by daily administration of 0.5—2.5 mg. of testosterone propionate or of 150 r.u. of Collip's anterior pituitary gonadotrophic factor. V. J. W.

**Experimental muscular dystrophy in rats.** M. ALOISI and V. POLÁNYI (Boll. Soc. ital. Biol. sperim., 1940, 15, 450—451).—A diet of oat bran, caseinogen, lard, cod-liver oil, skimmed milk powder, NaCl,  $CaCO_3$ , and  $FeCl_3$  produces muscular dystrophy in rats. F. O. H.

## (ix) NERVOUS SYSTEM.

**Formal theory of nerve conduction.** A. M. WEINBERG (Bull. Math. Biophys., 1940, 2, 127—133).



—Velocity formulæ for capacitative and non-capacitative models are derived mathematically.

F. O. H.

**Production of alarm reaction in young rats by trans-section of spinal cord.** J. D. FRANK (Endocrinol., 1940, 27, 447—451).—Rats of average wt. 235 g., after trans-section of the cord below the vertebra prominens, showed after 48 hr. a loss of thymus wt. of  $\frac{2}{5}$  and a gain in adrenal wt. of  $\frac{1}{5}$ . Thymus wts. in some cases returned towards normal after 10—12 days. Occasional bladder hæmorrhages were found, and, if the animals became chilled, gastric hæmorrhages were const.

V. J. W.

**Chronaxie investigations in infants.** H. U. KOTTGEN and W. TILING (Arch. Kinderheilk., 1938, 115, 202—216).—Chronaxie was determined in spasmophilia, parathyroid tetany, epilepsy, uræmia, generalised fibrous and cystic osteitis, and acidotic vomiting.

M. K.

**Spontaneous activity of spinal tadpoles of frog and toad.** G. H. WANG and T. W. LU (Science, 1940, 92, 148).—Decapitated tadpoles, and tadpoles with only a small caudal fragment of the spinal cord intact, move about without noticeable external stimulation. The movements occur periodically, and last 1—60 sec. These spinal specimens have not been reared successfully.

E. R. S.

**Emergent fibres in posterior roots.** W. H. L. WESTBROOK and S. TOWER (J. comp. Neurol., 1940, 72, 383—397).—The dorsal root ganglia C7 to Th1 were excised on one side in 16 cats. Two weeks to a month later the deganglionated dorsal roots were severed immediately at their emergence from the cord. After a suitable time period Marchi and Bielschowsky staining of the material revealed no evidence for the emergence of nerve fibres, myelinated or unmyelinated, from the central into the peripheral nervous system through the posterior roots. It is concluded that the concept that nerve fibres emerge from the spinal cord into the posterior roots in adult mammals including man is without anatomical foundation and it is considered that the postulation of such emergent fibres is not required to explain physiological findings.

J. D. B.

**Spinal shock.** A. VAN HERREVELD (Amer. J. Physiol., 1940, 129, 515—523).—The period of depressed reflex excitability in the hind leg of the monkey resulting from thoracic trans-section of the spinal cord is curtailed by asphyxiating the cord for 15—30 min. Reflexes appeared earlier, after combined trans-section + asphyxiation of the cord, which soon showed high or even extreme excitability. The stretch reflex not normally found in the spinal monkey was observed after asphyxiation of the cord. Spinal shock is attributed to dominance of a spinal inhibitory mechanism, which is more sensitive to asphyxia than the excitatory structures in the cord. Abolition of spinal shock by asphyxiation of the isolated part of the cord is due to release of the reflexes from a spinal inhibitory mechanism.

M. W. G.

**Oculo-motor and trochlear nuclei in reptiles, especially chameleon.** A. STEFANELLI (Boll. Soc. ital. Biol. sperim., 1940, 15, 437—438).—The charac-

teristic eye movements in chameleons are related to the greater development of the nuclei as compared with those of other reptiles.

F. O. H.

**Abducens and accessory nuclei in reptiles.** A. STEFANELLI (Boll. Soc. ital. Biol. sperim., 1940, 15, 439—440).—The characteristic eye movements in chameleons are related to the abnormal morphology of the abducens nucleus.

F. O. H.

**Position nystagmus and head trauma.** R. BERLIN and C. O. NYLÉN (Acta paediatr. Stockh., 1939, 25, 19—21).—Report of a severe head trauma in a child, which, after a few symptom-free days, had vomiting and temporary diplopia. In certain positions of the head a pronounced nystagmus was observed, indicating cerebral injury near the nuclei of the vestibular nerve.

M. K.

**Experimental studies on conditioned salivary reflexes in children.** C. G. BERNHARD (Acta paediatr. Stockh., 1938—1939, 23, 118—128).—17 experiments (4—5 a week) were performed on a healthy boy, 9 years old, with the method of Krasnogorski. Three different conditioned stimuli were applied; red light (3 times), beats of a metronome (100 beats per min., once), and the sound of a buzzer (once). Each stimulus acted alone during 30 sec., during which time the secretion of saliva from the right parotid gland was recorded. A conditioned reflex system was set up, consisting of 5 positive and 2 negative conditioned reactions. The negative stimulus was represented by another metronome signal (150 beats per min.). In addition a conditioned inhibitory effect was formed on the light reaction by skin stimulation on the boy's right ankle. The conditioned secretion caused by red light was an average of  $13.2 \pm 0.4$  drops, the secretion caused by the positive metronome signal was  $13.4 \pm 0.4$  drops, and the buzzer caused an average of  $2 \pm 0.2$  drops. 2 c.c. of 0.4% NaCl, which gave positive sensation of salt, was used as conditioned stimulus (average conditioned secretion  $13.7 \pm 0.3$  drops). A negative conditioned reflex was formed on skin stimulation together with salt and later 2 c.c. of water was used as inhibitor on the positive salt reaction. The water preceded the salt solution by 2 sec. and the inhibitory effect was evident after 6 applications.

M. K.

**Sensitivity to pain.** R. M. WILDER (Proc. Staff Mayo Clin., 1940, 15, 35, 551—554).—Pain threshold is higher for men than for women in 394 patients tested by the method of Hollander (A., 1939, III, 370) for the quant. evaluation of one type of painful stimulus. Obesity does not increase the sensitivity of the skin to pain. The pain-sensitivity level of patients with functional disease is significantly lower than that of those with organic complaints.

H. H. K.

**Effect of removal of cerebral hemispheres in rabbits with different hepatic efficiency.** S. KURIBAYASHI (Tohoku J. Exp. Med., 1939, 37, 573—575).—In rabbits giving poor liver efficiency test (using Sato and Saturada's method) convulsions usually developed within 24 hr. after removal of cerebral hemispheres.

M. W.

**Effects of insulin on serum-lipins and cholinesterase in schizophrenia.** L. O. RANDALL (J.



Lab. clin. Med., 1940, 25, 1025—1028).—During treatment of 17 schizophrenic patient with large daily doses of insulin, serum-phospholipin, -total and -free cholesterol, -total lipin, and -choline-esterase rose above pretreatment vals. and remained high for 2 weeks following treatment. In 12 patients studied during the 4th week of treatment, insulin produced no consistent immediate change in serum-lipins, but increased the choline-esterase to a greater extent than could be accounted for by hæmo-concn.

C. J. C. B.

**Temperature and brain metabolism.** H. E. HIMWICH, K. M. BOWMAN, J. F. FAZEKAS, and W. GOLDFARB (Amer. J. med. Sci., 1940, 200, 347—353).—In 11 of 15 patients with general paresis given one of 3 forms of fever therapy, the arterial-venous  $O_2$  difference increased by more than 2 vols. %. The increase in this difference was greater than could be explained by the rise of temp. It may be due to changes in cerebral blood flow not commensurate with those of the  $O_2$  uptake of the brain. In minced cerebral tissues from rats, the increase of respiration from 30° to 37° is 90%, in accordance with expectation of chemical reactions; with a rise from 37° to 44° it is only 66%. This damaging effect of high temp. is increased with duration.

C. J. C. B.

**Metabolism of the isolated perfused cat's brain.** A. L. CHUTE and D. H. SMYTH (Quart. J. Exp. Physiol., 1939, 29, 379—394).—A method of perfusing the isolated cat's brain with defibrinated blood, with provision for the measurement of  $O_2$  usage, is described. Criteria are given for the survival of function of the brain and for the completeness of the perfusion. Blood flows through the isolated brain at a speed of 60—90 ml. per 100 g. per min. at pressures of 120—150 mg. Hg. Flows below 45 ml. per 100 g. per min. were incapable of maintaining cerebral function.  $O_2$  usage is fairly const. over long periods at 200—300 ml. per 100 g. per hr. and is greater than that of grey matter alone in *in vitro* experiments. Chloralose did not diminish  $O_2$  uptake. There is rough proportionality between the usage of glucose by the brain and the amount present in the blood. Lactate usage by the brain depends on the blood-glucose level, being higher when the glucose level is lower. An estimate of the extra-cerebral usage of glucose by the prep. showed that 14% of the usage is accounted for by extracranial tissue. There is some proportionality between  $O_2$  consumption and blood-glucose level, but the former is always in excess of that required for the complete oxidative removal of the carbohydrate consumed.

T. S. G. J.

**Effect of yakriton in epilepsy.** A. TAKAMATSU and S. SATO (Tohoku J. Exp. Med., 1939, 37, 576—588).—2 c.c. of cardiazol intravenously regularly produced convulsions in 10 epileptic children. 19 patients were treated with yakriton. Of 8 with positive cardiazol test, 3 became free from attacks and cardiazol-negative and 5 improved.

M. W.

**Newer drugs in treatment of epilepsy.** J. N. PETERSEN and H. M. KEITH (Canad. Med. Assoc. J., 1940, 43, 248—250).—A lecture on the use of dilantin and mebaral.

C. J. C. B.

**Cerebral compression: clinical and experimental study.** W. L. REID (Med. J. Austral., 1940, I, 885—893).—An apparatus is described for recording the movements of the surface of the brain in the cat, when 2.5 sq. cm. of the brain surface is subjected to pressures of 1—3 oz. for varying periods. After the wt. is removed the brain expands to its normal shape more slowly after greater pressure and after more prolonged pressure.

F. S.

**Vertebral fractures in induced convulsions.** P. POLATIN, M. M. FRIEDMAN, M. M. HARRIS, and W. A. HORWITZ (J. Amer. Med. Assoc., 1940, 115, 433—436).—20% of 34 patients, in whom hypoglycæmic convulsions were induced, showed X-ray signs of fractures of the thoracic spine. 3 of 12 patients given insulin + metrazol showed compression fractures.

C. A. K.

**Familial lumbosacral syringomyelia.** C. VAN EPPS and H. D. KERR (Radiology, 1940, 35, 160—173).—A study of 26 cases in 4 families and one sporadic case showing a syndrome of chronic painless ulcers of the feet associated with roentgenological evidence of neurotrophic changes in the bones and joints of the feet, treated by irradiation of the lumbosacral cord.

E. M. J.

**Feer's disease. Infantile acrodynia.** K. SOMMER (Arch. Kinderheilk., 1939, 115, 232—241).—Clinical and anatomo-pathological observations in 21 cases during the last 10 years. Treatment with Bellergal compound (bellafolin, gynergen, and luminal) was effective.

M. K.

**Hemichorea in mono-ovular twins.** H. ASPERGER and H. GOLL (Arch. Kinderheilk., 1939, 116, 92—115).—Report of a case.

M. K.

**Extensive angiomatosis of medulla oblongata and spinal cord with central gliosis, syringomyelia, cystic pancreas, cystic kidneys, and cystic hypernephroid tumours of both kidneys (Lindau's syndrome).** E. KÖNIG and H. SCHOEN (Beitr. klin. Chir., 1939, 170, 239—265).—Report of a case.

H. H. K.

**Case of intrathoracic sympatheticoblastoma in suckling.** F. WAHLGREN and S. RUDBERG (Acta paediatr. Stockh., 1939, 25, 292—301).

M. K.

**Permeability of blood-brain barrier.** U. KOTTMANN (Z. Hyg., 1939, 122, 304—319).—Horse serum injected into the c.s.f. of rabbits is detectable in the blood serum after 1—2 hr., reaches max. after 2—3 days, when it has already disappeared from the c.s.f., and disappears from the blood after 9 days. Horse serum injected intravenously in sufficient quantity can be detected in the c.s.f., the concn. being about 0.1% of that in blood. The amount of horse serum passing the blood-brain barrier and the rate of transport are similar to the vals. observed for *B. coli* and *Staphylococcus* phages. The demonstration of the transport of normal globulin from the blood to the c.s.f. does not warrant the assumption that the blood-brain barrier is also permeable to immune globulins (anti-bodies).

M. A. B.

**Standardised mastic test for spinal fluid.** R. BRANDT (J. Lab. clin. Med., 1940, 25, 1077—1084).—



Gradation of the sensitivity is produced by adding water to mastic solution in 2 steps, whereby the amount of the first addition is decisive for the final colloid. The sensitivity can thus be easily varied, and the selected reagent repeatedly prepared in a const. manner.

C. J. C. B.

**Encephalographic examinations in organic nervous diseases in children.** O. BRANDBERG (*Acta paediatr. Stockh.*, 1939, 26, 90—97).—Report of 3 cases.

M. K.

**Encephalography with small quantities of air (Laruelle).** M. WEINBREN (*Brit. J. Radiol.*, 1938, 11, 705—725).

H. H. K.

**Hydrochloric acid-collargol reaction of cerebrospinal fluid.** W. NAGEL (*Schweiz. med. Wschr.*, 1940, 70, 661—666).—1 c.c. of 0.01% collargol is added to dilutions of c.s.f. and 0.002N-HCl. Various types of reactions are described. The test runs parallel to other c.s.f. colloid reactions but showed higher sensitivity.

A. S.

**Radiography of fourth ventricle.** T. G. HARDMAN (*Brit. J. Radiol.*, 1938, 11, 726—735).

H. H. K.

**Pentothal sodium anaesthesia in pneumoencephalography.** W. J. GARDNER, W. A. NOSIK, and R. E. BRUBAKER (*Cleveland Clin. Quart.*, 1940, 7, 174—177).—This gives min. changes in blood pressure, pulse, and respiration and a quiet recovery period.

F. S.

**Mechanism of development of early acquired hydrocephalus.** O. ELO and E. OTILA (*Acta paediatr. Stockh.*, 1938—1939, 23, 503—547).—Disturbance in the development of mesencephalon is the apparent cause.

M. K.

**Encephalography in children.** A. PALMGREN (*Acta paediatr. Stockh.*, 1939, 25, 227—240).—A review.

M. K.

**Vitamin-E (synthetic  $\alpha$ -tocopherol) therapy in neurologic disorders.** C. H. SHELDEN, H. R. BUTT, and H. W. WOLTMAN (*Proc. Staff Mayo Clin.*, 1940, 15, 577—580).—Vitamin-E was given to 18 patients. 8 had progressive muscular dystrophy, 6 amyotrophic lateral sclerosis, and 4 progressive muscular atrophy. Wheat-germ oil was administered by mouth in doses of 45 c.c. with each meal and supplemented by synthetic  $\alpha$ -tocopherol in sterile peanut oil, given intramuscularly in doses of 100 mg. twice weekly. Those patients who received  $\alpha$ -tocopherol orally were given 50 mg. daily. About half the patients have been under treatment for 5 months. 3 patients received -E for only 3 months. All but 2 of the patients were ambulatory. There was no improvement in any case.

H. H. K.

**Vitamin-B<sub>6</sub> and  $\alpha$ -tocopherol in arsenical peripheral neuritis.** R. W. VILTER, C. D. ARING, and C. D. SPIES (*J. Amer. Med. Assoc.* 1940, 115, 290).—Severe arsenical peripheral neuritis in a man aged 35 was much improved by administration of synthetic vitamin-B<sub>6</sub>.  $\alpha$ -Tocopherol enhanced this effect although alone it was ineffective, as also was thiamin.

C. A. K.

## (x) SENSE ORGANS.

**Amaurotic family idiocy.** G. A. JERVIS (*Amer. J. Dis. Child.*, 1940, 60, 88—101).—A case of late infantile amaurotic idiocy with megaloccephaly is described. Pathologically, typical lesions of amaurotic idiocy associated with extensive demyelination were found. Chemically there was a marked increase of lipins of the protagon fraction but no significant increase of sphingomyelin. (7 photomicrographs.)

C. J. C. B.

**Cryptophthalmos or ablepharia: survey of condition, review of literature, and presentation of case.** I. BRODSKY and G. WADDY (*Med. J. Austral.*, 1940, I, 894—898).—A baby was born with the site of the eyes covered with skin. Incision showed that the eyeball was represented by a thick-walled sac of 1 cm. diameter attached to a strand representing the optic nerve.

W. T. A.

**Wernicke's disease: neuro-ophthalmic syndrome of nutritional deficiency.** A. D. ECKER and H. W. WOLTMAN (*Proc. Staff Mayo Clin.*, 1939, 14, 520—524).—Report of a case.

H. H. K.

**Inherited eye defect in guinea-pig.** H. L. FOUST (*Amer. J. Ophthal.*, 1940, 23, 1000—1013).—A full description of the anatomy and physiology of the cornea studied in connexion with the inherited eye defect of guinea-pigs described by Whittock (*Iowa State Coll. J. Sci.*, 1935, 9, 667) and Lambert and Schrigley (*Iowa Acad. Sci.*, 1933, 40, 227). The defect includes pigmentation of the cornea and is inherited as a Mendelian recessive.

K. T.

**Local action of oils containing vitamin-A.** A. DE RÖTH (*Arch. Ophthal.*, N.Y., 1940, 24, 281—291).—Keratomalacia was produced in rats by a vitamin-deficient diet. Oils containing vitamin-A applied to one eye caused improvement in the condition of both eyes together with systemic improvement. Inactive oils delayed the appearance of keratomalacia only in the eye treated; hence inactive oils have a non-sp. local protective action, -A has only a systematic action. Oils containing -A were no more effective than inactive oils in promoting epithelial repair in the injured corneas of normal rabbits.

W. T. A.

**Ocular signs of ariboflavinosis.** V. P. SYDENSTRICKER, W. H. SEBRELL, H. M. CLECKLEY, and H. D. KRUSE (*J. Amer. Med. Assoc.*, 1940, 114, 2437—2445).—Ariboflavinosis in 47 cases was associated with photophobia and dimness of vision. Congestion of the sclera, vascularisation and opacities of the cornea, and abnormal pigmentation of the iris were seen, and the slit lamp showed first proliferation and engorgement of the limbic flexus and later superficial vascularisation of the cornea and interstitial keratitis. Both symptoms and signs were rapidly relieved by 5—15 mg. daily of riboflavin after thiamin and nicotinic acid had been ineffective.

C. A. K.

**Tension tolerance [in eye].** H. S. GRADLE (*J. Amer. Med. Assoc.*, 1940, 115, 495—496).—The importance of increased intraocular tension does not depend on its abs. magnitude, but on the degree to which it influences eye function.

W. T. A.



**Osmotic relation between aqueous humour and blood plasma.** R. R. ROEPKE and W. A. HETHERINGTON (Amer. J. Physiol., 1940, 130, 340—345).—In rabbits and dogs under nembutal the osmotic pressure of aqueous was greater than that of plasma. Injection of  $HgCl_2$  into the anterior chamber posterior to the iris abolished this difference in osmotic pressures. Hence the formation of aqueous may be a secretory process. W. T. A.

**Site of disturbance in Adie's syndrome.** H. G. SCHEIE (Arch. Ophthal., N.Y., 1940, 24, 225—237).—Affected pupils, which give a retarded reaction to light and accommodation, are always constricted by mecholyl, a stable choline derivative. Normal pupils are not constricted. The postulated lesion is a partial post-ganglionic denervation of the sphincter muscle. W. T. A.

**Oculomotor nerve and reflex dilatation of pupil.** W. D. SEYBOLD and R. M. MOORE (J. Neurophysiol., 1940, 3, 436—441).—One oculomotor nerve was sectioned in 20 cats; maximal dilatation of the pupil ensued. Eserine constricted both pupils, the operated less than the control. The normal eserinated pupil dilated in response to withdrawal of light, pain, and emotional excitement; the operated pupil did not alter. The sympathectomised pupil also dilated in response to these stimuli; hence the dilatation is brought about by inhibition of the oculomotor nerve. W. T. A.

**Specificity of oxidised and reduced proteins of ocular lens.** E. E. ECKER and L. PILLEMER (J. Exp. Med., 1940, 71, 585—590).—Relatively pure preps. of oxidised and reduced proteins obtained from the lenses of sheep, swine, chicken, and fish show species-specificity which is most marked in widely differing species. Serological differences, which are dependent on the redox state of the protein, can be demonstrated in a single species. A. C. F.

**Comparative anatomical studies of eye with special reference to photoreceptors.** S. R. DETWILER (J. Opt. Soc. Amer., 1940, 30, 42—50).—A survey of the respective functions of rod and cone visual elements with reference to diurnal and nocturnal animal species. N. M. B.

**Action potentials of squid eye.** P. O. THERMAN (Amer. J. Physiol., 1940, 130, 239—248).—Two monophasic action potentials are produced in the retina by the action of light. A negative deflexion is produced from the peripheral end and a positive from the basal end of the receptor cells (relative to an electrode on the optic nerve). The two deflexions are differentially affected by various drugs and probably represent two processes. They resemble the P III component of the vertebrate eye. W. T. A.

**More nearly absolute method of testing and rating vision [than test types].** C. E. FERREE and G. RAND (Arch. Ophthal., N.Y., 1940, 24, 292—315).—Test types are unsatisfactory owing to the differences in overall size and size of crit. detail of the various letters. A test chart is described in which the test objects are circles of 5' overall size containing two breaks of 1' width placed 90° apart. The circles are placed so that the breaks occur in 4 meridians. The

subject indicates the direction of the breaks. The score accurately measures visual acuity and shows whether astigmatism is present and its approx. location. W. T. A.

**Influence of area on foveal intensity discrimination.** C. H. GRAHAM and N. R. BARTLETT (J. Exp. Psychol., 1940, 27, 149—159).—Experimental results on the effect of area on visual intensity discrimination by the fovea are interpreted in terms of a mathematical theory of the contributions made by each element in the stimulated area to every other; this suggests that the excitation is greatest at the centre of the stimulated area. K. J. W. C.

**Phi phenomenon and anomalous projection.** F. H. VERHOEFF (Arch. Ophthal., N.Y., 1940, 24, 247—251).—Successive stimulation of the two foveas in squinters by flashes from two suitably placed lights elicits the Phi phenomenon (apparent motion of a single light from the first to the second position). Hence squinters with good visual acuity in each eye do not suppress the vision of the deviating eye. W. T. A.

**Two unusual cases of quinine amblyopia.** J. N. DUGGAN (Acta Ophthal. Orient., 1940, 2, 56—59).—In the first case, sudden total blindness associated with retinal oedema was only later followed by pallor of the disc and contracted vessels. Vision improved to 6/6 with restricted fields, but 9 years later was only 6/18 after correction of a myopic astigmatism which had developed, although the fields were fuller. The disc was white and the arteries contracted. In the second case, a single large dose caused loss of vision. The arteries were initially contracted, were normal again at the 5th day, but were much constricted again after a year with pallor of the discs. E. E. P.

**Effect of stimulation of senses of vision, hearing, taste, and smell on sensibility of organs of vision.** F. ALLEN and M. SCHWARTZ (J. Gen. Physiol., 1940, 24, 105—121).—Stimulation with red light, sound, quinine, and odours all produce similar effects on vision—depression of red sensitivity and enhancement of green. Violet is sometimes depressed and sometimes enhanced. Intensity of the non-visual stimulus is sometimes a factor in determining whether enhancement or depression will occur. K. J. W. C.

**Photometric measurements on visual adaptation in normal adults on diets deficient in vitamin-A.** L. F. STEFFENS, H. L. BAIR, and C. SHEARD (Proc. Staff Mayo Clin., 1939, 14, 698—704).—The course and final level of dark adaptation (light threshold method) both at the macula and at 10° of 3 healthy adults were not affected during a dietary regimen very low in vitamin-A (100—300 i.u. daily) for periods of 44, 160, and 190 days, respectively. H. H. K.

**Dystrophies of macula.** A. SORSBY (Brit. J. Ophthal., 1940, 24, 470—533).—Eight family groups showing familial progressive macular degeneration are described. There was an extensive range of ophthalmoscopic appearances and lack of uniformity in genetic behaviour, onset, and progress. It is considered that, despite their protean manifestations, the macular



dystrophies constitute a single clinical entity with more than one mode of inheritance. They must be differentiated from other central retinal conditions such as choroidal sclerosis and angeoid streaks.

W. T. A.

**Intramuscular injections of cod-liver oil in treatment of retinitis pigmentosa.** V. P. FILATOV and V. A. VERBITZKI (J. méd., Ukraine, 1939, 9, 847—855).—Parenteral administration of cod-liver oil has a rapid beneficial effect (often after only 1 or 2 injections) even in advanced cases of pigmented retinitis.

M. K.

**Amaurosis fugax: effect of centrifugal flying.** R. B. PHILLIPS and C. SHEARD (Proc. Staff Mayo Clin., 1939, 14, 612—618).—A lecture.

H. H. K.

**Visuo-psychic apparatus and accommodation reflex.** R. Y. HERREN (Arch. Neurol. Psychiat., 1940, 43, 1185—1187).—A patient, blind in his left eye by corneal injury but seeing with his right, was operated for a cyst in the left occipital region. This left him with "mind-blindness" though his pupillary response in the right eye was intact and his eyes followed moving objects such as brightly coloured clothes. He did not recognise objects, had no judgment of distance, and could make no use of vision since his visual impressions were meaningless to him.

K. J. W. C.

**Night-shining eyes.** E. A. GLENNIE (Nature, 1940, 146, 366).—"Night-shining" in human eyes was observed on 3 occasions, in which the observer was below the object and the illuminant a conc. beam from a focussed electric torch. It is a tawny orange glow.

E. R. S.

**Night-shining eyes.** J. H. PARSONS (Nature, 1940, 146, 366).—The rareness of the phenomenon is due to the facts that the observed eye must be highly hypermetropic or very highly myopic, the incident light must be bright, and the observing eye must be so placed that some of the reflected rays enter it.

E. R. S.

**Pathogenesis of syphilitic optic atrophy.** H. P. WAGENER (Amer. J. med. Sci., 1940, 200, 280—288).—A crit. review.

C. J. C. B.

**Pupillary reactions in affections of ear.** J. BERBERICH (Laryngoscope, St. Louis, 1940, 50, 555—558).—In 9 of 27 cases "operated" (? radically) on one side for disease of the middle ear, the pupil on that side was smaller and the palpebral fissure usually narrower. Cocaine had less dilator effect on this side.

E. E. P.

**Changes in pupil reflex to light after rotatory excitation of labyrinth.** A. M. DI GIORGIO (Boll. Soc. ital. Biol. sperim., 1940, 15, 394—396).—Rotation of the subject (men, infants, monkeys) is followed by a period of diminished readiness of response of the pupil to light.

F. O. H.

**Changes in near point, acuity of vision, and discrimination of light intensity following stimulation of labyrinth.** A. M. DI GIORGIO (Boll. Soc. ital. Biol. sperim., 1940, 15, 391—394).—Following the period of post-rotatory nystagmus (man), the near point is shortened, visual acuity slightly in-

creased, and discrimination of light intensity enhanced. Changes in the pupil are discussed.

F. O. H.

**Effect of cerebral lesions on ocular nystagmus in guinea-pigs habituated to rotation.** G. PESTELINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 386—388).—The occurrence of habituation is not affected by cerebral lesions.

F. O. H.

**Vestibular reactivity in schizophrenia.** A. ANGYAL and N. BLACKMAN (Arch. Neurol. Psychiat., 1940, 44, 611—620).—Vestibular sensitivity, as measured by the nystagmus response to rotation and caloric stimulation (injection of 20 c.c. of water at 20° into one ear), was found to be significantly low in schizophrenic patients. The difference was particularly marked when caloric stimulation was used. The possible connexion between these results and the clinical symptoms is discussed.

K. T.

**Labyrinth.** M. ELLIS (Lancet, 1940, 239, 371—372).—A general survey.

C. A. K.

**Treatment of Ménière's disease with histamine.** C. H. SHELDEN and B. T. HORTON (Proc. Staff Mayo Clin., 1940, 15, 17—21).—11 patients obtained permanent relief from all symptoms immediately after the intravenous administration of 1.9 mg. of histamine acid phosphate in 250 c.c. of isotonic saline injected over a period of approx. 1½ hr.

H. H. K.

**Bomb concussion and ear.** H. LEVITT (Lancet, 1940, 239, 344).—The vac. created by the explosion is more effective in damaging the ear than the initial concussion. The tympanic membrane and ossicles may be sucked right out of position.

K. T.

**Length of basilar membrane in man and various animals.** J. A. KEEN (J. Anat., 1940, 74, 524—527).—Calculations based on measurements taken from photomicrographs give the length of the basilar membrane as 20 mm. (cat), 21 mm. (cavy), 24 mm. (dog), 32 mm. (man), 33 mm. (calf), and 35 mm. (sheep).

E. E. H.

**Clarification of certain phases of physiology of hearing.** H. DAVIS (Laryngoscope, St. Louis, 1940, 50, 747—755).—A general survey and review of recent work.

K. T.

## (xi) DUCTLESS GLANDS, EXCLUDING GONADS.

**Disorders of internal gland secretion in children.** F. B. TALBOT and N. B. TALBOT (J. Pediat., 1940, 16, 647—652).—A crit. review.

C. J. C. B.

**Prophylaxis of experimental infections and intoxications with hormone preparations.** L. WEINSTEIN (Yale J. Biol. Med., 1940, 12, 549—557).—Mice were given 15 doses of 2.5 Hanson units of parathyroid extract or 0.1 c.c. of anterior pituitary extract daily and then injected with organisms or toxin. There was no protection against *Kl. pneumoniae*, and partial protection against infection and intoxication with *E. coli* and *Ps. pyocyaneus*. Parathyroid extract was the more effective. Parathyroid extract prevented the spread of tetanus toxin and delayed death more than anterior pituitary extract. The protective action may be correlated with the



ability of the endocrine preps. to decrease tissue permeability. F. S.

**Relation of endocrine function to resistance and immunity.** O. COPE and I. KAPNICK (*Endocrinol.*, 1940, 27, 533—542, 543—547).—(A) Serum complement is decreased in the rabbit after removal of thyroid or hypophysis, and is increased in the normal rabbit by injection of 1 mg. daily of thyroxine. Reaction to vaccinia virus is not altered by thyroidectomy or thyroxine; it is delayed after adrenalectomy and diminished after hypophysectomy.

(B) The changes in serum complement caused by thyroidectomy or thyroxine are independent of the blood-ascorbic acid concn. V. J. W.

**Dwarf mutation in rabbit. Constitutional influence on homozygous and heterozygous individuals.** [Relation to endocrines.] H. S. N. GREENE (*J. Exp. Med.*, 1940, 71, 839—856).—In an hereditary type of dwarfism obtained in rabbits, the homozygous form was lethal and associated with complete inhibition of the pituitary secretion, but in the heterozygous form the acidophil cells of the pituitary showed hyperplasia, the gonads were atrophic, and some animals survived for 1 or 2 months. This latter type was due to modifying genetic factors carried by a line of cretinoid animals. Many carriers of the dwarf gene eventually develop adenocarcinoma of the uterine fundus. A. C. F.

**Goitre caused by eating cabbage.** N. JUDIN (*J. méd.*, Ukraine, 1939, 9, 801—808).—Overfeeding of rabbits with cabbage (105 g. daily) disturbs thyroid function. After 10 months thyroid was increased by 50% and the gland contained colloid cysts. M. K.

**Relation of cervical sympathetic to activity of thyroid.** S. BROCK, G. E. DOTY, L. KRASNO, and A. C. IVY (*Endocrinol.*, 1940, 27, 504—510).—Removal of the cervical sympathetic with the stellate and superior cervical ganglia caused a decrease in basal metabolic rate of 10—30% in rabbits and 20—35% in cats. V. J. W.

**Lactation and growth in thyroidectomised rats.** D. V. PREHEIM (*Endocrinol.*, 1940, 27, 494—499).—Female rats were thyroidectomised through 3 generations. The growth of their litters was reduced by 12% presumably through an effect on lactation. Gestation was prolonged by 24 hr. V. J. W.

**Toxic adenoma of thyroid.** W. GNEITING (*Beitr. klin. Chir.*, 1939, 170, 112—120).—Enucleation of a thyroid adenoma caused disappearance of auricular fibrillation previously unsuccessfully treated for 2 years. H. H. K.

**Cretinism.** E. K. SHELTON, B. N. TAGER, and E. HOYT (*Endocrinol.*, 1940, 27, 425—429).—Report of a case in which thyroid treatment did not begin until the age of 11. V. J. W.

**Exophthalmic goitre in a 10-year-old girl.** G. EDGREN (*Acta paediatr. Stockh.*, 1939, 25, 41—50). M. K.

**Relationship between vitamin-A metabolism and thyrogenic osteoporosis and arthrosis.** E.

LYON (*Gastroenterologia*, 1940, 65, 51—62).—A discussion. H. H. K.

**Pre-operative treatment with iodine in exophthalmic goitre.** W. GATTIG (*Beitr. klin. Chir.*, 1939, 170, 107—111).—Administration of I is advocated. H. H. K.

**Age changes in thyroid of mouse.** R. D. SMITH and W. F. STARKEY (*Endocrinol.*, 1940, 27, 621—627).—Glands of mice from birth to 250 days are described and illustrated. V. J. W.

**Thyroglobulin in blood.** L. I. STELLAR and H. G. OLKEN (*Endocrinol.*, 1940, 27, 614—616).—Except after injury to thyroid tissue, no thyroglobulin could be detected in blood from the thyroid vein by a precipitin method sensitive to 1:150,000 of thyroglobulin. V. J. W.

**Self-selected diets in toxic goitre.** H. M. JONES (*J. Amer. Med. Assoc.*, 1940, 115, 274—279).—Self-selected diets in normal active persons contained 13—17 protein calories per 100 calories of food. Toxic goitre patients chose diets containing 6.3—11.1% protein calories. C. A. K.

**Thyroid therapy in juvenile myxœdema.** L. G. ROWNTREE (*J. Pediat.*, 1940, 16, 770—774).—The excellent results in 2 cases are reported. C. J. C. B.

**Effects of irritants and thyroxine on hair growths in albino rats.** E. O. BUTCHER (*Amer. J. Physiol.*, 1940, 129, 553—559).—Quiescent hair buds of underfed rats can be induced to grow by increasing the vascularisation of the skin with irritants. Benzoic acid, tincture of cantharides, tincture of capsicum, and xylene caused the least injury to the skin and were still effective. The irritant must be either conc. or rubbed in well for several consecutive days. Thyroxine is very effective. It can be incorporated in irritants and applied externally or injected alone. M. W. G.

**Carbohydrate metabolism in hyperthyroidism.** T. L. ALTHAUSEN (*J. Amer. Med. Assoc.*, 1940, 115, 101—104).—In hyperthyroidism there is accelerated absorption of sugars and starch and increased oxidation of glucose in the tissues (shown by an increase in the arterio-venous blood-sugar difference), which leads to depletion of glycogen stores. These disturbances account for high glucose-tolerance curves and glycosuria. C. A. K.

**Thyroid gland and nutrition.** W. BERGFELD (*Z. ges. exp. Med.*, 1940, 107, 106—152).—The eosinophil cells of rat's anterior pituitary are increased when the thyroid gland shows histological signs of hyperactivity. More I was excreted in the urine. The diet of subjects with goitre in a certain area consisted preponderantly of animal fats and proteins. The I content of the food of goitrous families was the same as that of healthy people. Strains of normal rats fed on the diet of goitrous subjects developed enlargement of the thyroid and histological signs of hyperactivity of thyroid and anterior pituitary; the I content of the thyroids was diminished. Animals kept on the diet of healthy subjects had normal thyroid and anterior pituitary. The same water



was given in both series. If part of the animal fats and proteins of the goitre diet was replaced by carbohydrates (I content const.), the thyroid and pituitary were normal; signs of goitre were produced if 5 times as much fat and meat was given as in the normal diet. The thyroid changes were prevented by administration of KI. Lack of vitamin-A, -B<sub>1</sub>, -B<sub>2</sub>, and -D does not produce goitrous thyroid or eosinophilia of the pituitary. Enlargement of the thyroid was not produced by feeding olive oil, butter, ovalbumin, or casein. A. S.

**Vitamin-D<sub>2</sub> and -D<sub>3</sub> and A.T. 10 [in parathyroid deficiency].** H. P. HIMSWORTH and M. MAIZALS (*Lancet*, 1940, 238, 959—960).—Vitamin-D<sub>3</sub> was as effective as -D<sub>2</sub> in raising serum-Ca and lowering inorg. PO<sub>4</sub>''' in a case of congenital thyroid and parathyroid deficiency, and both were more effective than A.T. 10 (dihydrotachysterol). C. A. K.

**Tetania parathyreopriva.** H. H. MCGARRY (*Canad. Med. Assoc. J.*, 1940, 43, 155—157).—A case of latent tetany is reported with a review of the literature. Treatment with Ca and vitamin-D and a low-P diet produced a prompt response in 4 days. C. J. C. B.

**Parathyroid extract and gastric secretions.** F. J. ELLIOTT (*J. Physiol.*, 1940, 98, 27P).—The injection of 50—75 units of parathyroid extract into normal dogs markedly raises acidity (total and free) and peptic activity. The increase in activity continues as long as the blood-Ca level is above normal. J. A. C.

**Growth and development of six generations of rats under treatment with thymocrescin.** A. SEGALOFF and W. O. NELSON (*Endocrinol.*, 1940, 27, 693—699).—Injection of 5 times the min. effective dose of Asher's thymocrescin (*Physiol Abs.*, 1931, 16, 202) failed to cause any acceleration of growth or development. V. J. W.

**[Histological] observations of small blood vessels in normal and involuted human thymus gland.** A. MONROY (*Boll. Soc. ital. Biol. sperim.*, 1940, 15, 500—501). F. O. H.

**Effect of adrenal preparations on adrenalectomised nephrectomised rat.** F. A. HARTMAN and R. DUBACH (*Endocrinol.*, 1940, 27, 638—641).—Adrenal extracts increase survival time. This is due to the cortin fraction; the Na factor of the adrenal extract alone is ineffective. V. J. W.

**Influence of adrenal cortex in phloridzin diabetes.** B. B. WELLS and E. C. KENDALL (*Proc. Staff Mayo Clin.*, 1940, 15, 565—573; cf. A., 1940, III, 847).—A high intake of fat was not beneficial but the administration of glucose or a diet of casein maintained adrenalectomised fasting phloridzinised rats in excellent condition. Hormones of the adrenal cortex confer on tissue cells increased ability to withstand the toxic effect of phloridzin, and in addition those compounds which have an O on C<sub>11</sub> have a sp. antagonism to insulin. This group of compounds annuls the inhibition of gluconeogenesis normally produced by insulin, leading to acceleration of conversion of protein into carbohydrate. The direct antagonistic effect between this group of compounds

and insulin is also shown by the protection against convulsions. This effect is not produced by deoxycorticosterone. H. H. K.

**Sex factors of adrenal gland.** J. M. LOONEY (*Endocrinol.*, 1940, 27, 511—520).—A review. V. J. W.

**Dimethyl sulphone, constituent of adrenal gland.** J. J. PFIFFNER and H. B. NORTH (*J. Biol. Chem.*, 1940, 134, 781—782; cf. Ruzicka *et al.*, A., 1940, III, 562).—186 mg. of crude, cryst. dimethyl sulphone were obtained from 1000 kg. of ox adrenals. P. G. M.

**Phæochromocytoma of adrenal.** A. BRUNSCHWIG and E. HUMPHREYS (*J. Amer. Med. Assoc.*, 1940, 115, 355).—A typical case of phæochromocytoma of the adrenal with paroxysmal hypertension is reported. After removal of the tumour the blood pressure was normal. C. A. K.

**Adrenal hæmorrhage in meningococcal septicæmia.** W. H. GRACE, C. V. HARRISON, and T. B. DAVIE (*Lancet*, 1940, 239, 102—103).—3 cases of meningococcal septicæmia died with signs of circulatory collapse. Autopsy showed adrenal hæmorrhages (Waterhouse-Friderichsen syndrome) with particular destruction of the medulla, the cortical cells being separated but not necrotic. C. A. K.

**Neuroblastoma of adrenal gland with intrathoracic metastases.** J. REURINK (*Acta paediatr. Stockh.*, 1938—1939, 23, 78—92).—Clinical and pathological report of a case. M. K.

**Elimination of adrenal glands by electrocoagulation in animal experiments.** W. NELL and D. SCHÄFER (*Beitr. klin. Chir.*, 1940, 171, 126—128). H. H. K.

**Differential diagnosis in diseases with virilism.** A. WESTMAN (*Acta obstet. Gynec. Scand.*, 1939, 19, 455—476).—Report of 3 women with pronounced virilism. In one case X-ray treatment of the pituitary improved the condition. In the second an adrenal adenoma was found. The third case had one enlarged adrenal gland and an arrhenoblastoma of one ovary, extirpation of which cured amenorrhœa. M. K.

**Significance of oxidation of adrenaline to benzoquinone.** P. MARQUARDT (*Z. ges. exp. Med.*, 1940, 107, 179—183).—The oxidation of adrenaline to benzoquinone by succinic acid is prevented under anaërobic conditions; oxidation by fumaric acid still takes place. A. S.

**Adrenaline ester.** D. RICHTER (*J. Physiol.*, 1940, 98, 25P).—After administering adrenaline (0.13—0.4 mg. per kg. by mouth) in man a substance appears in the urine which has the properties of an adrenaline ester. Esterification and not oxidation is the main fate of adrenaline administered under these conditions *in vivo*. J. A. C.

**Amines related to adrenaline.** J. A. GUNN and M. R. GURD (*J. Physiol.*, 1940, 98, 424—441).—Phenylallylamine is, in its physiological activities, hardly distinguishable from phenylethylamine. Phenylbutenylamine very closely resembles benzadrine in toxicity, in action on blood pressure and on



smooth muscle in various organs; it has a relatively less stimulating action on the motor cortex and is a reliable respiratory stimulant. Neither phenyl-allyl-nor -butenyl-amine is strictly sympathomimetic in action; the lengthening of the side-chain by introduction of 2 unsaturated C atoms has little effect on physiological activity, the substitution of the group  $\cdot\text{CH}_2\text{CH}_2\cdot$  being equiv. to  $\cdot\text{CH}_2\cdot$ . Diphenylethylamine differs widely from benzedrine in its action especially in having a mainly depressant action both on the central nervous system and on smooth muscle. The substitution of a phenyl for a methyl group in the  $\alpha$ -position in phenylethylamine has a profound effect in altering the quality of physiological action.

J. A. C.

**Effect of adrenaline and ergot alkaloids on (A) muscle of iris of isolated frog's eye, (B) bronchial muscles.** L. DONATELLI (Boll. Soc. ital. Biol. sperim., 1940, 15, 486—487, 487—490).—(A) Concn. of 5 and 200 p.p.m. of ergotamine and ergometrine produce miosis but do not abolish, although modifying, the mydriasis due to adrenaline.

(B) Ergotamine and ergometrine produce (to equal extents) contraction of isolated lung muscle of guinea-pig; in a few experiments, a preliminary dilatation occurred.

F. O. H.

**Hypotension due to adrenaline.** A. MANCINI (Boll. Soc. ital. Biol. sperim., 1940, 15, 485).

F. O. H.

**Adrenals and thermoregulation. I. Effect of cortical extracts in defence mechanism against cold.** C. ZUMMO and G. SARZANA. **II. Effect of medullary extracts in defence mechanism against cold in adrenalectomised rats.** F. FAZIO. **III. Effect of adrenaline on gaseous exchange in adrenalectomised rats treated with cortical extracts.** C. ZUMMO and R. URSO (Boll. Soc. ital. Biol. sperim., 1940, 15, 494—496, 496—497, 498—499).—I. Adrenalectomy enhances the fall in rectal temp. and in  $\text{O}_2$  consumption due to exposure to atm. temp. of  $3.5\text{--}4^\circ$ . Administration of cortical extracts to adrenalectomised rats results in a normal fall in  $\text{O}_2$  consumption but has little effect on the fall in rectal temp.

II. The high  $\text{O}_2$  consumption due to exposure to low temp. is further increased in normal rats by adrenaline; with adrenalectomised rats, the  $\text{O}_2$  consumption and, to some extent, the fall in rectal temp. are diminished by adrenaline.

III. Adrenaline (1 mg. per kg.) increases the gaseous metabolism of adrenalectomised rats (at  $28^\circ$ ) by 15% and of normal rats by 80%; the effect on rectal temp. is not significant. With adrenalectomised rats at  $10^\circ$ , adrenaline does not affect the gaseous metabolism but increases it (for rats both at  $10^\circ$  and  $28^\circ$ ) when cortical hormone is being administered. The metabolism-stimulating effect of adrenaline, therefore, appears to be conditioned by cortical hormone in the blood.

F. O. H.

**Effect of adrenaline in peanut oil and adrenaline pellets on thyroid gland of guinea-pig and rabbit.** C. GOETSCH (Endocrinol., 1940, 27, 617—620).—No effect was produced in guinea-pigs by injections of 0.3 mg. twice daily of adrenaline in oil.

Injections of 1—1.5 mg. twice daily in rabbits caused no increase in mitoses but the mitochondria became numerous and fine instead of few and large. Implanted pellets had no effect.

V. J. W.

**Precursor of adrenaline.** N. HASHIGUCHI (Japan. J. Med. Sci., IV, 1940, 12, Proc., 25—26).—Dopa or liver extract or both substances were injected subcutaneously into mice and guinea-pigs. Adrenal glands showed no changes after injection of dopa or liver extract but a marked increase of the vacuoles and of the chromaffin substance was observed after the administration of both substances. The results are believed to indicate that the adrenal glands transform dopa into adrenaline in the presence of a substance from the liver.

H. H. K.

**Inhibition of adrenaline oxidation.** J. C. DAVID, R. KRISHNASWAMI, and M. SRINIVASAN (Indian J. med. Res., 1940, 27, 997—1007).—The rôle of phenolases in the oxidation of adrenaline and the inhibition of their action by stabilisers, namely HCN and ascorbic acid, has been studied. Ephedrine is stabiliser to a limited degree. Ephedrine inhibits the system adrenaline-amine-oxidase.

H. B. C.

**Deoxycorticosterone acetate in Addison's disease.** G. W. THORN and W. M. FIROR (J. Amer. Med. Assoc., 1940, 114, 2517—2525).—Deoxycorticosterone acetate was given to 30 patients with Addison's disease, 21 of whom showed marked clinical improvement, retention of Na, Cl, and water, increased renal excretion of K, marked increase of plasma vol., restoration of plasma-Na, -Cl, and -K to normal, increase of body-wt., and rise of both systolic and diastolic blood pressures. Carbohydrate metabolism showed little improvement; excessive doses of the acetate + NaCl may produce œdema, hypertension, and congestive heart failure. The successful use of subcutaneous pellets is described.

C. A. K.

**Deoxycorticosterone acetate in Addison's disease.** E. P. McCULLAGH and E. J. RYAN (J. Amer. Med. Assoc., 1940, 114, 2530—2537).—6 patients with Addison's disease were treated with deoxycorticosterone acetate for 6—10 months. In 2 cases complete symptomatic relief occurred, the other cases showing improvement. In all cases wt. increased, blood pressure rose (to hypertensive levels in 5 cases), electrolyte changes were corr.; plasma vol. increased, but no changes in pulse, temp., pigmentation, or glucose tolerance were observed. Overdosage produces arterial hypertension and massive œdema. Thus deoxycorticosterone is not a complete adrenal cortex substitute.

C. A. K.

**Deoxycorticosterone and its esters in Addison's disease.** E. S. GORDON (J. Amer. Med. Assoc., 1940, 114, 2549—2551).—A review.

C. A. K.

**Action of deoxycorticosterone acetate in uræmia.** H. SELYE (Canad. Med. Assoc. J., 1940, 43, 333—335).—Experiments in mice and rats indicate that pre-treatment with deoxycorticosterone acetate prolongs the survival time of animals in which acute uræmia is produced by bilateral nephrectomy.

C. J. C. B.



**Mitotic count in adrenal cortex of normal guinea-pigs.** H. T. BLUMENTHAL (Endocrinol., 1940, 27, 477—480).—The average no. of mitoses in a 6- $\mu$ . section of the gland is 4.1. There is no sex difference, but the count is rather higher in animals kept at 20° than at 30°. V. J. W.

**Influence of time of feeding on periodicity in activity in thyroid and adrenal glands of normal male guinea-pigs.** H. T. BLUMENTHAL (Endocrinol., 1940, 27, 481—485).—If guinea-pigs are fed once in 24 hr. a max. no. of mitoses is found in the thyroid and adrenal cortex 4—12 hr. after feeding. This increase is independent of time of day or conditions of illumination. V. J. W.

**Effect of fresh and experimentally modified anterior hypophyses of cattle on mitotic activity in adrenal cortex of guinea-pig.** H. T. BLUMENTHAL (Endocrinol., 1940, 27, 486—493).—Implantation of ox hypophysis, or its acid extract, in immature female guinea-pigs causes an increase in mitoses of adrenal cortex. If the hypophysis is first immersed in 95% alcohol, acetone, glycerol, or 50% urea this effect is lessened, and if it is immersed successively in 50% urea and 95% alcohol the effect is abolished. If it is immersed in acetone or saturated  $(\text{NH}_4)_2\text{SO}_4$  before immersion in urea the urea does not lessen the cortex-stimulating capacity. V. J. W.

**Comparison of effects of deoxycorticosterone acetate, corticosterone, and cortical extract on patient with Addison's disease.** J. W. FERREBEE, C. RAGAN, D. W. ATCHLEY, and R. F. LOEB (Endocrinol., 1940, 27, 360—366).—A patient on a maintenance dose of 6 mg. of deoxycorticosterone acetate received in addition another 20 mg. daily of this, or of corticosterone, or 7 c.c. of cortical extract. All three had some effect on Na and K excretion but very little on N or carbohydrate metabolism (cf. A., 1940, III, 210). V. J. W.

**Effect of adrenal cortical extract on serum-phosphatase in chronic arthritis.** E. M. WATSON (Endocrinol., 1940, 27, 521—522).—Such patients usually have increased serum-phosphatase. This is decreased by administration of 3—5 c.c. of Upjohn cortin weekly, with relief of symptoms. V. J. W.

**Is potassium tolerance curve of value in diagnosis of adrenal cortical insufficiency in man?** J. A. GREENE, H. LEVINE, and G. W. JOHNSTON (Endocrinol., 1940, 27, 375—377).—Normal curves were found in 2 cases of Addison's disease, and abnormal (high serum-K) ones in cases of bromism and nephritis. V. J. W.

**Use of adrenal cortical extract in psychotic and non-psychotic patients.** C. A. LOEHNER (Endocrinol., 1940, 27, 378—380).—Good results were obtained in cases of dementia præcox, psychoneurosis, and debility. V. J. W.

**Adrenal cortical hormone and salt in treatment of pneumonia and other severe infections.** D. PERLA and J. MARMORSTON (Endocrinol., 1940, 27, 367—374).—2—5 c.c. twice daily of cortin was beneficial in 7 cases. V. J. W.

**Comparative activity of deoxycorticosterone acetate and progesterone in adrenalectomised rats.** F. E. EMERY and P. A. GRECO (Endocrinol., 1940, 27, 473—476).—Growth curves are identical when daily injections of 1 mg. of either are given. V. J. W.

**Effect of adrenal cortex extract on uterus and vagina of infantile mice.** S. SCHIRRMESTER (Endocrinol., 1940, 22, 377—399).—Repeated subcutaneous injections of adrenal cortex extracts in infantile mice produce enlargement of the uterus; the vagina was dilated; the ovaries were unchanged. Uterine glands proliferated and the vagina showed multilayered squamous epithelium. A. S.

**Survival time in treated Addison's disease.** L. G. ROWNTREE (J. Amer. Med. Assoc., 1940, 114, 2526—2530; cf. A., 1940, III, 728).—6 patients with severe Addison's disease have survived an average of 7 years on treatment with a research prep. of adrenal cortex (Swingle) + high NaCl intake. They lead active lives and have shown no toxic effects. C. A. K.

**Glycotropic (anti-insulin) activity of sodium factor and cortin fractions of adrenal.** F. A. HARTMAN, K. A. BROWNELL, R. WALTHER, and A. EDELMANN (Endocrinol., 1940, 27, 642—646).—Resistance of fasting mice to insulin is increased by both the cortin fraction and the Na factor, the former being more effective. Both blood-sugar and liver-glycogen are increased. V. J. W.

**Corticosterone and its esters.** M. H. KUIZENGA and G. F. CARTLAND (Endocrinol., 1940, 27, 647—651).—A no. of esters were synthesised and assayed on rats. The most effective was the diethylacetate, which was 4 times as active as corticosterone and about 3 times as active as the acetate. V. J. W.

**Influence of deoxycorticosterone acetate and of progesterone on diffusion of sodium and chloride into peritoneal space.** A. CANTAROW and A. E. RAKOFF (Endocrinol., 1940, 27, 652—656).—5.5% glucose solution was injected intraperitoneally into dogs 17—96 hr. after intramuscular injections of 3—10 mg. of deoxycorticosterone acetate or 15 mg. of progesterone. During the next 15 min. there was a marked increase in the Na and Cl of withdrawn samples of peritoneal fluid as compared with controls. After 30 min. vals. became normal. V. J. W.

**Addison's disease treated by implantation of deoxycorticosterone acetate pellets.** R. C. MOEHLIG (Endocrinol., 1940, 27, 633—637).—Intramuscular implantation of 600 mg. caused prolonged improvement in all symptoms except pigmentation. V. J. W.

**Treatment of Addison's disease by subcutaneous implantation of tablets of deoxycorticosterone acetate.** P. P. LAMBERT (Bull. acad. méd. Belg., 1940, [vi], 5, 136—164).—Two cases of Addison's disease were much improved. H. B. C.

**Alkalosis and low plasma-potassium in case of Cushing's syndrome.** D. M. WILSON, M. D. POWER, and E. J. KEPLER (J. clin. Invest., 1940, 19, 701—707).—A typical case of Cushing's syndrome



showed diminished plasma-K and -Cl, increased  $\text{-HCO}_3'$ , elevated  $p_{\text{H}}$ , and normal plasma-Na, -protein, -Ca, -Mg, -P,  $\text{SO}_4''$ , and undetermined acid fraction. Plasma-electrolytes returned to normal following the simultaneous administration of KCl and  $\text{NH}_4\text{Cl}$ . Thereafter, the administration of KCl alone maintained a relatively normal pattern. The administration of K citrate was followed by partial correction of the abnormal plasma-K, -Cl, and  $\text{-HCO}_3'$ .  $\text{NH}_4\text{Cl}$  failed to maintain a normal concn. of plasma-Cl and  $\text{-HCO}_3'$  after plasma-K had decreased to low levels following the discontinuance of administration of K salts. C. J. C. B.

**Corticosterone in wound shock.** H. SELYE and C. DOSNE (*Lancet*, 1940, 239, 70—71).—Pure corticosterone effectively combats traumatic shock in rats; deoxycorticosterone is ineffective and the relative inefficiency of adrenal cortical extracts suggests that they may contain harmful contaminating substances which antagonise the action of corticosterone. C. A. K.

**Adrenaline sensitivity in patients before and after operations.** L. F. FINDEISEN (*Beitr. klin. Chir.*, 1939, 170, 472—476). H. H. K.

**Effects of steroid glucosides and cortin on insulin convulsions and blood-sugar.** R. L. ZWEMER, K. L. PINES, and B. E. LOWENSTEIN (*Science*, 1940, 91, 600—602).—Insulin convulsions and death of mice and rats may be prevented by previous administration of cardiac glucosides. Protection was effective in some experiments 18 hr. after the glucoside injection. Injection of these glucosides into cats raises the blood pressure. E. R. S.

**Pathogenesis of insulin convulsions.** V. P. KOMISSARENKO (*J. méd., Ukraine*, 1939, 9, 809—814).—Insulin convulsions are of central origin and do not depend on peripheral hypoglycæmia. Dogs in which the medulla was transsected did not develop convulsions after large doses of insulin (10 units per kg.). M. K.

**Effect of fasting on insulin sensitivity.** H. SELYE (*Endocrinol.*, 1940, 27, 434—436).—After about 48 hr. fasting, the rat develops a transitory resistance to insulin and may at this time show an increased blood-sugar after a dose of it. V. J. W.

**Species variation in insulin content of pancreas.** H. P. MARKS and F. G. YOUNG (*Nature*, 1940, 146, 31—32).—A table gives pancreas wt. (g. per 100 g. body-wt.) and its insulin content (units per g. of pancreas and per 100 g. body-wt.) of chimpanzee, dog, cat, rabbit, guinea-pig, rat, and mouse. Experiments indicate the presence in extracts of guinea-pig pancreas of a substance which interferes with absorption of insulin from subcutaneous tissues. Mice resemble rats in their reaction to treatment with ox anterior pituitary extracts. E. R. S.

**"Insulitis" in diabetes mellitus.** H. VON MEYENBURG (*Schweiz. med. Wschr.*, 1940, 70, 554—557).—The pancreas of a patient who died in diabetic coma showed mainly lymphocytic infiltration of the islets. A. S.

**Basal insulin requirement in diabetes.** H. MARTIN, D. R. DRURY, and S. STROUSE (*Arch. intern. Med.*, 1940, 66, 78—92).—The basal insulin requirement is the amount of insulin needed to prevent hyperglycæmia and glycosuria in the fasting state. Its val. in cases of severe diabetes is discussed. C. A. K.

**Electrocardiogram in insulin shock.** D. GOLDMAN (*Arch. intern. Med.*, 1940, 66, 93—108).—Insulin shock therapy may produce changes in the e.g. which may persist for months. C. A. K.

**Wound healing in diabetics.** L. F. FINDEISEN and Z. SZABOLCS (*Beitr. klin. Chir.*, 1939, 170, 422—431). H. H. K.

**Various insulins in diabetes.** B. SMITH and W. H. GRISHAW (*Arch. intern. Med.*, 1940, 66, 465—477).—The effects of regular, cryst., and protamine-Zn insulins were compared in 800 diabetics. C. A. K.

**Experience with globin insulin.** L. BAUMAN (*Amer. J. med. Sci.*, 1940, 200, 299—303; cf. A., 1939, III, 910).—4 cases improved when transferred from protamine-Zn insulin to globin insulin. Insulin requirement diminishes and skin reactions are absent. C. J. C. B.

**Effectiveness of peroral insulin in human diabetes.** J. R. MURLIN, C. B. F. GIBBS, M. J. ROMANSKY, T. B. STEINHAUSEN, and F. L. TRUAX (*J. clin. Invest.*, 1940, 19, 709—722).—In 20 diabetics the effects of hexylresorcinol and a buffering mixture of salts on the absorption of insulin from the alimentary tract were studied. The standard dose was 100 i.u. of pure insulin in a solution containing 0.125% of hexylresorcinol and alkaline salts necessary to give a  $p_{\text{H}}$  10—10.5. Results on urine-sugar for 24 hr. and blood-sugar changes in the morning after the first dose of oral insulin are presented for the 12 most favourable cases. These show weighted average effects on urine-sugar varying from 4.7 to 17.7 g. per 24 hr. below the average excretion in control periods. The blood-sugar effect from the single dose, as a weighted average, varied from 0 to 60 mg.-% in 45 min. C. J. C. B.

**[Removal of pancreatic adenoma for] paroxysmal hypoglycæmia.** F. SAUERBRUCH (*Schweiz. med. Wschr.*, 1940, 70, 587—589).—3 patients suffering from severe hypoglycæmic attacks were cured by extirpation of adenoma of the pancreas. A. S.

**Treatment of diabetic emergencies (J. Amer. Med. Assoc., 1940, 115, 454—460).**—Conference at Cornell University Medical College and New York Hospital. C. A. K.

**Insulin and vitamin-B<sub>1</sub>.** L. AHLSTRÖM, F. SCHLENK, and H. VON EULER (*Naturwiss.*, 1940, 28, 188—189; cf. A., 1940, III, 518).—Application of the thiochrome and ætiozymase tests to untreated insulin and to insulin hydrolysed with HCl, NaOH, and pepsin shows that no aneurin or cocarboxylase is present or produced. W. McC.

**Duration of insulin action.** P. O. GREELEY (*Amer. J. Physiol.*, 1940, 129, 17—21).—For the depancreatized dog the duration of action of an intravenous dose of insulin depends on the size of the dose.



For physiological doses the duration of the action is proportional to the log of the size of the dose. The rate at which insulin is destroyed is proportional to the amount of it in the body at the time. The average rate is  $\frac{1}{10}$  of this amount per hr. or  $\frac{1}{90000}$  per sec.

M. W. G.

**Insulin deficiency and insulin inefficiency.** H. P. HIMSWORTH (Brit. Med. J., 1940, I, 719—722).—A review. C. A. K.

**Zinc-protamine insulin and soluble insulin.** G. W. WAUCHOFE (Lancet, 1940, 238, 962—966).—Studies in 17 diabetics showed that mixing of Zn-protamine insulin and sol. insulin in one syringe reduces the activity of the latter. C. A. K.

**Diabetic control versus caloric sufficiency in treatment of diabetes and pulmonary tuberculosis.** H. F. ROOT (Amer. J. med. Sci., 1940, 200, 53—60).—In a review of aetiological factors in 396 cases of pulmonary tuberculosis in diabetic patients limitation in calories had less influence than lack of control of the diabetes. Acidosis or coma preceded the development of tuberculosis in at least 20% and probably nearly 50% of the cases. The tuberculosis death rate among diabetics per 1000 fell from 11 prior to the use of insulin to 4.1 during the first 6 years after the use of insulin. C. J. C. B.

**Co-existence of diabetes mellitus and diabetes insipidus.** P. A. GRAY and W. M. MOFFAT (Endocrinol., 1940, 27, 430—433).—Case report with autopsy. The patient became allergic to pituitary extract. V. J. W.

**The pituitary.** E. H. RYNEARSON and L. R. SCHWEIGER (Arch. intern. Med., 1940, 66, 226—290).—Review of recent literature. C. A. K.

**Effect of hypophysectomy on percentage of body-weight present as muscle in rat.** R. A. PHILLIPS and H. GILDER (Endocrinol., 1940, 27, 597—600).—Muscle % of body-wt. is not increased after hypophysectomy or decreased after thyroidectomy. V. J. W.

**Strain-limited development of tumours of the pituitary gland in mice receiving oestrogens.** W. U. GARDNER and L. C. STRONG (Yale J. Biol. Med., 1940, 12, 543—548).—Hypophyseal adenomas did not appear in over 700 mice of 6 inbred strains after the injection of 8.3—250  $\mu$ g. weekly of one of several oestrogens for 251—457 days. The glands rarely weighed more than 4 mg. 15 of 106 mice of the  $C_{57}$  strain similarly treated had pituitary glands weighing more than 12 mg. Glands of 12—26 mg. showed generalised hypertrophy of the chromophobe cells and distension of the vascular sinuses. Glands of 47—87 mg. consisted largely of adenomas of non-granular chromophobic cells. Mice of the  $C_{57}$  strain showed extensive brown degeneration of the adrenal which may be related to the hypophyseal changes (1 photomicrograph.) F. S.

**Histologic changes in pituitaries of parabiotic rats.** I. T. ZECKWER (Arch. Path., 1940, 30, 461—464).—The pituitaries of female rats united in parabiosis with ovariectomised rats show within one month degranulation of basophils and sometimes of

acidophils; extreme degranulation occurred after 1 year. The pituitaries of male rats united in parabiosis with male and female rats showed only occasional slight degranulation of basophils. The pituitaries of rats united in parabiosis with thyroidectomised rats showed no changes. When gonadectomised rats were united in parabiosis with thyroidectomised rats, castration cells were found similar to those occurring in simple gonadectomised rats. Thyroidectomy cells persisted except in the case of 1 female, maintained for 189 days, which showed the usual effects of degranulation by oestrogen in very large doses. C. J. C. B.

**Effect of anterior pituitary extracts on detoxication mechanisms of the dog.** A. H. ENNOR (Austral. J. Exp. Biol., 1940, 18, 163—169).—In 2 dogs treated with anterior pituitary extracts, detoxication of benzoate was accompanied by marked excretion of glucose. In 9 normal animals without pituitary treatment, benzoylglycuronic acid was excreted without any glucose. D. M. N.

**Prolificacy of rats treated with mare gonadotropic hormone.** H. H. COLE (Science, 1940, 91, 436—437).—The largest no. of foetuses observed in treated rats was 33, and of young born 23. Max. no. of offspring was obtained by treatment just before time of normal maturity. E. R. S.

**Potency of pituitary gonadotrophins.** S. F. GOLDMAN and B. L. CINBERG (Endocrinol., 1940, 27, 524—525).—5 commercial preps. were assayed. One contained 10% of the labelled potency and the others much less. 10 times the recommended doses were used. V. J. W.

**Experiments on hypophyseal anterior lobe hormone.** I. ITIKAWA (Japan. J. Med. Sci., 1940, 12, Proc., 48—49).—No prolan-A or -B was found in urine or c.s.f. of normal dogs or normal and pregnant rabbits. Tests were performed with undiluted and 20 to 50 times conc. urine and c.s.f. H. H. K.

**Quantitative determination of follicle-stimulating and luteinising hormones in mammalian pituitaries and discussion of gonadotrophic quotient F/L.** E. WITSCHI (Endocrinol., 1940, 27, 437—446).—The rat vagina unit of follicle-stimulating hormone is the min. amount required to cause vaginal cornification in an immature rat. The weaver finch unit of luteinising hormone is the min. amount required to produce a black dot on a white abdominal feather of the African weaver finch, *Pyromelana afra*. V. J. W.

**Excretion of prolan in normal and cancerous subjects after prolan administration.** K. KATZ (Beitr. klin. Chir., 1939, 170, 380—386).—Prolan was injected intramuscularly into 46 women, 23 of whom suffered from cancer. Aschheim-Zondek reaction was performed before and 48 hr. after the administration. Prolan was excreted only by the climacteric women, but not by cancerous subjects or women with a normal menstrual cycle. H. H. K.

**Non-specific augmentation with highly purified follicle-stimulating hormone fraction (Evans).** F. BISCHOFF (Endocrinol., 1940, 27,



554—558).—Non-sp. augmentation of the effects of pituitary extract, or of Evans' highly purified product (A., 1940, III, 120), is caused by addition of 0.5 mg. of Cu or Zn as sulphate to each dose. No augmentation is caused if  $Zn(OH)_2$  is added, or if the salt is given subcutaneously and the hormone intraperitoneally. V. J. W.

**Gonadotrophic action of pituitaries from pregnant cows.** A. NALBANDOV and L. E. CASIDA (Endocrinol., 1940, 27, 559—566).—Gonadotrophic activity decreases during pregnancy so that for each cm. increase in fetal length the gonad wt. of rats implanted with 25 mg. of acetone-dried pituitary powder is less by 0.13 mg. V. J. W.

**Influence of chlorophyll on activity of gonadotrophic extracts tested on normal and hypophysectomised immature female rats.** J. H. LEATHEM and U. WESTPHAL (Endocrinol., 1940, 27, 567—572).—When 10 mg. of chlorophyll was mixed overnight with 1 unit of Schering pregnant mare serum extract its effect was inhibited. Effect of anterior pituitary extract was slightly augmented, and of male urine extract not affected. The inhibiting effect of chlorophyll was reduced by addition of ovomucoid or egg-white. V. J. W.

**Effect of pituitary stalk section on reproductive phenomena in female rat.** E. W. DEMPSEY and U. U. UOTILA (Endocrinol., 1940, 27, 573—579).—After such section all reproductive processes are normal, but exposure to cold no longer causes increased production of thyrotrophic, or decreased production of gonadotrophic, hormone. V. J. W.

**Alleged gonadotrophic effect of royal jelly.** R. M. MELAMPY and A. J. STANLEY (Science, 1940, 91, 457—458).—Aq. extracts of acetone-dried and aq. pyridine extracts of royal jelly produced no difference from controls in wt. of body, ovary, or adrenal in rats. The thymus wts. were lower than controls. E. R. S.

**Extraction and assay of gonadotrophic hormones from human male urine.** D. R. McCULLAGH and W. E. BOWMAN (Endocrinol., 1940, 27, 525—526).—4 vols. of alcohol are added to the urine and the ppt. is centrifuged off and dried with ether. This powder is extracted with water, to which an equal vol. of alcohol is then added, and finally washed with 50% alcohol in which the hormone is sol. Raising the alcohol content to 80% ppts. the hormone, which is then non-toxic, and can be assayed on immature female rats. V. J. W.

**Gonadotrophic hormones in urine of giraffe.** J. F. WILKINSON and P. DE FREMERY (Nature, 1940, 146, 491).—A 6-year-old, 2-para, female giraffe in captivity gave birth to a calf 468 days after mating. 8 months after mating no gonadotrophic hormone was found in the urine by the Aschheim-Zondek test, but positive results were found at 11 months. Urines from non-pregnant females and a male giraffe gave negative results. The excretion of gonadotrophic hormones during pregnancy is thus not limited to primates, but occurs also in the antelopes. E. R. S.

**Purification of interstitial cell- and follicle-stimulating hormones of pituitary gland.** H. JENSEN, S. TOLKSDORF, and F. BAMMAN (J. Biol. Chem., 1940, 135, 791—792).—The interstitial cell-stimulating fraction (cf. A., 1939, III, 905) is purified by pptn. at  $pH$  5—6 by aq.  $(NH_4)_2SO_4$  (25—35% saturation), dialysis, and final pptn. with 85—90% alcohol, whilst the follicle-stimulating fraction requires  $(NH_4)_2SO_4$  at 50—60% saturation. H. G. R.

**Antigonadotrophic substances.** F. GUERCIO and D. CAZZOLA (Boll. Soc. ital. Biol. sperim., 1940, 15, 508—509).—Ox blood and brain, liver, spleen, and adrenal glands of ox and rabbit contain a substance antagonistic to the (anterior pituitary) gonadotrophic hormone (tested at levels of 200 r.u. in rabbits) from urine or serum. The anti-substance, which is not protein, cholesterol, lecithin, fatty acid, vitamin-A, -B, -C, or -D, or nucleic acid, is thermostable and not or slightly sol. in org. solvents. F. O. H.

**Experimental superfecundity with pituitary gonadotrophins.** H. M. EVANS and M. E. SIMPSON (Endocrinol., 1940, 27, 305—308).—Injection into 26—34-day-old rats of 15 r.u. of follicle-stimulating hormone from sheep pituitary before mating caused the formation of a max. of 33 ovum implantation sites as compared with a max. of 10 in controls. Embryos were frequently absorbed, or the young were born dead. V. J. W.

**Further purification of growth hormone of anterior pituitary.** H. L. FRAENKEL-CONRAT, D. L. MEAMBER, M. E. SIMPSON, and H. M. EVANS (Endocrinol., 1940, 37, 605—613).—Further details are given of the purification of growth hormone by means of cysteine (cf. A., 1940, III, 121). V. J. W.

**Inactivation of pituitary lactogenic hormone by iodine.** C. H. LI, W. R. LYONS, M. E. SIMPSON, and H. M. EVANS (Science, 1940, 91, 530—531).—Under the conditions employed I acts only on the tyrosine component of lactogenic hormone, and its absorption is accompanied by a decrease in biological activity. Lactogenic hormone is probably the first protein substance in which the essential nature of both tyrosine and free  $NH_2$  groups has been demonstrated. L. S. T.

**Thyrotrophic hormone and its relation to clinical syndromes.** C. G. LAMBIE (Med. J. Austral., 1939, II, 819—830, 853—869).—A review with 312 references. (12 photomicrographs.) F. S.

**Purification of thyrotrophic hormone of anterior pituitary gland.** J. FRAENKEL-CONRAT, H. FRAENKEL-CONRAT, M. E. SIMPSON, and H. M. EVANS (J. Biol. Chem., 1940, 135, 199—212).—Smelser's method, based on the increase in thyroid wt. of day-old chicks, is used for assaying the thyrotrophic hormone, and this method is correlated with others based on histologically detectable thyroid stimulation in 4-day-old chicks, guinea-pigs, pigeons, and hypophysectomised rats, and on wt. increase in guinea-pigs. A method for the prep. and concn. of thyrotrophic hormone from ox anterior pituitary gland, involving acetone and fractional  $(NH_4)_2SO_4$  pptn. at  $-5^\circ$  to  $-10^\circ$  from a 0.25% acetic acid-1%



aq. NaCl solution, is described. The final product, representing a concn. of 100 times and a 30% recovery of the total activity, contained 10% of the interstitial cell-stimulating hormone, but very little of the lactogenic, adrenocorticotrophic, and growth- and follicle-stimulating hormones. The associated protein (N 13%, carbohydrate 3.5%, glucosamine 2.5%) could not be pptd. at  $p_H$  4—9. A. L.

**Specific metabolic principle of pituitary.** R. N. FEINSTEIN and E. S. GORDON (Endocrinol., 1940, 27, 592—596).—Pituitary extracts cause a greater increase in  $O_2$  consumption in human subjects and rabbits than do control injections of liver extract.

V. J. W.

**Pituitary and insulin content of pancreas.** R. E. HAIST (J. Physiol., 1940, 98, 419—423).—The insulin content of the pancreas in hypophysectomised rats is slightly less than in normal animals fed *ad libitum* but is of the same order as that of controls receiving a similar caloric intake. A fall in insulin content is obtained in hypophysectomised rats when fat is fed. When a balanced ration is given to hypophysectomised rats, which have previously received a diet very rich in fat for 1 week, the insulin content of the pancreas returns to normal within 7 days.

J. A. C.

**Cyclic pulmonary oedema at menses in mitral stenosis [relation to pituitary].** J. EDEIKEN and J. Q. GRIFFITH (J. Amer. Med. Assoc., 1940, 115, 287—289).—A patient with advanced mitral stenosis developed pulmonary oedema with each menstrual period. Mercupurin relieved attacks temporarily and irradiation of the pituitary cured the condition, which was associated with increased antidiuretic substance in the blood.

C. A. K.

**Pituitary extract and non-gravid human uterus.** A. McLELLAN (Lancet, 1940, 238, 919—922).—The min. effective dose of posterior pituitary extract at various stages of the menstrual cycle was determined by intrauterine pressure records in normal women. Responses were obtained immediately before and during menstruation and in the early interval part of the cycle. The non-gravid uterus responds to vasopressin but not to oxytocin.

C. A. K.

**Simple laboratory method for obtaining preparations containing pressor and oxytocic activity from the posterior lobe of the pituitary gland.** G. W. IRVING, jun., and V. DU VIGNEAUD (J. Amer. Chem. Soc., 1940, 62, 2080—2082).—A convenient process is described for prep. of a non-hygroscopic powder containing 80—90% of the pressor and oxytocic activity (9—10 units per mg.) from posterior lobes.

R. S. C.

**Pituitary antidiuretic principle and anaesthesia.** H. HELLER (J. Physiol., 1940, 98, 405—418).—A non-pressor but antidiuretic extract of the posterior pituitary lobe is prepared which has no diuretic action on the anaesthetised animal. The diuretic effect of posterior pituitary extracts containing both the antidiuretic and the vasopressor principle is due to the pressor activity. The action of the antidiuretic principle on the urine flow of anaesthetised rabbits depends on the osmotic pressure of the urine

elaborated and this in turn on the dose of anaesthetic (urethane) used. Posterior pituitary extracts retain a pronounced antidiuretic action above an osmotic pressure equiv. to  $\Delta = -0.360$  and fail to decrease the urine flow at f.p. vals. below  $\Delta = -0.800$ .

J. A. C.

**Antidiuretic substance in urine in relation to normal and toxæmic pregnancy.** V. I. KRIEGER and T. B. KILVINGTON (Med. J. Austral., 1940, I, 575—585).—The estimation of the antidiuretic potency of urine concentrates, after biological assay by Burn's method, by measurement of the total effect instead of the time taken to excrete half the vol. of ingested water, is described. A pituitary-like substance inhibiting water diuresis was found in small amounts in concentrates of the urine of some non-pregnant women and frequently in larger amounts in concentrates of the urine of normal pregnant women. Preps. from urine of pre-eclamptic and eclamptic patients frequently contained large amounts. The max. concn. was observed at the height of toxæmia, when albuminuria, oliguria, oedema, and raised blood pressure were present. Decrease in oedema and increase in urinary excretion were accompanied by a sharp decrease in the diuretic potency of urine concentrates.

F. S.

## (xii) REPRODUCTION.

**Hormones and undescended testis.** J. A. EISENSTAEDT, M. APPEL, and M. FRAENKEL (J. Amer. Med. Assoc., 1940, 115, 200—204).—In 7 cases of undescended testis who had received over 6000 rat units of gonadotrophic hormone, operation subsequently showed decrease in size of testis and profuse adhesions between the cord and surrounding fascia and muscle. Gonadotrophic hormone produced atrophy in cryptorchid testes in rats.

C. A. K.

**Atrophy of testis after removal of rectum.** G. SOMMER (Beitr. klin. Chir., 1939, 170, 457—465).—Atrophy of testis is attributed to injury of the sacral autonomic nervous system.

H. H. K.

**Development of testicle cells in tissue culture.** T. GOTO (Jap. J. exp. Med., 1940, 18, 77—88).—Testicular extract accelerates the growth of testicular parenchymatous cells more than other organ extracts, but not of fibroblasts or wander cells. The growth-promoting action of testis extract depends on a sp. property of testis cells.

C. J. C. B.

**Treatment of impotence by male sex hormone.** C. D. CREEVY and C. E. REA (Endocrinol., 1940, 27, 392—394).—10—25 mg. of testosterone propionate 3 times weekly had no effect on 12 patients who had no demonstrable physical deficiency.

V. J. W.

**Response of testis to small doses of testosterone propionate.** H. S. RUBINSTEIN and A. A. KURLAND (Endocrinol., 1940, 27, 461—462).—Injections of 5  $\mu$ g. daily in rats causes results similar to those previously (A., 1940, III, 734) reported for doses of 10  $\mu$ g.

V. J. W.

**Implantation of crystalline testosterone in monkey.** S. A. VEST, J. E. DREW, and O. R. LANGWORTHY (Endocrinol., 1940, 27, 455—460).—1.4—4.7 mg. are absorbed daily from an implanted



pellet, and cause an increase in wt. of accessory sexual organs comparable with that caused by larger injections of the same substance. V. J. W.

**Testosterone propionate and premenstrual tension.** R. B. GREENBLATT (J. Amer. Med. Assoc., 1940, 115, 120—121).—Testosterone propionate relieved 2 cases of severe premenstrual tension and reduced the accompanying hypermenorrhœa.

C. A. K.

**Differentiation of sex in *Opossum* and its modification by testosterone propionate.** R. K. BURNS (J. Morph., 1939, 65, 79—119).—The response of proper male characters to androgenic stimulation always markedly exceeds the similar response of homologous characters in the female. Conversely (in response to the feminising effect of the hormone) the same size difference is noted in the reaction of female parts in female subjects as compared with their male homologues. In spite of the striking character of the modifications induced by hormone treatment, there is still manifest the important factor of genetic constitution, limiting the sp. response in a quant. way though not qualitatively.

J. D. B.

**Sex differentiation during early female stages of *Opossum* and comparison of anatomical changes induced by male and female sex hormones.** R. K. BURNS (J. Morph., 1939, 65, 497—535).—A continuation of the work reported in the preceding abstract.

J. D. B.

**Clinical experience with diacetylstilbœstrol (estilbin).** S. FELDING and E. MOLLER-CHRISTENSEN (Acta obstet. gynec. scand., 1939, 19, 337—344).—1 mg. of diacetylstilbœstrol, 2 to 3 times a week, helped most of patients with ovarian hypofunction and hypoplasia of the uterus. In one sixth of the patients it caused nausea and vomiting 4—5 hr. after injection.

M. K.

**Evaluation of colorimetric and biological methods for determining urinary androgens.** D. G. DRIPS and A. E. OSTERBERG (Endocrinol., 1940, 27, 345—354).—Extracts were examined by Esting's method and by observation of the epithelial growth produced in the seminal vesicles of immature castrated rats. Concordant results were obtained.

V. J. W.

**Production of persistent changes in genital organs of immature female rats treated with testosterone.** H. SELYE (Endocrinol., 1940, 27, 657—660).—The genital atrophy and renal hypertrophy previously described (A., 1940, III, 734) persist for at least 1 month after cessation of treatment although by this time body-wt. is equal to that of controls.

V. J. W.

**Androgen assays of normal and pathological urines.** E. J. BAUMANN and N. METZGER (Endocrinol., 1940, 27, 664—669).—Steroids are dissolved in pentane, adsorbed on MgO, dissolved in ether, and determined colorimetrically.  $\alpha$  and  $\beta$  compounds are separated by digitonin.  $\beta$  compounds are usually present only in very small amounts, but at 20—27 years they form 15% of total androgens, and in a case of virilism amounted to 40%.

V. J. W.

**Action of androgenic substances on immature female rat and guinea-pig.** J. R. GROOME (Quart. J. Exp. Physiol., 1939, 29, 367—377).—Treatment of the immature female rat for 8 days with 500  $\mu$ g. of testosterone propionate showed on the 9th day abnormal increase in body wt., not due to fat deposits; abnormal presence of Graafian follicles and corpora lutea; hypertrophy of the uterus, preputial glands, and clitoris-like organ; mucification of the vaginal epithelium; no mammary development. In the oöphorectomised guinea-pig, implantation of solid testosterone propionate was followed by increase in body-wt. without fat deposits, hypertrophy of the uterus and clitoris, with formation of horny styles on the latter. The successful grafting of a testis, with simultaneous administration of gonadotrophic hormone, was followed by uterine hypertrophy, with no change in body-wt. or clitoris length. T. S. G. J.

**Peroral use of methyltestosterone in testicular deficiency.** E. P. McCULLAGH (Cleveland Clin. Quart., 1940, 7, 226—230; cf. A., 1939, III, 755).—Report of a case of eunuchoidism treated with 75 mg. daily. Coincident with sexual improvement there were increase in wt. (188—214 lb. in 23 days) and increased basal metabolic rate (from -20 to -4). There was no increase in urinary androgens, indicating that metabolism of methyltestosterone differs from that of testosterone propionate.

F. S.

**Causation of singing in female canaries by male sex hormone.** H. E. VOSS (Endocrinol., 1940, 22, 399—402).—Repeated intramuscular injections of testosterone propionate (total dose up to 1.65 mg.) caused female canaries to sing.

A. S.

**Effect of testosterone propionate on development of tuberculosis in immature male guinea-pig.** W. H. CARNES and G. R. BISKINS (Johns Hopkins Hosp. Bull., 1940, 66, 297—312).—Subcutaneous implants of testosterone propionate had no effect on the extent of distribution or character of the lesions in tuberculosis in guinea-pigs, nor on the degree of skin sensitivity to tuberculin.

T. F. D.

**Feminisation and demasculinisation of 17-year-old girl by injections of stilbœstrol.** H. LISSER (Endocrinol., 1940, 27, 385—386).—A case report.

V. J. W.

**Effects of synthetic androgens and œstrogens on pituitary, prostate, and seminal vesicles in castrated rat.** M. SASAKI (Japan. J. Med. Sci., IV, 1940, 12, Proc., 32).—4 synthetic androgens (testosterone, androstenedione, *trans*-dehydroandrosterone, androstenediol), 3 œstrogens (anol, triphenylethylene, stilbene), and œstrone were studied. The increase in the wt. of pituitary after castration was reduced after administration of 2 mg. of the drugs except œstrone, which caused a further increase. The wt. of prostate and seminal vesicles decreased in the castrated animals and recovered after treatment except in the case of stilbene. œstrone was more effective than testosterone and androstenedione. Among the androgens employed, testosterone and androstenedione had a stronger action than *trans*-dehydroandrosterone and androstenediol. Changes in the distribution of cells of anterior pituitary after



castration were corr. after most of the drugs examined. Testosterone was strongest in its effect.

H. H. K.  
**Renal hypertrophy in mice receiving oestrogens and androgens.** C. A. PFEIFFER, V. M. EMMEL, and W. U. GARDNER (Yale J. Biol. Med., 1940, 12, 493—501).—Administration of a total of 66.4 µg. of oestradiol dipropionate or oestradiol benzoate to male mice in 30 days caused a 0.7—3.7% increase in kidney wt. 5 µg. of testosterone and 5 µg. of testosterone propionate over the same period gave increases of 15.6% and 35%, respectively. Combinations of oestrogens and androgens in the same doses gave increases up to 56%. The enlargement of the kidneys appeared to be due to hypertrophy with no indication of hyperplasia. (7 photomicrographs.)

F. S.  
**Oestrogens and testicular tumours in mice.** C. W. HOOKER, W. U. GARDNER, and C. A. PFEIFFER (J. Amer. Med. Assoc., 1940, 115, 443—445).—Oestradiol benzoate produced a metastasising interstitial cell tumour of the testis in a mouse of the A strain and stilbœstrol produced a similar but non-metastasising tumour in another mouse.

C. A. K.  
**Influence of reproductive hormones on motility of Fallopian tube. Action of corpus luteum hormone.** A. BINDER (Arch. Gynäk., 1939, 168, 744—753).—Spontaneous contractions of Fallopian tube of rabbits at puberty were inhibited by preliminary treatment of the animals with corpus luteum hormone (2 × 50,000 units), or by adding 0.4 mg. of progesterone (in aq. solution) *in vitro* to the isolated surviving organ.

M. K.  
**Influence of diethylstilbœstrol on spontaneous activity of male rats.** R. G. HOSKINS and R. SMALL (Endocrinol., 1940, 27, 452—454).—0.1—0.5 mg. 3 times a week caused marked increase in activity in 11—18-months-old male rats, together with some loss of wt. (cf. A., 1939, III, 982; 1940, III, 654).

V. J. W.  
**Biological assay of stilbœstrol.** V. L. KOENIG and R. G. GUSTAVSON (J. Pharm. Exp. Ther., 1940, 69, 355—358).—Stilbœstrol was assayed against œstrone in ovariectomised rats. Stilbœstrol in oil (single injection) was 3 times as active as œstrone, in aq. solution (multiple injections) 1½ times.

E. M. S.  
**Menstrual disorders treated with follicular hormone.** H. ANKER (Acta obstet. gynec. scand., 1939, 19, 9—27).—Large doses of follicular hormone (10,000—50,000 r.u. per injection) were given in 7 cases of menorrhagia, including 6 of juvenile type. A regular cycle developed in 2 cases, in 3 others the hæmorrhages decreased, in 2 menorrhagia continued, but was diminished. Curettage of 3 of the juvenile cases showed glandular hyperplasia of the endometrium, which is attributed to a protracted influence of the corpus luteum hormone rather than to insufficient corpus luteum function. Three of 5 cases of secondary amenorrhœa or oligomenorrhœa reacted by hæmorrhages to treatment with folliculin or folliculin plus corpus luteum hormone; the rest showed improvement of infantile symptoms.

**Investigations of newer sex hormone preparations.** R. T. FRANK, M. A. GOLDBERGER, and G. FELSHIN (Endocrinol., 1940, 27, 381—384).—1 mg. daily of stilbœstrol by mouth was of benefit to 29 out of 37 menopausal patients. Pregneninolone was given in 1-mg. daily doses for premenstrual pain, and 5—15 mg. for menstrual pain, with benefit in 13 out of 20 cases. Concentrates of pregnant mare serum intravenously failed to cause ovulation, in a dosage of 120 Upjohn units, in 7 cases where the ovaries could be examined in a laparotomy.

V. J. W.  
**Isolation of  $\Delta^{5:7:9}$ -œstratrien-3-ol-17-one from urine of pregnant mares.** R. D. H. HEARD and M. M. HOFFMAN (J. Biol. Chem., 1940, 135, 801—802).—The *hydroxyketone*, m.p. 138—139.5°,  $[\alpha]_D^{25} +59^\circ$ , ultra-violet absorption max. at 269.5 (ε 345) and 278 mµ. (ε 240) (*acetate*, m.p. 158°; *oxime*, m.p. 195—197°), has been isolated from the non-phenolic extract of the urine of pregnant mares.

H. G. R.  
**Stilbœstrol.** C. M. MACBRYDE, H. FREEDMAN, E. LOEFFEL, and D. CASTRODALE (J. Amer. Med. Assoc., 1940, 115, 440—443).—Stilbœstrol gave excellent subjective relief to 35 of 56 hypogonad women and partial relief to 17. Intramuscularly it is twice as potent as œstrone and by mouth it is as potent as œstrone given intramuscularly. Intramuscular stilbœstrol is  $\frac{1}{3}$ — $\frac{1}{2}$  as potent as oestradiol benzoate. Stilbœstrol is about 50—66% as active by mouth as by injection. 9 patients (16%) had nausea or vomiting which was usually eliminated by reduction of dosage. There were no serious toxic signs and studies of liver function (bromsulphaleïn and hippuric acid synthesis tests) showed no abnormalities.

C. A. K.  
**Effect of  $\alpha$ -œstradiol benzoate on skeletal development of immature rats.** J. O. ELY and R. L. PHILLIPS (Endocrinol., 1940, 27, 661—663).—Total doses up to 250 µg. had no effect on bony growth though causing marked genital changes.

V. J. W.  
**Comparative œstrogenic potency of diethylstilbœstrol, œstrone, oestradiol, and œstriol.** C. W. SONDERN and J. L. SEALEY (Endocrinol., 1940, 27, 670—672).—Assayed by oral administration and vaginal smear, the relative potencies of stilbœstrol, œstrone, oestradiol, and œstriol were 1 :  $\frac{1}{55}$  :  $\frac{1}{20}$  :  $\frac{1}{10}$  in spayed mice and 1 :  $\frac{1}{50}$  :  $\frac{1}{55}$  :  $\frac{1}{30}$  in rats. Subcutaneously stilbœstrol and œstrone were equally active. In mice, subcutaneous œstrone is 4 times as effective as oral stilbœstrol, but in rats the effectiveness is the same.

V. J. W.  
**Relative potency of several œstrogenic compounds tested on chicks of both sexes.** S. S. MUNRO and I. L. KOSIN (Endocrinol., 1940, 27, 687—692).—10 daily injections of 0.01 mg. of oestrogens were made, after which the gonads, oviducts, adrenals, and combs were weighed. Order of increasing effect on the oviduct is œstrone, oestradiol, oestradiol benzoate, and oestradiol dipropionate. In females body and comb wt. were not affected. In males they were decreased. Gonad wt. in both sexes, and adrenals in females, were decreased.

V. J. W.  
**Ovarian hormone therapy in functional menorrhagia.** E. J. RYAN (Cleveland Clin. Quart.)



1940, 7, 197—202).—Report of a case in which normal bleeding was restored by intermenstrual injections of 8000 units of oestradiol benzoate and 2 i.u. of progesterone. (2 photomicrographs.) F. S.

**Periodic changes in blood-oestrogen.** H. LAMPART (Endocrinol., 1940, 27, 673—680).—Mathematical analysis of the view that oestrin production and gonadotrophic hormone production react on each other and cause the reproductive cycle shows that this theory is inadequate to account for the fluctuations in blood-oestrogen. V. J. W.

**Fat: an index of oestrogen and progesterone activity in human endometrium.** J. GILLMAN (Nature, 1940, 146, 402).—Scharlach R staining fat in the glandular epithelium is scarce in the oestrogen phase, plentiful in the late progesterone phase. On the first day of menstruation the fat may extend throughout the cytoplasm, but some of the surviving cells retain their basal fat, which is reduced in quantity. Basal fat persists in the glandular epithelium until the 4th or 5th month of gestation, and in women under progesterone treatment in the second half of the cycle. Excess of oestrogen with insufficient progesterone leads to an extraordinary accumulation of stromal fat, and absence of uterine fat. Basal fat in uterine glands is a test for optimal quantities of progesterone. E. R. S.

**Restoration of ovulatory cycles and corpus luteum formation in persistently oestrous rats by progesterone.** J. W. EVERETT (Endocrinol., 1940, 27, 681—686).—Ovulation was caused by 0.25—1 mg. in rats of a persistently oestrous strain. V. J. W.

**Androgenicity of progesterone.** R. R. GREENE, M. W. BURRILL, and D. M. THOMSON (Endocrinol., 1940, 27, 469—471).—2 mg. daily subcutaneously has effects on castrated rats similar to those already described (A., 1939, III, 483) for doses of 3 or 6 mg. Intraperitoneal administration is much less effective. V. J. W.

**Determination of sodium pregnanediol glucuronide in urine.** G. Y. SHINOWARA and H. L. REINHART (Amer. J. Clin. Path. Tech. Suppl., 1940, 4, 77—81).—A modification of Venning's method is described. C. J. C. B.

**Action of anhydrohydroxyprogesterone.** R. WENNER (Schweiz. med. Wschr., 1940, 70, 417—419).—Anhydrohydroxyprogesterone given by mouth has  $\frac{1}{8}$ — $\frac{1}{10}$  the activity of injected progesterone in the rabbit. Menstruation was produced in ovariectomised women by oral administration of 220—300 mg. A. S.

**Conversion of testosterone into aetioallocholan-3( $\beta$ )-ol-17-one.**—See A., 1940, II, 329.

**Further experiences with hormone of pregnant mare serum.** S. L. SIEGLER (Endocrinol., 1940, 27, 387—391).—Administration of Upjohn extract, in dosages of approx. 60 units weekly, caused ovulation in women with various menstrual disorders or sterility. Ovulation was evidenced by uterine biopsy, vaginal smears, Na pregnanediol glyconate in the urine, or pregnancy. V. J. W.

**Chorionic gonadotrophic effects on height and osseous development in sexually underdeveloped young boys.** G. B. DORFF (Endocrinol., 1940, 27, 403—410).—Results in 9 cases of total dosages of 22,650—74,200 r.u. of hormone from various sources are reported. V. J. W.

**Effect of combinations of amniotin and progesterone on uterine weights of rats and mice.** L. J. ZELDIS (Amer. J. Physiol., 1940, 129, 539—545).—Mature and immature mice and mature rats were injected daily for 5 days with 1 or 2 i.u. of amniotin plus 25—800  $\mu$ g. of progesterone. On autopsy both mature and immature mice receiving more than 25  $\mu$ g. of progesterone + amniotin showed less increase in uterine wt. than those receiving amniotin alone. In rats, those receiving more than 25  $\mu$ g. of progesterone daily showed heavier uteri than those receiving amniotin alone. It is suggested that the qual. response is similar in both species, the difference being quant. M. W. G.

**Effect of gonadotrophic hormone treatment in amenorrhœa.** E. RYDBERG and E. OSTERGAARD (Acta obstet. gynec. scand., 1939, 19, 222—245).—Hormone analyses made in 42 patients with secondary amenorrhœa and in 6 with primary amenorrhœa 1—2 weeks before treatment generally showed subnormal excretion of oestrin and normal or reduced excretion of gonadotrophic hormone. A few patients had normal excretion of both oestrin and gonadotrophic hormone; some showed abnormally high vals. for gonadotrophic hormone (so-called castrate type, which was refractory to the treatment). 21 cases of secondary amenorrhœa lasting from 4 months to 4 years were treated with "physex," a chorionic hormone prep. extracted from human pregnancy urine (500 mouse units twice a week over a prolonged period or 1000 m.u. a day for 7—8 days). 9 of the patients gave positive reaction with bleeding and secretory change of endometrium; 8 of these continued to menstruate spontaneously. 27 cases of secondary amenorrhœa were treated with "antex," extracted from pregnant mare serum, and then with physex (10,000 mouse units of each drug in the course of 14 days). 23 patients reacted with true menstrual bleeding about 3 weeks after the first injection. Three cases of primary amenorrhœa reacted positively to antex-physex treatment; the 3 others were of the castrate type. All patients with positive reaction to antex-physex treatment showed increased excretion of oestrin during treatment. M. K.

**Quantitative determination of gonadotrophic content of urine in case of hydatid mole.** M. WINGE (Acta obstet. gynec. scand., 1939, 19, 186—194).—Two months after removal of the mole the gonadotrophic content increased from 9000 to 450,000 r.u. per 1000 c.c. of urine, but dropped spontaneously during the following 2 months to 10 r.u. The val. of the test varies considerably. M. K.

**Hormonal action of ovum.** E. KLARE (Z. ges. exp. Med., 1940, 107, 290—305).—Fish eggs contain a substance which produces abortion in pregnant mice and rabbits. One mouse unit produces abortion within 10 hr. The substance is extracted in alkaline



alcohol and dialysed and is pptd. in HCl-alcohol; it is insol. in ether or  $\text{CHCl}_3$ ; it is inactivated by trypsin, but is thermostable. Extracts of identical activity were occasionally obtained from human urine during menstruation. A. S.

**Biological properties of highly purified gonadotrophin from pregnant mare serum.** H. H. COLE, R. I. PENCHARZ, and H. GOSS (*Endocrinol.*, 1940, **27**, 548—553).—Reactions in the female rat to the purified product (cf. A., 1940, III, 404) were indistinguishable from those caused by untreated serum. V. J. W.

**Retardation of mammary involution in mouse by irritation of the nipples.** C. W. HOOKER and W. L. WILLIAMS (*Yale J. Biol. Med.*, 1940, **12**, 559—564).—On the 4th day post-partum 15 lactating mice were isolated from their young and spirits of turpentine was applied to all the nipples twice daily for 7 days. There was marked retardation of mammary involution in 13 cases, the average stage of involution being that seen on the 4th day after weaning. In 6 there had been almost no glandular regression. Turpentine applied to the back and water applied to the nipples had no effect. (2 photomicrographs.) F. S.

**Nasogenital relationship. II. Pseudopregnancy following extirpation of sphenopalatine ganglion in rat.** S. ROSEN, M. C. SHELESNYAK, and L. R. ZACHARIAS (*Endocrinol.*, 1940, **27**, 463—468).—This operation was followed by a prolonged luteal phase (average 13 days) similar to that caused by anæsthesia of the nasal mucosa (cf. A., 1938, III, 910). No such result followed removal of the olfactory bulbs. V. J. W.

**Visscher-Bowman pregnancy test.** B. OŠTÁDAL (*Zentr., Gynäkol.*, 1937, **61**, 266—268; *Chem. Zentr.*, 1937, i, 3528).—Neither the specificity nor the reliability of the test is confirmed. Positive results are dependent on the presence of carbohydrates and on the concn. of the urine. The accuracy of the test is approx. 88%, but results are difficult to classify. A. G. P.

**Positive Friedman reaction in case of corpus luteum cyst.** B. HEIBERG (*Acta obstet. gynec. scand.*, 1939, **19**, 176—185).—In a 25-year-old woman with symptoms of extra-uterine pregnancy the Friedman test was positive. Laparotomy revealed a corpus luteum cyst, but no signs of pregnancy. Rate of metabolism was increased. M. K.

**Hyperemesis gravidarum.** E. SCHJÖTT-RIVERS (*Acta obstet. gynec. scand.*, 1939, **19**, 290—336).—Vomiting occurred 3 times as frequently in primigravidae as in multigravidae. The average loss of Cl' in the vomit was 0.5—1 g. in 24 hr. In severe cases hypochloræmia was regularly found (lowest val. was 259 mg.-% serum-Cl). In some patients serum-Cl vals. remained normal, while in others -Cl was very low even after vomiting had ceased. An acidity was frequently found, due to neutralisation by regurgitation of alkaline duodenal content into the stomach. There was no correlation between serum-Cl and non-protein-N vals. In 80% of the cases hyperurobilinuria was found. Icterus is a frequent complication in the severe form. Tachycardia occurs in

$\frac{2}{3}$  of the cases. Post-mortem findings are mainly liver changes, similar to those in acute yellow atrophy, and degenerative kidney changes. M. K.

**Pathogenesis and treatment of hyperemesis gravidarum.** E. BRANDSTRUP (*Acta obstet. gynec. scand.*, 1939, **19**, 376—446).—Administration of large doses of adrenal cortex (20—30 c.c. daily, in 2—3 intramuscular or intravenous injections) caused improvement in 7 of 11 cases of hyperemesis, but aggravated the condition of the rest. Gonadotrophic content of urine and blood was normal. Urinary cestrin content was low. No parallelism was found between the clinical condition of the patient and hormonal vals. 40 fatal cases are reported. M. K.

**Contraception.** M. P. WARNER (*J. Amer. Med. Assoc.*, 1940, **115**, 279—285).—Data of 5000 cases are reported. C. A. K.

**Effect of ovariectomy and hypophysectomy on gestation in snakes.** H. J. CLAUSEN (*Endocrinol.*, 1940, **27**, 700—704).—Removal of ovaries early in gestation causes resorption of embryos. In the middle period it causes their death, and near the end is without effect. Hypophysectomy early in gestation causes resorption; in middle or late stages it causes death of the embryos. Progesterone (1 mg. twice a week) has no effect. V. J. W.

**Slow vaginal potentials.** R. B. BOURDILLON and O. M. LIDWELL (*J. Physiol.*, 1940, **98**, 480—486).—Close synchronism of contraction and potential fall is obtained with the active electrode in the vagina (rabbit), or on the skin of the abdomen, or on the thigh. Some potential curves are shown from a Ag electrode in an isolated vagina contracting in paraffin; these show a max. negativity exceeding 34 mv. Contraction waves in unstriped muscle are accompanied by negative potential waves lasting for a no. of sec. (cf. A., 1940, III, 212). J. A. C.

**Abdominal pregnancy.** E. BERGENFELDT (*Acta obstet. gynec. scand.*, 1939, **19**, 274—289). M. K.

**Endometriosis of sigmoid colon.** H. JOSEFSSON (*Acta obstet. gynec. scand.*, 1939, **19**, 256—273).—Pre-operative X-ray examination of a 42-years-old woman revealed well-circumscribed organic stenosis in the sigmoid colon, in which mucous membrane was intact. Another X-ray examination made during menstruation showed a much narrower lumen than before. Clinical symptoms were characterised by their menstrual periodicity. M. K.

**Glycogen content of human uterine mucosa.** B. ZONDEK and L. STEIN (*Endocrinol.*, 1940, **27**, 395—399).—During follicular maturation the mucosa contains 0.1% of glycogen. During the luteal phase it contains 0.25—0.66%. In certain cases of sterility this val. remained at 0.1% and may be a contributory factor. V. J. W.

**Endometriosis externa.** A. TURUNEN (*Acta obstet. gynec. scand.*, 1939, **19**, 477—541).—A review. M. K.

**Temperature and electric potentials in menstrual cycle.** D. S. BARTON (*Yale J. Biol. Med.*, 1940, **12**, 503—523).—There was no direct correlation



between the cyclic temp. phenomenon and the occurrence of significant peaks of electric potential in a group of 14 women for a total of 72 cycles. The greatest no. of significant peaks occurred at mid-cycle, i.e., at the beginning of the premenstrual temp. wave. F. S.

**Adrenaline, eserine, and guinea-pig's uterus.** W. T. AGAR (J. Physiol., 1940, 98, 492—502).—The inhibition and relaxation which adrenaline causes in the isolated uterus of the infantile guinea-pig is modified, on prolonged treatment of the uterus with eserine, to a diphasic response in which inhibition and relaxation is followed by contraction. The same response to adrenaline is obtained after treatment of the uterus with a prostigmine-like substance. Some procedures which increase the irritability of the uterine muscle and its sensitivity to acetylcholine inconstantly lead to the appearance of a diphasic response to adrenaline. The diphasic modification of the action of adrenaline is not altered by atropine or ergotoxin. J. A. C.

**Histopathology of defective scar of high Cæsarian section and mechanism of subsequent rupture of uterus.** N. W. ELTON (Amer. J. clin. Path., 1940, 10, 511—526).—The formation of a defective Cæsarian section scar is attributed to a play of stresses in the suture line above and below a neutral point in the uterine wall, characteristic of a contracting ring or hollow sphere of soft tissue, in which the resultant of the forces tends to produce eversion of the wound through retraction of the outer layers and compression of the inner layers. The pathology of these defects is that of sinus and fistula. Suturing only of the outer layer after adequate undercutting of the side walls of the incision as a part of the operation would relieve the compression of the inner layers, facilitate contraction, thereby controlling hæmorrhage, reduce the tension on the outer layers, and promote better coaptation and healing during involution. Undercutting of the wound in addition to simple coaptation by a simple row of interrupted sutures, not placed deeper than the neutral level, and tied externally, is suggested as an innovation in technique. C. J. C. B.

**Chromatin in nuclei of endometrium from monkeys under experimental conditions.** R. CLEVELAND (Endocrinol., 1940, 27, 580—591).—Histology of endometrium is described with photomicrographs for castrate controls and for such castrates treated with 100 r.u. daily of oestrogen, or with 1 rabbit unit of progesterone, or with both in succession. V. J. W.

**Röntgenological study of arterial supply in normal and diseased uterus.** K. ИТОИ (Nagoya J. med. Sci., 1939, 13, 1—60).—Both ascending and descending branches of the uterine artery have horizontal branches passing around the anterior and posterior uterine walls; the lower incline downwards before reaching the midline. The uterine mucosa is fed by branches which arise from the above secondary vessels. Changes taking place in neoplastic disease including endometriosis and hydatidiform mole are described. E. M. J.

### (xiii) DIGESTIVE SYSTEM.

**Partition of nitrogen in submaxillary saliva evoked by chorda tympani stimulation in cat.** G. W. STAVRAKY (Amer. J. Physiol., 1940, 129, 532—545).—No exhaustion of the non-protein-N of the submaxillary saliva occurs during prolonged stimulation of the chorda tympani in the cat; its concn. is not affected by the strength of the stimulus or the rate of secretion. The concn. of protein-N varies with the strength of the stimulating current; the rate of secretion shows a diminution during prolonged stimulation. During very prolonged strong stimulation with an induction current of const. strength a steady output of protein-N is maintained. M. W. G.

**Congenital atresia of œsophagus.** W. ADDEY (Brit. J. Radiol., 1940, 13, 179).—Congenital atresia of the œsophagus was found by radiological examination in a 13-day-old baby. H. H. K.

**Dysphagia with disorders of heart and great vessels.** A. L. BLOOMFIELD (Amer. J. med. Sci., 1940, 220, 289—299).—Dysphagia may occur in connexion with the following disorders of the heart and aorta: dilated left auricle, pericarditis, saccular aneurysm, dissecting aneurysm, and anomalous aortic arch. The literature is reviewed and a case of dysphagia associated with compression of the œsophagus by an enlarged left auricle is reported. C. J. C. B.

**Congenital pyloric stenosis without vomiting.** G. BEXELIUS (Acta paediatr. Stockh., 1939, 25, 22—27).—Report of a case in a 4½-month-old boy. M. K.

**Action of acetylcholine on movement of rabbit's stomach *in situ*.** E. YAMAO (Japan. J. Med. Sci., IV, 1940, 12, Proc., 31—32).—Intravenous injection of acetylcholine produced a slight increase followed by sudden decrease in stomach movement. After removal of the adrenal glands no relaxation occurred. H. H. K.

**Gastric secretion in diseases of the gall bladder.** L. VON MURÁNYI (Beitr. klin. Chir., 1939, 170, 513—539).—31% of patients with gall-bladder stones had diminished, 31% increased, gastric acidity. 24% with obstruction of the cystic duct showed decreased, 19% increased, acidity. 8% with acute inflammation of the gall bladder showed hypo-, 58% hyper-acidity. 80% with jaundice had hypo- or an-acidity, and 20% showed normal vals. H. H. K.

**Effect of intravenous administration of histamine on gastric acids in man.** G. A. PETERS and B. T. HORTON (Proc. Staff Mayo Clin., 1940, 15, 545—549).—Continuous intravenous injection of histamine (2.75 mg. of histamine diphosphate to 250 c.c. of saline) in 20 subjects produces a rise in gastric acids except in cases of achlorhydria and pernicious anæmia. The rise in gastric acids is approx. the same at different rates of injection, the max. being reached more quickly with faster rates. The gastric cells react to histamine intravenously over prolonged periods of stimulation. H. H. K.

**Value of thread test for recognition of peptic ulcer.** M. EINHORN (Gastroenterologia, 1939, 64,



65—67).—Einhorn's test was positive in 2 cases with a negative clinical diagnosis, in which the presence of peptic ulcer was later confirmed by X-rays.

H. H. K.

**Acute severe gastro-enteritis as problem of circulation and permeability.** T. KLEEBERG (*Gastroenterologia*, 1940, 65, 149—161).

H. H. K.

**Chronic gastritis and development of gastric cancer.** H. KAPP and B. ILIAN (*Gastroenterologia*, 1940, 65, 137—148).—13% of 157 gastritis patients developed gastric cancer after an average lapse of 12.5 years.

H. H. K.

**Edema of stomach in case of familial Quincke's disease.** K. LUNDBAEK (*Gastroenterologia*, 1940, 65, 131—136).—Edema and hyperæmia of the gastric mucosa were found gastroscopically during an acute gastric attack.

H. H. K.

**Sex incidence of peptic ulcer in children.** H. C. SALTZSTEIN, A. A. FARBMAN, and D. J. SANDWEISS (*Endocrinol.*, 1940, 27, 400—402).—Out of 105 cases in children of 1 to 12, 57 were in boys and 48 in girls. Between 1 and 6 there were 8 boys and 11 girls, and between 6 and 12, 49 boys and 37 girls.

V. J. W.

**Medical treatment of peptic ulcer.** E. SPRIGGS (*Brit. Med. J.*, 1940, II, 39—42, 78—80).—A review.

C. A. K.

**Movements of pouches of stomach of sheep.** A. T. PHILLIPSON (*Quart. J. Exp. Physiol.*, 1939, 29, 395—415).—The reticulo-rumen of the sheep undergoes a regular cycle of contraction of period 50—70 sec. The reticulum undergoes a 2-stage contraction, the second stage being superimposed on the first, relaxation occurring between the stages. The contraction cycle of the rumen follows the 2-stage contraction of the reticulum in a regular manner, either 2 or 4 contractions of the former for every 2-stage contraction of the latter. The contractions are alternately in the dorsal and the ventral sac of the rumen. Changes in the shape of the omasum may be seen radiographically; the passage of masses of Ba from the omasum to the abomasum follows contraction of the reticulum, while quickly-moving trickles of Ba may occur at any time. The body of the abomasum is lifted anteriorly with every contraction of the reticulum and its contents are moved towards the pyloric antrum with the regular initiation of peristalsis. Ba appears in the duodenum within 5 min. of giving a Ba meal to a lamb from a bottle. The introduction of fluid directly into the abomasum temporarily increases the period of the reticular cycle; sufficient fluid abolishes the contractions for a time. The application of direct pressure inside the abomasum by inflating a balloon prevents the contractions of the reticulum as long as the pressure is maintained. This suggests that food passes to the omasum and abomasum during every contraction of the reticulum and that the reticulum is the chief organ for the propulsion of food through the stomach.

T. S. G. J.

**Permanent stomach fistulæ in ruminants.** A. T. PHILLIPSON and J. R. M. INNES (*Quart. J. Exp. Physiol.*, 1939, 29, 333—341).—A technique and

apparatus for making permanent rumen and abomasal fistulæ in sheep are described.

T. S. G. J.

**Duodenal ulcer as industrial disease.** H. KAPP (*Gastroenterologia*, 1939, 64, 290—298).—A case of chronic duodenal ulcer is reported which developed following a burn. Duodenal ulcers occur frequently in patients suffering from chronic Pb poisoning.

H. H. K.

**Effect of depancreatization and ligation of pancreatic ducts on blood- and liver-lipins of dogs.** S. H. RUBIN and E. P. RALLI (*Amer. J. Physiol.*, 1940, 129, 578—584).—The accumulation of fat in the liver of depancreatized and pancreatic-duct-ligated dogs is accompanied by a marked fall in plasma-lipins. The ratio of free/total plasma-cholesterol rises above normal vals., but may recede to levels which are within normal limits. Little or no change occurs in the red blood cell lipins.

M. W. G.

**Evaporated milk in infant feeding.** K. SCHEER (*Arch. Kinderheilk.*, 1939, 117, 180—194).—Observations in 75 sucklings and infants during one year showed that evaporated milk, to which a sufficient supply of vitamin-C and -D was added, can fully replace fresh or pasteurised cow's milk.

M. K.

**General fluid-circuit theory of active chloride absorption.** H. C. PETERS (*Bull. Math. Biophys.*, 1940, 2, 141—143).—The theory developed to explain active intestinal absorption of Cl' (Ingraham *et al.*, A., 1938, I, 136; III, 584) is modified to include diffusion and secretion of Cl' and osmosis.

F. O. H.

**Absorption of water from colon of rat under urethane anæsthesia.** B. L. ANDREW, J. N. DAVIDSON, and R. C. GARRY (*J. Physiol.*, 1940, 98, 487—491).—The colon, although impermeable to monosaccharides, is freely permeable in both directions to water mols. In one of the methods employed D<sub>2</sub>O was used as an index of water exchange.

J. A. C.

**Relation of age, nutrition, and hypophysectomy to absorption of glucose from gastro-intestinal tract in rat.** R. A. PHILLIPS and H. GILDER (*Endocrinol.*, 1940, 27, 601—604).—Intestinal absorption of glucose decreases with age, becoming const. at a wt. of about 250 g. Hypophysectomised rats absorb at this const. rate much earlier, but their absorption can be brought to normal by forced feeding.

V. J. W.

**Glucose treatment of diarrhœa in childhood.** N. MALMBERG (*Acta paediatr. Stockh.*, 1939, 25, 181—188).—A review.

M. K.

**Treatment of intestinal diseases with yatren.** SILVA-MELLO (*Gastroenterologia*, 1939, 64, 93—144).—A discussion.

H. H. K.

**Congenital malformations of intestinal tract.** V. KOSZLER (*Arch. Kinderheilk.*, 1939, 116, 151—172).

M. K.

**Extrarenal azotæmia in gastro-intestinal hæmorrhage.** I. General and clinical consideration. II. Experimental observations. D. H. KAUMP and J. C. PARSONS (*Amer. J. digest. Dis. Nutr.*, 1940, 7, 189—194).—In dogs the effects of



spontaneous gastro-intestinal hæmorrhage were paralleled by removing blood from the heart and placing it in the gastro-intestinal tract with a stomach tube. An extrarenal azotæmia is produced which is characterised by 2 rises in the blood-urea val., the first after 12—24 hr. and the second after 42—48 hr. When fasting and non-fasting animals are used and when one group loses blood only and the other is fed blood only, this double curve can be dissociated into its component factors. The initial rise is due to feeding of blood and the secondary rise to loss of blood. Both elevated vals. fall within 5—12 hr. and both are accentuated if a high-protein diet is allowed. The blood-urea rise is due to assimilation of the ingested protein and digestion products of the whole blood in the gastro-intestinal tract and to an increase in protein catabolism. Hypochloræmia, hæmoconcn., and dehydration are not significant factors.

C. J. C. B.

**Allergic intestinal bleeding in newborn; a clinical syndrome.** M. I. RUBIN (Amer. J. med. Sci., 1940, 200, 385—390).—A well-defined clinical syndrome, in which the occurrence of intestinal bleeding is a prominent feature, is described in infants 3—5 weeks of age who developed an allergic sensitivity to cow's milk. Colic is a const. symptom. The intestinal disturbances disappeared within 48 hr. after the removal of cow's milk from the diet. In all except 1 case goat's milk was well tolerated.

C. J. C. B.

**Intestinal motility [in man].** G. G. KOPSTEIN (Radiology, 1940, 35, 39—44).—60—70 g. of BaSO<sub>4</sub> in water suspension were given in the morning to 126 healthy young individuals and the cæcal and total emptying time of the large bowel determined repeatedly. Emptying of the cæcum occurred within 24 hr. in 88—92%, the remainder emptied in 48 hr. Individual variations in these times were observed when examined a few weeks or months later. Total emptying time was 24 hr. in one case, 48 hr. in 28.5%, 72 hr. in 49—53%, 96 hr. in 16.5—13.5%, and 120 hr. in 4% of cases. No relation between long cæcal emptying time and total emptying time was found. Extremely high or low cæcum was seen in 8 cases, and mobile cæcum in 5 cases without giving rise to any symptoms or changes in the average emptying times.

E. M. J.

**Enterospasm.** H. STEINDL (Arch. klin. Chir., 1939, 195, 152—160).—A case is reported in a 3-day-old suckling.

H. H. K.

**Genesis of post-operative jejunal ulcer.** S. MIZOGUTI (Arch. klin. Chir., 1939, 195, 118—135).—Damage of blood vessels, nerves, and lymph vessels caused by the operation and local infection at the site of anastomosis are more significant for genesis of post-operative jejunal ulcer than acidity.

H. H. K.

**Colour photography through sigmoidoscope.** Z. BERCOVITZ and C. C. FULLER (Amer. J. digest. Dis. Nutr., 1940, 7, 332).—An instrument is described to photograph in full colour the bowel wall as far up as it can be visualised through the sigmoidoscope.

C. J. C. B.

**Melanosis proctocoli.** H. E. BACON and W. A. H. SCHEFFLER (Gastroenterologia, 1939, 64, 68—73).—11 cases are reported.

H. H. K.

**Parasympathetic drugs in megacolon.** J. L. LAW (J. Amer. Med. Assoc., 1940, 114, 2537—2540).—Acetyl-β-methylcholine bromide was successfully used in the treatment of 6 children with megacolon. 2 were able to discontinue the drug after 3 and 9 months, respectively.

C. A. K.

#### (xiv) LIVER AND BILE.

**Effect of [composition of] medium and of pyrophosphate on respiration of liver.** R. N. FEINSTEIN and F. J. STARE (J. Biol. Chem., 1940, 135, 393—398).—Rat liver, when minced, takes up more O<sub>2</sub> in BO<sub>3</sub><sup>'''</sup> buffer than in unbuffered isotonic or strongly hypertonic aq. NaCl, unbuffered hypertonic aq. KCl, various Ringer-PO<sub>4</sub><sup>'''</sup> and -HCO<sub>3</sub><sup>'</sup> solutions with and without glucose and, when sliced, takes up as much O<sub>2</sub> in BO<sub>3</sub><sup>'''</sup> buffer as in any of the other media, the vals. being approx. 100% greater than those for the greatest O<sub>2</sub> uptake of the minced material. Unbuffered, isotonic aq. NaCl does not support the O<sub>2</sub> uptake of liver slices as well as do BO<sub>3</sub><sup>'''</sup>, PO<sub>4</sub><sup>'''</sup>, and HCO<sub>3</sub><sup>'</sup> media but supports that of minced liver as well as do the other (excepting BO<sub>3</sub><sup>'''</sup>) media. The O<sub>2</sub> uptake of minced and sliced liver is restricted by the hypertonic media. The respiration of slices in unbuffered, isotonic aq. NaCl is not affected by 0.03M-P<sub>2</sub>O<sub>7</sub><sup>'''</sup> but this solution restricts respiration of minced and sliced liver in all the other media except Ringer-HCO<sub>3</sub><sup>'</sup> solution, in which it increases O<sub>2</sub> uptake.

W. McC.

**Factors affecting the oxidation of alanine by liver.** R. J. ROSSITER (J. Biol. Chem., 1940, 135, 431—436; cf. A., 1940, III, 165; Klein, *ibid.*, 161).—The O<sub>2</sub> uptake of a mixture of *dl*-alanine and suspension of minced rat liver is diminished if the rats are on a diet deficient in flavin. When flavin-adenine dinucleotide is added to the mixture, the resulting increase in O<sub>2</sub> uptake is greater with liver from flavin-deficient rats than with livers from adequately fed rats, the uptake being increased almost to normal levels in the former. Administration of desiccated thyroid increases the O<sub>2</sub> uptake of the liver-alanine mixtures. The flavin-adenine dinucleotide content of boiled extracts of the liver is not increased by giving desiccated thyroid and large dietary supplements of riboflavin. The changes in O<sub>2</sub> uptake correspond with changes in *d*-amino-acid oxidase activity.

W. McC.

**Effect of diet on formation of acetaldehyde in liver. II. Starvation, protein-fat feeding, and carbon tetrachloride poisoning in dogs.** K. RI (J. Biochem. Japan, 1940, 31, 215—241; cf. A., 1940, III, 665).—Acetaldehyde formation from fructose, glucose, or lactose in the perfused liver during fasting or feeding with protein-fat diets is less than that with normal diets and is further diminished in dogs poisoned by CCl<sub>4</sub> while on a normal diet. Production of acetaldehyde is greater from fructose than from glucose or lactose. The impaired liver produces more acetaldehyde from glycogen than does the



normal liver. The decrease in acetaldehyde formation from sugars is due to impairment of liver function and not to qual. changes in the perfused blood.

F. O. H.

**Distribution of selenium in plasma- and liver-proteins and its fractionation in tryptic liver digests.** B. B. WESTFALL and M. I. SMITH (U.S. Publ. Health Repts., 1940, 55, 1575—1583).—The distribution of Se in plasma- and liver-proteins of chronically poisoned animals was studied. Se occurred in all the proteins examined, though predominantly in the globulins. Tryptic (and also peptic) digestion of the selenised liver releases about 80% of the Se from its protein combination. The combined Se is not removable by procedures commonly employed for the removal of the histone bases from protein hydrolysates.

C. G. W.

**Comparative examination of liver extracts.** O. SCHALES (Klin. Woch., 1937, 16, 277—278; Chem. Zentr., 1937, i, 3528).—The commercial extract (5 c.c.) is mixed with alcohol 13.5 c.c., cooled in ice (5 hr.), and centrifuged. To the clear liquid are added 63 c.c. of alcohol. After keeping overnight in ice the mixture is again centrifuged and the ppt. is dried ( $P_2O_5$ ,  $H_2SO_4$  in a vac.). The wt. and N content of the residue serve as criteria of the clinical val. of the original extract.

A. G. P.

**Increased serum-phosphatase activity without hyperbilirubinæmia after ligation of hepatic ducts in dogs.** A. B. GUTMAN, B. M. HOGG, and K. B. OLSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 613—617).—Ligature of hepatic ducts in 4 dogs caused in their serum increase of phosphatase but not of bilirubin, and in the urine increase of bilirubin but not of phosphatase.

V. J. W.

**Autolytic cathepsin action of rabbit liver injured by phosphorus or by ligation of bile duct.** T. T. CHEN (Tohoku J. Exp. Med., 1939, 37, 541—549).—Chopped liver was autolysed at 37° in citric acid- $PO_4$  buffer in presence of toluene.  $p_H$ , amino- and residual N were determined after 48 and 96 hr. After subcutaneous injection of 0.02 g. of P per kg. body wt. there is an increase in acidity which is 5 times that in normal liver. After 3 or 4 injections the acidity is reduced but is still above normal. When the bile duct is tied for 3—6 days, the increase in acidity is even greater. Residual N content of autolysate of poisoned liver is above normal.

M. W.

**Heterolytic cathepsin action of rabbit liver injured by phosphorus, chloroform, carbon tetrachloride, or by ligation of bile duct.** T. T. CHEN (Tohoku J. Exp. Med., 1939, 37, 550—567).

M. W.

**Quantitative prothrombin and hippuric acid determinations as sensitive reflectors of liver damage in human subjects.** S. J. WILSON (J. Lab. clin. Med., 1940, 25, 1139—1145).—In 41 patients studied without biliary obstruction or biliary fistulas, the plasma-prothrombin level and the amounts of hippuric acid excreted following the ingestion of a known quantity of Na benzoate (Quick test) reflected most sensitively the existing degree of liver damage. There was no such correlation between these tests

and plasma-fibrinogen, the bromsulphalein dye clearance, or galactose utilisation, either singly or collectively, when all were studied in the same patient.

C. J. C. B.

**Relationship between disturbance of liver function and mental disease.** P. BERKENAU (J. ment. Sci., 1940, 86, 514—525).—The following observations were made on 32 mental patients: van den Bergh reaction, Takata reaction, erythrocyte sedimentation rate, detection of urobilin and of histidine in the urine, Na benzoate detoxication. Abnormal results were obtained more frequently in catatonia and depression with catatonic features than in other psychoses. Hippuric acid excretion after benzoate ingestion was lower in catatonic than in non-catatonic patients (cf. A., 1938, III, 892) (the catatonic patients included manic-depressives and involuntal-depressives).

G. D. G.

**Chemical analysis of liver in case of essential xanthomatosis.** H. WOOD and H. BERNSTEIN (Arch. Path., 1940, 30, 533—534).—The total cholesterol was increased over 7-fold; both the free and ester cholesterol were also increased. The total phospholipins were decreased, the sphingomyelin and lecithin were decreased, the kephalin was increased, and the total of the lipin-fatty acids decreased.

C. J. C. B.

**Effect of long-continued ingestion of oxidised bile acids on the dog and rat [on liver].** A. L. BERMAN, E. SNAPP, A. C. IVY, and A. J. ATKINSON (Amer. J. digest Dis. Nutr., 1940, 7, 280—284).—Various oxidised bile salts, dehydrocholic acid (Decholin), ketocholic acids (Ketochol), oxidised conjugated ox-bile salts (Dechacid No. 14), and oxidised conjugated hog-bile salts (Dechacid No. 22), were administered orally to dogs and rats to determine their toxic effects on the liver. The oral administration of 3 and 5 g. of the oxidised bile preps. daily for 3—7 months to dogs and the feeding of 0.3 g. per kg. daily of these preps. to white rats for at least 1 month resulted in no change in body-wt., no alteration in the normal bromsulphalein excretion test, and no abnormal changes in the concns. of total liver-fat and -glycogen. There were no destructive or degenerative changes in the liver or kidney.

C. J. C. B.

**Osmotic activity changes of serum and salt solutions placed in gall bladder.** J. W. SCHULZE and M. B. VISSCHER (Proc. Soc. Exp. Biol. Med., 1940, 44, 560—563).—When serum of a cat is introduced into its washed-out gall bladder 50—100% disappears and Cl falls 30—40% in 90 min. Osmotic pressure also falls. If an isotonic mixture of NaCl and  $Na_2SO_4$  is used instead of serum 50—75% disappears and Cl falls 25—50%. Osmotic pressure usually rises. Addition of 0.001—0.004M-HgCl<sub>2</sub> prevents these changes.

V. J. W.

## (xv) KIDNEY AND URINE.

**Respiration of kidney cortex in high-potassium-low-sodium Ringer's solution.** A. E. LEWIS and J. Field II (Proc. Soc. Exp. Biol. Med., 1940, 44, 423—424).—There was no significant difference in O<sub>2</sub>



uptake between rat kidney slices in Ringer's solution and in an isotonic solution resembling in electrolyte concn. the serum of adrenalectomised rats.

V. J. W.

**Glomerular filtration rate in infants and children.** H. L. BARNETT (Proc. Soc. Exp. Biol. Med., 1940, 44, 654—658).—Blood-inulin is determined 2 and 3 hr. after injection of 0.15 g. per kg. Inulin clearance is thus determined and is much less in infants under a fortnight old than in older children.

V. J. W.

**Water and electrolyte content of dolphin kidney and extraction of pressor substance (renin).** L. EICHELBERGER, L. LEITER, and E. M. K. GEILING (Proc. Soc. Exp. Biol. Med., 1940, 44, 356—359).—Determinations were made of water, fat, Cl<sup>-</sup>, Na<sup>+</sup>, K<sup>+</sup>, Ca<sup>++</sup>, and Mg<sup>++</sup>, and presence of a pressor substance in extracts was noted.

V. J. W.

**Influence of rate of urine formation on potassium excretion.** V. E. HALL and L. L. LANGLEY (Proc. Soc. Exp. Biol. Med., 1940, 44, 425—427).—Below a flow rate of 0.6 c.c. per sq. m. per min. K clearance falls abruptly. Above this rate it is const.

V. J. W.

**Acute ischaemic necrosis of kidney.** A. PENNER and A. I. BERNHEIM (Arch. Path., 1940, 30, 465—480).—A review of the clinical features of these cases shows that a profound state of shock was present often for days before death occurred. In the absence of evidence of either embolisation or a focus from which emboli could have been discharged it is considered that the vasospasm which occurs in shock is of sufficient intensity and duration to cause these lesions. (13 photomicrographs.)

C. J. C. B.

**Treatment of nephrotic oedema.** A. GOUDSMIT and M. W. BINGER (J. Amer. Med. Assoc., 1940, 114, 2515—2517).—A review.

C. A. K.

**Clinical method for inulin clearance.** A. S. ALVING and B. F. MILLER (Arch. intern. Med., 1940, 66, 306—318).—After intravenous injection of 10 g. of inulin the plasma clearance was measured (cf. A., 1939, III, 540) over many hr. in 2 normal subjects and in 6 cases of renal disease.

C. A. K.

**Intravenous administration of sucrose solutions as means of producing intense diuresis.** H. F. HELMHOLZ and J. L. BOLLMAN (J. Lab. Clin. Med., 1940, 25, 1180—1187).—Diuresis is obtained in rabbits by the intravenous injection of 20% solutions of sucrose; 100 c.c. per kg. of body-wt. injected in 1 hr. produced an excretion of urine 130% of the vol. injected. Hydropic degeneration of the convoluted tubules occurred, and in the next 24—48 hr. there was a marked lowering of the phenolsulphone-phthalein output or temporary anuria developed. That these changes produced no permanent damage was demonstrated by repeated injections of sucrose 5 times each week for as many as 68 injections. Na<sub>2</sub>SO<sub>4</sub>, urea, glucose, and sorbitol similarly injected in solutions of equiv. tonicity produced less diuresis. An intense diuresis was maintained for 6-hr. periods by the continuous intravenous injection of solutions. Prolonged diuresis is safely produced if the sucrose is dissolved in half-strength Ringer's

solution; similar solutions of the other substances are dangerous.

C. J. C. B.

**Urinary excretion of histidine.** R. SAKAGUCHI (J. Biochem. Japan, 1940, 31, 289—302).—The histidine content of human urine, determined by Kurihara's method (A., 1940, III, 779), varies considerably and is of no diagnostic val. for pregnancy or pathological conditions. *l*-Histidine is isolated (up to 86% recovery) from urine as the diflavinate or dihydrochloride. Rabbits excrete histidine only when the liver is damaged by, e.g., P poisoning.

F. O. H.

**Detection of different types of sugar in urine.** G. JOACHIMOGLU and K. PANAGOPOULOS (Praktika, 1936, 11, 229—232; Chem. Zentr., 1937, ii, 113).—Glucose, lactose, galactose, or fructose is identified by correlation of the optical rotation of the urine with its reducing power for Benedict's solution.

A. J. E. W.

**Hitherto unrecognised nicotinic acid derivative in human urine.** V. A. NAJJAR and R. W. WOOD (Proc. Soc. Exp. Biol. Med., 1940, 44, 386—390).—Treatment of a KCl extract of urine with alkali yields a substance sol. in butyl alcohol and giving a bluish fluorescence. Excretion is greatly increased by a dose of 50 mg. of nicotinic acid. It could not be identified but is destroyed by boiling, by alkali at room temp., and by exposure to sunlight.

V. J. W.

## (xvi) OTHER ORGANS, TISSUES, AND BODY-FLUIDS.

**Hepato-renal insufficiency after burns.** K. H. ZINCK (Klin. Woch., 1940, 19, 78—84).—Cases with burns involving 70—90% of the surface of the skin in which death occurred in 7 hr.—26 days showed extensive lesions of the liver and glomerulonephrosis.

M. K.

**Normal ranges of concentration of certain trace metals in biological materials.** R. A. KEHOE, J. CHOLAK, and E. V. STORY (J. Nutrition, 1940, 19, 579—592).—A spectrographic technique for determination of Pb, Mn, Sn, Al, Cu, and Ag is described. Pb, Mn, Cu, and Al occurred in all organs and tissues examined; Sn was present in 80% and Ag in 10—20% of the samples. Normal urine (per l.) and blood (per 100 g.) contain Mn 0.01, 0.015, Al 0.078, 0.013, Cu 0.034, 0.114, Pb 0.027, 0.025, Sn 0.011, 0.012, and Ag 0.0, trace, mg., respectively. Nearly all blood-Mn, -Pb, and -Sn occurs in the formed elements, -Al in the plasma, whilst Cu is divided between the two. The concn. of the metals in daily or weekly samples of urine and blood of individuals varies appreciably. Faecal excretion of the metals is approx. equiv. to the dietary intake. The Pb content of numerous foodstuffs is determined.

A. G. P.

**Oral conditions of children in relation to state of general health and habits of life.** R. F. SOGNAES and R. L. WHITE (Amer. J. dis. Child., 1940, 60, 283—307).

C. J. C. B.

**Durability of mottled teeth.** M. C. SMITH and H. V. SMITH (Amer. J. Publ. Health, 1940, 30, 1050—



1052).—Mottled teeth are more resistant to the onset of decay but less resistant when decay sets in.

H. G. R.

**Regional changes and changes caused by age in normal skin.** W. R. HILL and H. MONTGOMERY (J. invest. Dermat., 1940, 3, 231—245).—On the unexposed parts of the body, increase in pigmentation and vascular changes do not become more marked with advancing age. Regional atrophy (chest and axilla) of the sebaceous glands and hair follicles was noted in 7 instances in specimens taken from the covered skin, but this atrophy was not related to age. The network of elastic fibres on the covered parts of the body is not related to senile change, and differs from the degenerative changes occurring in the elastic tissue with advancing age as seen by Ejiri (Jap. J. Dermat., 1937, 41, 95). (8 photomicrographs.)

C. J. C. B.

**Specific precipitation test for cow's milk.** A. GNOSPÉLIUS (Arch. Dis. Childh., 1940, 15, 171—176).—A slide pptn. reaction is described which will detect the presence of 1% of cow's milk in human milk.

C. J. C. B.

**Deterioration of the bovine udder in absence of streptococci.** E. G. HASTINGS and E. H. PETERSON (J. Agric. Res., 1940, 60, 145—156).—The % of Cl' and catalase in milk is a measure of cells and cellular debris present and increases in successive lactation periods and progressively through individual periods. Exceptions to these conditions occur even when streptococci are absent from the udder. Such "abnormal" deterioration of the udder is discussed in relation to mastitis.

A. G. P.

**Composition of amniotic and allantoic fluids of sea-turtle embryo.** G. I. IMAMURA (J. Biochem. Japan, 1940, 31, 303—309).—Data for total solids and org. matter, total ash, ash constituents, sugar, total N, urea, uric acid, and creatinine contents and for  $p_H$  and sp. gr. of the fluids from embryos at the 30th and 35th day of development are tabulated.

F. O. H.

**Chemical nature of royal jelly** G. F. TOWNSEND and C. C. LUCAS (Biochem. J., 1940, 34, 1155—1162; cf. A., 1940, III, 746).—The jelly yields an ether-sol. fraction consisting mainly of an org. acid or acids, m.p. 58°, equiv. wt. 178, small amounts of phenolic material, and smaller amounts of beeswax, sterol, phospholipin, and a saponifiable substance; a water-sol. dialysable fraction, consisting, to the extent of approx. 50%, of sugars (most of the reducing material is glucose and fructose), an acid, inorg. salts, and N compounds; and water-sol. and -insol. protein fractions. The material responsible for the sexual development of the queen bee is probably in the first fraction and this fraction, added to the diet of *Drosophila*, markedly increases the rate of reaching sexual maturity and increases, by approx. 60%, the no. of eggs laid per day.

W. McC.

**Component acids of ox bone marrow fat.** T. P. HILDITCH and K. S. MURTI (Biochem. J., 1940, 34, 1299—1300).—The component acids of the fat from yellow bone marrow are indistinguishable from those

of ox depôt fat of the softer type, e.g., from the rump (cf. Hilditch and Longenecker, A., 1937, III, 415).

H. G. R.

**Component acids and glycerides of some Indian ox depôt fats.** T. P. HILDITCH and K. S. MURTI (Biochem. J., 1940, 34, 1301—1311).—The fats were more saturated than those of European origin (cf. A., 1937, III, 415), containing 27—33% of unsaturated acids (mainly oleic), 26—28% of stearic acid, and a higher proportion of palmitic acid. The component glycerides were similar to those of other ox depôt fats if allowance is made for the more highly unsaturated nature of the fat.

H. G. R.

**Biochemistry of carbohydrates. LVI. Heparin.** H. MASAMUNE, M. SUZUKI, and Y. KONDOH. **LVII. Sclera mucoid and its prosthetic group. I.** T. SATOH (J. Biochem. Japan, 1940, 31, 343—350, 351—356).—LVI. Heparin, prepared as cryst. Ba salt (Charles and Scott, A., 1936, 1534), contained equimol. proportions of glycuronic acid and glucosamine; the amino-group of the latter is not free but is not acetylated. The Ba salt, considered as a monosulphuric ester, contained 1.84 equivs. of S.

LVII. Mucoid preps. from ox sclera consisted of protein and a carbohydrate moiety containing mucicoin and chondroitinsulphuric acid. F. O. H.

**Caseinogen-tryptone.** T. T. CHEN, T. HIROOKA, and M. KAWARADA (J. Biochem. Japan, 1940, 31, 335—341).—Gelatin- and caseinogen-tryptone (cf. Itzioka, A., 1937, III, 374) are resistant to further tryptic digestion (by activated pancreatic juice, which attacks the corresponding peptones) and to hydrolysis by pepsin, but are hydrolysed by fresh gastric juice (dog) or liver macerates at  $p_H$  7.8. F. O. H.

**Conjugation of horse serum-albumin with 1:2-benzanthrylcarbimides.** H. J. CREECH and R. N. JONES (J. Amer. Chem. Soc., 1940, 62, 1970—1975).—Dialysed aq. horse serum-albumin in dioxan, buffered to  $p_H$  8.2—8.3, with 1:2-benzanthryl-10- or -3-carbimide at 2—5° gives conjugated proteins, containing about 12 and 18 hydrocarbon prosthetic groups per mol., respectively. Absorption spectra are used to establish the nature of the product.

R. S. C.

**Sterols from various sources.**—See A., 1940, II, 372.

## (xvii) TUMOURS.

**Influence of solvent on rate of induction of epithelial skin tumours in mice.** H. G. CRABTREE (J. Path. Bact., 1940, 51, 299—302).—With 3:4-benzopyrene, ether + 2% liquid paraffin is a much more effective solvent than benzene. Using 1:2:5:6-dibenzanthracene, acetone + 2% liquid paraffin is a much more effective solvent than benzene.

C. J. C. B.

**Activating, transforming, and carcinogenic effects of rabbit papilloma virus (Shope) on implanted tar tumours.** P. ROUS and J. G. KIDD (J. Exp. Med., 1940, 71, 787—812).—Papilloma virus causes varied effects on tar tumours ranging from no significant effect, through varying degrees of stimulation and production of blended characteristics, to



complete conversion into virus papillomas. The virus makes some benign tar tumours cancerous and may induce rapid proliferation in normally slow-growing tar-induced squamous-celled carcinomas in cotton-tail rabbits. A. C. F.

**Transplantable rabbit carcinoma originating in virus-induced papilloma and containing virus in masked or altered form.** J. G. KIDD and P. ROUS (*J. Exp. Med.*, 1940, **71**, 813—838).—A metastasising, rapidly lethal, squamous-celled carcinoma derived from a virus-induced rabbit papilloma has been propagated by transplantation through 14 successive groups of animals. The persistence and increase of the virus, or some closely-allied agent, in the malignant tissue occur since sp. antibody develops in the blood of every new host showing progressive growth of the tumour. The antibody is absent from the blood of normal animals or those in which the tumour fails to grow. A. C. F.

**Identity of "inhibitor" and antibody extracts of virus-induced rabbit papillomas.** W. F. FRIEDEWALD (*J. Exp. Med.*, 1940, **72**, 175—200).—Quant. investigations and chemical and serological tests indicate that the "inhibitor" demonstrable in extracts of virus-induced rabbit papillomas is identical with the antiviral antibody found in the blood of infected animals bearing the growths. A. C. F.

**Extreme rarity of cancer in the cow's udder: negative finding of vital interest to the dairy industry and to the consumer.** W. W. SWETT, C. A. MATTHEWS, and R. R. GRAVES (*J. Dairy Sci.*, 1940, **23**, 437—446).—Mammary cancer is common in humans and most animals, but not in cows. J. G. D.

**Urinary excretion of gonadotrophins in cattle suffering from cancer.** J. VELASQUEZ and P. ENGEL (*Endocrinol.*, 1940, **27**, 523—524).—Urine of 5 non-pregnant cows, suffering from malignant growths of the eye, gave positive Aschheim-Zondek tests in immature rabbits. V. J. W.

**Breakdown of nucleotides and nucleic acids in tumours.** E. ADLER and H. VON EULER (*Arkiv Kemi, Min., Geol.*, 1940, **13**, A, No. 26, 14 pp.; cf. Edlbacher *et al.*, A., 1931, 1180; Boyland *et al.*, A., 1935, 782).—Methylene-blue is decolorised by extract (impurities removed by filtration and dialysis) of Jensen sarcoma to which adenylic acid, or another substrate (adenosine, inosic acid, adenosinetriphosphoric acid, cozymase, deaminocozymase, adenosine-3-phosphoric acid, guanosine, guanine, yeast- and pancreas-nucleic acid) which undergoes enzymic hydrolysis to hypoxanthine or xanthine, is added. The hypoxanthine produced from adenylic acid is converted by xanthine dehydrogenase into uric acid. The degradation of 1 mol. of adenylic acid, adenosine, cozymase, or deaminocozymase is accompanied by uptake of 2 O, this uptake corresponding with the conversion of hypoxanthine into uric acid. No decolorisation occurs when adenine, ribose, uric acid, guanylic acid, thymus-nucleic acid, or thymine deoxyriboside is added. Comparison of the rates of decolorisation by the substrates indicates that adenylic acid, or its degradation product, acting

as H donator, is degraded chiefly by way of adenosine, inosine, and hypoxanthine although possibly the decolorisation is also partly due to catalysis by adenylic acid of the dehydrogenation of a non-dialysable substrate of high mol. wt. in the extract. The extract contains nucleotidase, xanthine dehydrogenase, nucleosidase, guanase, and a very active adenosine deaminase (but no adenase) and attacks nucleic acids of the ribose but not those of the deoxyribose type. W. McC.

**Cathepsin in sarcoma tissue.** S. UTZINO and T. T. CHEN (*Gann*, 1940, **34**, 215—229).—Cathepsin of normal tissues and sarcomata of rabbits and fowls shows optimum activity at  $pH$  4.6. Sarcoma tissue contains about the same amount of cathepsin as spleen. The activity is greatly enhanced by the addition of cysteine. E. B.

**Provitamin-D in experimentally produced rat hepatoma.** S. KISHI and W. NAKAHARA (*Gann*, 1940, **34**, 252—255).—Cholesterol crystals were isolated from hepatoma tissue of rats treated with dimethylaminoazobenzene. The crystals were normal cholesterol, but cholesterol isolated from the likubo transplanted hepatoma contained provitamin-D. E. B.

**Fine structure of cytoplasm of hepatoma cells.** S. MORIGAMI and N. KASIWABARA (*Gann*, 1940, **34**, 247—251).—Hepatoma tissue from rats treated with dimethylaminoazobenzene was grown in culture and impregnated with Ag. Fibroblasts had few large fibrillæ whilst hepatoma cells contained many small fibrillæ. Cells which were not growing developed granules of Ag in place of fibrillæ. E. B.

**Localisation of acid azo-dyes in tumours.** M. HESS (*J. Path. Bact.*, 1940, **51**, 309—311).—Mice bearing carcinoma C 63 and rats with Guerin carcinoma were injected intravenously with Chicago-blue 6 B. After 24 hr., the animals showed uniform diffuse blue coloration of most organs and tissues, but brain, lungs, and spleen appeared free from dye. The renal cortex showed the most intense staining. The staining of the tumour approached in intensity that of the renal cortex. The histological picture was characterised by the abs. freedom of the carcinoma cells from dye. C. J. C. B.

**Effect of X-rays on tumour growth when the tumour itself is not irradiated.** S. RUSS and G. M. SCOTT (*Brit. J. Radiol.*, 1940, **13**, 267—272).—When a dose of X-rays, approx. 1200 r., was given to the surrounding tissue of a rapidly growing Jensen rat sarcoma, the rate of growth of the tumour was considerably slowed down and nearly 37% (30 out of 82 tumours) disappeared. The damage to the skin caused by this dose of radiation was slight. The no. of untreated control tumours which spontaneously disappeared was 13 out of 190. H. H. K.

**Radiosensitivity of malignant melanomata.** F. ELLIS (*Brit. J. Radiol.*, 1939, **12**, 327—352). H. H. K.

**Relative grading of primary and secondary carcinoma.** I. A. B. CATHE (*Brit. J. Radiol.*, 1939, **12**, 94—95).—In 34 cases the grading of primary and secondary growths was the same. In 31 cases



the primary was less differentiated than the metastasis, while in the remaining cases the primary was more differentiated than its secondary deposits.

H. H. K.

**Epidermal tumours of skin.** I. G. WILLIAMS (Brit. J. Radiol., 1938, 11, 641—648).—7 out of 175 cases of epidermal carcinoma died from malignant growths in other sites.

H. H. K.

**Adenomatosis of human lung.** G. O. RICHARDSON (J. Path. Bact., 1940, 51, 297—299).—(4 photographs.)

C. J. C. B.

**Lympho-epithelial tumours of neck.** P. HELLMANN and R. WAPPLER (Beitr. klin. Chir., 1939, 170, 452—456).

H. H. K.

**Reticulosarcoma of the throat.** S. HANAFUSA and K. KIBOTA (Gann, 1940, 34, 231—237).—Occurrence in a man of 43 is recorded.

E. B.

### (xviii) NUTRITION AND VITAMINS.

**Nutrition and nervous excitability.** L. MARKS and H. NECHELES (J. Lab. clin. Med., 1940, 25, 1177—1179).—The skin resistance of Chinese in Peiping decreased after a protein meal, whilst that of Westerners in Chicago did not.

C. J. C. B.

**Nutritive value of powdered whole milk.** R. C. HUTCHINSON (Med. J. Austral., 1939, II, 392—400).—A popular Australian brand (not named) was compared chemically and biologically (in cats) with whole fresh milk and found to be an excellent substitute.

F. S.

**Result of providing lactic acid milk to infants from the Infant Welfare Centres in Batavia.** J. H. POSTHUMA and J. H. DE HAAS (Geneesk. Tijds. Ned.-Indië, 1940, 80, 888—901).—Lactic acid milk supplemented with ascorbic acid, rice-meal water, and cod-liver oil was given to 5—10% of native and 10—20% of Chinese infants attending the centres. The gain in wt. was above the average and equalled that of normal breast-fed European children. Over 50% were dystrophic when feeding began but this and the mortality rate were reduced as feeding continued. Lactic acid milk is recommended for infant feeding in the tropics.

S. C.

**Utilisation of feeding-stuffs by foals.** W. ZORN, H. BRÜGGEMANN, and W. BÜNGER (Bied. Zentr., 1939, B, 11, 1—18).—In the period from birth to weaning foals consumed 343 g. of digestible protein and 1.82 kg. of starch equiv. per kg. increase in live wt.

A. G. P.

**Stimulating action of the protein of animal feeding-stuffs.** J. AXELSSON (Bied. Zentr., 1939, B, 11, 162—175).—With increase in protein content of the ration the rate of gain in live wt. (rat, chicken, cattle) and % utilisation of food energy increased progressively up to a limit beyond which further rise in dietary protein resulted in a decline in both vals. Utilisation of protein for N storage in the body began to decline at levels of feeding below those producing optimum rate of increase in total live wt., the effect coinciding with increase in urinary excretion of N. A stimulatory effect of protein on

the utilisation of foods is indicated. During lactation the % utilisation of food protein increases at levels of supply beyond that of N balance. The optimum level of dietary protein exceeds that usually adopted. For practical purposes N requirements should be based on the % utilisation of the whole ration rather than on production only.

A. G. P.

**Protein requirement of horses at rest and at work.** H. NITSCHKE (Bied. Zentr., 1939, B, 11, 214—244).—Kellner's standard food requirements differ from those observed. The protein requirement is influenced by environmental conditions, by the breed and age of the animal, by the salt content of the ration, and by the biological val. of the proteins of the ration.

A. G. P.

**Fat requirements of the growing chick.** W. C. RUSSELL, M. W. TAYLOR, and L. J. POLSKIN (J. Nutrition, 1940, 19, 555—562).—Ether extraction of poultry mash did not retard growth of chicks up to 14 weeks of age provided the ether-sol. vitamins were replaced. With a very low level (0.1%) of dietary fat cryst. carotene was utilised when supplied in proportions exceeding the min. requirement. The degree of saturation of the depot fat was greater with a low-fat than with a normal diet. The saturation of liver-fat was less than that of depot fat but was not significantly affected by the dietary fat level.

A. G. P.

**Fasting catabolism and food utilisation of calcium-deficient rats.** M. KLEIBER, M. D. D. BOELTER, and D. M. GREENBERG (J. Nutrition, 1940, 19, 517—530).—Rats receiving a Ca-deficient diet (10 mg. of Ca per 100 g. of food) showed loss of body-wt., diminished appetite, smaller skull and finer skeletal development, low carcass ash and serum-Ca, increased fasting catabolism, and lowered efficiency of utilisation of food energy. Similar effects were obtained in many cases by restricting the intake of a normal diet to a stage at which the Ca intake was slightly less than that from the Ca-deficient diet when fed *ad lib.*

A. G. P.

**Content of iodine in soil and fresh water in Ireland in relation to endemic goitre incidence.** J. C. SHEE (Sci. Proc. Roy. Dublin Soc., 1940, 22, 307—314).—Data for I content of fresh water and soil are tabulated and discussed. No correlation is evident between I content of fresh water and goitre incidence, whilst a definite negative correlation exists between soil-I and goitre incidence.

F. O. H.

**Adaptation of the growing rat to the ingestion of a constant concentration of fluorine in the diet.** M. LAWRENZ, H. H. MITCHELL, and W. A. RUTH (J. Nutrition, 1940, 19, 531—546).—Continuous ingestion of small proportions of F (4—12 p.p.m. of the diet) is followed by a process of adaptation accompanied by progressive increase in the proportion of F excreted in urine and faeces (60—100% of the amount ingested). Adaptation becomes less efficient as the level of ingestion is raised. Increase in F consumption raises the F content of teeth more than that of bones.

A. G. P.



**Biological oxidation and vitamins.** A. SZENT-GYÖRGYI (Bull. N.Y. Acad. Med., 1939, 15, 456—468).—A lecture.

**Recent advances in vitamin therapy.** T. D. SPIES, D. P. HIGHTOWER, and L. H. HUBBARD (J. Amer. Med. Assoc., 1940, 115, 292—297).—A review. C. A. K.

**Vitamin-A deficiency and requirements of farm mammals.** G. H. HART (Nutr. Abs. Rev., 1940, 10, 261—272).—A review.

**Vitamin-A and carotene content of Shorthorn colostrum.** K. M. HENRY, J. HOUSTON, and S. K. KON (J. Dairy Res., 1940, 11, 1—8).—Vitamin-A vals. varied from 800 to 8000 Moore blue units % and carotene from 400 to 2000 Moore yellow units % in first colostrum. Vals. fell rapidly, reaching a const. level after 5 days. Pasture feeding before parturition increased the carotene but not the -A. J. G. D.

**Unsaturated fat oxidase.** H. TAUBER (J. Amer. Chem. Soc., 1940, 62, 2251).—Carotene oxidase (B., 1931, 652; A., 1940, III, 764) does not exist. Oxidation of carotene in soya-bean oil etc. is a secondary reaction brought about by products formed by an unsaturated fat oxidase. R. S. C.

**Diets deficient in vitamin-B and their influence on intestinal yeast flora of animals.** I. F. DE MELLO (Proc. Indian Acad. Sci., 1940, 11, B, 225—235).—During beriberi in rats, hens, rabbits, and pigeons, the yeast flora of the faeces is increased, a return to normal levels occurring when a normal diet is fed. With pigeons, the avitaminotic diarrhoea is associated with a very large increase in the no. of yeasts. F. O. H.

**Deficiency diseases in military horses caused by avitaminosis-B.** B. CARLSTRÖM and A. HJÄRRE (Bied. Zentr., 1939, B, 11, 121—129).—Symptoms of deficiency of vitamin-B among military horses receiving a hay-oats ration were corr. by supplements of dried yeast (50 g. per day per animal). A. G. P.

**Difference between thiamin deficiency in rats and deficiencies of other members of the vitamin-B complex.** M. K. DMICK (J. Nutrition, 1940, 19, 605—610).—The growth curve of thiamin-deficient rats, unlike that of rats deficient in riboflavin, vitamin-B<sub>6</sub>, or the rat filtrate factor, shows no "plateau period" during depletion. A. G. P.

**Avitaminosis-B<sub>1</sub> in guinea-pigs.** B. CARLSTRÖM and G. JONSSON (Bied. Zentr., 1939, B, 11, 130—138).—Winter mortality among guinea-pigs was largely prevented by feeding a hay-clover-beet ration. With a ration of vitamin-B<sub>1</sub>-deficient hay and beet high mortality followed the appearance of symptoms of avitaminosis-B<sub>1</sub>. Affected animals were cured by administration of aneurin or dried yeast but not by that of cod-liver oil. The proportion of SO<sub>3</sub>'-combining constituents in the blood of diseased exceeded that of healthy animals. A. G. P.

**Therapy of subvitaminosis-B<sub>1</sub>.** B. FANTUS, E. F. TRANT, and R. S. GREENEBAUM (J. Amer. Med. Assoc., 1940, 115, 450—454).—A review. C. A. K.

**Avian thiamin deficiency.** R. L. SWANK (J. Exp. Med., 1940, 71, 683—702).—In acute thiamin deficiency opisthotonus, unassociated with nerve degeneration, occurs owing to functional impairment of inhibitory fibres from the upper to the lower brain. In chronic deficiency leg weakness associated with nerve degeneration is found. The axis cylinder degenerates, then the myelin sheath, and the cell undergoes chromatolysis. Recovery on thiamin administration is rapid in acute cases with opisthotonus only, but in chronic cases it runs parallel with regeneration. Heart failure is in some cases accompanied by necrosis of myocardial fibres. A. C. F.

**Pink disease treated by vitamin-B<sub>1</sub>.** G. FORSYTH (Med. J. Austral., 1939, II, 751—755).—Three out of 4 cases improved within 7 days after 180—600 units daily. F. S.

**Aneurin metabolism in man indicated by use of radioactive sulphur.** H. BORSOOK, E. R. BUCHMAN, J. B. HATCHER, D. M. YOST, and E. McMILLAN (Proc. Nat. Acad. Sci., 1940, 26, 412—418).—When vitamin-B<sub>1</sub> containing <sup>35</sup>S is injected intramuscularly into a man deprived of -B<sub>1</sub> for 36 days, there is a rapid increase of <sup>35</sup>S in the urine indicating that a significant amount of -B<sub>1</sub> remains in the tissues after a -B<sub>1</sub>-free diet. Injected -B<sub>1</sub> interacts very quickly with that pre-existing in blood and tissues. Metabolism is very rapid and yields neutral S compounds and inorg. SO<sub>4</sub>'', most of which are excreted in the urine. Losses incurred by excretion and decomp. are inevitable in the maintenance of a physiologically adequate concn. of -B<sub>1</sub> and cocarboxylase in blood and tissues. J. N. A.

**Effect of high-fat diet on excretion of bisulphite-binding substances in urine of rats deficient in vitamin-B<sub>1</sub>.** G. G. BANERJI (Biochem. J., 1940, 34, 1329—1333).—With rats deprived of vitamin-B<sub>1</sub>, the excretion of HSO<sub>3</sub>'-binding substances and the severity of bradycardia are decreased by high-fat diets. H. G. R.

**Effect of different levels of vitamin-B<sub>1</sub> and iron on retention of iron and on the fat content of normal young rats.** H. OLDHAM and F. W. SCHLUTZ (J. Nutrition, 1940, 19, 569—578).—The level of dietary vitamin-B<sub>1</sub> does not affect Fe retention. The optimum daily intake of Fe for rats 20—40 days of age does not exceed 0.30 mg. Larger proportions do not increase the amount of Fe stored. The increase in body-wt. of rats receiving 39 µg. of -B<sub>1</sub> daily was 1.19 g. per week greater than of those receiving an isocaloric diet but only 9 µg. of -B<sub>1</sub>, 93% of the difference in wt. being fat and water. A. G. P.

**Xerostomia successfully treated with nicotinic acid.** W. SAPHIR (Amer. J. digest. Dis. Nutr., 1940, 7, 298—299).—A case report. C. J. C. B.

**Vitamin-B<sub>6</sub> and related factors of the vitamin-B<sub>2</sub> complex.** I, II. P. GYÖRGY and R. E. ECKARDT (Biochem. J., 1940, 34, 1143—1154; cf. A., 1935, 545).—When the vitamin-B<sub>6</sub>-deficient diet (caseinogen 18, sucrose 68, butter fat 8, salt mixture 4, cod-liver oil 2%) of rats is modified by replacing 10% of the sucrose by an equal wt. of dried egg-white which has been detoxified by heat, the onset of



acrodynia is accelerated and its incidence is increased. In young rats on the original or modified diet, supplemented in each case with aneurin, riboflavin, and  $-B_6$ , necrosis of the kidney cortex due to choline deficiency occurs more frequently than when no  $-B_6$  supplement is given. The beneficial effects of  $-B_6$  in acrodynia, where they appear, are transitory. Rats treated with  $-B_6$  not supplemented with other constituents of the  $-B_2$  complex apart from riboflavin and choline develop cutaneous lesions and achromotrichia; three type of lesion are observed. One type is sometimes characterised by progressive keratitis and panophthalmitis which are often accompanied by pediculosis.

W. McC.

**Urinary excretion of vitamin- $B_6$  colorimetrically determined.** J. V. SCUDI, K. UNNA, and W. ANTROPOL (J. Biol. Chem., 1940, **135**, 371—376; cf. A., 1940, III, 514).—Determinations of urinary vitamin- $B_6$  before and after administration of 25—500 mg. of the vitamin show that, in dogs, 18% is excreted within 1 hr. with intravenous, and 20% within 6 hr. with oral, administration. In healthy men, 8.7% of a 50-mg. intravenous dose is excreted within 1 hr. and 7.6% of a 100-mg. oral dose within 4 hr.

W. McC.

**Relation of pantothenic acid to dermatitis of the rat.** L. R. RICHARDSON and A. G. HOGAN (Proc. Soc. Exp. Biol. Med., 1940, **44**, 583—585).—Rats on a dermatitis-producing diet recover permanently if given both vitamin- $B_6$  and Na pantothenate, but not with either alone.

V. J. W.

**Effect of synthetic pantothenic acid on adrenal hæmorrhage, atrophy, and necrosis in rats.** F. S. DAFT, W. H. SEBRELL, S. H. BABCOCK, and T. H. JUKES (U.S. Publ. Health Repts., 1940, **55**, 1333—1337).—Repair or prevention of adrenal hæmorrhage, atrophy, and necrosis in rats is brought about by a daily dose of 100  $\mu$ g. of synthetic pantothenic acid for 6—14 days. A deficiency of pantothenic acid may be one of the causes of these adrenal lesions in rats on deficient diets.

C. G. W.

**Effect of administration of pantothenic acid on histopathology of filtrate factor deficiency state in rats.** L. L. ASHBURN (U.S. Publ. Health Repts., 1940, **55**, 1337—1346).—The adrenal lesions, abnormal testicular function, and cartilage hypoplasia occurring in rats fed on a diet deficient in the "filtrate factor" are markedly affected by supplementing the diet with 100  $\mu$ g. of pantothenic acid daily. Arrest and repair of adrenal lesions occur, testicular function is improved, and skeletal growth is accelerated. It is suggested that rats develop a partial or complete adrenal cortical insufficiency on the deficient diet.

C. G. W.

**Assay of pantothenic acid.** D. PENNINGTON, E. E. SNELL, and R. J. WILLIAMS (J. Biol. Chem., 1940, **135**, 213—222).—A modification of the method of Snell *et al.* (A., 1937, III, 487), involving the growth response of *Lactobacillus casei* measured turbidimetrically, is used for the determination of pantothenic acid in extracts of yeast, liver, milk, oysters, mushrooms, urine, and chick tissue. The method is sp.

A. L.

**Non-identity of grey hair produced by mineral deficiency and vitamin deficiency.** A. H. FREE (Proc. Soc. Exp. Biol. Med., 1940, **44**, 371—373).—Young black rats become grey when they are maintained on an exclusively milk diet or on a diet which is deficient in an essential factor. In the former case they regain colour if Fe, Cu, and Mn are added to the diet, and in the latter case if they receive rice bran extract.

V. J. W.

**Ascorbic acid levels in patients suffering from senile psychoses.** D. G. REMP, S. R. ROSEN, J. B. ZIEGLER, and D. E. CAMERON (J. ment. Sci., 1940, **86**, 534—537).—Ascorbic acid levels in blood and c.s.f. of 15 patients were lower than those of non-senile adults. The vals. were obtained within 48 hr. of admission of the patients to hospital, and did not rise while the patients were on ordinary diet containing 50—70 mg. of ascorbic acid per day. The levels could be raised by the addition of 300 mg. of ascorbic acid to the diet; this was accompanied by no mental changes. Probably aged psychotics have diminished power of absorbing ascorbic acid from the gastro-intestinal tract.

G. D. G.

**Effect of organic compounds on vitamin-C synthesis in rats.** H. E. LONGENECKER, H. H. FRICKE, and C. G. KING (J. Biol. Chem., 1940, **135**, 497—510).—All barbituric acid derivatives examined increased the synthesis of vitamin-C in rats, 20 mg. per day of Na phenobarbital or Ca ipral increasing the daily excretion of -C from 0.2 to 10 mg. per day within a few days. Equiv. doses of paraldehyde and chlorotone caused similar daily excretion of -C. Pyrazolone derivatives, phenols, salicylates, sulphanilamide, etc. were less active. Most alkaloids exerted a negligible effect. The increased synthesis due to Na phenobarbital and chlorotone (20 mg. per day) continued for 3 months. Urinary ascorbic acid, which was higher after intraperitoneal injection than oral administration, was not conjugated with any of the substances administered.

P. G. M.

**Effects of vitamin-C intake on degree of tooth injury produced by diphtheria toxin.** C. G. KING, R. R. MUSULIN, and W. F. SWANSON (Amer. J. Publ. Health, 1940, **30**, 1068—1072).—Marked injury to the odontoblasts and dentine, which follows injection of diphtheria toxin to guinea-pigs receiving 0.8 mg. of ascorbic acid per day (sufficient for normal growth and to produce only slight evidence of vitamin-C deficiency), is not observed in animals receiving 5 mg. per day.

H. G. R.

**C-avitaminosis on pure meat diet.** W. RUDOLPH (Klin. Woch., 1940, **19**, 84).—Report of a case.

M. K.

**Factors affecting the vitamin-C content of fruit and vegetables.** K. W. ROBINSON and R. COURTICE (Med. J. Austral., 1940, **I**, 786—788).—The % loss of vitamin-C in 4—5 days at 25° and in a refrigerator respectively was: peas, 51, 14; beans 32, 15; cabbage 55, 50; pawpaw 19, 24. Oranges lost 60% and 7% in 21 days, but when wrapped in paper and kept in air-tight containers lost only 6% at 25° in 21 days.

F. S.



**Distribution and concentration of ascorbic acid in potato (*Solanum tuberosum*).** A. M. SMITH and J. GILLIES (Biochem. J., 1940, 34, 1312—1320).—The ascorbic acid content of the tubers reaches a max. in August and decreases as the plant ripens, there being a further decrease on storage to 1/3 of the val. at harvesting after 6 months. Variations in manuring have little effect and tubers with mosaic or leaf roll have a greater concn. than those from healthy plants. In the sprout, the concn. increases from the heel to the tip, especially if sprouting takes place in the light, there being no synthesis of ascorbic acid at this stage. H. G. R.

**Chemical determination of vitamin-C, with analyses made on some Queensland products.** E. L. LEGGETT and K. W. ROBINSON (Med. J. Austral., 1939, II, 241—244).—One extraction was made in 0.1N trichloroacetic acid and titration was made at a const.  $p_H$  of 2.5. The vitamin-C contents of 10 types of fruits and 9 of vegetables are given. 20—40% of -C in vegetables was lost in cooking, mostly by dissolution in the water. Lettuce stored at room temp. lost 65% of its -C at 24 hr. and 90% at 72 hr. F. S.

**Therapy of rickets.** E. A. PARKS (J. Amer. Med. Assoc., 1940, 115, 370—379).—A review. C. A. K.

**Error of vitamin-D assay by the method of ash content of bone.** E. A. G. SHRIMPTON (Quart. J. Pharm., 1940, 13, 97—108).—Statistical analysis of assay data shows that the dosage-response relationship is linear when the response is expressed as % ash content in bones and dosage as logarithm of the dose; whilst the slope of the line is const. for any one -D prep. but varies from prep. to prep., a common slope may be assumed without marked loss of accuracy. F. O. H.

**Biological assay of vitamin-D<sub>3</sub>.** I. Assay methods at present in use, with particular reference to Olsson's radiographic technique. A. Z. BAKER and M. D. WRIGHT (Analyst, 1940, 65, 326—335).—Since normal osteogenesis in birds is promoted far more economically by vitamin-D<sub>3</sub> than by calciferol, stress is laid on the practical importance of basing assays of the antirachitic val. of liver oils for poultry feeding on bird tests, using pure -D<sub>3</sub> as the standard of reference. Olsson's claim that the tarso-metatarsal distance in chicks is a function of the log of the amount of -D<sub>3</sub> supplied in the diet is confirmed, but using the log gives greater accuracy than using the actual distance. The accuracy of the Olsson method is approx. the same as that of the A.O.A.C. method but the former is less costly in experimental material. The statistical treatment of the results is given. E. C. B. S.

**Effect of ingested vitamin-E (tocopherol) on vitamin-A storage in liver of rat.** A. L. BACHARACH (Quart. J. Pharm., 1940, 13, 138—149).—Vitamin-A storage in liver of rats is not affected by intake of -E when the latter is at prophylactic or curative levels; rats receiving no -E for the first 14 weeks of life, however, store less -A than do matched

rats receiving a relatively massive dose of *dl*- $\alpha$ -tocopherol (cf. Moore *et al.*, A., 1939, III, 1074). F. O. H.

**Effect of vitamin-E deficiency on vitamin-A reserves of the rat.** T. MOORE (Biochem. J., 1940, 34, 1321—1328).—The vitamin-A reserves of rats on an -E-deficient diet with -A supplied by halibut-liver oil are much lower than those of control rats receiving supplements of -E, this deficiency in -A being much less if -A is supplied as carotene. H. G. R.

**Prevention of nutritional muscular dystrophy in guinea-pigs with vitamin-E.** N. SHIMOTORI, G. A. EMERSON, and H. M. EVANS (J. Nutrition, 1940, 19, 547—554; cf. A., 1940, III, 54).—When the supply of vitamin-B is adequate -E probably becomes the sp. factor preventing nutritional muscular dystrophy. A. G. P.

**Anti-hæmorrhagic vitamin-K.** P. KARRER (Schweiz. med. Wschr., 1940, 70, 537—541).—2-Methyl-1:4-naphthaquinone is the most active of a great no. of synthetic vitamin-K preps.; it is twice as active as natural -K<sub>1</sub>. It is little sol. in H<sub>2</sub>O and sensitive to light and alkali. The diacetate of 2-methyl-1:4-naphthaquinol is insol. in water but dissolves in oil and is suitable for subcutaneous and, with bile acids, for oral administration. The disuccinate is recommended for intravenous use. A. S.

**Potencies of vitamin-K<sub>1</sub> and of 2-methyl-1:4-naphthaquinone.** S. A. THAYER, R. W. MCKEE, S. B. BINKLEY, and E. A. DOISY (Proc. Soc. Exp. Biol. Med., 1940, 44, 585—588).—The relative potencies of these two compounds determined by a 6-hr. method are 1:3, and not 1:30 as found by Ansbacher *et al.* (A., 1940, III, 284). The discrepancy is due to differences in the results obtained with the vitamin, those with the quinone being concordant. V. J. W.

**Absorption of water-soluble vitamin-K from intestinal tract.** E. D. WARNER and J. E. FLYNN (Proc. Soc. Exp. Biol. Med., 1940, 44, 607—608).—After the bile duct had been tied in the rat, the therapeutic efficiency of water-sol. vitamin-K derivatives was the same whether they were administered with or without bile. V. J. W.

**Bio-assay of water-soluble anti-hæmorrhagic compounds by intravenous administration.** D. RICHERT, S. A. THAYER, R. W. MCKEE, S. B. BINKLEY, and E. A. DOISY (Proc. Soc. Exp. Biol. Med., 1940, 44, 601—604).—A no. of substances examined had the same activity as 2-methyl-1:4-naphthaquinone. The disulphate was approx. one third as potent per mol. V. J. W.

### (xix) METABOLISM, GENERAL AND SPECIAL.

**Nature of the cyanide-stable portion of cellular respiration.** E. A. H. ROBERTS (Nature, 1940, 146, 461—462).—Commoner's views (A., 1940, III, 516) take no account of the possible contribution of purine oxidation to CN<sup>-</sup>-stable respiration, and the evidence quoted also favours the view that this respiration in mammalian tissues is to be identified with purine base oxidation. L. S. T.



**Comparison of a chemical and a biochemical method for determining the biological value of proteins; evaluation of endogenous nitrogen.**

F. C. OLSON and L. S. PALMER (J. Agric. Res., 1940, 60, 331—342).—In N balance experiments with rats the relative biological vals. of proteins were: whole egg 94, casein 63, whole wheat 47, wheat gluten 42, whole maize 52, maize-gluten meal 42, liver meal 56, meat and bone tankage 38, solvent-extracted soya-bean meal 61. The digestibility of proteins as determined by the N-retention method agreed fairly well with that determined by enzymes in the case of natural foods but not in that of isolated proteins. Heated solvent-extracted soya-bean meal had a higher biological val. but the same digestibility coeff. as the raw meal. Correction of endogenous urinary N vals. for differences in body surface brought about less variation in results than when the correction was made on a body-wt. basis. A. G. P.

**Examination of horse faeces in metabolism trials.** H. NITSCHÉ (Bied. Zentr., 1939, B, 11, 48—54).—The high water content of the fresh faeces necessitates careful mixing and handling prior to sampling and analysis. Duplicate analyses are essential. Drying the sample prior to analysis causes low vals. for digestible protein. A. G. P.

**Changes in physiological condition of the newborn infant. IX. Non-protein-nitrogen and its constituents.** K. RIN (J. Biochem. Japan, 1940, 31, 205—213).—The total non-protein-N is highest during the first 3 days of life of puppies, the val. slowly decreasing to adult levels during the following 30 days, after which a slight increase occurs. The principal changes are in urea- and amino-acid-N; those in total creatinine-N are negligible. The relationship of these changes to those in the physiological condition of the organism is discussed. F. O. H.

**Conversion of phenylalanine into tyrosine in rats.** A. R. MOSS and R. SCHOENHEIMER (J. Biol. Chem., 1940, 135, 415—429).—*dl*-Phenylalanine heated at 50° for 8½ days with 84% deuterio-sulphuric acid yields *dl*-deuterophenylalanine (benzoyl derivative, m.p. 185—186.5°) in which, as shown by oxidation with chloramine-*T* and hydrolysis of the resulting deuterobenzyl cyanide to *deuterophenylacetic acid*, m.p. 76.5—77° (corr.), 96% of the D is in the ring, probably equally distributed amongst the 5 positions. The small proportion of D in the side-chain is probably in the  $\alpha$ -position. Tyrosine, isolated from the proteins of the internal organs of growing and adult rats on a diet containing *dl*-deuterophenylalanine, contains D in concns. indicating 20—30% conversion of the latter amino-acid into tyrosine. The deuterio-tyrosine from the proteins of the muscle and skin has a lower D content. Conversion of *dl*-deuterophenylalanine into deuterotyrosine occurs also when the diet of adult rats is supplemented with large proportions of tyrosine together with *dl*-deuterophenylalanine. These results, in conjunction with others previously obtained, show that in the organism tyrosine is produced from phenylalanine and that tyrosine of body proteins is continuously replaced by tyrosine of dietary and metabolic origin. *l*(—)

3 U (A., III.)

Phenylalanine undergoes at least 20% racemisation when heated for 3 days at 50° with 86% deuterio-sulphuric acid. W. McC.

**Cystine and methionine for growth and lactation.** J. R. HAAG and L. D. WRIGHT (J. Nutrition, 1940, 19, 563—568; cf. A., 1940, III, 142).—Cystine and methionine stimulate lactation by rendering S-deficient proteins nutritionally active rather than by exerting a sp. effect on lactation (cf. A., 1939, III, 1066). A. G. P.

**Comparative effect of choline and betaine in the replacement of methionine by homocystine in the diet.** J. P. CHANDLER and V. DU VIGNEAUD (J. Biol. Chem., 1940, 135, 223—229).—In young rats fed on a diet the N of which was supplied by amino-acids excluding cystine and methionine, choline was more effective than equiv. amounts of betaine in enabling the animals to utilise homocystine. The difference was shown mainly in the delay in the growth response to betaine. The activity of the two substances was shown in both oral and parenteral administration. A. L.

**Excretion of porphyrin in dermatoses.** C. CARRIE (Klin. Woch., 1940, 19, 54—56).—The amount of excreted porphyrin was increased in acute dermatoses. M. K.

**Fate of ingested pectin.** S. C. WERCH and A. C. IVY (Proc. Soc. Exp. Biol. Med., 1940, 44, 366—368).—Out of 20 g. of pectin given daily to dogs on a mixed diet 90% is decomposed. When given to fasting dogs only 50% is decomposed. V. J. W.

**Study of certain tissue-lipins in generalised lipodystrophy.** A. E. HANSEN and I. McQUARRIE (Proc. Soc. Exp. Biol. Med., 1940, 44, 611—613).—All tissues examined, especially the skin, showed a marked lack of fat as compared with a control. Vals. are tabulated. V. J. W.

[Androgen excretion in] **Hand-Schüller-Christian disease.** E. C. HAMBLÉN, H. M. ARENA, and W. K. CUYLER (Amer. J. Dis. Child., 1940, 60, 352—358).—The excretion of androgens in the urine of a 29-month-old white boy with Hand-Schüller-Christian disease was 10 times normal. This was related to the general disturbance of lipin metabolism, rather than to an excessive activity of the gonads or of the adrenal cortex. No Na pregnanediol glucuronide was excreted. C. J. C. B.

**Administration of ascorbic acid to an alkaptonuric patient.** R. R. SEALOCK, M. GALDSTON, and J. M. STEELE (Proc. Soc. Exp. Biol. Med., 1940, 44, 580—583).—Administration of 4 g. per day had no effect on excretion of homogentisic acid. V. J. W.

**Renal excretion of hexitols (sorbitol, mannitol, and dulcitol) and their derivatives (sorbitan, isomannide, and sorbide) and of endogenous creatinine-like chromogen in dog and man.** W. W. SMITH, N. FINKELSTEIN, and H. W. SMITH (J. Biol. Chem., 1940, 135, 231—250).—Methods are described for the determination in blood and urine of sorbitol, mannitol, and dulcitol using  $KIO_4$ , and for sorbitan, isomannide, and sorbide using  $Ce(SO_4)_2$ . In dogs, the renal clearances of sorbitol,



mannitol, dulcitol, and sorbitan are identical with the simultaneous clearances of creatinine or inulin. In man, sorbitol, mannitol, or sorbitan clearance is identical with that of inulin, the dulcitol:inulin clearance ratio of 0.94 being possibly due to some systematic error. This identity of clearance rate is not a consequence of the identical reabsorption of the substances, which are metabolised to different extents, sorbitol most easily. Sorbitol and mannitol are cleared from the plasma at the same rate as inulin when the glomerulus is normal and also when it is permeable to protein. *iso*Mannide and sorbide undergo tubular reabsorption in the dog. These findings support the view that inulin clearance is at the level of glomerular filtration in both species. Clearance of endogenous chromogenic substance (giving the Jaffe reaction) in man varied according to whether the picric acid or the Fe filtrate was used, and differed from the inulin clearance, thus indicating the limited usefulness of this test in evaluating renal function. A. L.

**Reasons for high carbohydrate requirement of infants and children.** W. HEYMANN (Amer. J. Dis. Child., 1940, 60, 316—321).—A discussion.

C. J. C. B.

**Effect of fructose on peripheral utilisation of glucose.** A. B. CORKILL and J. F. NELSON (Austral. J. Exp. Biol., 1940, 18, 171—174).—In the spinal eviscerated cat receiving continuous infusion of glucose, simultaneous infusion of fructose greatly increases the fall in blood-glucose produced by insulin. Fructose increases the peripheral utilisation of glucose, and it is possible that it also stimulates hepatic glycogenesis. D. M. N.

**Modification of galactose-tolerance test based on differential fermentation of glucose occurring with galactose in urine.** S. S. LICHTMAN (J. Lab. clin. Med., 1940, 25, 1193—1198).

C. J. C. B.

**Ketogenic activity of acetic acid.** E. M. MAC-KAY, R. H. BARNES, H. O. CARNE, and A. N. WICK (J. Biol. Chem., 1940, 135, 157—163).—Acetic acid, fed to phloridzinised dogs and fasting rats, increases the excretion of ketonic compounds in the urine, and blood-acetone determinations show that the increase is not due to a change in the renal threshold. The acetone probably arises from the conversion of acetic into acetoacetic acid. Accordingly the metabolism of fatty acids is regarded as involving the successive  $\beta$ -oxidation of the chain, *i.e.*, 1 mol. of a  $C_{16}$  acid producing 4 mols. of acetoacetic acid. A. L.

**Ketogenic action of short-chain, even-numbered carbon fatty acids in carbohydrate-fed animals.** E. M. MAC-KAY, A. N. WICK, and C. P. BARNUM (J. Biol. Chem., 1940, 135, 183—187).—Ethyl esters of fatty acids with an even no. of C atoms ( $C_{4-10}$ ), administered by stomach tube to normal, carbohydrate-fed rats with adequate liver-glycogen, were ketogenic. Under the same conditions, higher fatty acids were not ketogenic. These results were not due primarily to differences in the rate of absorption of the acids, but are probably to be associated with the inability of the organism to store fat containing short-chain acids. A. L.

**Methane production by cattle.** J. W. BRATZLER and E. B. FORBES (J. Nutrition, 1940, 19, 611—613).—In dairy cattle the relationship between the wt. in g. of methane produced ( $E$ ) and the amount (in 100 g. units) of carbohydrate ( $X$ ) digested is represented by  $E = 4.012X + 17.68$ . The relationship is sufficiently accurate to permit computation of methane production, *e.g.*, in calculations of metabolisable energy of foods, without use of animal calorimeters.

A. G. P.

**Radioactive phosphorus as an indicator of phospholipin metabolism. XII. Effects of amino-acids on the phospholipin activity of liver.** I. PERLMAN, N. STILLMAN, and I. L. CHAIKOFF (J. Biol. Chem., 1940, 135, 359—364; cf. A., 1940, III, 597).—Experiments in which rats on a high-fat, low-protein diet received injections of radioactive P and, at the same time, suspensions of amino-acid or related compound in gum tragacanth solution by stomach tube, show that the phospholipin activity of the liver is stimulated by methionine and cysteine but not by glycine, *l*-alanine, *dl*-serine, *l*-tyrosine, *l*-proline, *d*-glutamic acid, *l*-asparagine, taurine, creatine, sarcosine, and di- $\beta$ -hydroxyethyl sulphoxide.

W. McC.

**Evidence of demethylation in animal body.** S. W. STROUD (Nature, 1940, 146, 166).—3 g. of 4:4'-dimethoxydiphenyl ether were injected into 2 female rabbits during 3 weeks. From the urine 47 mg. of "free" and 22 mg. of "combined" 4-hydroxy-4'-methoxydiphenyl ether were obtained. Using 4-methoxydiphenyl, 203 mg. of "free" and 43 mg. of "combined" cryst. phenols were obtained from the urine. 30 mg. of 4:4'-dihydroxydiphenyl and 111 mg. of 4-hydroxydiphenyl were isolated. Thus demethylation definitely occurs in the animal body.

E. R. S.

## (xx) PHARMACOLOGY AND TOXICOLOGY.

**Substituted sulphanilamides.  $N^1$ -Hydroxy- $N^4$ -acyl derivatives.**—See A., 1940, II, 346.

**Substituted sulphanilamidopyridines.**—See A., 1940, II, 359.

**Deacylation of  $N^4$ -*n*-acylsulphanilamides and  $N^4$ -*n*-acylsulphanilylhydroxamides *in vitro*.** M. F. F. KOHL and L. M. FLYNN (Proc. Soc. Exp. Biol. Med., 1940, 44, 455—457).—Ease of deacylation by liver extracts increases with length of acyl group.

V. J. W.

**Anticatalase activity of sulphanilamide and related compounds. VI. Sulphonhydroxamides.** L. E. SHINN, E. R. MAIN, and R. R. MELLON (Proc. Soc. Exp. Biol. Med., 1940, 44, 596—600).—Bacteriostasis from sulphanilamide has a lag which has been shown absent in broth cultures in the case of *p*-hexoamidobenzenesulphonhydroxamide (A., 1940, III, 756) and is now shown absent in blood cultures. In these, however, bacteriostasis is transient owing to reaction between  $-NH\cdot OH$  and hæmoglobin.

V. J. W.

**Free and combined sulphanilamide in material drained from human biliary tract.** R. S. HUBBARD and R. K. ANDERSON (Proc. Soc. Exp. Biol.



Med., 1940, 44, 487—489).—The free drug appeared in bile from fistulae shortly after ingestion, the combined (probably acetyl) form only after 4 hr. The latter at no time exceeded 20% of total sulphanilamide although free and combined forms were present in equal quantities in blood. V. J. W.

**Concentration of sulphanilamide in saliva following oral administration.** S. WILLIAMS, B. SPLATT, and R. JAKOBOWICZ (Med. J. Austral., 1940, I, 120—125).—In man the concn. of sulphanilamide in the saliva has no const. relationship to the blood concn. F. S.

**Determinations of sulphanilamide and other primary aromatic amines in body-fluids.** P. FANTL (Austral. J. Exp. Biol., 1940, 18, 175—184).—The method is based on diazotisation and subsequent coupling with  $\alpha$ -naphthol in alkaline solution. In sera of patients undergoing treatment with M. & B. 693, the ratio between free and total M. & B. 693 varies in different individuals. Animals on a diet producing alkaline urine excreted greater amounts of acetylated M. & B. 693 than those producing more acid urine. M. & B. 693 is found in higher concn. in the serum than in the whole blood; the reverse is true for sulphanilamide. D. M. N.

**Sulphanilamide solution.** W. J. SIEBERT and F. LOOSE (J. Lab. clin. Med., 1940, 25, 1062—1066).—The solution contains in each fluid ounce 30 grains of sulphanilamide and 4 fluid drams of systemic alkaliniser (29% Na lactate and 10.6% K citrate by wt.) and glucose. In the guinea-pig and rabbit higher blood concns. of free sulphanilamide are obtained and more rapidly when the drug is given as the solution than when it is administered in equiv. doses in other forms. The rate of elimination of the sulphanilamide was not accelerated. C. J. C. B.

**Effects of sulphapyridine on staphylococci and staphylococcus toxin.** R. H. RIGDON and P. R. FREEMAN (J. Lab. clin. Med., 1940, 25, 1125—1134).—Sulphapyridine in extract broth has a bacteriostatic effect on staphylococci which varies with the strain, but the hæmolytic, skin-necrotising, and lethal factors in staphylococcus toxin are not affected. C. J. C. B.

**Effect of sulphanilamide, sulphapyridine, and sulphathiazole on staphylococcus toxins.** M. BAYLISS (Proc. Soc. Exp. Biol. Med., 1940, 44, 525—529).—Virulence of toxins was not affected by mixing with any of these substances. V. J. W.

**Effectiveness of sulphanilamide on anaërobic hæmolytic streptococci.** E. H. SPAULDING and A. BONDI, jun. (Proc. Soc. Exp. Biol. Med., 1940, 44, 321—326).—One of two strains of group A streptococci was sulphanilamide-resistant in mice whilst the other was not. Both behaved identically *in vitro*. After adaptation for 14 and 18 months to aerobic incubation both strains became equally resistant to sulphanilamide in mice. V. J. W.

**Comparison of organic acids and sulphanilamide as urinary antiseptics.** H. F. HELMHOLZ (Acta paediatr. Stockh., 1938—1939, 23, 1—13).— $\beta$ -Hydroxybutyric acid and mandelic acid are useless in treatment of *Proteus* infections, but effective in

*Strep. faecalis* infections, as they act only in acid medium ( $p_H$  of urine must be less than 5.5). Sulphanilamide is the ideal drug during acute stage; acting best in alkaline medium, it is useful in *Proteus* infections and also in patients with reduced renal function, but is ineffective in *Strep. faecalis* infections. M. K.

**Use of sulphanilamide in infections of urinary tract during puerperium.** E. BRANDSTRUP and V. SINDBJERG-HANSEN (Acta obstet. Gynec. Scand., 1939, 19, 195—200).—Sulphanilamide, 3  $\times$  0.6 g. daily, was superior to "pyelol" in infections of the urinary tract of puerperal patients. 73% of the 120 cases had sterile urine after 4 days' treatment. In 439 pyelol cases a bacteria-free urine was obtained in 51%. No restrictions of diet or water intake were required during treatment. No toxic by-effects were observed. M. K.

**Sulphapyridine and serum in experimental type III lobar pneumonia.** J. L. WRIGHT and F. D. GUNN (Proc. Soc. Exp. Biol. Med., 1940, 44, 523—525).—Serum and sulphapyridine were equally effective after infective doses causing 63% mortality in rats. After larger doses sulphapyridine was the more effective. Serum and sulphapyridine combined were not superior to sulphapyridine alone. V. J. W.

**Serum treatment of pneumonia.** G. WIELE and H. IBELING (Dtsch. med. Wschr., 1940, 66, 113—118).—The mortality rate of 100 patients suffering from acute pneumonia treated with sp. serum was the same as that of an untreated control series (30%). A. S.

**Treatment of pneumonia during pertussis with sulphapyridine.** J. L. KOHN, H. J. RUBIN, and H. M. HOBART (Arch. Pediat., 1940, 57, 410—421).—33 children with pneumonia during pertussis were given sulphapyridine in the usual dosage; 60% were under two years of age. 12 in which pneumococci were isolated did no better than those in whom other bacteria were found. Sulphapyridine had little effect on the course of illness in those considered severely ill. 2 of the children developed agranulocytosis and one died; 3 others developed leucopenia. C. J. C. B.

**Sulphapyridine and serum in pneumonia.** C. J. MCSWEENEY (Lancet, 1940, 239, 3—5).—In 186 cases of lobar pneumonia treated with antipneumococcal serum and sulphapyridine the mortality rate was 2.7%; in 74 cases of bronchopneumonia similarly treated, the mortality rate was 9.5%. C. A. K.

**Chemotherapeutic properties of derivatives of the apoquinine and sulphamide series in pneumococcal streptococcal infections. Combined therapy with ethylapoquinine and 2-(*p*-aminobenzenesulphonamidopyridine).** K. MIURA (Japan. J. Med. Sci., IV, 1940, 12, 209—235).—The chemotherapeutic actions of sulphapyridine and ethylapoquinine were compared. Sulphapyridine was effective against pneumococcus type I and III, and *Strep. hæmolyticus in vitro* and *in vivo*. Ethylapoquinine is still active against pneumococcus type I and III in dilutions where sulphapyridine was ineffective. Antistreptococcal activity of ethylquinine is, however, much less than that of the corresponding



amount of sulphapyridine, and it is not so well tolerated. In pneumococcus type I infections sulphapyridine and ethylapoquinine do not inhibit each other if given together, but are synergistic.

K. S. W.

**Sulphapyridine in pneumonia and bronchopneumonia in children.** A. LICHTENSTEIN (*Acta paediatr. Stockh.*, 1939, 25, 156—163).—Sulphapyridine caused a regular fall of temp. within 24—48 hr. and rapid disappearance of symptoms in 50 children between the ages of 4 months and 12 years.

M. K.

**Antibody formation in cases of lobar pneumonia treated with sulphathiazole.** Y. KNEELAND, jun., and B. MULLIKEN (*J. clin. Invest.*, 1940, 19, 735—738).—16 of 21 cases of lobar pneumonia treated with sulphathiazole showed an excess of antibody when the temp. became normal or thereafter. Of the patients treated with sulphapyridine 75% showed no antibody. This suggests that sulphapyridine is a more powerful antipneumococcal agent than sulphathiazole.

C. J. C. B.

**Treatment of epidemic meningitis with sulphapyridine.** W. JÄCKLI (*Schweiz. med. Wschr.*, 1940, 70, 280—281).—16 children suffering from epidemic meningitis were treated with oral sulphapyridine; soluble preps. were given intramuscularly or intravenously in severe cases. The children recovered.

A. S.

**Treatment of erysipelas with or without sulphanilamide.** R. BERGMAN (*Acta paediatr. Stockh.*, 1939, 25, 8—18).—Fall of temp. in cases treated with sulphanilamide was more rapid and complete than in control cases.

M. K.

**Treatment of gonorrhœa with sulphapyridine.** F. WYSS-CHODAT (*Schweiz. med. Wschr.*, 1940, 70, 375—377).—Immediate treatment of gonococcal urethritis and metritis with large doses of sulphapyridine is recommended; treatment is to be discontinued if cure is not achieved after a total dose of 20 g. The initial dose is 4 g. per day.

A. S.

**Gonococcal chemotherapy in women and children.** M. MOFFETT (*Brit. Med. J.*, 1940, II, 8—10).—87.4% of 104 cases of gonorrhœa in women, 11 out of 20 cases of gonococcal vulvovaginitis in children, and all of 20 cases of gonococcal ophthalmia were cured by sulphapyridine. Toxic effects were slight and infrequent.

C. A. K.

**Sulphapyridine in treatment of gonococcal infections after sulphanilamide failure.** C. FERGUSON, M. BUCKHOLTZ, and R. A. HINGSON (*Amer. J. med. Sci.*, 1940, 200, 365—366).—75 of 100 such patients were cured by sulphapyridine treatment.

C. J. C. B.

**Effect of azosulphamide (neoprontosil) on experimental *Welchii* infection in mice.** P. MORALES-OTERO and L. M. GONZÁLES (*Proc. Soc. Exp. Biol. Med.*, 1940, 44, 532—534).—Intramuscular injection of 1 c.c. of neoprontosil failed to give any protection against *Cl. welchii* infections.

V. J. W.

tion in mice the ratio of the therapeutic dose to the toxic dose was for sulphanilamide 1 : 6; for prontosil rubrum and soluseptasine, 1 : 6 and 1 : 3; and for uleron and sulphapyridine, 1 : 13.

F. S.

**Sulphathiazole in septicæmia.** W. C. STIRLING (*J. Amer. Med. Assoc.*, 1940, 115, 118—120).—1 case of *Staph. aureus* septicæmia and 1 case of non-hæmolytic streptococcus septicæmia were successfully treated with sulphathiazole.

C. A. K.

**Use of sulphamethylthiazole.** A. FISCHER (*Schweiz. med. Wschr.*, 1940, 70, 666—667).—The bacteriostatic concn. of sulphamethylthiazole on staphylococci in broth is 0.2%, that of sulphapyridine 0.8%. Sulphapyridine and sulphamethylthiazole are equally effective against pneumococcal infections in mice. Oral administration of 3 g. per day of sulphamethylthiazole in man over 3 days raises the thiazole concn. in serum above 10 mg.-%; urinary thiazole reaches its max. (14 mg.-%) on the third day; 58% of the substance was recovered from urine in non-acetylated form. The drug is well tolerated. It was successfully used in pneumococcal pneumonia, meningococcal meningitis, and male and female gonorrhœa.

A. S.

**Treatment of acute staphylococcal infections with sulphamethylthiazole.** D. WEISMAN and H. RUSSELL (*J. Pediat.*, 1940, 17, 31—37).—Five cases of acute bronchitis in infants and 2 cases of staphylococcus bacteræmia in children which were treated with sulphamethylthiazole are described. Doses of 1.5—3 grains per lb. per 24 hr. gave an effective concn. of the drug in the blood. The clinical response was striking.

C. J. C. B.

**Experiments with sulphonamidothiazole (Ciba 3714).** R. MEIER, O. ALLEMANN, and E. MERZ (*Schweiz. med. Wschr.*, 1940, 70, 338—342).—The curative efficacy of sulphonamidothiazole in hæmolytic streptococcal infections of mice and guinea-pigs equals that of sulphapyridine. The blood concn. of Ciba 3714 after oral administration of 0.05—0.1 g. per kg. body-wt. remains at 1.5—4.0 mg.-% for 2—5 hr.; this dose cures 85—98% of the infected animals. The substance, if given by mouth or intravenously injected as Na salt, is tolerated by mice and rabbits as well as sulphanilamide and sulphapyridine. The lethal oral dose in dogs and pigs is 2 g. per kg. body-wt.; 0.5 g. per kg. is tolerated without untoward effects. Blood pressure and intestinal movements decrease after intravenous injection of  $\frac{1}{3}$  of the lethal dose in rabbits. 100 mg. of Ciba 3714 per 100 c.c. of blood do not produce methæmoglobin *in vitro* if kept at 37° for 10 hr. 0.5—0.8% of the free substance and 0.18% of the acetylated compound are sol. in urine. With very large doses, up to 37% of the substance is excreted in urine as acetate.

A. S.

**Action of albucid on experimental trichophytia.** P. W. SCHMIDT (*Dtsch. med. Wschr.*, 1940, 66, 210—213).—Guinea-pigs were infected with *Trichophyton gypseum*. Percutaneous administration of 1—20% albucid ointment was ineffective. Subcutaneous injection of 7.5 g. in 30% solution cured the disease.

A. S.



**Prontosil in scarlet fever.** J. WOLFF (Arch. Kinderheilk., 1939, 116, 131—136).—Prontosil did not prevent complications during and after scarlet fever. M. K.

**Prontosil rubrum in treatment of scarlet fever.** J. STRÖM (Acta paediatr. Stockh., 1938—1939, 23, 332—360).—In cases treated with prontosil pyrexia was of shorter duration and the sedimentation reaction became normal within a shorter period. The no. of local inflammatory complications was greater in untreated cases. Toxic side-effects were few (5 cases of polymorphic exanthema). M. K.

**Solution of sulphanilamide in local treatment of wounds.** C. W. MAYO and J. M. MILLER (Proc. Staff Mayo Clin., 1940, 15, 609—611).—The solution is prepared by heating a physiological solution of NaCl to the b.p. and adding sufficient sulphanilamide to make a saturated solution. Irrigation of wounds with this solution has been used successfully for more than a year. H. H. K.

**Sulphanilamide in therapy of tropical ulcer.** K. V. EARLE (Trans. Roy. Soc. trop. Med. Hyg., 1940, 34, 105—108).—Sulphanilamide compounds are of doubtful val. in the case of long-standing ulcers, favourable in recent ulcers, and good in the pre-ulcerative or vesicular state. The val. of the drug as a prophylactic in this condition is not proved. C. J. C. B.

**Sulphonamides in trachoma.** O. S. LEE and H. RÖTENSTEIN (J. Amer. Med. Assoc., 1940, 115, 107—112).—Sulphonamides were effective in 95 cases of trachoma in stages I, II, and III. C. A. K.

**Chemotherapy in acute otitis media.** W. C. BOWERS (J. Amer. Med. Assoc., 1940, 115, 178—181).—Sulphonamides increase by 50% the chances of prompt resolution in cases of acute purulent otitis media. C. A. K.

**Local action of sulphonamides on brain.** D. S. RUSSELL and M. A. FALCONER (Lancet, 1940, 239, 100—101).—The local application of sulphonamides to the rabbit's brain does not cause significant tissue damage. Solutions are preferable to solid applications. C. A. K.

**Pathological changes following prolonged administration of sulphathiazole and sulphapyridine.** G. RAKE, H. B. VAN DYKE, and W. C. CORWIN (Amer. J. med. Sci., 1940, 200, 353—361).—Sulphathiazole given as 2% of the diet killed 77% of mice during a 4-week period and produced lesions chiefly in the spleen and genito-urinary tract. Sulphapyridine was not lethal and produced fewer pathological changes. In rats sulphapyridine was twice as toxic as sulphathiazole as shown by the effect on the growth curve and by the lesions produced in the genito-urinary tract. In monkeys receiving a single daily dose sulphapyridine was more toxic than sulphathiazole as shown by the lesions in the genito-urinary tract and, to a small extent, by loss of wt. and leucopenia. (19 photomicrographs.) C. J. C. B.

**Peripheral neuropathy and toxic psychosis with convulsions due to sulphamethylthiazole.** C. F. GARVIN (Amer. J. med. Sci., 1940, 200, 362—

364).—A report of a fatal case 6 days following an average daily dose of 6 g. of the drug for 21 days for pneumonia. C. J. C. B.

**Fatal reactions to administration of sulphonamide drugs.** L. J. TRAGERMAN and J. M. GOTO (J. Lab. clin. Med., 1940, 25, 1163—1176).—Five deaths are reported following the administration of sulphonamide drugs. 3 were from granulocytopenia (receiving 101 and 64 g. of sulphanilamide, and 88 g. of sulphapyridine respectively). In 2 of these the bone marrow at autopsy showed maturation arrest of the myeloid series at the myelocyte level. Fatal acute hæmolytic anæmia developed in one case of erysipelas within 3 days after 25 g. of sulphanilamide. Interference with renal tubular function by pptd. hæmoglobin derivatives was a major factor leading to death. The fifth fatal case showed clinical evidence of severe liver and kidney damage after 34 g. of sulphanilamide for gonorrhœal arthritis. Degeneration of liver cells and necrosis of renal tubular epithelium were found at autopsy. (6 photomicrographs.) C. J. C. B.

**Sulphapyridine dermatitis.** C. G. LAROCOCO (Arch. Dermat. Syphilol., 1940, 42, 341—342).—Report of two cases. C. J. C. B.

**Hæmaturia with sulphathiazole in pneumonia.** J. H. ARNETT (J. Amer. Med. Assoc., 1940, 115, 362—363).—Case report. C. A. K.

**Methæmoglobinæmia following sulphanilamide and sulphapyridine therapy in infants and children.** B. W. CAREY and J. L. WILSON (J. Pediat., 1940, 17, 38—43).—There was no relation between increasing amounts of methæmoglobin and increasing blood concns. of "free" sulphanilamide and sulphapyridine, but methæmoglobinæmia occurred in almost every patient who received these drugs. C. J. C. B.

**Fatal renal insufficiency following administration of sulphapyridine.** S. KOLETZKY and B. G. KING (J. Lab. clin. Med., 1940, 25, 1021—1025).—An 80-year-old woman who received 8 g. of the drug in 3 days for bronchopneumonia developed abdominal pain, hæmattria, and oliguria. During the next 5 days a total of only 154 c.c. of bloody urine was obtained by catheter. Death occurred in uræmia 8 days after onset of administration of the sulphapyridine and 5 days after it was discontinued. At autopsy, there was necrosis of the ureters and pyelitis, with obstruction of the terminal portions of both ureters, and marked acute nephrosis. C. J. C. B.

**Toxic effects of sulphonamide compounds, particularly sulphapyridine.** W. S. TILLET (Bull. N.Y. Acad. Med., 1940, 16, 217—226).

**Concentration of Bayer 205 (germanin) in human blood and cerebrospinal fluid after treatment.** F. HAWKING (Trans. Roy. Soc. trop. Med. Hyg., 1940, 34, 37—52).—After a single intravenous dose of 1 g. the concn. was 3 mg.-% after 2 days and 0.6 mg.-% after 9 days. After courses of 4 doses, concns. reached depended more on individual peculiarities than on the spacing of the doses. One day after the fourth dose, concn. in the blood was 4—15 mg.-%. After courses of 5 or 6 doses, Bayer 205 could be demonstrated in the blood of some patients



up to 8 or 9 months later; in other patients it had disappeared within 5 months. Although Bayer 205 was present in the plasma in considerable concns., it did not penetrate into the c.s.f. in sufficient amounts to be detected chemically.

C. J. C. B.

**Antitoxin in staphylococcal septicæmia.** R. T. SUTHERLAND (Arch. intern. Med., 1940, 66, 1—10).—Staphylococcal antitoxin was given to 6 cases of staphylococcal septicæmia of whom 1 died.

C. A. K.

**Action of acetylcholine in chronic arthritis.** E. PAYR (Münch. med. Wschr., 1940, 87, 7—11).—Repeated intra-articular and intramuscular injections of 0.1 g. of acetylcholine was beneficial to patients suffering from chronic arthritis, ankylosis, and myositis.

A. S.

**Salicylates in rheumatic pericarditis.** E. P. BOAS and M. ELLENBERG (J. Amer. Med. Assoc., 1940, 115, 345—348).—Large doses of salicylates produced rapid absorption of effusion in 2 cases of acute rheumatic pericarditis but had no effect on the endocardial and myocardial involvement.

C. A. K.

**Ineffectiveness of proprietary remedies and other drugs in control of Bang's disease.** A. B. CRAWFORD and B. A. BEACH (J. Agric. Res., 1940, 60, 565—574).—The advertised remedies "3-v tonic" and "Bowman's" were fed to pregnant cows later exposed to *B. abortus* infection. No differences were found in the abortion rates or immunological results between these cows and controls.

V. J. W.

**Sodium pyrocatecholdisulphonate as complex former in chemotherapy.** L. ZANCAN (Boll. Soc. ital. Biol. sperim., 1940, 15, 521—523).—The chemotherapeutic use of complexes of Na pyrocatecholdisulphonate with Sb, Cu, Bi, and Fe is discussed.

F. O. H.

**Treatment of *Falciparum* malaria of drug addicts.** H. MOST and N. JOLLIFFE (Amer. J. med. Sci., 1940, 200, 367—372).—*Falciparum* malaria is endemic in New York City among drug addicts using a common hypodermic apparatus for administration of heroin intravenously. The mortality is very high unless effective treatment is given soon after admission to the hospital. In the presence of nervous or gastrointestinal involvement quinine dihydrochloride should be given intravenously. When the emergency phase has passed, atabrin should be given orally. To less severely ill patients, or to symptomless carriers of asexual parasites, atabrin alone should be given. Plasmochin should be given as a gametocide to all patients before they are discharged from the hospital.

C. J. C. B.

**Antiseptic action of sodium hypochlorite.** W. MANNINGER (Dtsch. med. Wschr., 1940, 66, 169—170).—A 0.1% solution of a mixture containing 5 c.c. of NaOCl and 100 c.c. of 3% H<sub>3</sub>BO<sub>3</sub> killed staphylococci and strepto-cocci within 2 min. A 1% solution is recommended for washing of wounds or cavities (e.g., pleura). The tissues remained undamaged.

A. S.

**Correlation of the evaluation of disinfectants by agar cup-plate method and clinical experience.** R. G. HARRIS and W. A. PROUT (J. Amer. Pharm.

Assoc., 1940, 29, 413—415).—The coeff. of diffusion [=  $9.739x(15 + x)$  where  $x$  = zone width] is considered to be superior to the zone width given by the agar cup-plate method as a criterion of the bactericidal power of disinfectants, especially those used in obstetrics.

F. O. H.

**Mode of action of neotropin.** K. JUNKMANN (Z. ges. exp. Med., 1936, 99, 300—305; Chem. Zentr., 1937, i, 3174).—Following administration of neotropin urine contains an elimination product, probably a sulphonic ester of 3- or 4-hydroxynotropin. The bactericidal effect of neotropin is probably due to the action of hydroxynotropin derived from the sulpho-ester.

A. G. P.

**Pharmacological action of anthranilic acid.** R. IMAZUMI and K. HANO (Japan. J. Med. Sci., IV, 1940, 12, Proc., 50—51).—The acid stabilises but does not potentiate adrenaline. It has no effect on blood pressure, intestinal motility, or peripheral blood vessels of rabbits. It increases the action of the heart in rabbits and turtles. Intravenous injection of small doses produces diuresis. Kidney vol. is increased. The renal vessels show dilatation. The acid has a good diuretic action on artificially hydrated rabbits.

H. H. K.

**Pharmacological studies on phthalic acid-bis-diethylamide.** Y. NAKAZAWA (Japan. J. Med. Sci., IV, 1940, 12, Proc., 55—56).—Intravenous or subcutaneous injection of large doses into rabbits produces chronic and tonic cramps, still larger doses respiratory paralysis. The lethal doses per 10 g. in mice are 0.6 mg. subcutaneously and 0.3 mg. intravenously, and 25 mg. subcutaneously and 13 mg. per kg. intravenously in rabbits. 0.01% solution increases heart beat, 0.1% weakens and slows the isolated frog's heart, and 2% arrests the heart in diastole. 0.5 mg. increases systole and diastole, 1—5 mg. decreases rate and contractility, and 10 mg. produces arrest in diastole of the perfused rabbit's heart. 0.001% constricts vessels of the perfused rabbit's ear, 0.1—1% produces vasodilatation. 3 mg. per kg. intravenously produce a prolonged rise of rabbit's blood pressure. Decerebration or section of the cervical spinal cord abolishes or decreases this effect. The marked increase of respiration is more pronounced in the morphine-poisoned than in normal rabbits.

H. H. K.

**Increased water excretion due to sympathomimetic drugs.** P. W. SPRINGORUM (Klin. Woch., 1940, 19, 33—36).—Pervitin ( $\beta$ -methylamino- $\alpha$ -phenylpropane) and veritol caused diuresis, especially during the first 4 hr.

M. K.

**Melanophore-dilating action of adrenaline on Silurian catfish, *Parasilurus asotus*.** M. ENAMI (Proc. Imp. Acad. Tokyo, 1940, 16, 236—240).—Intramuscular or intraperitoneal injection of adrenaline into the clear fish against an illuminated white background causes a quick darkening of the fish which reaches max. in 0.5—1 hr., together with dilatation of both types of melanophores. After a time the fish assumes its previous colour. With an illuminated black background, where the expansion of the melanophores is already max., there is no



change in colour. The action of adrenaline is still more marked in the case of hypophysectomised fish. Similar results are obtained when adrenaline is applied directly to the skin *in vivo* or *in vitro*.

J. N. A.

**Chemistry and pharmacodynamics of diaryl-ethanolamines.** A. LESPAGNOL, G. BIZARD, and J. TURLUR (Bull. Sci. pharmacol., 1936, 43, 555—571; Chem. Zentr., 1937, i, 3173).—The prep. of diphenylethanolamine, m.p. 162°, and the *p*-dimethoxy-, m.p. 140°, and anisylidenedimethoxy-, m.p. 132°, derivatives is described. All lowered the blood pressure when injected intravenously into dogs. Stilbene-diamine had a hypotensive action, and dihydroxydiphenylethylamine at first raised and subsequently lowered blood pressure.

A. G. P.

**Chromodacryorrhœa, a new criterion for biological assay of acetylcholine.** S. TASHIRO, C. C. SMITH, E. BADGER, and E. KEZUR (Proc. Soc. Exp. Biol. Med., 1940, 44, 658—661).—Intravenous injection of 0.2 µg. or over of acetylcholine in the eserinated rat causes the shedding of blood-stained tears. The threshold is sharp and can be used for assay.

V. J. W.

**Effect of atropine on gastro-intestinal tract following thyroid medication.** S. MORRISON and M. FELDMAN (Endocrinol., 1940, 27, 500—503).—Administration of dried thyroid does not overcome the gastric inhibition caused by atropine, although it does overcome that caused by cutting the vagi (cf. A., 1940, III, 218).

V. J. W.

**Action of nicotine on leucocyte count.** P. SCHEER (Z. ges. exp. Med., 1940, 107, 219—227).—Smoking 3 cigarettes increases the fasting leucocyte count, especially that of lymphocytes and neutrophils. Chronic nicotine intoxication produces marked lymphocytosis.

A. S.

**Effect of parasympathomimetic drugs on isolated bladder of rabbit.** L. DONATELLI and S. SCIAGRÀ (Boll. Soc. ital. Biol. sperim., 1940, 15, 490—491).—Data for the tonic and motor functions (inhibited by atropine) of acetylcholine, eserine, prostigmine, histamine, ericolin (? arecoline), and carbamylcholine chloride are given.

F. O. H.

**Active principle from *Ephedra vulgaris*, Rich., and *Ephedra nebrodensis*, Tin., from Sardinia.** A. LA FLORESTA (Boll. Soc. ital. Biol. sperim., 1940, 15, 501—503).—Both plants yield an alkaloid (as cryst. hydrochloride, m.p. 215—216°) with chemical, physical, and biological properties identical with those of ephedrine.

F. O. H.

**Sardinian variety of *Ephedra vulgaris*, Rich., similar to Chinese ephedra, Ma-huang.** A. LA FLORESTA (Boll. Soc. ital. Biol. sperim., 1940, 15, 503—504).—Preps. (containing ephedrine and  $\psi$ -ephedrine) from the plant are described.

F. O. H.

**Methylcholineurethane.** I. STARR and L. K. FERGUSON (Amer. J. med. Sci., 1940, 200, 372—385).—This drug has parasympathomimetic action which is annulled by atropine. It is more stable than mecholyl and largely lacks the undesired nicotine-like action of doryl, so that fewer uncomfortable side

effects are caused. Given to 25 normal young adults, in suitable dosage, the drug caused increased peristalsis and a desire to void when its action on the heart and circulation, on salivation, and on sweating was min. It caused emptying of the bladder in 68% of 122 patients with post-operative urinary retention, reducing the necessity for catheterisation by  $\frac{2}{3}$ . It has also been used with benefit in patients with neurogenic bladders and in certain cases of abdominal distention, extreme constipation, and peripheral vascular disease.

C. J. C. B.

**Comparison of one- and eighteen-hour frog method of assay of digitalis.** C. W. CHAPMAN (J. Amer. Pharm. Assoc., 1940, 29, 337—339).—The two methods gave results in good agreement when tested on 7 leaf and powder preps. The U.S.P. reference powder has an activity 152.5% of that of the 1936 international standard when the latter is considered to have an activity of 1 i.u. per 0.08 g.

F. O. H.

**U.S.P. (1939—40) digitalis assay.** L. C. MILLER (J. Amer. Pharm. Assoc., 1940, 29, 339—340).—An interim report of collaborative work. The 18-hr. is slightly superior to the 1-hr. frog method. The potencies of macerates prepared from the same digitalis powder in different laboratories are very uniform.

F. O. H.

**Relationship between chemical constitution and pharmacological action of cardiac glucosides.** E. ROTHLIN (Schweiz. med. Wschr., 1940, 70, 577—580).—The cardiac affinity of numerous digitalis glucosides is discussed with reference to their chemical constitution.

A. S.

**Variations in glucoside content of different specimen of digitalis.** A. STOLL (Schweiz. med. Wschr., 1940, 70, 594—596).—The dried leaves of numerous *D. purpurea* specimens showed great fluctuations of digitoxin content (0.15—0.79 g. per kg.); the gitoxin content varied from 0 to 0.7 g. per kg. The fluctuations in various *D. lanata* specimens were less marked.

A. S.

**Action of digitaloid glucosides on vasomotor centre.** P. BLICKENSCHDORFER and H. A. MCGUIGAN (J. Lab. clin. Med., 1940, 25, 1134—1139).—The central pressor action of digitaloid glucosides is shown in dogs, but, after the central action has reached its max., in many cases an added rise may be obtained by injecting the drug intravenously.

C. J. C. B.

**Cumulative effects of digitalis preparations.** W. HEUBNER (Schweiz. med. Wschr., 1940, 70, 524—529).—Repeated intravenous or oral administration of gitoxigenin, digoxigenin, or digitoxigenin, obtained from *Digitalis lanata*, has no cumulative cardiac effects in cats. Digitoxigenin has a cumulative central excitatory action; digoxigenin has an increasing effect on the vomiting centre. The local irritating effect on subcutaneous injection increased in the order gitoxigenin, digoxigenin, digitoxigenin. The preps. produced albuminuria. The cumulative effects of the glucosides digilanid A, B, and C are due to their genin contents.

A. S.

**Pharmacological action of cinnamon.** L. CHANG (Japan. J. Med. Sci., IV, 1940, 12, Proc., 52).



—Na cinnamate produces vasodilatation in frogs and perfused frog's hind-legs. White blood cells, especially the eosinophils, increase after subcutaneous injection of Na cinnamate and cinnamaldehyde.

H. H. K.

**Pharmacological action of bis-ethylxanthogen.** T. FUKUMOTO (Japan. J. Med. Sci., IV, 1940, 12, Proc., 56—57).—This substance contains 53.5% S and rapidly destroys micro-organisms. It lowers rabbit's blood pressure after section of the vagi and splanchnic nerves. Rate and vol. of respiration are increased. It paralyzes first motor nerve endings and then skeletal muscle in frogs.

H. H. K.

**Theophylline with isopropanolamine in heart disease.** H. F. ROBERTSON and F. B. FAUST (J. Lab. clin. Med., 1940, 25, 1066—1069).—Theophylline with isopropanolamine given to 21 patients lowered for a short time arterial, venous, and c.s.f. pressures and caused capillary dilatation. Considerable relief from dyspnoea and orthopnoea was obtained shortly after injection, lasting 3—4 hr.

C. J. C. B.

**Cardiac and side actions of red and white *Scilla maritima*.** G. MADAUS and F. E. KOCH (Z. ges. exp. Med., 1940, 107, 199—211).—The action of red and white *S. maritima* preps. on the frog's heart is as variable as that of different digitalis specimens. Local application of whole or pulverised scilla leaves produces skin erythema, due to Ca oxalate crystals (Raphidæ). The crystals produce severe irritation of the rabbit's conjunctiva and of the gastric mucous membrane in guinea-pigs. Red squill is 40 times as toxic as white; the red plant contains a substance highly toxic to rats (scillitin), male rats being 3—5 times as resistant as females. The ratio of toxic to therapeutic action is 1 : 20—1 : 150 (white squill) and 1.5 : 1—1 : 7 in red squill preps.

A. S.

**Red squill. VII. Effect of altitude on toxicity in rats.** J. C. WARD, H. J. SPENCER, D. G. CRABTREE, and F. E. GARLOUGH. **VIII. Bio-assay.** J. C. WARD, D. G. CRABTREE, and F. E. GARLOUGH (J. Amer. Pharm. Assoc., 1940, 29, 350—353, 354—357; cf. A., 1940, III, 212).—VII. Male rats are approx. 3 times as resistant to red squill at an altitude of 717 ft. as they are at 14,200 ft.; with female rats, the change in susceptibility with altitude is in the same direction but to a much smaller extent.

VIII. Factors affecting the assay of red squill powder by determination of toxicity in rats are discussed. Female rats are more than twice as susceptible to the powder as are male rats.

F. O. H.

**Structure and composition of achenes of *Adonis cupaniana*, Guss.** A. GRECO (Boll. Soc. ital. Biol. sperim., 1940, 15, 504—505).—The achenes (gross and minute structure are described) contain an aromatic oil and bitter principles which are cardio-active (frog).

F. O. H.

**Expectorants in chronic bronchitis.** S. ALSTEAD (Edinb. Med. J., 1940, [iv], 47, 693—699).—A method for determination of the vol. of the bronchial secretions is described.

H. S.

**Purgative action of triacetyldihydroxyphenylbenzopyrrolidone.** F. SOICLOUNOFF (Schweiz. med. Wschr., 1940, 70, 377).—Oral administration of

0.012—0.024 g. of the compound has a purgative action after 12—24 hr. The substance acts on the large intestine.

A. S.

**Purgative effect of boric acid.** H. ISIBASI (Japan. J. Med. Sci., IV, 1940, 12, Proc., 54—55).—Oral administration of 1.5 g. per kg. of  $H_3BO_3$  produces diarrhoea in rabbits. The same effect occurs after injection of 1 g. subcutaneously or 0.8 g. per kg. intravenously. 50% of the orally administered drug is excreted in the urine after 12 hr. Complete elimination occurs only after 3 days, because of accumulation in the body. The acid contracts intestine *in situ* or isolated. This action is not abolished by atropine or nicotine. The drug acts directly on the smooth muscle of the intestinal canal.

H. H. K.

**Anthelmintic drugs in frogs.** M. YAMANOUÉ (Japan. J. Med. Sci., IV, 1940, 12, Proc., 42—43).—Various drugs were tested on infected frogs. Extractum filicis combined with oleum chenopodii has strongest anthelmintic effect. Some drugs are more effective if given with a 0.05% solution of nicotine. Min. effective dose and concn. are tabulated.

H. H. K.

**Anthelmintic action of *Sargassum Thunbergii*,** J. Ag. C. Go (Japan. J. Med. Sci., IV, 1940, 12, Proc., 43—48).

H. H. K.

**Treatment of lamblia intestinalis [with acramil].** L. VON FRIEDRICH (Gastroenterologia, 1940, 65, 24—35).—Vegetative forms in the duodenal juice and cystic forms of lamblia in the stools disappeared after treatment with acramil in 34 cases.

H. H. K.

**Pharmacology of *Henna*.** G. CASANOVA (Boll. Soc. ital. Biol. sperim., 1940, 15, 491—492).—Extracts of the leaves do not contract the isolated, gravid uterus (guinea-pig, rat); the plant is therefore useless as an abortifacient.

F. O. H.

(A) Use of phenothiazine as anthelmintic for sheep. W. E. SWALES. (B) Fate of phenothiazine in sheep. H. B. COLLIER. (C) Effects and excretion of phenothiazine when used as an anthelmintic for sheep. W. E. SWALES and H. B. COLLIER (Canad. J. Res., 1940, 18, D, 266—271, 272—278, 279—287).—(A) Satisfactory use of phenothiazine in tablet form is recorded.

(B) In faeces from sheep treated with phenothiazine only unchanged phenothiazine (approx. 50% of the initial dose) was detected. A conjugated compound, probably K leucophenothiazone sulphate, was present in urine, serum, and milk. Catalase was inhibited by leucophenothiazone, leucothionol, and thionol but not by phenothiazine.

(C) More than 80% of the phenothiazine administered to sheep was recovered in faeces and urine. Max. concns. of the leuco-derivative occurred in blood and urine approx. 6 hr. after dosage. Max. faecal excretion occurred later. Amounts of the leuco-compound in milk were insufficient to exert any direct effect on the lamb.

A. G. P.

**Anthelmintic efficiency of compounds related to phenothiazine.** H. McL. GORDON and M. LIPSON (J. Counc. Sci. Ind. Res. Australia, 1940, 13, 173—177).—Phenarsazine (0.04 to 0.12 g. per kg.) is



very effective against *Æ. columbianum* but is very toxic for sheep, causing severe inflammation of the rumen and abomasum. Smaller doses are ineffective against this organism and *H. contortus*. Phenoxthine (0.25 g. per kg.) has slight anthelmintic action against *H. contortus* and prevents larval development in faecal cultures. Smaller doses are inactive, whilst twice the dose is fatal. Phenothiazone (0.017 to 0.024 g. per 25 kg. in aq. solution injected into the abomasum, or 0.07 to 0.12 g. per kg. orally), thionol (0.13 g. per kg.), and diphenylamine (0.03 to 0.12 g. per kg.) are all inactive towards *H. contortus*. 0.4 g. of diphenylamine per kg. causes a temporary reduction in faecal egg counts, and larval development is prevented on the day after treatment. None of the compounds shows the high efficiency and low toxicity of phenothiazine. J. N. A.

**Chronic histamine action.** C. F. CODE and R. L. VARCO (Proc. Soc. Exp. Biol. Med., 1940, 44, 475—477).—15—60 mg. of histamine was suspended in 1 c.c. of beeswax and injected intramuscularly into dogs, divided among about 20 sites. Gastric secretion for 24—40 hr. was produced. V. J. W.

**Anaphylactic shock and susceptibility to histamine poisoning in cotton rat.** B. C. SEEGAL (Proc. Soc. Exp. Biol. Med., 1940, 44, 628—631).—The cotton rat is relatively insusceptible to anaphylactic shock (sheep serum or egg-white). The min. lethal dose of histamine is approx. 0.8 mg. per 100 g. V. J. W.

**Histaminase and histamine poisoning.** H. J. CORPER and M. L. COHN (J. Amer. Med. Assoc., 1940, 115, 30—33).—Histaminase which neutralised histamine *in vitro* was quite ineffective against similar amounts of histamine in the guinea-pig and had no effect on tuberculo-allergic and tuberculo-anaphylactic reactions. C. A. K.

**Histamine and scalding.** T. WENSE (Z. Immunitätsforsch., 1939, 97, 100—108).—Immunisation with histamine does not protect guinea-pigs against the lethal effect of scalding, although the local response is less pronounced. Torantil, a histaminase prep., does not influence the time of survival after scalding. G. W.

**N'-Aryl-N-alkylfuramidines.**—See A., 1940, II, 353.

**Local anaesthetics derived from tetrahydronaphthalene.** Esters of 2-dialkylamino-3-hydroxy- and 1-dialkylamino-2-hydroxy-1 : 2 : 3 : 4-tetrahydronaphthalene.—See A., 1940, II, 344.

**Chemistry and physicochemistry of lumbar anaesthesia.** W. LUDWIG and E. DORZBACH (Med. u. Chem., 1936, 3, 375—382; Chem. Zentr., 1937, i, 3174).—Comparative viscosity measurements of pantocain, dextrin, gum arabic, and methylhydroxyethylcellulose are recorded. The slow resorption of pantocain depends not only on increased viscosity but also on partial adsorption of pantocain on the methylhydroxyethylcellulose. A. G. P.

**Efficacy of local anaesthetics.** C. A. TINN (Brit. dent. J., 1940, 68, 190—191). H. H. K.

**Idiosyncrasy to local anaesthetics.** C. A. TINN (Brit. dent. J., 1940, 69, 252—254).—5 cases are reported. H. H. K.

**Sodium pentobarbital for repeated anaesthesia in guinea-pigs.** V. E. KINSEY (J. Amer. Pharm. Assoc., 1940, 29, 342—346; cf. A., 1940, III, 862).—With doses of Na pentobarbital of 15.6 mg. per kg. in guinea-pigs, ethyl alcohol does not potentiate the drug in doses below 0.4 g. per kg. Repeated injection of 15.6 mg. per kg. gives a primarily decreasing anaesthesia. A low level of ascorbic acid in the diet increases the period of anaesthesia by approx. 10%. Anaesthesia of 2 hr. duration, produced every other day for 6 months by intraperitoneal injection, leads to a gradual increase in susceptibility to the drug. The response to single doses is not affected by sex. F. O. H.

**Use of sodium pentobarbital for repeated anaesthesia in rats.** V. E. KINSEY (J. Amer. Pharm. Assoc., 1940, 29, 387—390; cf. preceding abstract).—Anaesthesia by Na pentobarbital (nembutal) is not potentiated by ethyl alcohol (0.5 g. per kg.). Repeated injection of the drug diminishes the period of anaesthesia. With single or repeated doses, female rats sleep twice as long as do male rats. Subcutaneous injection of 1 mg. of testosterone propionate into female rats reduces the period of anaesthesia by approx. 50%. Spayed rats sleep approx. 60—70% as long as unspayed controls. F. O. H.

**Ether convulsions.** W. D. STEEL (Brit. J. Anaesth., 1939, 16, 64—66).—Report of a case. H. H. K.

**Ether convulsions.** H. G. DODD (Brit. J. Anaesth., 1939, 16, 90—99).—Use of atropine is suspected as causal agent. H. H. K.

**Ether convulsions.** F. K. BOSTON (Brit. J. Anaesth., 1939, 17, 16—23).—Increased tension of CO<sub>2</sub> in the tissue is suggested as a cause. Serum-Ca was normal during convulsions. H. H. K.

**Ether convulsions.** N. R. JAMES and E. A. PASK (Lancet, 1940, 239, 97—98).—Case report. C. A. K.

**Anaesthetic action of avertin and evipan at different times of day.** Y. EDLUND and H. HOLMGREN (Z. ges. exp. Med., 1940, 107, 26—52).—Mice treated with avertin or evipan at 6 a.m. are more resistant to the anaesthetics than those treated at 11 a.m.; the resistance of the animals is also increased by previous administration of insulin and glucose. The liver is comparatively rich in glycogen at 6 a.m. and poor in glycogen at 11 a.m. A. S.

**Avertin anaesthesia in hypovitaminoses.** Y. EDLUND and H. HOLMGREN (Z. ges. exp. Med., 1940, 107, 275—289).—The anaesthetic sensitivity of mice to avertin is unchanged in A-, C-, and D-hypovitaminosis. Depth of anaesthesia is increased and induction time shortened in vitamin-B<sub>1</sub> lack. 0.4 mg. of liver-glycogen per g. body wt. was found in the -B<sub>1</sub>-deficient animals, as compared with 1.02 mg. in normals. A. S.

**Effect of carbon dioxide respiration on changes of blood gases in avertin anaesthesia.** E. DERRA



and J. KORTH (Beitr. klin. Chir., 1940, 171, 53—61). H. H. K.

**Pregnancy—a contraindication to spinal analgesia.** F. B. MALLINSON (Brit. J. Anæsth., 1938, 16, 22—27).—A discussion. H. H. K.

**Protecting action of chemicals related to procaine on ventricular fibrillation during cyclopropane anaesthesia.** B. A. MARANGONI, C. L. BURSTEIN, and E. A. ROVENSTINE (Proc. Soc. Exp. Biol. Med., 1940, 44, 594—596; cf. A., 1940, III, 474).—Intravenous injection of *p*-aminobenzoic acid, or its Na salt, or the Ca salt of this and benzylsuccinic acids, reduced the incidence of ventricular fibrillation from adrenaline under cyclopropane. Established fibrillation was not stopped by intracardiac injection of these substances but was stopped by procaine.

V. J. W.

**Pentothal acid: new basal anaesthetic.** J. S. HORSLEY (Brit. J. Anæsth., 1938, 16, 1—9).—Pentothal acid, a stable yellow powder, is slightly sol. in water, freely sol. in abs. alcohol, insol. in aq. alcoholic solutions below 50%. The ethereal solution can be emulsified with olive oil for rectal injection, but is unstable and should be used within 3 hr. of prep. The drug acts primarily on the brain-stem and to a smaller extent on the cerebral cortex. Small doses are mildly sedative, medium doses hypnotic, and large doses anaesthetic. It is strongly anti-convulsant and to some extent anti-epileptic. It can be given by mouth in capsule form together with an alkaline mixture. There is no change in pulse or blood pressure. Respiration is diminished in vol. by full anaesthetic doses but unaffected by the dosage for basal anaesthesia. The period of action by oral administration is divisible into 4 stages: (i) the pre-absorption stage lasting 10 min. to 3 hr., (ii) stage of drowsiness 5—10 min., (iii) basal narcosis 1—2 hr. which is characterised by deep sleep, absent corneal reflexes, partial analgesia, and some degree of surgical relaxation, and (iv) calm postanæsthetic awakening. Pharmacological investigations in animals show a wide margin of safety, the therapeutic quotient in cats being 4.5 and in rats 6.6. The drug should be used as basal narcotic, the dosage being 8 grains 3 hr. before operation, repeated, if necessary, after an interval of 1 hr.

H. H. K.

**Marihuana activity of tetrahydrocannabinol.**—See A., 1940, II, 379.

**Marihuana investigation. II. Effect of variety, maturity, fertiliser treatment, and sex on intensity of response to Beam's test.** J. R. MATCHETT, J. LEVINE, L. BENJAMIN, B. B. ROBINSON, and O. A. POPE (J. Amer. Pharm. Assoc., 1940, 29, 399—404; cf. A., 1938, III, 430).—The response to the alkaline Beam test varies considerably with different varieties of *Cannabis sativa*; the response is independent of the method of soil fertilisation or sex of the plant but tends to increase in intensity with increase in age of the plant. Similar observations were made for the acid Beam test.

F. O. H.

**Hæmolytic action and chemical structure of barbituric acid derivatives.** H. M. LEE and E. E. SWANSON (J. Amer. Pharm. Assoc., 1940, 29, 340—

341).—The investigation of a series of primary and sec. alkylbarbituric acids indicates that the hæmolytic time (sheep's blood) decreases with increase in no. of C atoms in the substituted alkyl ( $C_{1-9}$ ) radical.

F. O. H.

**Synthesis of soporifics.** E. PREISWERK (Festschr. E.C. Barel [Basel], 1936, 185—194; Chem. Zentr., 1937, i, 4641—4642).—The activity of dialkylbarbituric acids is related to their acidity and not to lipid solubility. It is suggested that compounds containing the structural features of barbituric acid which are weakly acidic and form water-sol. salts are probable soporifics.

H. B.

**Prolonged narcosis with paraldehyde and dial.** M. B. BRODY (J. ment. Sci., 1940, 86, 526—531).—The technique of the treatment of mental patients by prolonged narcosis using paraldehyde and dial is described. The advantages are cheapness and simplicity (the drugs are given orally); the disadvantage is the unpleasant taste. Results and complications, as observed with 90 patients, are similar to those with somnifaine. The method is particularly recommended for treating acute phases in chronic patients.

G. D. G.

**Acute poisoning with dilantin sodium.** L. J. ROBINSON (J. Amer. Med. Assoc., 1940, 115, 289—290).—Case report.

C. A. K.

**Formylphenacetyl tropeine.**—See A., 1940, II, 360.

**Analeptic action of pyridine.** J. REITMANN (Med. u. Chem., 1936, 3, 399—402; Chem. Zentr., 1937, i, 3173).—Analeptic effects among pyridine compounds are examined. The relatively small activity of 3:4-phenyltriazolopyridine was increased by alkylation, and further increased by incorporation of another heterocyclic ring compound although such compounds had low solubility. Introduction into the mol. of basic groups to increase solubility lowered the activity of the product.

A. G. P.

**Elimination of metrazol.** J. M. DILLE and V. P. SEEBERG (Proc. Soc. Exp. Biol. Med., 1940, 44, 624—625).—No metrazol is found in the urine and its effects are not modified by removal of the kidneys. If the liver is injured by P administration the min. lethal dose is decreased, and in rabbits a smaller effect is produced by injection into the portal than into the ear vein.

V. J. W.

**Pharmacological action of coriamyrtin and its derivatives.** K. KIRINO (Japan. J. Med. Sci., IV, 1940, 12, Proc., 60—61).—Hydrocoriamyrtin and coriamyrtin increase respiration. The effect of hydrocoriamyrtin is weaker and of shorter duration than of coriamyrtin. Large doses of hydrocoriamyrtin produce convulsions and decrease the rate of breathing contrary to the long-lasting stimulating effect of coriamyrtin on respiration. 15—20 mg. per kg. of hydrocoriamyrtin dihydrate have no effect on respiration, whilst 15—30 mg. per kg. of monobromocoriamyrtin increase slightly the rate of breathing. Coriamyrtin and hydrocoriamyrtin increase blood pressure and decrease heart rate in rabbits. None of the compounds has any effect on isolated frog's heart, perfused rabbit's ear, or isolated rabbit's heart.



Min. lethal doses in fish, frogs, mice, and rabbits are given. H. H. K.

**Assay of ergot.** R. G. SMITH (J. Amer. Pharm. Assoc., 1940, 29, 385—387).—Methods used for the assay of various preps. of ergot are discussed. The cock's comb and Broom-Clark methods do not indicate the true content of ergometrine in, e.g., fluid extract of ergot. The replacement of certain galenical preps. of ergot by the pure alkaloids is suggested. F. O. H.

**Treatment of oedema by rectal administration of diuretics.** I. J. BRIGHTMAN and R. C. BATTERMAN (J. Lab. clin. Med., 1940, 25, 1038—1046).—Mercurin and modified salyrgan suppositories produce min. changes in the rectal mucosa; they occasionally cause local discomfort and burning. They produce effective diuresis in 60% of cases. C. J. C. B.

**Synthesis of 4-alkylaminoazobenzene-4'-arsinic acids.**—See A., 1940, II, 262.

**Massive arsenotherapy in early syphilis by continuous intravenous drip method.** G. BAHR, W. LEIFER, L. CHARGIN, H. T. HYMAN, J. F. MAHONEY, B. WEBSTER, E. THOMAS, H. SOBOTKA, W. MANN, E. FELDBAU, and J. L. RICE (Arch. Dermat. Syphilol., 1940, 42, 239—284).—A complete review of 375 cases so treated with results of the treatment. 21% of the injected As was excreted in the urine and 50% in the combined excreta during 5 days of treatment with 4 g. of neoarsphenamine. Additional amounts were excreted during 2—3 days following treatment. When less than 1 g. of mapharsen was given by the intravenous drip method, 67% was excreted. C. J. C. B.

**Effect of arsenicals on liver-lipins of rabbits.** P. L. MACLACHLAN (Proc. Soc. Exp. Biol. Med., 1940, 44, 429—431).—Hepatic necrosis from arsphenamine was not accompanied by any change in amount or distribution of lipins. V. J. W.

**Influence of arsenicals, bismuth, and iron on plasma-ascorbic acid level.** C. J. FARMER, A. F. ABT, and H. C. S. ARON (Proc. Soc. Exp. Biol. Med., 1940, 44, 495—499).—Plasma-ascorbic acid is not affected by Bi. It is decreased by Fe and org. As. Hypersensitivity to neoarsphenamine was reduced by administration of ascorbic acid. V. J. W.

**Purpura hæmorrhagica due to arsphenamines. Sensitivity in patients as influenced by vitamin-C therapy.** E. H. FALCONER, N. N. EPSTEIN, and E. S. MILLS (Arch. intern. Med., 1940, 66, 319—338).—Attacks of thrombopenic purpura were repeatedly reproduced in 7 hypersensitive patients following administration of neoarsphenamine and bismarsen. Vitamin-C, by mouth or by injection, did not influence these reactions. C. A. K.

**Post-arsphenamine jaundice.** F. M. HANGER and A. B. GUTMAN (J. Amer. Med. Assoc., 1940, 115, 263—271).—Serum-phosphatase determinations and kephalin flocculation tests showed that 12 cases of post-arsphenamine jaundice were due to obstruction of the intrahepatic biliary tract (confirmed by liver biopsy in a few cases). The condition began acutely after the 2nd or 3rd As injection. C. A. K.

**Effect of thiosulphate on arsenic excretion.** M. R. MATTICE, H. BAXT, and J. M. BYRNE (Arch. Dermat. Syphilol., 1940, 42, 399—404).— $\text{Na}_2\text{S}_2\text{O}_3$  injected intravenously does not mobilise As from body stores for urinary elimination. When an arsenical and a thiosulphate are injected within 1 hr. of each other, in the order stated, the urinary excretion of As is reduced. C. J. C. B.

**Acute interstitial myocarditis following administration of arsphenamines.** C. E. BROWN and D. H. McNAMARA (Arch. Dermat. Syphilol., 1940, 42, 312—321).—A case report. (3 photomicrographs.) C. J. C. B.

**Bismuth injections in therapeutic malaria.** H. N. COLE, G. A. DE OREO, J. R. DRIVER, H. JOHNSON, and W. F. SCHWARTZ (J. Amer. Med. Assoc., 1940, 115, 422—427).—Bi Na thioglycollate temporarily arrested the chills in therapeutic malaria and thereby prevented exhaustion, circulatory collapse, and other complications. Sb compounds had a similar but feebler action, whilst As, Au, and Hg compounds were ineffective. C. A. K.

**Potassium bismuth saccharate. II. Toxicity, absorption, and distribution after intramuscular injection.** C. W. SONDERN, A. E. PUGH, F. V. KALICH, G. LANN, and C. J. W. WIEGAND (J. Amer. Pharm. Assoc., 1940, 29, 346—348; cf. Doak, A., 1940, II, 204).—Injected K Bi saccharate is gradually absorbed and excreted (rabbit), Bi being present in all organs and tissue fluids examined within 24 hr. and the blood-Bi maintaining a fairly steady level for 5 days. F. O. H.

**Poisoning by mercury methyl compounds.** D. HUNTER, R. R. BOMFORD, and D. S. RUSSELL (Quart. J. Med., 1940, 9, 193—213).—4 cases of poisoning by Hg methyl compounds are described in seed disinfectant workers. The central nervous system only was affected, the visceral changes of Hg poisoning being absent. Ataxia, dysarthria, and constriction of the visual fields were extreme, and there was no recovery, apart from re-education. Experiments in rats showed a degeneration first of peripheral nerves, the posterior spinal roots, and the trigeminal nerve, and later of the posterior columns, descending root of the trigeminal nerve, and the granular layer of the middle lobe of the cerebellum. One monkey showed nerve and posterior root ganglion changes, and also a diffuse cortical encephalitis. One rat only showed optic atrophy. The human pathology seems to be peripheral neuritis followed by irreversible posterior column damage. All workers wore masks and gloves, and closed apparatus, as used by some firms, is essential to prevent further cases. R. K.

(A) **Relative toxicity of lead and some of its compounds.** L. T. FAIRHALL and R. R. SAYERS.  
(B) **Pathologic changes induced by lead and some of its compounds.** J. W. MILLER (U.S. Publ. Health Bull. 253, 1940, 40 pp.).—The results of administration of Pb compounds by mouth, by intraperitoneal injection, and by inhalation were studied in over 500 guinea-pigs. Muscular inco-ordination, anæmia, basophilic stippling, polychromasia, and



morphological changes in the blood occurred. Analyses of the dusty air were made at intervals during the inhalation experiments. Pb present in the various organs was determined. In the inhalation experiments, the particles *in situ* were compared in size with particles of the suspended Pb fume or dust. Pb compounds were more toxic on inhalation than when administered by mouth or injection.

C. G. W.

**Vitamin-C in chronic lead poisoning.** L. PILLEMER, J. SEIFTER, A. O. KUEHN, and E. E. ECKER (Amer. J. med. Sci., 1940, 200, 322—327).—In 2 series of 44 guinea-pigs on a diminished intake of vitamin-C, the degree of Pb poisoning developed in 1 month by oral ingestion of basic PbCO<sub>3</sub> was more severe than in 2 groups of 24 guinea-pigs on a saturation level of -C. -C did not protect against wt. loss, anæmia, or stippling, but prevented the onset of nervous symptoms. Pb has no effect on -C utilisation or metabolism. -C therapy is not as effective as removal of exposure to Pb. Activity of serum complement of the animals in Pb poisoning was parallel to the ascorbic acid of the serum, and was not influenced by the Pb intake.

C. J. C. B.

**Zinc ionisation in treatment of allergy in nose.** J. F. BIRELL (Edinb. Med. J., 1940, [iv], 47, 645—652).—Of 120 cases of nasal allergy 31% were cured, 43% greatly improved, and 15% improved by Zn ionisation. In 56 cases of vasomotor rhinitis 24% were cured and 41% greatly improved, and in 35 asthmatics 32% were cured and 52% greatly improved.

H. S.

**Zinc peroxide in malignant lesions.** B. S. FREEMAN (J. Amer. Med. Assoc., 1940, 115, 181—186).—ZnO<sub>2</sub> was successfully used to deal with anaerobic infections in 35 cases of radionecrotic ulcers.

C. A. K.

**Use of "distibinyl" in treatment of Chinese kala-azar.** C. J. SUN and S. C. RANG (Chinese Med. J., 1940, 57, 442—448).—Diethylamine di-*p*-aminophenylstibinate ("distibinyl") contains 41% of Sb and given intravenously is as good as, and cheaper than, other Sb preps. in the treatment of kala-azar. Complications seen in other forms of Sb treatment do not occur, although slight diarrhoea and vomiting may result from excessive dosage.

W. J. G.

**Therapy of infantile leishmaniasis.** G. SPILIO-PULÓS (Arch. Kinderheilk., 1939, 117, 244—256).—Repeated intravenous injections of large doses of neostibosan (0.10—0.30 g. according to age) in 35 children between the ages of 13 months and 12 years had a beneficial effect on the duration of treatment. In refractory cases with dysfunction of the whole reticulo-endothelial system blood transfusions and injections of vitamin-C were useful.

M. K.

**Treatment of acute stomatitis [with chromium trioxide].** C. H. SMITH and H. B. JOHNSON (J. Pediat., 1940, 17, 1—8).—Cr trioxide (5—7% solution) is the only local application which is of val. in gingivo-stomatitis.

C. J. C. B.

**Chronic fluorine poisoning.** P. F. MOLLER (Brit. J. Radiol., 1939, 12, 13—20).—A lecture. H. H. K.

**Fluorine osteosclerosis.** J. WILKIE (Brit. J. Radiol., 1940, 13, 213—217).—2 cases are described.

H. H. K.

**Action of acetylsalicylic acid on teeth.** D. B. DORT (Edinb. Med. J., 1940, [iv], 47, 700—701).—Solutions of acetylsalicylic acid in concns. commonly used as mouth washes and gargles dissolve appreciable amounts of Ca from teeth.

H. S.

**Action of adrenaline, acetylcholine, and pilocarpine on animals previously treated with manganese.** S. KITAGAWA (Japan. J. Med. Sci., IV, 1940, 12, Proc., 52—54).—Frogs, turtles, and mice were poisoned with repeated injections of Mn. The action of adrenaline on isolated organs and sympathetic stimulation is diminished, but pilocarpine and acetylcholine have the same effect as in controls.

H. H. K.

**Morphine elimination in urine and fæces by various animal species.** N. YOSHIKAWA (Japan. J. Med. Sci., IV, 1940, 12, Proc., 74—75).—In normal rabbits morphine elimination was determined after single subcutaneous injections of 0.05—0.2 g. per kg. The drug was excreted far more in urine than in fæces. A large part of the drug was eliminated in 1 or 2 days. After subcutaneous injection of 0.05 g. per kg. of morphine, the total excretion was 7—11%, and after 0.1 or 0.2 g. per kg., it was 8.9—9.3% or 5.9—7.8%, respectively. In cats morphine elimination was determined after a single injection of 0.05 g. per kg. The total excretion was 11—27% and most of the drug was eliminated in urine in 1 or 2 days. 10—13% of 0.1 g. per kg. is excreted within 1 or 2 days in hens.

H. H. K.

**Grasping power, contraction power of musculi dorsi, and the ergogram of opium addicts.** S. To and B. Ko (Japan. J. Med. Sci., IV, 1940, 12, Proc., 72—73).—Muscular power is markedly decreased in opium addicts.

H. H. K.

**Nicotine poisoning in a child.** R. W. CRAGG and A. E. OSTERBERG (Proc. Staff Mayo Clin., 1940, 15, 589—592).—A case is reported.

H. H. K.

**Effect of vitamin-B<sub>1</sub>, panax extract, and histotoxin on chronic nicotine poisoning.** H. KIN (Japan. J. Med. Sci., IV, 1940, 12, Proc., 66—67).—Vitamin-B<sub>1</sub> has no effect on the hypertension produced by repeated administration of nicotine. Panax Ginseng lowers the blood pressure slightly. Combined administration of -B<sub>1</sub> or panax with histotoxin prevents nicotine hypertonus.

H. H. K.

**Effect of halogenation of phenol on its toxicity to goldfish. II. Monobromophenols.** W. A. GERSDORFF and L. E. SMITH (Amer. J. Pharm., 1940, 112, 316—322; cf. A., 1940, III, 761).—In the range of most powerful action, the toxicity of phenol and *o*-, *m*-, and *p*-bromophenol, as determined by the min. product of concn. and survival time, is in the ratio 1 : 1.25 : 1.56 : 1.86. *o*-Bromo- is slightly more toxic than *o*-chloro-phenol.

J. N. A.

**Protective ointment for prevention of poison ivy dermatitis.** L. SCHWARTZ, L. H. WARREN, and F. H. GOLDMAN (U.S. Publ. Health Repts., 1940, 55, 1327—1333).—An alkaline vanishing cream contain-



ing a non-irritant oxidising agent, such as  $\text{NaBO}_3$  or  $\text{KIO}_4$ , is an effective preventive against poison ivy dermatitis.  
C. G. W.

**Polyploidy in relation to chemical analysis.** W. J. BONISTEEL (J. Amer. Pharm. Assoc., 1940, 29, 404—408).—The toxicity of *Aconitum* plants varies with the chromosome no.; diploids are usually non-toxic, triploids and tetraploids show high toxicity, whilst hexaploids are non-toxic. Chemical analysis of hybrids indicates that a shift from one alkaloid to another is possible. Genetic aspects of the relationship between chromosome no. and the nature of plant constituents are discussed.  
F. O. H.

**Prophylactic effect of yakriton against dinitrophenol poisoning.** G. SUGIHARA (Tohoku J. Exp. Med., 1939, 37, 568—572).—Yakriton considerably lowered the death rate.  
M. W.

**Elasti-glass dermatitis.** E. P. ZEISLER (J. Amer. Med. Assoc., 1940, 114, 2540—2542).—2 cases of dermatitis due to contact with "elasti-glass" (a synthetic resin) are reported.  
C. A. K.

**Dermatitis due to aquaphor.** S. J. FANBURG (Arch. Dermat. Syphilol., 1940, 42, 479—480).—A case is presented in which sensitivity to aquaphor and to the purified cholesterol esters used in the manufacture of aquaphor was demonstrated. The patient was not sensitive to wool fat from which the cholesterol esters are derived.  
C. J. C. B.

**Sensitivity to sodium morrhuate and monoethanolamine oleate (monolate).** R. F. GOLDEN and W. W. HEYERDALE (Proc. Staff Mayo Clin., 1940, 15, 436—440).—0.5 c.c. of 5% Na morrhuate produced marked peripheral vascular dilatation and profuse sweating, followed by coma and generalised convulsive twitchings. 0.25 c.c. produced weakness, dizziness, flushing of skin, and a semicomatose state for about 5 min.  
H. H. K.

**Oil of wintergreen poisoning.** W. T. SHIRREFF and L. N. PEARLMAN (Canad. Med. Assoc. J., 1940, 43, 264—268).—A report of 2 fatal cases in infants of 15 and 32 months.  
C. J. C. B.

**Influence of Röntgen rays on action of different opium alkaloids on blood-sugar level.** E. SAI (Japan. J. Med. Sci., IV, 1940, 12, Proc., 73—74).—Morphine hydrochloride, codeine phosphate, and papaverine hydrochloride have hyperglycaemic effect in animals. After X-ray irradiation of drugs this effect is decreased.  
H. H. K.

**Percutaneous administration of drugs by ultrasonic waves.** H. FLORSTEDT and R. POHLMANN (Z. ges. exp. Med., 1940, 107, 212—218).—Marked erythema and blisters were produced by histamine (1 mg.), apitoxin (200 mg.-%), and cantharidin (200 mg.-%); the substances were applied to the intact skin and ultrasonic radiation (800 kHz.) was used for 1—5 min.  
A. S.

**Effect of fresh *Aloe vera* gel on [healing of] third-degree X-ray reactions in rats.** T. D. ROWE (J. Amer. Pharm. Assoc., 1940, 29, 348—350).—Favourable results were obtained in some cases.  
F. O. H.

## (xxi) PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

**Effect of relative humidity on insensible weight loss of newborn infant.** J. A. ANDERSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 464—465).—Rate of wt. loss per hr. is inversely proportional to % R.H.  
V. J. W.

**Effect of relative humidity on skin and rectal temperatures of newborn infant.** J. A. ANDERSON (Proc. Soc. Exp. Biol. Med., 1940, 44, 466—467).—High humidity is accompanied by a rise in skin temp., rectal temp. remaining const.  
V. J. W.

**Differences between men and women in response to heat and cold.** J. D. HARDY and E. F. DUBOIS (Proc. Nat. Acad. Sci., 1940, 26, 389—398).—Men and women at complete rest, naked, and in an environment with min. air movement show two points of agreement, viz., Newton's law const. and internal body temp. In all other adjustments to changes in temp., women have a physiological advantage. The comfort zone, in which loss of heat equals heat production, extends over a range of approx. 6° for women and only 2—3° for men. The heat production of men is fairly const. whilst that of women decreases as temp. increases. Women have a slightly better adaptation of skin temp. to meet external changes of temp.  
J. N. A.

**Disabling morbidity among male and female industrial workers during 1938 and 1939, and among males during the first quarter of 1940, with an inquiry into the occurrence of multiple attacks of disabling sickness and injuries, 1939.** W. M. GAFAFER (U.S. Publ. Health Repts., 1940, 55, 1402—1406).  
C. G. W.

**Evolution of pneumoconioses.** M. G. PARRIQUE (Ann. Hyg. Publ., 1940, 18, 1—16).—Identity of silicosis and tuberculosis, in the opinion of some French authors, is based entirely on pathological and anatomical findings. This view is discussed and 9 case histories are reported of silicosis with typical X-ray pictures and without any symptoms of tuberculosis. Silicosis is a separate entity and should be listed among the compensable diseases, as in France it is not recognised as a separate disease, either by scientists or the law.  
C. G. W.

**Pneumoconiosis among mica and pegmatite workers.** W. C. DRESSEN *et al.* (U.S. Publ. Health Bull. 250, 1940, 74 pp.).—10 cases of pneumoconiosis were found in 57 men exposed to mica dust generated by grinding hand-sorted mica and mica scrap which contained no free  $\text{SiO}_2$ . The clinical signs and symptoms resembled those of silicosis. Among 741 men exposed to a mixture of dusts generated by excavating pegmatite in mines and quarries, separating it into its constituents (mica, quartz, and feldspar), and pulverising these products, there were 23 cases of silicosis. Only 4 of these had been employed less than 10 years; their average dust exposure exceeded  $50 \times 10^6$  particles per cu. ft. Equipment and practices are described which have effectively reduced dust exposure to safe limits in similar operations in other industries.  
C. G. W.



**Medical control of silicosis in foundries.** O. A. SANDER (U.S. Dept. of Labor Bull. 36, 1940, 173—176).—While the foundry industry has a silicosis hazard, it is not as severe as in the granite and some mining industries; for prevention definite control steps are necessary. Sand-blasting without protection is the quickest silicosis producer, several cases developing after only 4 years' exposure. With proper protective equipment, many sand-blasters examined in this survey have since worked for 13 years without acquiring silicosis. Dust inhalation is not of itself enough of an irritant to reactivate a latent tuberculosis. Silico-tuberculosis is primarily silicosis superimposed on tuberculosis rather than vice versa. For the uninfected silicotic the danger of developing tuberculosis is no greater than for anyone else of the same age. C. G. W.

**Pyrophyllite dust—its effect and control.** M. F. TRICE (Amer. Inst. Min. Met. Eng., Tech. Publ. 1179, 13 pp.; Min. Tech., 1940, 4, No. 3).—Examination of 101 workers at a pyrophyllite mine showed that none with less than 2 years' exposure exhibited dust pathology, but that 35% of those with longer exposure suffered from pneumoconiosis, some of the more seriously affected having been at the work for only 6 years. The underground air, although containing only half the no. of dust particles found in surface air, is the more dangerous since it contains a greater % of particles smaller than  $1\ \mu$ . The safe limits for mine and mill are considered to be 10 and 25 million particles per cu. ft., respectively. The symptoms of the disease are described and recommendations for its prevention discussed. A. R. P.

**Chronic manganese poisoning in an ore-crushing mill.** J. M. DALLAVALLE (U.S. Publ. Health Bull. 247, 1940, 77 pp.).—Physical examination of the employees of a Mn-ore crushing plant revealed 34 cases of chronic Mn poisoning. No cases were found among men exposed to less than 30 mg. of Mn per cu. m., but the true threshold limit is still uncertain. Muscular stiffness and inco-ordination are typical symptoms. Various methods of dust control are discussed. C. G. W.

## (xxii) RADIATIONS.

**Effect of Roentgen rays on skin reactivity to histamine and bacterial vaccine.** B. SHAFFER (J. invest. Dermat., 1940, 3, 159—191).—The wheal which develops after the injection of histamine 2—5 days following unfiltered X-ray exposure (this may be a single dose or 3 daily doses of 125 r.) is smaller on the exposed skin than on the non-irradiated site. The flare which develops about the wheal when histamine is injected from 1 hr. to 5 days after the last of 3 daily unfiltered X-ray exposures of 125 r. is reduced in intensity and size on the irradiated area as compared with the control skin. The papule which develops when mixed catarrhal vaccine is injected either one or 3 days following the last of 3 daily unfiltered X-ray exposures of 125 r. each is larger on the X-rayed than on the normal skin. C. J. C. B.

**Phosphatide metabolism. Effect of ultra-violet- and X-irradiation of spleen in dogs in-**

**jected with hæmolysed blood.** S. KAN (J. Biochem. Japan, 1940, 31, 259—271; cf. A., 1940, III, 753).—Ultra-violet irradiation does not greatly alter the increase in lipin-P, -N, and -amino-N of the blood due to injection of hæmolysed blood; in normal dogs, the irradiation increases the lipin-P and -amino-N levels. X-Irradiation of the spleen increases lipin-P, -N, and -amino-N levels both before and after injection of hæmolysed blood, but the increases are greater in the non-injected dogs. The general mechanism of these changes and those occurring in non-irradiated, injected dogs is discussed. F. O. H.

**Oxidation of tyrosine by ultra-violet light in its relation to human pigmentation.** S. ROTHMAN (Proc. Soc. Exp. Biol. Med., 1940, 44, 485—486).—Tyrosine when exposed to ultra-violet irradiation in presence of  $\text{Fe}^{II}$  salts is oxidised to melanin. V. J. W.

**Effect of fast neutrons on the chromosomes of *Tradescantia*.** N. GILES (Proc. Nat. Acad. Sci., 1940, 26, 567—575).—Neutrons are 16—17 times as effective as X-rays in producing chromatid dicentric aberrations although the qual. results are the same. Exchange break aberrations, producing chromatid and chromosome rings and dicentrics, show a linear relationship to dosage. H. G. R.

**Ultra-sound in medicine.** H. GOHR and T. WEDEKIND (Klin. Woch., 1940, 19, 25—29). M. K.

## (xxiii) PHYSICAL AND COLLOIDAL CHEMISTRY.

**Mathematical biophysics of organic form. III. Deformation of shell-shaped cellular aggregates.** N. RASHEVSKY (Bull. Math. Biophys., 1940, 2, 123—126; cf. A., 1940, III, 87).—Average concns. of a substance diffusing into or from an open spherical shell in which it is consumed or produced at a const. rate are calc. and the results applied to the deformation of the shell under the influence of diffusion forces. F. O. H.

**Thiol groups of ovalbumin.** M. L. ANSON (J. Biol. Chem., 1940, 135, 797—798).—Thiol groups of denatured ovalbumin in guanidine hydrochloride solution may be titrated by measuring the quantity of  $\text{Fe}(\text{CN})_6'''$ ,  $\text{S}_4\text{O}_6''$ , *p*-chloromercuribenzoate, or porphyrindin required to abolish the nitroprusside test. A const. val. of 1 c.c. of 0.001M-titrating reagent is required to abolish the thiol groups of 10 mg. of denatured ovalbumin. H. G. R.

## (xxiv) ENZYMES.

**Alcohol enzyme [dehydrogenase] of *Bacterium coli*.** J. L. STILL (Biochem. J., 1940, 34, 1177—1182; cf. Negelein and Wulff, A., 1938, III, 150).—Cell-free extracts of *B. coli commune*, Escherich, contain an alcohol dehydrogenase which oxidises ethyl alcohol to acetaldehyde (optimum at  $p_{\text{H}}$  7.4) in systems of ethyl alcohol-alcohol dehydrogenase-co-enzyme I-co-enzyme dehydrogenase- $\text{O}_2$  carrier (e.g., methylene-blue)- $\text{O}_2$ . The amount of  $\text{O}_2$  taken up is theoretical if a ketone-binding substance (e.g., semi-



carbamide) is present. The alcohol dehydrogenase also oxidises lower aliphatic alcohols (methyl alcohol slowly) but differs from washed suspensions of the bacterium in not oxidising acetaldehyde. The action of the enzyme is inhibited by iodoacetate and apparently also by borate. In presence of acetaldehyde, the enzyme re-oxidises reduced co-enzyme I.

W. McC.

***d*-Amino-acid dehydrogenase.** P. KARRER and H. FRANK (Helv. Chim. Acta, 1940, 23, 948—954).—Lactoflavin-adenine nucleotide contains a free amino-group and the PO<sub>4</sub> residues are in terminal positions in the two sugar groups (cf. Warburg *et al.*, A., 1938, III, 1047). The *d*-amino-acid dehydrogenase which it forms with the sp. protein of sheep's kidney deaminates alanine, proline, methionine, leucine, isoleucine, and phenylalanine, but not dihydroxyphenylalanine, histidine, arginine, serine, β-alanine, aspartic and glutamic acid, *dl*-alanylglycine, *dl*-leucylglycine, *dl*-glycyl-leucine, *dl*-leucylglycylglycine, glucosamine, chondrosamine, and glucosamic and chondrosamic acid.

H. W.

**Glycollic acid oxidase.** J. S. DOHAN (J. Biol. Chem., 1940, 135, 793—794).—Suspensions of rat or rabbit liver, but not other organs, in PO<sub>4</sub>''' buffer contain glycollic acid oxidase. The activity is not increased by co-enzymes and is max. at alkaline reactions.

H. G. R.

**Inhibition of carboxylases by thiazole pyrophosphate.** E. R. BUCHMAN, E. HEEGAARD, and J. BONNER (Proc. Nat. Acad. Sci., 1940, 26, 561—563).—Although not able to replace cocarboxylase in enzymic decarboxylation of pyruvic acid, thiazole pyrophosphate inhibits the activity of the carboxylase system, probably by combination with the sp. carboxylase protein.

H. G. R.

**Cocarboxylase.** R. A. PETERS (Nature, 1940, 146, 387—391).—A review.

L. S. T.

**Isolation and properties of cocarboxylase.** D. E. GREEN, D. HERBERT, and V. SUBRAHMANYAN (J. Biol. Chem., 1940, 135, 795—796).—Purified cocarboxylase is obtained from top yeast by salt fractionation. It is a diphosphothiamin (0.46%)—Mg (0.13%)—protein complex and may be resolved into its components by pptn. from aq. NH<sub>3</sub>—(NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>. The prosthetic group may not be replaced although other bivalent cations are active in the system with varying efficiency. The mol. ratio of protein : diphosphothiamin : Mg is 1 : 1 : 5.

H. G. R.

**Mechanism of cocarboxylase action.** K. G. STERN and J. L. MELNICK (J. Biol. Chem., 1940, 135, 365—369; cf. A., 1940, III, 161).—Determinations of the amount of reduction product which will produce the same vol. of CO<sub>2</sub> in the carboxylase test system (pyruvic acid + yeast and *Bacillus delbrückii*) and of amounts of thiamin pyrophosphate remaining unreduced after its treatment with Pd—H<sub>2</sub> show that dihydrococarboxylase is biologically inactive, activity previously observed being due to residual unreduced cocarboxylase. In the enzymic transformation of pyruvic acid, cocarboxylase possibly undergoes a cyclic change involving reversible oxidation—reduction.

W. McC.

**Purification and properties of carbonic anhydrase.** D. KELLIN and T. MANN [with appendix by E. C. B. SMITH] (Biochem. J., 1940, 34, 1163—1176; cf. A., 1939, III, 1096; Meldrum and Rough-ton, A., 1933, 844).—Details of the purification and of two methods of prep. of the enzyme from ox and sheep erythrocytes (max. yield approx. 200 mg. per litre of ox blood) and pig gastric mucosa, and of manometric and colorimetric methods of determining its activity are given. The pure or almost pure enzyme, which is free from Fe, Cu, Mn, Mg, Pb, and hæmatin, is a protein (N 14.95%) containing approx. 0.33% of Zn, the enzymic activity being proportional to the Zn content. 100 ml. of erythrocytes or 200 ml. of mammalian blood contain approx. 0.21 g. of the enzyme, which has approx. 150 times the catalytic activity of the erythrocytes. Low concns. of KCN, H<sub>2</sub>S, and NaN<sub>3</sub> very rapidly produce completely reversible inhibition of the action of the enzyme. In the appendix it is shown that the pure enzyme exhibits a single boundary in the Tiselius cataphoretic apparatus and that the isoelectric point is p<sub>H</sub> approx. 5 (cf. Kiese and Hastings, A., 1940, III, 260).

W. McC.

**Quantum yield as function of wave-length for inactivation of urease.** E. W. LANDEN (J. Amer. Chem. Soc., 1940, 62, 2465—2468).—The absorption spectrum of urease has been measured in a P<sub>2</sub>O<sub>7</sub>''' buffer solution of p<sub>H</sub> 5.6. Assuming a mol. wt. of 483,000, a max. mol. extinction coeff. 0.798 × 10<sup>6</sup> occurs at approx. 2700 Å. and a min. at approx. 2480 Å. Vals. of quantum yield (φ) for urease inactivation produced by direct irradiation with λ 2537 Å. have been calc. and are compared with existing data. φ is ~0.0008 mol. per quantum from 3130 to 2530 Å., increasing with shorter λλ to 0.00938 at 1860 Å. Similar calculations, using the data for pepsin (A., 1934, 1033), indicate that φ for pepsin shows similar variation with λ.

W. R. A.

**Tyrosinase of *Dolichos lablab*.** I. Determination. Oxidation of various substrates. S. L. VENKITESWARAN and M. SREENIVASAYA (Proc. Indian Acad. Sci., 1940, 11, B, 248—256; cf. A., 1940, III, 532).—The activity of the enzyme preps. is determined by measurement of O<sub>2</sub> uptake with, e.g., phenol or *p*-cresol as substrate (at p<sub>H</sub> 6.2); pyrocatechol is unsuitable as substrate but may be used as carrier for the oxidation of ascorbic acid or quinol. The oxidation is also followed iodometrically. The general substrate specificity of the enzyme indicates that it is not a "laccase."

F. O. H.

**Plant proteases. I. Activation-inhibition reactions. II. p<sub>H</sub>-activity curves. III. Kinetic properties.** D. M. GREENBERG and T. WINNICK (J. Biol. Chem., 1940, 135, 761—773, 775—780, 781—787).—I. The reactions of bromelin from pineapple and ascelpain *m* from *Asclepias mexicana* resemble those of papain and ascelpain *s* (A., 1940, III, 534) and indicate the presence of an essential reactive thiol group. Solanain of *Solanum elaeagnifolium* is inactivated by HNO<sub>2</sub> and keten and probably contains an active phenolic, but no active thiol, group. Papain probably contains an active phenolic group.

II. The optimum p<sub>H</sub> for ascelpain *s* and *m*, brom-



elin, solanain, and papain on denatured hæmoglobin and ovalbumin in conc. urea solution is 6.5—8.5 and 7—7.5, respectively. At varying  $p_H$ , digestion depends more on the nature and charge of the enzyme than on the charge or dissociation of the substrate.

III. The enzyme-substrate intermediary compound consists of a mol. each of enzyme and protein as shown by the Michaelis const. Heat-inactivation of asclepain *m* and solanain are first-order reactions and the enzymes have high crit. thermal increments, the magnitude of which is not related to the heat-lability.

H. G. R.

**Proteases. I. Proteolysis by trypsin and papain.** K. NAKAMURA. **II. Proteolysis by pepsin.** T. UCHINO (J. Biochem. Japan, 1940, 31, 311—322, 323—330).—I. Hydrolysis by trypsin-enterokinase (optimum  $p_H$  8.7—9.0) gives an order of decreasing rate of protamine, caseinogen or edestin, vitellin or globin, gelatin or gliadin, serum-globulin, serum-albumin or legumin or ovalbumin or ricin. Papain hydrolyses gelatin more readily than serum-globulin or -albumin or ovalbumin.

II. The order of decreasing rate of hydrolysis (optimum  $p_H$  0.9—1.0) is caseinogen, ovalbumin, serum-albumin, ovoglobulin, gelatin, serum-globulin, vitellin.

F. O. H.

**Effects of high pressure on activity of pepsin and rennin.** J. E. MATTHEWS, jun., R. B. DOW, and A. K. ANDERSON (J. Biol. Chem., 1940, 135, 697—705).—The decrease in activity of pepsin and rennin produced by high pressure varies with temp., exposure time, buffer, and  $p_H$ . Several reactions probably occur the rates of which are influenced by the magnitude of the pressure. No appreciable hydrolysis occurs since the amino-N content of pepsin is unchanged.

E. M. W.

**Plastein formation. I. Formation of plastein by papain.** H. B. COLLIER (Canad. J. Res., 1940, 18, B, 255—263).—Conc. peptic or papain digests of egg-albumin with papain at  $p_H$  4.8 yield a protein-like plastein, hydrolysed by papain under the same conditions ( $p_H$  4.2), the direction of the reaction being influenced only by concn. Cyanide, cysteine, or  $H_2S$  increases the yield of plastein, but the reaction is prevented by boiling, aération, or addition of Cu salts,  $H_2O_2$ , Na iodoacetate, or alloxan, indicating that free SH groups are essential.  $NH_2OH$ , benzaldehyde, or phenylhydrazine followed by benzaldehyde considerably reduces the activity of papain, although phenylhydrazine alone has no effect. The rate of plastein formation is proportional to the square root of enzyme concn. The effect of varying  $p_H$ , temp., and substrate concn. has been studied. The plastein-forming properties of papain and pepsin are compared. A. LI.

**Evaluation of methods for determining blood and urinary amylase.** D. L. DOZZI (J. Lab. clin. Med., 1940, 25, 1303—1308; cf. A., 1940, III, 587).—I, saccharogenic, and viscosimetric methods were compared in both blood and urine of dogs that had had various procedures performed for producing rises and falls in amylase. No one method is entirely satisfactory under all circumstances, but the saccharogenic method is the most accurate and has fewer objectionable features than any other method studied.

This method, though generally satisfactory, is difficult to employ when there is marked hyperglycæmia or glycosuria. The method is equally applicable to blood and urine. The Wohlgenuth method is satisfactory for serum but is unreliable for urine. The viscosimetric method, being attractive for its simplicity and ease of performance, is suitable for serum but is not satisfactory for urine because of the necessity of frequent corrections of the "zero point."

C. J. C. B.

**Kinetics of enzymic synthesis of glycogen from glucose 1-phosphate.** G. T. CORI and C. F. CORI (J. Biol. Chem., 1940, 135, 733—756).—The catalysis of the reaction, glycogen + inorg. phosphate  $\rightleftharpoons$  glucose 1-phosphate, by phosphorylase is studied by the colorimetric determination of the inorg.  $PO_4'''$ . Adenylic, but not inosic, acid is a necessary co-enzyme. Enzyme preps. from heart, brain, and muscle show a lag in the reaction to the left which increases on purification, without affecting the reaction to the right. This is eliminated by the addition of glycogen, the stimulating effect of which continues up to 500 mg.-% for muscle and 200 mg.-% for other preps. The activity of the enzyme is inhibited by glucose ( $\alpha$ - more than  $\beta$ -), phlorhidzin, and Cu, but the effect of the latter is overcome by glutathione. Under optimal conditions the reaction is unimol. and the rate of glycogen production is inversely proportional to enzyme concn. The dissociation of the enzyme-substrate and of the enzyme-co-enzyme complex is expressed by the equation of Michaelis and Menton. The  $p_H$  optimum of the reaction to the left is 6.3—6.5.

E. M. W.

## (xxv) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

**Effect of amino-acids, of vitamin-B complex, and other compounds on respiration of bakers' yeast.** E. S. COOK, E. M. WALTER, and M. R. EILERT (Proc. Soc. Exp. Biol. Med., 1940, 44, 547—551).—Of a no. of substances examined, only thiamin and insulin had any marked effect in increasing respiration of yeast.

V. J. W.

**Radioactive carbon in study of respiration in heterotrophic systems.** S. RUBEN and M. D. KAMEN (Proc. Nat. Acad. Sci., 1940, 26, 418—422).—Yeast cells can reduce small amounts of radioactive  $CO_2$ , and hence  $CO_2$  is a sp. oxidising agent in respiratory processes. The reduction of  $CO_2$  in the dark by a photosynthetic system differs from that by a non-photosynthetic system. The nature of the active mol. in the oxidation is not known.

J. N. A.

**Colchicine stimulation of yeast growth fails to reveal mitosis.** O. W. RICHARDS (J. Bact., 1938, 36, 187—195).—Colchicine treatment failed to produce any other than amitotic cell division or any difference in cytological structure. Max. stimulation of yeast growth was produced by 1% of colchicine in the medium and was due to the nutritive val. and buffering capacity of this substance.

A. G. P.

**Intermediates of vitamin- $B_1$  and growth of *Torula*.** W. J. ROBBINS and F. KAVANAGH (Plant



Physiol., 1938, 13, 611—619).—Of the species examined, *T. hansen*, *T. sphaerica*, *T. fermentati*, and *T. laurentii* grew to varying extents on a synthetic medium to which no vitamin-B<sub>1</sub> or pyrimidine or thiazole intermediate was added. *T. rosea* and *T. sanguinea* needed addition of the pyrimidine intermediate. *T. cremoris* and *T. kefyri* failed to grow in media containing either or both intermediates. Growth of *Phycomyces blakesleeanus* on media on which *Torula* spp. had previously been cultured confirmed that some species, notably *T. hansen*, synthesised both intermediates in adequate amounts, *T. fermentati* synthesised both in rather small proportions, whereas *T. rosea* and *T. sanguinea* synthesised the thiazole but not the pyrimidine intermediate.

A. G. P.

**Mutations and reversions in reproductivity of *Aspergilli* with nitrite, colchicine, and *d*-lysine.** R. A. STEINBERG and C. THOM (Proc. Nat. Acad. Sci., 1940, 26, 363—366).—"Injury mutants" in which differentiation and reproduction are suppressed in varying degree are readily formed by the action of HNO<sub>2</sub> on various types of *Aspergillus*. Ninhydrin, chloramine-T, KI, and hexamethylenetetramine also produce sterility-type mutants with *A. niger*, and it is suggested that all the substances act by destroying some of the free amino-groups in the proteins of the hereditary mechanism. By the use of *d*-lysine or NH<sub>4</sub> salts and Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> (both in presence of CaCO<sub>3</sub>), reversion mutants showing partial to complete recovery in reproductivity are obtained with *A. niger*. Colchicine in presence of CaCO<sub>3</sub> readily produces mutants.

J. N. A.

**Serological characters of *Trypanosoma brucei* after cyclical development in *Glossina morsitans*.** J. C. BROOM and H. C. BROWN (Trans. Roy. Soc. trop. Med. Hyg., 1940, 34, 53—64).—The effect of cyclical development in *G. morsitans* on the serological characters of *T. brucei* was studied. In general, the "cyclical substrains" which result from this method of passage resemble each other closely irrespective of the serological type of the strain on which the flies were fed. This is true only of the derivatives of a single original strain. The cyclical substrains of different original strains are serologically distinct. A strain of *T. brucei* was successfully cultivated in developing hens' eggs. The serological type of the trypanosomes was changed in an irregular manner during the process.

C. J. C. B.

**Flagella staining as a routine test for bacteria.** H. J. CONN and G. E. WOLFE (J. Bact., 1938, 36, 517—520).—The technique is described.

A. G. P.

**Gentian-violet in Sabouraud's medium for isolation of pathogenic fungi.** S. S. EPSTEIN and F. D. SNELL (Arch. Dermat. Syphilol., 1940, 42, 308—311).—Sabouraud medium containing 0.0002% of gentian-violet for primary isolation of fungi is superior to ordinary Sabouraud medium. It yielded more positive cultures, and simplified subsequent purification, because of diminished bacterial interference.

C. J. C. B.

**Culture medium for general use without meat extract or peptone.** G. P. GLADSTONE and P. FILDEN (Brit. J. exp. Path., 1940, 21, 161—173).—

3 X (A., III.)

The medium consists of acid hydrolysate of casein, tryptic digest of casein, yeast extract, glutamine, and Na lactate.

F. S.

**Sensitising bacterial spores to heat by exposing them to ultra-violet light.** H. R. CURRAN and F. R. EVANS (J. Bact., 1938, 36, 455—465).—Spores surviving lethal heat or ultra-violet ray treatments become more susceptible to subsequent treatments. The no. of spores sensitised to heat by ultra-violet radiation exceeds that sensitised to ultra-violet radiation by heat-treatment; the no. sensitised to ultra-violet radiation by heat exceeds that sensitised to heat by heat-treatment. Spores normally highly resistant to heat and light are the more readily sensitised by heat. The combined effects of heat and irradiation vary with the order in which the treatments are applied. Heat has no appreciable light-sensitising action on spores. Ultra-violet rays of  $\lambda$  exceeding 2000 Å sensitise spores to heat; rays of  $\lambda$  1250—1600 Å. are more effective in this respect than are those transmitted by quartz.

A. G. P.

**Determination of disinfection rates.** M. L. ISAACS (J. Bact., 1938, 36, 547—557).—By the method described contact between organism and disinfectant is made for periods of approx. 0.2 sec. Conc. disinfectants may be examined without appreciable dilution. The reaction between phenol and staphylococcus proceeds at a unimol. rate.

A. G. P.

**Apparent oxidation-reduction potentials of bright platinum electrodes in synthetic media cultures of bacteria.** W. E. WARD (J. Bact., 1938, 36, 337—355).—Greater uniformity of readings is obtained from broth cultures than from those in synthetic media, the former containing poisoning materials. The importance of controlling accessibility of O<sub>2</sub> to cultures is stressed. Zone effects due to temporary poisoning of electrodes by bacteria or gas bubbles must be obviated by shaking the cultures. The type of bright electrode is important only when poorly poisoned media are examined in air.

A. G. P.

**Microbiology of the upper air. III. Improved apparatus and technique.** B. E. PROCTOR and B. W. PARKER (J. Bact., 1938, 36, 175—185).—The apparatus is described. Organisms occurring at various altitudes are recorded.

A. G. P.

**Heavy carbon as tracer in bacterial fixation of carbon dioxide.** H. G. WOOD, C. H. WERKMAN, A. HEMINGWAY, and A. O. NIER (J. Biol. Chem., 1940, 135, 789—790).—Formation of succinic acid by combination of CO<sub>2</sub> and a C<sub>3</sub> compound (cf. A., 1940, III, 353) is confirmed, all the fixed CO<sub>2</sub> being in the carboxyl groups.

H. G. R.

**Influence of osmotic pressure on sporulation by *Bacillus subtilis*.** J. L. ROBERTS, W. C. WHITE, and E. OJERHOLM (Plant Physiol., 1938, 13, 649—653).—Slight inhibition of sporulation was apparent in media having osmotic pressures greater than 18 or less than 2 atm.

A. G. P.

**Lipins of acid-fast soil bacilli. II.** H. KAMEDA (J. Biochem. Japan, 1940, 31, 247—257).—The lipin content (lipin-P 0.189, lipin-N 0.073, lipin-amino-N 0.034, lecithin 2.72, kephalin 1.87, and



cerebroside 0.374%; cholesterol content varies considerably) of the bacilli examined (cf. A., 1937, III, 356) is greater than that in other acid-fast bacilli whilst the wax content is generally greater and less than that in acid-fast pathogenic and non-pathogenic bacteria, respectively.

F. O. H.

**Effects of association and competition on *Acetobacter*.** R. VAUGHN (J. Bact., 1938, 36, 357—367).—*Acetobacter* spp. showed very limited capacity for rapid acetification when grown in association with yeasts, the effect varying with the strain of bacteria, the type of yeast, and temp. of incubation. Strains of *Lactobacillus* produced smaller amounts of volatile acids when associated with *Saccharomyces ellipsoideus* or with certain strains of *Acetobacter*.

A. G. P.

**Proteolytic enzymes of bacteria. II. Peptidases of some common bacteria.** J. BERGER, M. J. JOHNSON, and W. H. PETERSON (J. Bact., 1938, 36, 521—545).—The enzymes are extracted by a process involving repeated freezing and thawing of the cells followed by toluene autolysis. The  $p_H$  optima of enzymes of many species was 8—9 and, in two cases, 5—6. Peptidases of *Bacillus megatherium* and of *E. coli* readily hydrolysed di- and tri-peptides but acted slowly or not at all on acylated or decarboxylated peptides. Methylation of the free amino-group of a peptide markedly increased its resistance to attack by the enzyme. From 4 organisms a leucylpeptidase activated by  $Mg^{++}$  (0.003M.) was obtained.

A. G. P.

**Nutrition of propionic acid bacteria.** H. G. WOOD, A. A. ANDERSEN, and C. H. WERKMAN (J. Bact., 1938, 36, 201—214).—Amino-acids improve but are not essential to the growth of the organisms. Riboflavin stimulates growth in  $(NH_4)_2SO_4$  media but is not generally essential. The ether extract of yeast extract contains an essential growth factor which cannot be replaced by a mixture of nicotinic acid, vitamin- $B_1$ , pimelic acid, uracil,  $\beta$ -alanine, and pantothenic acid.

A. G. P.

**Assimilation of carbon dioxide by propionic acid bacteria determined by use of radioactive carbon.** S. F. CARSON and S. RUBEN (Proc. Nat. Acad. Sci., 1940, 26, 422—426).—When *Propionibacterium pentosaceum* is grown in a glycerol medium in presence of radioactive  $CO_2$ , 72% of the latter taken up by the cells is converted into propionic acid and approx. 10% into succinic acid. Addition of propionic acid in absence of glycerol has practically no effect on the distribution of radioactive C between the two acids or on the total C assimilated, contra-indicating the formation of succinic from propionic acid and  $CO_2$ . Presence of glycerol not only affects the uptake of radioactive  $CO_2$ , but also increases the ratio of radioactive C in the two acids. The latter are probably formed by reaction between  $CO_2$  and glycerol or intermediate products arising during its fermentation.

J. N. A.

**Reduction of radioactive carbon dioxide by methane-producing bacteria.** H. A. BARKER, S. RUBEN, and M. D. KAMEN (Proc. Nat. Acad. Sci., 1940, 26, 426—430).—*Methanobacterium omelianskii*

and *Methanosarcina methanica* reduce  $CO_2$  to methane and utilise  $CO_2$  in the synthesis of cell material.

J. N. A.

**Isolation of glucosamine and chondrosamine.**—See A., 1940, II, 365.

**Influence of various factors on fermentation end products of heterofermentative lactobacilli.** C. C. THEIL (J. Dairy Res., 1940, 11, 136—144).—Total lactic acid was increased by addition of yeast autolysate and  $CaCO_3$  but not affected by the  $O_2$  tension or temp. The % of by-products was higher at low temp. and lower in the presence of  $CaCO_3$ . Acetic acid was depressed by  $CaCO_3$  and anaërobiosis, and alcohol was increased by anaërobiosis. The presence of talc had much the same effect as  $CaCO_3$ ; this effect is apparently largely a surface phenomenon.

J. G. D.

**Nutrient requirements of *Lactobacillus delbrückii* in the lactic acid fermentation of molasses.** H. R. STILES and L. M. PRUESS (J. Bact., 1938, 36, 149—153).—Use of accessory nutrients (steep water, thin grain residue, or malt sprouts) favours rapid fermentation ( $3\frac{1}{2}$ —6 days) and high yields of lactic acid. The accessory substances probably supply sol. org. N and stimulatory material.

A. G. P.

**Comparative metabolism of *R* and *S* variants of *Lactobacillus plantarum* (Orla-Jensen).** R. L. TRACY (J. Bact., 1938, 36, 467—479).—*L. plantarum* dissociates from the *S* to the *R* form when grown on glucose-agar containing 4% NaCl. The *R* variant differed from the *S* variant in failing to utilise glucose or other sugars or to produce titratable acid in 1—8 days when grown in glucose broth at 37°, and in growing in sugar-free peptone or casein broth.

A. G. P.

**Bacterial wilt resistance and genetic host-parasite interaction in maize.** R. E. LINCOLN (J. Agric. Res., 1940, 60, 217—239).—The virulence of cultures of *Phytophthora stewartii* was increased by successive passage through resistant and decreased by passage through susceptible hosts. The changes were reversed by reversal of the hosts. Loss of virulence was associated with a raised, firm colony but not necessarily with a change from the rough to the smooth phase. Gain in virulence coincided with the formation of more spreading, watery and viscid colonies. Virulence is a direct function of the proportion of virulent and avirulent organisms in a given culture; the proportion is changed by passage through susceptible or resistant hosts. The mutation rate (colour, morphology) of 3 bacterial strains examined was of the same order as the known mutation rate of the genes in higher forms. Sexual fusion of white and yellow strains of *P. stewartii* could not be demonstrated experimentally.

A. G. P.

**Micro-organism decomposing group-specific A substances.** M. W. CHASE (J. Bact., 1938, 36, 383—390).—The organism described destroys group-sp. A substance; it grows on ordinary media only in presence of A substance.

A. G. P.

(A) **Relationships of coliform organisms.** C. A. STUART, A. M. GRIFFIN, and M. E. BAKER.



(B) **Coliform organisms in certified milk.** C. A. STUART, K. M. WHEELER, and A. M. GRIFFIN (J. Bact., 1938, 36, 391—410, 411—418).—(A) A system of classification of these organisms into 3 classes (*Aërobacter*, intermediates, *Escherichia*) based on the indole and Voges-Proskauer reactions is described.

(B) Considerable variation occurred in the proportions of the 3 classes of organisms present in certified milk. The 3 classes differ in sanitary significance; total coliform counts of milk are thus of doubtful val.

A. G. P.

**Heteroauxin and growth of *Escherichia coli*.** E. BALL (J. Bact., 1938, 36, 559—565).—Heteroauxin doubled the rate of cell division regardless of the concn. (0.1—1.0 p.p.m. in the medium) used.

A. G. P.

**Brilliant-green-lactose-bile and the Standard Methods completed test in isolation of coliform organisms.** C. B. KELLY (Amer. J. Publ. Health, 1940, 30, 1034—1039).—Production of gas in brilliant-green-bile broth is a more accurate criterion of the presence of coliform organisms than is the Standard Methods completed test. In a series of water and shellfish samples, 101.2 and 93.8% of the total coliform organisms were indicated by the respective methods.

H. G. R.

**Heat-sterilised reducing sugars: effects on thermal resistance of bacteria.** J. G. BAUMGARTNER (J. Bact., 1938, 36, 369—382).—During sterilisation of sugar solutions by autoclaving at 112° for 15 min. in each of 3 successive days substances are formed which are toxic to *Escherichia coli* at 54° and delay its growth at 37°. The toxic matter is produced simultaneously with caramel, and is not formed when media are sterilised by filtration. The latter process protects *E. coli* from thermal destruction.

A. G. P.

**Synthetic medium for cultivation of *Corynebacterium diphtheriae*.** J. H. MUELLER (J. Bact., 1938, 36, 499—515).—Growth on a modified Pappenheimer medium was markedly improved by increasing the proportions of cystine and *d*-lactic acid therein and by addition of traces of Fe, Mn, Cu, and Zn.

A. G. P.

**Degeneration and variation of gonococci.** W. A. CASPER (J. Bact., 1938, 36, 111—131).—Strains of gonococci classified as distinct serological types are transformable from papilla-bearing into papilla-free forms. Formation of the latter is indicative of degeneration probably due to cultivation on artificial media. Diagnostic sera prepared with degenerated forms may give rise to errors in classification. Degeneration is associated with loss of type-sp. carbohydrate; such loss in old cultures marks a developing relationship between formerly heterologous strains. The high frequency of overlapping forms in cultures freshly isolated from acute cases of gonorrhœa is probably related to the degree of degeneration. In chronic gonorrhœa the organism by adaptation to human tissue may undergo a similar degenerative process. After cultivation on artificial media strains which are type-sp. in comparative agglutination tests can be shown by slide-agglutination to contain mixed-phase colonies.

A. G. P.

**Isolation and pathogenicity of *Pityrosporium ovale*.** C. W. EMMONS (U.S. Publ. Health Repts., 1940, 55, 1306—1312).—*P. ovale* was repeatedly and easily isolated by planting scales from seborrhœa oleosa in acid glucose broth containing 23—44% of glycerin and incubating at 30—37°. Subcultures were successfully carried out on media prepared by pipetting an ether extract of lanoline, oleic acid, or seborrhœic scales over agar plates.

C. G. W.

**Effect of quaternary ammonium compounds and tertiary amines on chain growth of pneumococci; use of diethylaminoethanol as substitute for choline.** H. OKAMOTO (Japan. J. Med. Sci., IV, 1940, 12, 143—155).—Choline tetra-ammonium iodide, cotarnine chloride, hydrastinine chloride, and other quaternary ammonium compounds cause growth of long chains of pneumococci. Some tertiary amines cause chain formation (arecoline, brucine, strychnine, antipyrine, pyramidone, cocaine, novocaine, eserine, and dimethylurea), others do not (nicotine, histamine). Urea, urethane, nitromethane, and glycine are without effect. Diethylaminoethanol (1:200—1:6400) in bouillon is especially effective and it is therefore possible to use a 1% diethylaminoethanol blood agar medium ( $p_H$  7.7) as a substitute for 1% choline medium for the differentiation between streptococci and pneumococci and for demonstrating pneumococci in exudates.

K. S. W.

**Occurrence of precipitation zones in mixtures of serum and sodium deoxycholate; significance in pneumococcolysis.** S. C. BUKANTZ, P. F. DE GARA, and J. G. M. BULLOWA (Proc. Soc. Exp. Biol. Med., 1940, 44, 489—495).—Addition of 0.12—0.24% of Na deoxycholate to 2% serum at  $p_H$  7.3 causes formation of a ppt. which is sol. in excess. This may mask lysis of pneumococci in serum broth cultures.

V. J. W.

**Pneumococcal immunity.** H. A. REICHEL (Proc. Staff Mayo Clin., 1939, 14, 636—640).—The clearance capacity of the blood in experimental pneumococcal infection was estimated in rabbits. Highly virulent pneumococci are not removed for a certain period, pneumococci of lesser virulence are removed slowly, and avirulent pneumococci are removed rapidly. Type-sp. immune serum causes a rapid removal of virulent pneumococci. The removal of pneumococci is due to phagocytosis by the reticulo-endothelial system. The determination of clearance capacity of the blood for pneumococci is a reliable method for determining the presence of pneumococcal antibodies and gives better information than the life-protecting test. The presence of antibodies was proved as early as 1 hr. after injection of living pneumococci and within 20 hr. after intravenous vaccination with formol-killed pneumococci.

H. H. K.

**Immunisation experiments with artificial complexes formed from substances isolated from the antigen of *Bact. shiga*.** S. M. PARTRIDGE and W. T. J. MORGAN (Brit. J. exp. Path., 1940, 21, 180—195).—In rabbits, the sp. polysaccharide component failed to induce immune-body. The polypeptide-like component induced homologous precipitins of low titre but no significant agglutinins for



*Bact. shigæ*. The artificial polysaccharide-polypeptide complex induced potent immune-body which agglutinated *Bact. shigæ* to high titre, pptd. with the sp. polysaccharide and fixed complement in the presence of "Shiga" antibacterial serum. The sp. polysaccharide adsorbed on two non-sp. substances was not antigenic. F. S.

Type-specific antigenic protein derived from staphylococcus. W. F. VERWEY (J. Exp. Med., 1940, 71, 635—644).—A type-sp. protein antigen can be obtained by chemical extraction of lyophilised staphylococci type *A*. The antigen can be entirely differentiated from type-sp. carbohydrate. A. C. F.

Influence of organic acids, sugars, and sodium chloride on strains of food-poisoning staphylococci. T. D. NUNHEIMER and F. W. FABIAN (Amer. J. Publ. Health, 1940, 30, 1040—1049).—The order of decreasing germicidal activity of the acids is acetic, citric, lactic, malic, tartaric, HCl and must depend on some factor other than  $[H^+]$ . NaCl, glucose, and sucrose exhibit inhibiting and germicidal effects at 15—20 and 20—25, 30—40 and 40—60, 50—60 and 60—70%, respectively; the germicidal effect is observed only after 4—5 days and is less effective than glucose in presence of acid. H. G. R.

Fermentation end-products of heterofermentative streptococci. C. C. THIEL (J. Dairy Res., 1940, 11, 51—61).—Anaërobic conditions increased both the total and relative amount of lactic acid produced, whilst chalk raised the proportion of lactic acid. Anaërobic conditions decreased, and chalk, low temp., and yeast autolysate increased, the total amount of acetic acid. Anaërobic conditions, chalk, low temp., and yeast autolysate increased both the total and the relative amounts of alcohol. The Pasteur effect was slight. Residual lactose was hydrolysed by some types, notably *Str. citrovorus*. J. G. D.

Oxidations produced by hæmolytic streptococci. E. S. G. BARRON and H. R. JACOBS (J. Bact., 1938, 36, 433—449).—Among seven strains of organisms examined, one group oxidised glucose, lactic and pyruvic acids, and glycerol; a second group oxidised glucose, lactic acid, and glycerol, and a third oxidised only glucose and lactic acid. In one case continued transplantation resulted in loss of ability to oxidise lactic acid although pathogenicity and power of oxidising pyruvic acid was retained. A. G. P.

Hæmolytic streptococci. V. Characteristics of human and animal strains of groups *A* and *C*. A. C. EVANS and E. VERDER (J. Bact., 1938, 36, 133—147).—Differentiation between human and animal strains of serological groups by selective carbohydrate fermentation and by sensitivity to nascent phage *B* is described. A. G. P.

Experimental arthritis in rat produced by a group *A* hæmolytic streptococcus. S. ROTHBARD (Proc. Soc. Exp. Biol. Med., 1940, 44, 379—381).—Polyarthritis was caused by inoculation with an unclassified organism of "matt" variety which could be cultivated from the synovial fluid of affected joints. V. J. W.

Effect of certain purines and carbon dioxide on growth of strain of group *A* hæmolytic streptococcus. A. M. PAPPENHEIMER, jun., and G. A. HOTTE (Proc. Soc. Exp. Biol. Med., 1940, 44, 645—649).—15 constituents are listed for a synthetic culture medium. Omission of any one inhibits growth. Growth also needs CO<sub>2</sub> at approx. 40 mm. Hg tension. V. J. W.

Increase of power to form hæmolysin by *Streptococcus hæmolyticus* in presence of nucleic acid. H. OKAMOTO (Japan. J. Med. Sci., IV, 1940, 12, 167—208).—1% blood agar nucleic acid of  $p_H$  7.5—7.7 is the best culture medium for the demonstration of the presence of hæmolysins in hæmolytic streptococci. Nucleic acid can thus be used to differentiate *Str. hæmolyticus* from *Str. nonhæmolyticus* and *viridans*, and from staphylococci. If nucleic acid is added to fluid media, a strongly hæmolytic cell-free filtrate is obtained. There is no direct relation between the virulence and the hæmolytic power of streptococci. Streptolysin is destroyed by heating at 70° for 12 hr.; it is difficult to dialyse and is filterable through bacterial filters. At 13° it can be kept for 1 month without decrease in activity. K. S. W.

Bactericidal effect of sulphanilamide on  $\beta$ -hæmolytic streptococci *in vitro*. H. J. WHITE and J. M. PARKER (J. Bact., 1938, 36, 481—498).—The bactericidal action of sulphanilamide *in vitro* probably exceeds that in glucose-peptone broth or in whole blood. Its action is delayed for at least 3 hr. and probably does not occur under experimental conditions at temp. below 39°. A. G. P.

Mazzini test in serodiagnosis of syphilis. A. W. RATCLIFFE (J. Lab. clin. Med., 1940, 25, 1224—1230).—The data of 10,253 blood specimens presented shew that the Mazzini test is more sensitive than the tests with which it is compared and has a satisfactory specificity. C. J. C. B.

Purification of tetanus and diphtheria toxins. M. D. EATON and A. GRONAU (J. Bact., 1938, 36, 423—432).—The method of purification involves pptn. by CdCl<sub>2</sub>. Diphtheria toxin is pptd. by numerous protein reagents; the tetanus toxin is not pptd. by acid or alum. Tetanus toxin differs in chemical properties from diphtheria toxin, which is a typical protein. A. G. P.

Effect of salicylate on the oxygen uptake of the tubercle bacillus. F. BERNHEIM (Science, 1940, 92, 204).—Addition of 1 mg. of Na salicylate to the bacteria (bovine strain *B*<sub>1</sub>) suspended in 2 c.c. of 0.05M-PO<sub>4</sub>''' buffer ( $p_H$  6.7) more than doubles the uptake of O<sub>2</sub> and the production of CO<sub>2</sub>. Benzoate, but not *p*- and *m*-hydroxybenzoates, methyl or acetyl-salicylate, also has an effect on the uptake of O<sub>2</sub>. *o*-Aminobenzoate has a slight effect, but when added with salicylate it inhibits the salicylate effect. L. S. T.

Occurrence of riboflavin in tubercle bacillus. H. R. STREET and R. E. REEVES (Proc. Soc. Exp. Biol. Med., 1940, 44, 641—644).—It is possible to extract from tubercle bacilli grown on Long's medium a fluorescent pigment which can replace riboflavin in promoting growth of young rats. V. J. W.



**Skin sensitisation to simple compound by injections of conjugates.** K. LANDSTEINER and M. W. CHASE (Proc. Soc. Exp. Biol. Med., 1940, 44, 559).—After injection of killed tubercle bacilli, guinea-pigs are made skin-sensitive to applications of picryl chloride by intraperitoneal injections of a conjugate made by treatment of guinea-pig erythrocyte stromata with picryl chloride in alkaline solution.

V. J. W.

**Two phage-susceptible types of *B. typhosus* isolated from typhoid fever case.** D. E. HELMER, D. E. KERR, C. E. DOLMAN, and L. E. RANTA (Canad. Publ. Health J., 1940, 31, 433—440).—The action of Craigie's type I and II bacteriophages against  $\nu$  forms of *B. typhosus* has been advantageously employed recently. The method facilitates earlier identification, and may furnish important epidemiological clues, but the established confirmatory tests for *B. typhosus* should not be omitted. The simultaneous isolation, from a specimen of faeces, from a case of typhoid fever, of type  $F_1$  and  $F_2$  colonies of *B. typhosus* is reported. There was no epidemiological evidence pointing to a double infection having been incurred.

C. G. W.

**Absorption of staphylococcus bacteriophages by enterococci.** M. L. RAKIETEN and E. J. TIFFANY (J. Bact., 1938, 36, 155—173).—Actively growing and ground formaldehyde-killed cultures of enterococci have similar powers of inactivating staphylococcus phage; heat-killed whole or ground cultures lack this power. Aq. extracts of enterococci absorb homologous phage but do not inactivate staphylococcus phage. Staphylococci and some strains of *B. subtilis* absorb enterococcus phage. Carbohydrate fractions of enterococci have no phage-inactivating power; protein fractions of the same strains absorb homologous phage and to a smaller extent heterologous (staphylococcus) phage. Pneumococci I, II, and III do not affect staphylococcus phage.

A. G. P.

**Action of chemical disinfectants on bacteriophages for the lactic streptococci.** G. J. E. HUNTER and H. R. WHITEHEAD (J. Dairy Res., 1940, 11, 62—66).— $Cl_2$  is the most effective and practicable. Acids and alkalis are effective only outside the limits of  $p_H$  2.5—11.8.

J. G. D.

**Action of surface-active agents on viruses.** F. M. BURNET and D. LUSH (Austral. J. Exp. Biol., 1940, 18, 141—150).—Na lauryl sulphate and saponin, like Na deoxycholate, show a selective inactivating effect on certain viruses. The effect is modified by presence of protein in the suspending fluid and by concn. of virus present. Psittacosis virus is almost unaffected by these surface-active chemicals, and a method for its isolation from sputum containing mouse-pathogenic pneumococci by treatment with Na lauryl sulphate is suggested. All the bacteriophages tested were highly resistant to these agents. Viruses can be arranged in a series of graded susceptibility, which is the same for Na deoxycholate, Na lauryl sulphate, saponin, the virus-inactivating agent in human nasal secretion, and homologous immune serum.

D. M. N.

**Inactivation of virus of epidemic influenza by soaps.** C. C. STOCK and T. FRANCIS (J. Exp. Med., 1940, 71, 661—681).—The virus of epidemic influenza can be inactivated by oleic, linoleic, and linolenic acids at a  $p_H$  of 7.5. The infectious properties of the virus are removed but the immunising capacity remains.

A. C. F.

**Effect of chlorination of city water on virus of poliomyelitis.** J. E. KEMPF and M. H. SOULE (Proc. Soc. Exp. Biol. Med., 1940, 44, 431—434).— $Cl_2$  in concn. of 0.5 p.p.m. did not inactivate the virus in  $1\frac{1}{2}$  hr.

V. J. W.

**Growth *in vitro* of virus of yellow fever.** G. M. FINDLAY and F. O. MACCALLUM (Brit. J. exp. Path., 1940, 21, 173—180).—This virus grew well in media containing chick or mouse embryo nervous tissue but failed to grow on adult mouse brain or larval tissues of *Aedes aegypti*. There was no growth in the absence of living animal cells. The virus grew readily in a medium consisting of embryonic cells and Tyrode solution without serum or glucose.

F. S.

**Ultracentrifuge studies of yellow fever virus.** E. G. PICKELS and J. H. BAUER (J. Exp. Med., 1940, 71, 703—717).—Yellow fever virus particles show a high light absorption in the spectral range of 320 to 440  $m\mu$ . The min. infective dose for monkeys contains approx. 10,000 viral particles. The vol. of the virus particle is at least that of a sphere of 12  $m\mu$ . diameter.

A. C. F.

**Yellow fever immune bodies in sheep sera.** E. C. SMITH (Trans. Roy. Soc. trop. Med. Hyg., 1940, 34, 97—104).—Of 100 sheep sera from Northern Nigeria, 32 gave positive results with the mouse protection test. Neurotropic yellow fever virus can survive for at least 13 days in the brain tissue of sheep. By serial intracerebral inoculations with neurotropic virus it is possible to produce a fatal infection in sheep. Intracerebral and subcutaneous inoculations bring about an immunity to yellow fever as shown by the mouse protection test. Following the passage of the neurotropic virus in sheep brain tissue its action in mice is retarded for one or more transfers.

C. J. C. B.

**Factors influencing efficacy of phenolised rabies vaccines.** K. HABEL (U.S. Publ. Health Repts., 1940, 55, 1619—1631).—Marked variations were found in the properties of 25 substrains derived from the original Pasteur strain. Immunising power of strains seemed related to their ability to resist phenol, to the rapidity of their passage transfer, and possibly to the length of the incubation period in rabbits. High immunising potency is not an inherent characteristic of any particular strain but can be increased or decreased during its passage transfers over a long period of time.

C. G. W.

**Enzymic activity of vaccinia elementary bodies.** M. G. MACFARLANE and D. E. DOLBY (Brit. J. exp. Path., 1940, 21, 219—227).—Suspensions of the elementary bodies of vaccinia virus were tested for dehydrogenase activity towards lactate, triose phosphate, hexose monophosphate, and alanine in the presence of the appropriate co-enzymes and



flavoprotein, with negative results. The suspensions also lacked zymohexase, enolase,  $\alpha$ - and  $\beta$ -glucosidases, and nucleosidase. They contained phospho-mono- and -di-esterases and hydrolysed ribonucleic acid.

F. S.

**Purification of tomato bushy stunt virus by differential centrifugation.** W. M. STANLEY (J. Biol. Chem., 1940, 135, 437—454; cf. Bowden and Pirie, A., 1938, III, 1059).—The sp. activity of the virus obtained from the juice of the tomato plant (*Datura stramonium* and *Solanum nodiflorum*) is unaffected by freezing the diseased plant. The yield of virus from *D. stramonium* is 4—5 times that from *S. nodiflorum*, although the properties are the same. Heat-treatment at 60° causes a definite inactivation and results in a virus of lower sp. activity than when differential centrifugation is used. The cryst. virus occurs as rhombic dodecahedral crystals similar to those of a specimen partly inactivated by heat-treatment. It consists of a nucleo-protein containing approx. 17% of nucleic acid; spectral absorption, sedimentation, and diffusion data are given.

P. G. M.

**Diffusion constant of tomato bushy stunt virus.** H. NEURATH and G. R. COOPER (J. Biol. Chem., 1940, 135, 455—462).—The average val. for the diffusion const. is found by the refractometric scale method to be  $1.15 \times 10^{-7}$  for dil. solutions. From this and the sedimentation const., the mol. wt. is calc. to be  $10.6 \times 10^6$ , and the dissymmetry const.,  $f_b/f_0$ , 1.27.

P. G. M.

**Sedimentation rate of bushy stunt virus.** M. A. LAUFFER and W. M. STANLEY (J. Biol. Chem., 1940, 135, 463—472).—The sedimentation const. of bushy stunt virus purified by centrifugation was found to be  $132 \times 10^{-13}$  at  $p_H$  7, as opposed to  $146 \times 10^{-13}$  for the virus purified by chemical means.

P. G. M.

**Immune human placental globulin in measles prophylaxis.** H. N. BUNDESEN, W. I. FISHBEIN, I. R. ABRAMS, and R. D. MILLER (J. Amer. Med. Assoc., 1940, 115, 104—107).—Immune human placental globulin is effective in measles prophylaxis but is inferior to convalescent serum.

C. A. K.

**Immunisation against human rickettsial diseases.** F. MURGATROYD (Trans. Roy. Soc. trop. Med. Hyg., 1940, 34, 1—36).—A review.

C. J. C. B.

**Bullous Schick reactions. Their occurrence during acute infectious diseases.** A. E. FISHER, B. RUBIN, and C. K. GREENWALD (Amer. J. Dis. Child., 1940, 60, 304—315).

C. J. C. B.

**Poison ivy sensitivity.** S. GREENBERG and E. D. MALLOZZI (Arch. Dermat. Syphilol., 1940, 42, 290—301).—Specifically treated subjects and controls were subjected to massive natural exposure to *Rhus toxicodendron* during the 6 weeks following the injections. There was little difference in the incidence or severity of clinical ivy dermatitis in the two groups.

C. J. C. B.

**Allergy in dermatology.** J. GOODMAN and M. B. SULZBERGER (J. Allergy, 1940, 11, 407—426).—A crit. review of recent literature.

C. J. C. B.

**Contact dermatitis from thurowort (*Eupatorium altissimum*).** A. J. BRIER (J. Allergy, 1940, 11, 402—406).—Report of a case.

C. J. C. B.

**Histaminase in allergic dermatoses.** L. C. GOLDBERG (J. Amer. Med. Assoc., 1940, 115, 429—432).—Improvement was noted in 26 of 35 patients with allergic skin disorders who were given histaminase, intramuscular injection being more effective than oral administration.

C. A. K.

**Effect of ointment bases on skin.** L. F. RAY and I. H. BLANK (Arch. Dermat. Syphilol., 1940, 42, 285—289).—Most petrolatum and ointment bases gave negative patch tests but two hydrous wool fats gave some positive reactions, due perhaps to the presence of triethanolamine soaps, which in another series of patch tests gave a high % of positive reactions to patch tests.

C. J. C. B.

**May-fly (Ephemera) hypersensitivity.** K. D. FIGLEY (J. Allergy, 1940, 11, 376—387).—In 1284 patients with seasonal hay fever and pollinosis who were adequately tested, 95 reacted to May fly. Of these, 20 reacted to May fly alone and 20 to May fly and some other inhalant, usually ragweed pollen. A comparison of May fly and caddis fly sensitisation at the western end of Lake Erie is given and the opinion advanced that there is an antigen common to both the May fly and the caddis fly, as well as species-sp. antigens for both.

C. J. C. B.

**Oral pollen therapy in ragweed pollinosis.** S. M. FEINBERG, F. L. FORAN, M. R. LICHTENSTEIN, E. PADNOS, B. Z. RAPPAPORT, J. SHELDON, and M. ZELLER (J. Amer. Med. Assoc., 1940, 115, 23—29).—Oral administration is much inferior to parenteral injection of pollen extract in ragweed pollinosis.

C. A. K.

**Heterophile factor in ragweed pollen.** F. E. SAMMIS (J. Exp. Med., 1940, 71, 591—601).—Ragweed pollen antigen contains a factor causing an increase in hæmolysin titre for sheep cells, when injected into rabbits. The antigen absorbs anti-ragweed hæmolysins. In 19 out of 22 cases of human ragweed-sensitive sera heat-labile hæmolysins for sheep cells were present, but treatment with ragweed antigen resulted in no change in titre.

A. C. F.

**Catalpa as a cause of hay fever.** O. SWINEFORD, jun. (J. Allergy, 1940, 11, 398—401).—A case of hay fever from catalpa is reported. 9 of 86 patients with spring hay fever who were tested had strong reactions to catalpa pollen extract.

C. J. C. B.

**Summer hay fever of unknown origin in south-east of U.S.A.** C. K. WEIL (J. Allergy, 1940, 11, 361—375).—In the S.E. of the United States there is encountered a type of seasonal hay fever which begins about May 15 and ends in October. In every respect, this type of hay fever resembles seasonal varieties due to pollen, but skin tests with the pollens of grasses, trees, weeds, and flowers, insect scales, fungi, and the constituents of commercial fertiliser and insecticides have been negative except for one case in which was demonstrated a marked degree of sensitivity to the scale of the tanytarsus and in 2 others reacting less intensely.

C. J. C. B.



## (xxvi) PLANT PHYSIOLOGY.

**Growth of *Chlorella* in darkness and in glucose solution.** W. H. PEARSALL and R. P. BENGRY (Ann. Bot., 1940, 4, 365—377).—In sugar media at 23° the growth of *Chlorella* is retarded in darkness. Three phases of growth are distinguished: (i) an exponential phase (1—8 days) in which cell nos. increase exponentially but dry matter per cell diminishes, (ii) a phase in which the rate of increase in no. of cells and total dry wt. increase linearly, with little change in wt. per cell, and (iii) a period (14th—40th days) when the rate of increase in cell nos. declines until the daily increase in no. of cells and total dry wt. remains const. and the dry wt. per cell falls. The periods are associated with changes in "utilisation ratio." During exponential growth much sugar is respired; in the third stage it is incorporated into cell materials. The linear stages of growth result from limited O<sub>2</sub> supply; higher rates of growth may be induced by continuous shaking of the cultures.

A. G. P.

**Permeability to gases of seed-coat membranes of *Cucurbita pepo*.** R. BROWN (Ann. Bot., 1940, 40, 379—395).—The outer membrane of the seed coat is more permeable to gases than is the inner membrane. Diffusion data for CO<sub>2</sub>, O<sub>2</sub>, and N<sub>2</sub> are recorded. Absorption of water by the inner membrane increases permeability by providing a solvent medium and by removing a sol. impermeable constituent. Partial drying further increases permeability.

A. G. P.

**Intake and accumulation of Prune pure by plant cells.** H. DRAWERT (Planta, 1938, 29, 178—214).—The intake of the dyestuff by plant cells depends on its solubility, as electrically neutral mols. ( $p_H$  3.0—8.5), in the org. liquid of the cells. Al salts block the entry of the dyestuff into the cells but over a wide range of concn. aq. NaCl, HCl, CaCl<sub>2</sub>, and MgCl<sub>2</sub> have no effect. The action of Al salts is not due to its effect on the permeability of the cell plasma or to adsorption effects, but probably to disturbance of the neutrality of the dye mols.

A. G. P.

**Water relations in *Bryophyllum calycinum* subjected to severe drying.** W. B. WELCH (Plant Physiol., 1938, 13, 469—487).—In whole plants the proportion of "unfreezable" water (−20°) increases with age, bud tissues containing less than those of intermediate age. During the drying of cut leaves under laboratory conditions freezable water gradually evaporates from the central portions of the leaves outwards but young plantlets are able to develop on the margins. In the plantlets (in which water-retaining power is very high) there is less correlation between unfreezable water content and extent of drying than is apparent in parent leaves. The youngest marginal plantlets contain the highest content of unfreezable water. Unfreezable water alone is not responsible for the water-retaining power of plantlets.

A. G. P.

**Factors determining resistance to movement of water in leaves.** C. L. MER (Ann. Bot., 1940, 4, 397—401).—Resistance to water movement through

net veins of leaves is much smaller than that through the veins into mesophyll cells.

A. G. P.

**Root resistance as a cause of decreased water absorption by plants at low temperatures.** P. J. KRAMER (Plant Physiol., 1940, 15, 63—79).—The decreased rate of water movement through roots associated with fall of temp. is attributable to lowered permeability of cell colloids and to the increase viscosity of water.

A. G. P.

**Conductivity of plant sap.** G. A. GREATHOUSE (Plant Physiol., 1938, 13, 553—569).—Factors affecting the electrical conductivity of saps are discussed. The lower conductivity of sap from hardened plants is not due entirely to presence of fewer ions but is conditioned by adsorption, viscosity, ionisation, and other factors. Addition of small amounts of non-electrolytes diminishes, and that of large amounts increases, the conductivity of saps. The interaction of solvent and solute is of primary importance in the interpretation of conductivity data.

A. G. P.

**Salt relations of plant tissues. I. Absorption of potassium salts by storage tissue.** W. STILES and A. D. SKELDING (Ann. Bot., 1940, 4, 329—363).—Absorption by carrot tissue of both ions of KCl, KBr, KNO<sub>3</sub>, and KH<sub>2</sub>PO<sub>4</sub> is rapid. Absorption of K<sup>+</sup> may be preceded by exosmosis from the tissue but the liberated ions are all reabsorbed. Absorption of K<sub>2</sub>SO<sub>4</sub> is somewhat slower than that of the other salts. The course of absorption, a two-phase process, is examined. The two ions of the salts are absorbed to unequal extents, depending on the degree of exosmosis, the inequality being more marked in dil. than in more conc. solutions.

A. G. P.

**Assimilation of ammonium and nitrate by pineapple plants grown in nutrient solutions: effects on nitrogenous and carbohydrate constituents.** C. P. SIDERIS, B. H. KRAUSS, and H. Y. YOUNG (Plant Physiol., 1938, 13, 489—527).—In water-cultured pineapple plants with media containing approx. 28 p.p.m. of N and of  $p_H$  4.2—5.5 growth rates were approx. the same whether N was supplied as NO<sub>3</sub><sup>-</sup> or NH<sub>4</sub><sup>+</sup>. NH<sub>4</sub><sup>+</sup> was the more rapidly absorbed and assimilated and produced plants containing more N and chlorophyll. Assimilation of NH<sub>4</sub><sup>+</sup> occurred rapidly in roots with production of amino-acid and small amounts of asparagine and glutamine. NO<sub>3</sub><sup>-</sup> was largely translocated as such to chlorophyllous tissues where it was rapidly converted into sol. org. N compounds notably asparagine and basic amino-compounds and thence into protein. NH<sub>4</sub><sup>+</sup>-fed plants contained much sol. org. N and little protein in non-chlorophyllous tissue. In NO<sub>3</sub><sup>-</sup>-fed plants the ratio of protein- to sol. org. N was high. In chlorophyllous sections of mature and full grown but still active leaves of NH<sub>4</sub><sup>+</sup> plants the sol. org. N and protein contents were greater than in NO<sub>3</sub><sup>-</sup> plants. Reducing sugar and sucrose contents of leaves and, more especially, of roots of NO<sub>3</sub><sup>-</sup> plants exceeded those in NH<sub>4</sub><sup>+</sup> plants; in the latter sugar present in roots is extensively utilised in synthesis of sol. org. N compounds. The distribution of sol. org. N and protein in full-grown leaves is more const. in plants receiving NH<sub>4</sub><sup>+</sup>.

A. G. P.



**Assimilation of ammonia-nitrogen by tobacco plant.** Preliminary study with isotopic nitrogen. H. B. VICKERY, G. W. PUCHER, R. SCHOENHEIMER, and D. RITTENBERG (J. Biol. Chem., 1940, 135, 531—539).— $\text{NH}_4\text{Cl}$  containing  $^{15}\text{N}$  is rapidly assimilated by growing plants and converted into amides, amino-acids, and proteins. The concn. of isotope in the N is greatest in the roots; the greatest quantity of  $^{15}\text{N}$  occurs in the leaves and exceeds that expected from growth alone owing to chemical interaction between tissue and sol. cell components. The latter phenomenon is analogous to that occurring in animal tissue-proteins. P. G. M.

**Bacteriophage of *Rhizobia* in relation to symbiotic nitrogen fixation by lucerne.** S. C. VANDECAVEYE, W. H. FULLER, and H. KATZNELSON (Soil Sci., 1940, 50, 15—27).—Growth of lucerne in phage-infected soil was poor regardless of addition of phage-resistant or -susceptible strains of *Rh. meliloti*. Phage was present in plant nodules. Addition of N fertilisers to soil after the first cut markedly improved the subsequent growth of the crop. A. G. P.

**Effect of sodium nitrate on response of spinach to length of day.** J. E. KNOTT (Plant Physiol., 1940, 15, 146—148).—Heavy applications of  $\text{NaNO}_3$  to spinach in pot cultures delayed seed stalk development. A. G. P.

**Effect of phosphorus on the nitrogen and sulphur intake of oats.** P. VON STREBEYKO (Planta, 1938, 29, 228—230).—P deficiency restricts the intake of N and S by oats during the period of rapid growth. A. G. P.

**Sulphur metabolism of plants.** II. K. MOTHES (Planta, 1938, 29, 67—109; cf. A., 1935, 553).—The distribution of S in plants at different periods of growth shows little change in the proportions of protein- and neutral S (glutathione, methionine, cystine) but considerable change in ester- and inorg.  $\text{SO}_4''$ . Plants continue to develop for some time in the absence of S supplies. Young active organs are rich in neutral S. Conductive tissue contains much  $\text{SO}_4''$ . Thiol compounds are detectable in sieve tubes. In well ripened seed practically all S is in protein form. In rapidly ripened or artificially after-ripened seed larger proportions of  $\text{SO}_4''$  or neutral S may occur. Reduced S compounds added artificially to leaves are oxidised to  $\text{SO}_4''$ . Transition from physiological activity to a resting condition in plants is accompanied by oxidation of neutral S to  $\text{SO}_4''$ . In fungi this oxidation is favoured by an alkaline reaction and by addition of sugar to the medium. Top yeasts effect complete oxidation of neutral S, whereas bottom yeasts produce only intermediate stages ( $\text{S}_2\text{O}_3''$ , thionic acids). Reduction of  $\text{SO}_4''$  does not take place readily in higher plants.  $\text{NO}_3'$  favours the oxidation of thiol compounds by baker's yeast and restricts  $\text{SO}_4''$  reduction in *Aspergillus*. A. G. P.

**Detection of oxalic acid idioblasts by reduction of silver nitrate.** V. RYPÁČEK (Planta, 1939, 29, 617—620).—Sections of the plant tissue are washed in water (5 sec.) and placed in 0.1N- $\text{AgNO}_3$  preferably at 30—35° for 1.0—1.5 hr. (or at 20° for 4—5 hr.).

Initial pptn. of Ag oxalate is followed by gradual reduction to metallic Ag forming a continuous film over the specialised cells. A. G. P.

**Histological structure of apple flesh in relation to growth and senescence.** W. H. SMITH (J. Pomology, 1940, 18, 249—260).—Larger apples possessed larger cells and a larger no. of cells than did smaller fruit of the same variety. Apples of different varieties differed widely in cellular structure. The average size of cell was related to average length of growth season. Total cell no. per fruit was greater for early than for late varieties. Large nos. of cells per unit wt. of tissue were associated with high respiration rates, poor keeping quality, early maturation, and a short growth season. A. G. P.

**Rapid staining methods in plant histology.** R. S. McLEAN and E. J. IRELAND (J. Amer. Pharm. Assoc., 1940, 29, 318—321).—Rapid staining is effected by using the stains in 95% alcohol and flaming the slide for the primary stain and, occasionally for the counterstain. Suitable stains are tabulated. F. O. H.

**Response of various spring wheats to vernalisation.** D. J. WORT (Plant Physiol., 1940, 15, 137—141).—Max. response of wheat to vernalisation was obtained among seed samples of which parent plants were exposed to relatively high temp. during flowering and ripening. A. G. P.

**Diurnal change in carbohydrates in relation to constitution of leaves.** B. N. SINGH and M. P. SINGH (Proc. Indian Acad. Sci., 1940, 11, B, 236—247).—The diurnal variation in glucose, sucrose, and starch content was determined in the leaves of various plants; attached and detached leaves, naturally and artificially illuminated, were used. The glucose and sucrose levels attain daily max. earlier than does starch, whilst the glucose : sucrose ratio is greater in the yellow than in the green parts of assimilating leaves. Increase in carbohydrate is accompanied by increase in fat and protein contents. The relationship between constitution of the leaves and the rate of depletion of carbohydrate stores is discussed. F. O. H.

**Carbohydrate relations of a single scion variety grafted on Malling rootstocks IX and XIII.** Y. V. RAO and W. E. BERRY (J. Pomology, 1940, 18, 193—225).—The distribution of carbohydrates in scions of Crawley Beauty and in the two stocks is recorded. Vals. generally were higher in bark than in wood; concns. of reducing sugars, disaccharides, and starch in the scions were greater on stock M. IX than on M. XIII. Seasonal variations in carbohydrates differed on the two stocks as also did the water content of scions. Starch accumulation in both stocks precedes growth cessation of the scions, but in scions the two phenomena occur simultaneously. Early and extensive accumulation of starch may explain the dwarfing effect of M. IX. A. G. P.

**Correlation between growth of excised root tips and types of food stored in seed.** G. C. GAL- LIGAR (Plant Physiol., 1938, 13, 599—609).—Excised root tips from starchy seeds grew well under the conditions of the test; those from oily seeds showed



widely different growth rates, those from high-protein seeds showed relatively poor growth. No diurnal rhythm of growth and no relation between growth behaviour and phyletic organ of root tips was apparent. The most active and prolonged growth was obtained with varieties of maize and sunflower.

A. G. P.

**Synthesis of thiamin by excised roots of maize.** J. E. McCLARY (Proc. Nat. Acad. Sci., 1940, 26, 581—587).—The addition of growth factors or extracts does not improve the mineral salts-glucose medium and growth of the roots is unsatisfactory. In mineral salts-glucose-agar medium synthesis of thiamin is observed.

H. G. R.

**Behaviour of pectic substances and naringin in grapefruit in the field and in storage.** G. L. RYGG and E. M. HARVEY (Plant Physiol., 1938, 13, 571—586).—The extent of pitting in stored grapefruit varied with temp. in the decreasing order 3.3°, 7.8°, 13.3°, the rate of pitting being influenced by the growth conditions of the fruit. Sealed chamber respiration tests showed that among fruit from individual districts the period of negative pressure was directly related to susceptibility to pitting. Sol. pectin in the albedo increased during the season. No seasonal variation in protopectin content was apparent although low vals. were general at mid-season. The proportion of total pectic substance in the albedo was low at the period of low susceptibility to storage pitting. Vals. were general higher for the albedo than for the flavedo. The ratio sol. pectin : protopectin remained unchanged during storage although the total pectic matter in albedo and flavedo increased somewhat. Variation in naringin contents followed those in total pectic matter; vals. were higher at higher storage temp.

A. G. P.

**Respiration and maturity in peaches and plums.** E. R. ROUX (Ann. Bot., 1940, 4, 317—327).—The CO<sub>2</sub> evolution of peaches and plums picked at different stages of maturity is examined. Very young fruit shows an early and very marked climacteric. In fruit of intermediate age the climacteric is delayed and storage life is prolonged. The picking stage associated with max. storage life is that at which the max. increase in fruit size begins. Longevity and respiration ratio are inversely related.

A. G. P.

**Tropical fruits. IX. Respiration of bananas during ripening at tropical temperatures.** C. W. WARDLAW and E. R. LEONARD (Ann. Bot., 1940, 4, 269—315).—The following stages in the respiration of bananas are distinguished: (i) the pre-climacteric, firm green stage characterised by low internal and tissue content of CO<sub>2</sub>, low respiration rate, and high but decreasing internal [O<sub>2</sub>]; (ii) the climacteric phase, during which respiration increases rapidly to a peak val., marked by increased pulp temp., diminution, almost to zero, of internal [O<sub>2</sub>], and corresponding increase in internal [CO<sub>2</sub>] to a peak val. coinciding with the peak respiration rate; (iii) post-climacteric peak phase in which skin colouring and softening begin, characterised by decrease in respiration rate and internal [CO<sub>2</sub>] with increase in internal [O<sub>2</sub>]; (iv) a stage during which fruit becomes "eating ripe,"

associated with increasing internal [CO<sub>2</sub>], decrease in internal [O<sub>2</sub>], small increase in respiration rate, and increased resistance to movement of gases in the tissue; (v) the over-ripe stage in which gas movement becomes increasingly difficult, respiration declines, and internal CO<sub>2</sub> increases. The climacteric is thus a change from a lower to a higher level of metabolism.

A. G. P.

**Anaërobic respiration of potato tubers.** J. G. BOSWELL and G. C. WHITING (Ann. Bot., 1940, 4, 257—268).—The nature of the CO<sub>2</sub> output curve of potato tissue immediately after transference from air to N<sub>2</sub> and the ratio of aerobic to anaërobic CO<sub>2</sub> output do not afford evidence of oxidative anabolism during aerobic respiration. The CO<sub>2</sub> output curve of whole tubers under anaërobic conditions is the resultant of the CO<sub>2</sub> output of cells and that liberated chemically by diminution of basicity of the tissue.

A. G. P.

**Metabolic processes of potato discs under conditions conducive to salt accumulation.** F. C. STEWARD and G. PRESTON (Plant Physiol., 1940, 15, 23—61).—Potato discs immersed in 0.05N-KCl show a rapid increase in respiratory rate to a limit much exceeding that of discs in water. In 0.05N-CaCl<sub>2</sub> the rate falls to a very low level. The calorific val. of the discs is lowered considerably by placing in salt solutions. Discs in aq. K salts synthesise more protein from sol. N fractions and those in aq. Ca salts less protein than when placed in water. The N fraction used in the synthesis comprises amino-acids and the heat-stable amides (asparagine). K salts increase and Ca salts decrease the proportion of amino-acids utilised and both series of salts influence the total amount of protein produced. During protein synthesis the proportion of unstable glutamine-like amides increases; these are probably intermediate products of metabolism and their utilisation is accelerated by salt conditions which favour protein synthesis. The high buffer capacity of potato sap in the range p<sub>H</sub> 8.0—10.6 is attributable to amino-acids; it diminishes as protein synthesis proceeds. Aërated aq. KCl favours and aërated aq. CaCl<sub>2</sub> diminishes the surface browning of discs by modifying the activity of phenol oxidase. The reducing action of potato extracts is largely due to ascorbic acid. During the rapid metabolism induced by aërated water the proportion of reduced ascorbic acid increases. Ascorbic acid is not a causal agent in the respiration or browning of the cells but may be concerned as an O<sub>2</sub> carrier between the phenolase and non-phenolic substrate.

A. G. P.

**The so-called induction process in carbon dioxide assimilation [by plants].** H. AUFDEMGARTEN (Planta, 1939, 29, 643—678).—In the algæ *Hormidium flaccidum* and *Stichococcus bacillaris* net assimilation (in intermittent light) per unit quantity of light varies with the length of the dark period; it is min. with intervals of 1—5 min. The induction period is related to the length of the previous dark period. The course of intake of CO<sub>2</sub> from the beginning of a light period proceeds in 2 stages, between which the assimilation curve falls. The first stage of assimilation is independent of light intensity, temp., and the duration of the preceding dark period. The



period of the second stage increases with the length of the preceding dark period and with light intensity and the extent of the intake is directly related to light intensity; rise in temp. shortens the duration but increases the rate of intake of  $\text{CO}_2$ . Poisoning with HCN results in disappearance of the wave form of the assimilation curve and delay in its decline in dark periods. A. G. P.

**Light-mass absorption during photosynthesis.** E. A. SPESSARD (Plant Physiol., 1940, 15, 109—120).—Blue-green algæ placed in sealed flasks in sterile water gain in wt. The possibility of absorption of light as mass during photosynthesis is discussed. A. G. P.

**Gaseous exchange of lichens.** M. G. STÄFELT (Planta, 1938, 29, 11—31).—Assimilation and respiration in a no. of lichens are directly related to temp. Assimilation involves considerable utilisation of light energy. In the winter season the temp. optimum of apparent assimilation falls. In *Cetraria glauca* and *C. islandica* apparent assimilation is but little affected by temp. changes in the range 0—15°. The ratio of apparent assimilation to dark respiration increases with fall of temp. The ability of lichens to regulate the rate of tissue production according to temp. permits continuous growth throughout the seasons. A. G. P.

**Equilibrium between chlorophyllic assimilation and respiration in leaves.** N. SĂLĂGEANU (Mem. Acad. Româna Sect. Stiinte, [iii], 15, No. 4, 36 pp.).—The "compensation point" of shaded leaves is reached at smaller light intensities than that of fully illuminated leaves owing to relatively greater reduction in respiration intensity. The compensation point of yellowish leaves occurs at higher light intensities than that of green leaves since their assimilation rate at any given light intensity is relatively the smaller. During periods of low light intensity in spring the assimilation of young is approx. the same as that of old leaves of the same species but their respiration rate is greater; their compensation point is therefore reached at higher light intensity than in older leaves. With rise in temp. respiration increases more rapidly than does assimilation and the compensation point is displaced towards zones of higher light intensity. Variation in atm.  $\text{CO}_2$  in the range 10.0—0.5 times normal has relatively little effect on the compensation point. The latter is displaced towards higher light intensity when the  $[\text{CO}_2]$  is lowered to 0.5—0.25 of normal. A. G. P.

**Effect of light and of ultra-violet irradiation on plant respiration.** F. GESSNER (Planta, 1938, 29, 165—178).—The respiration of submerged freshwater plants is increased by exposure to light of high intensity, provided the plants have been sufficiently adapted to darkness (60 hr.). The effect of light on respiration, like that on assimilation, is dependent on differences between experimental and pre-experimental conditions. Ultra-violet radiation stimulates respiration only when the plant material has been previously darkened for prolonged periods. A. G. P.

**Influence of different coloured light on the carbon dioxide assimilation and pigment content of *Elodea canadensis*.** W. SIMONIS (Planta,

1938, 29, 129—164).—*Elodea* was cultivated in red, blue, or white light and subsequently transferred to light of other colours. The light intensity required for a definite rate of assimilation was for "red-grown" material in white light 74.5 and in red light 47.3; for "blue-grown" material the corresponding vals. were 83.9 and 57.8 (blue = 100). Differences in assimilation in light of different colours are controlled by  $\lambda\lambda$  and not by intensity. *E. canadensis* adapts itself to the colour of light in which it is grown. "Red-grown" cultures contain more chlorophyll and less carotenoids than those grown in white light; "blue-grown" cultures show the reverse changes. A. G. P.

**Growth-substances in relation to the mechanism of the action of radiation on plants.** H. R. C. McILVAINE and H. W. POPP (J. Agric. Res., 1940, 60, 207—215).—Effects of radiations of  $\lambda$  374—720 on turnip seedlings are examined. When the visible spectrum was divided into two halves with approx. equalised energy, plants grown under the blue-violet half were shorter and contained less growth-substance than did those under the red half. Growth-substance allowed to diffuse from stem tips into agar was inactivated by irradiation with Hg-vapour lamps. Plants grown for alternate periods in darkness and light contained less growth-substance after light than after dark periods. A. G. P.

**Hormones and the analysis of [plant] growth.** K. V. THIMANN (Plant Physiol., 1938, 13, 437—449).—An address. A. G. P.

**Vitamin- $B_1$  in relation to the growth of green plants.** D. I. ARNON (Science, 1940, 92, 264—266).—Water-culture experiments with tomatoes, lettuce, cosmos, mustard, and cocklebur show that intact plants grown from seed do not benefit by additions of vitamin- $B_1$  (0.01—0.05 mg. per l.) to an otherwise favourable medium. The rate of  $-B_1$  synthesis by the plant under the given conditions did not limit growth, and was sufficient for the needs of the plant. L. S. T.

**Artificial production of tumour-like growths in plants in the cotyledon stage by means of heteroauxin.** E. JAKEŠ (Planta, 1938, 29, 110—113).—Seeds of *Raphanus sativus radicola* soaked in aq. indolylacetic acid (0.001—0.0001 g. per c.c.) produce seedlings having a tuberos growth at the junction of the root and hypocotyl, the effect increasing with the concn. of growth-substance used. The growths were larger at 16—18° in diffuse light than at 30° in darkness. A. G. P.

**Electrical polarity and auxin transport [in plants].** W. G. CLARK (Plant Physiol., 1938, 13, 529—552).—Sections of *Pisum* stems and of *Avena* coleoptiles are reversibly polarised by a d.c. of greater than a threshold strength. Apical negativity is increased, within limits, by an a.c. and decreased by ether narcosis. *Avena* coleoptiles do not act as ohmic rectifiers of a.c. The electrical resistance of coleoptiles is reversibly decreased by passage of small d.c. or a.c. Polar transport of heteroauxin in coleoptiles is prevented by Na glycocholate (1 in 100,000) without change in polarity, respiration, semi-permeability,



growth by cell extension, or protoplasmic streaming. Lateral and longitudinal transport of auxin-*a* in plants involve entirely different mechanisms.

A. G. P.

**Auxin production in seeds of dwarf maize.** J. VAN OVERBEEK (Plant Physiol., 1938, 13, 587—598).—Diffusion of auxin from cut coleoptile tips into agar blocks proceeds at a const. rate for several hr. after cutting. The total amount diffusing is increased by washing the cut surface. Production of auxin is max. from tips cut 5—6 days after sowing. The auxin content of seed producing *nana* dwarfs is normal but the amount of auxin reaching the growing zone of *nana* plants is much smaller than in normal plants. Considerable destruction of auxin occurs in *nana* plants.

A. G. P.

**The cell-division hormone in seeds and seedlings of *Pirus malus*, *Prunus domestica*, and *Prunus avium*.** K. RIPPEL (Planta, 1938, 29, 1—10).—Considerable amounts of the growth-substance are detectable in the resting seed, the seed case, the seedling and fruit of *Pirus malus*, in the seed, husk, and endosperm of *Prunus domestica*, and in the seed of *P. avium*.

A. G. P.

**Difficulties in extraction of growth hormones from plant tissues.** F. G. GUSTAFSON (Science, 1940, 92, 266—267).—Different methods recommended for extracting auxin from plant material have been examined. Ether is the best solvent used so far, but many extractions are required to remove all the auxin.

L. S. T.

**Relation between carotenoid content and number of genes per cell in diploid and tetraploid maize.** L. F. RANDOLPH and D. B. HAND (J. Agric. Res., 1940, 60, 51—64).—In tetraploid yellow maize the carotenoid content (total, and per endosperm cell) exceeded that in diploid strains. In individual tetraploid endosperm cells the amount of carotenoid elaborated per gene was 2.5 times that in diploid cells. The provitamin-A fraction of the carotenoids, including  $\beta$ -carotene and cryptoxanthin, was proportional to the total carotenoid content. In white maize doubling of chromosomes was associated with diminution in carotenoid content; no cumulative gene action was apparent. The yellow colour of maize was not a criterion of its carotenoid content.

A. G. P.

**Hybridisation of American 26-chromosome and Asiatic 13-chromosome species of *Gossypium*.** J. O. BEASLEY (J. Agric. Res., 1940, 60, 175—181).—In reciprocal crosses American 26-chromosome  $\times$  Asiatic 13-chromosome cottons, although pollen enters more than half the embryo sacs, embryo development is initiated but becomes aberrant. Minute viable hybrid seeds were obtained by using the American type as female and mixing a few grains of American pollen with excess of Asiatic pollen. Hybrids involving 6 combinations of 26- and 13-chromosome types were obtained.

A. G. P.

**Effect of ethylene and sulphur dioxide on fruits of *Mangifera indica*.** S. RANJAN and V. R. JHA (Proc. Indian Acad. Sci., 1940, 11, B, 267—288).—Ethylene-air mixtures accelerate the respiratory rate

and production of sugars in stored mangoes; high concns. cause black-tip disease.  $\text{SO}_2$ -air mixtures accelerate the respiratory rate and cause general yellowness of the fruit.

F. O. H.

**Production of ethylene by ripening McIntosh apples.** R. C. NELSON (Plant Physiol., 1940, 15, 149—151; cf. B., 1939, 881).—Production of ethylene increased rapidly after the climacteric, and reached max. a few days after the respiration max. Ethylene is consumed during the ripening process.

A. G. P.

**Production of epinasty by emanations from normal and decaying citrus fruits and from *Penicillium digitatum*.** E. V. MILLER, J. R. WINSTON, and D. F. FISHER (J. Agric. Res., 1940, 60, 269—277).—Emanations (probably ethylene) from oranges, tangerines, limes, lemons, or grapefruit caused epinasty in tomato and potato leaves, the effect being more marked when the fruit was inoculated with *Penicillium digitatum*. Pure cultures of the fungus caused similar effects.

A. G. P.

**Boron deficiency symptoms on pine seedlings in water culture.** W. V. LUDBROOK (J. Counc. Sci. Ind. Res. Australia, 1940, 13, 186—190).—Young plants of *Pinus radiata* and *P. taeda* when grown in nutrient solutions without an adequate supply of B develop characteristic symptoms, the chief of which are reduced rate of growth followed by cessation of apical growth which is accompanied by swelling of the stem apex, death of young needles adjacent to the apical bud, exudation of resin from the bud, and necrosis at the growing points of the tops and roots. The juvenile needles are shorter than normal and they develop a bluish-green tint. The fasciculate needles form more slowly, are fewer in no., shorter than those of normal seedlings, and tend to "fuse." B probably acts as an activator of chlorophyll formation and synthesis of carbohydrate.

J. N. A.

**Effects of boron deficiency and excess on plants.** S. V. EATON (Plant Physiol., 1940, 15, 95—107).—Deficiency of B in sunflower and soya bean is marked by dying back of stem tips and chlorosis and malformation of leaves. In sunflower B poisoning causes older leaves to become mottled especially at tips and edges. Deficiency of B affects the youngest and excess of B the older leaves first. Soya bean is far more susceptible to B deficiency than is sunflower. In general, sensitivity to excess of B increases, and that to B toxicity decreases, as growth becomes more vigorous. At a concn. of 1.0 p.p.m. B produced toxic symptoms in sunflower but nevertheless increased the total growth of the plants.

A. G. P.

**Exanthema in pear and copper deficiency.** J. OSERKOWSKY and H. E. THOMAS (Plant Physiol., 1938, 13, 451—467).—Exanthema is cured by application of Cu salts to the soil or to the root crown or by spraying the trees with Bordeaux mixture. Mn,  $\text{Fe}^{\text{II}}$ , Zn, Cr, V, Cd, Co, and Ni salts had no effect. The Cu contents of leaves and shoots of trees grown in affected areas were less than of those in localities free from diseases; no consistent difference in Cu contents of healthy and diseased trees in the same orchard was apparent.

A. G.



**Responses of bean plants to calcium deficiency.** H. GAUCH (Plant Physiol., 1940, 15, 1—21).—Under certain nutrient conditions Ca deficiency in beans led to diminished intake of  $\text{NO}_3^-$ . No optimal ratios of Ca : Mg or Ca : K in nutrients were apparent.

A. G. P.

**Magnesium deficiency of fruit trees: comparative base status of leaves of apple, gooseberry, and black currant receiving various manurial treatments under conditions of magnesium deficiency.** T. WALLACE (J. Pomology, 1940, 18, 261—274).—Leaves of black currant and gooseberry had relatively high and those of apple low ash contents. The ash of apple and gooseberry leaves contained fairly high proportions of Ca and K whereas black currant leaves showed high Ca and low K contents. Dung and K-deficient fertilisers tended to increase the Mg content of gooseberry and black currant leaves. In all three cases a Mg content of less than 0.4% MgO in the dry matter is associated with symptoms of Mg deficiency.

A. G. P.

**Nutritive requirements of the European maize borer.** G. T. BOTTGER (J. Agric. Res., 1940, 60, 249—257).—The % survival of larvæ on a no. of plants is examined. Food materials rich in glucose were more satisfactory than those having high sucrose or starch contents. Plant tissues showing profuse pubescence, thick epidermis, and many coarse fibrovascular bundles near the periphery of stems did not favour larval survival. Excessive moisture, e.g., in sunflower or potato plants, interfered with the tunnelling habits of the insect. Insufficient moisture and physical structure of the plant tissue incompatible with the positive thigmotropism of the insect contributed largely to larval mortality on maize leaves and tassels. Survival and wt. of insects 30 days after hatching were positively correlated. Sucrose- and protein-splitting but not starch-hydrolysing enzymes occurred in the cellular tissue of the digestive tract of hibernating larvæ. Metamorphic development of the borer was influenced by nutrition.

A. G. P.

**Influence of physiological age of pea plants on recovery from aphid damage.** C. D. HARRINGTON and E. M. SEARLS (J. Agric. Res., 1940, 60, 157—161).—Recovery of aphid-damaged plants was correlated with their physiological age rather than with inherent "resistance" to attack. Tests of relative resistance of varieties therefore cannot be based on ultimate yields alone.

A. G. P.

**Relation of the near-wilt fungus to the pea plant.** W. J. VIRGIN and J. C. WALKER (J. Agric. Res., 1940, 60, 241—248).—Penetration of the fungus into pea plants is similar for susceptible and resistant varieties, but the passage through root and stem, which occurs via the xylem, was much restricted in resistant varieties. The organism enters the seeds of diseased plants through the vascular system and is found in the seed coat and cotyledons. When grown in near-wilt-infested soil dwarf, late-maturing susceptible varieties are more likely to produce infected seeds than are early varieties.

A. G. P.

**Relation of internal surface to intercellular space in foliage leaves.** F. M. TURRELL (Science,

1940, 92, 244).—In a sample of 20 leaves from 4 lucerne plants, the coeff. of correlation between the internal-external surface ratio and the vol. of intercellular space per sample area is +0.874. The coeff. of correlation between the internal-external surface ratio and the % vol. of intercellular space is +0.629. Since the probability of chance occurrence is less than 0.01, the correlation coeffs. are significant. For 16 different angiosperm species the correlation coeff. is not significant.

L. S. T.

## (xxvii) PLANT CONSTITUENTS.

**Relation of organic acids of tobacco to inorganic basic constituents.** G. W. PUCHER, H. B. VICKERY, and A. J. WAKEMAN (Plant Physiol., 1938, 13, 621—630).—In cured and fermented tobacco leaves the excess of cations (ash bases,  $\text{NH}_4^+$ ; nicotine) over inorg. anions ( $\text{NO}_3^-$ ) is closely correlated with the proportion of ether-sol. org. acids. The org. acids probably control the intake of mineral nutrients by the plants.

A. G. P.

**Isolation of a hexose monophosphate from pea leaves.** W. Z. HASSID (Plant Physiol., 1938, 13, 641—647).—The hexose phosphate was a mixture of a glucose and a fructose phosphate (probably fructose 1-phosphate). Phosphorylation of glucose and fructose probably precedes synthesis of sucrose in the plant.

A. G. P.

**Determination of mineral elements in plant tissue.** W. E. TOTTINGHAM (Plant Physiol., 1940, 15, 121—130).—A committee report. Recent improvements in analytical methods are reviewed.

A. G. P.

**Determination of phosphorus in plant material. Use of Lorenz method after nitric-perchloric-sulphuric oxidation.** R. E. SHAPTER (J. Proc. Austral. Chem. Inst., 1940, 7, 155—163).—In samples containing 21—0.4 mg. of P recovery of P by this method ranged from 97.9 to 103.02%. For smaller quantities (0.2—0.05 mg.) the vals. were 97.9—126.3%.

A. G. P.

**Starch content of spotted gum trees.** A. R. BRIMBLECOMBE (J. Austral. Inst. Agric. Sci., 1940, 6, 110—113).—Starch, determined by spraying cut surfaces with 0.05N-I in KI, is mainly distributed through the sap wood of the tree irrespective of height or aspect.

A. G. P.

**Occurrence of lactic acid in higher plants.** A. SCHNEIDER (Planta, 1939, 29, 747—749).—The detection of lactic acid in plant tissues and the significance of the acid in carbohydrate metabolism are briefly noted. The temporary occurrence of lactic acid, in considerable proportions, in embryos of developing maize seeds is reported.

A. G. P.

**Isolation of carotene from green plant tissue.** H. G. PETERING, P. W. MORGAL, and E. J. MILLER (Ind. Eng. Chem., 1940, 32, 1407—1411).—Dehydrated lucerne leaf meal, rich in carotene, is extracted with acetone and the extract heated under a reflux condenser with solid  $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$  which causes chlorophyll and saponifiable lipins to be removed as a green sludge. The solution is conc. until a waxy



residue containing carotene separates, leaving flavones and other water-sol. constituents in solution. The waxy residue is extracted with cold acetone, when most of the carotene and xanthophyll and some of the lipid matter go into solution. The extract is conc. to an oil, dissolved in light petroleum, and purified from xanthophyll and lipins by available methods. The efficiency of treatment with  $\text{Ba}(\text{OH})_2 \cdot 8\text{H}_2\text{O}$  is dependent on the particle size of the solid and on the ratio of acetone to water in the solution of plant pigments. Proteins, carbohydrates, cellulose, and other non-extractable materials are not destroyed in this procedure. H. W.

**Chromatographic examination of leaf pigments.** A. SEYBOLD and K. EGGLE (Planta, 1938, 29, 114—118).—A method involving the use of columns of powdered sugar for absorption is described. A. G. P.

**Protochlorophyll. II.** A. SEYBOLD and K. EGGLE (Planta, 1938, 29, 119—128; cf. A., 1937, 1274).—Two distinct protochlorophylls (*a* and *b*) occur in proportions of approx. 1:12 in the outer shell of pumpkin seeds. A. G. P.

**Plastid pigments in rinds of maturing oranges.** E. V. MILLER, J. R. WINSTON, and H. O. SCHOMER (J. Agric. Res., 1940, 60, 259—267).—The change of green oranges to maturity is associated with steady diminution in chlorophyll and increase in carotenoid content of rinds, the latter change continuing long after chlorophyll had disappeared entirely. Treatment of fruit with ethylene stimulated the decomp. of chlorophyll without affecting carotenoid pigments. In mature green fruit the predominant carotenoid was xanthophyll; in fully ripened fruit the cryptoxanthin-carotene fraction was the greater. Pine-apple oranges from the northeast side of trees show better colour and contain larger amounts of the higher light petroleum fraction of the carotenoids than do those on the southwest side of trees. A. G. P.

**Seasonal variations in the production of plant pigments.** W. A. BECK and R. REDMAN (Plant Physiol., 1940, 15, 81—94).—The proportions of chlorophyll, xanthophyll, and carotene in sweet clover plants showed peak vals. in spring with a secondary peak in autumn, the relative abundance of the pigments being in the (decreasing) order named throughout the season. Max. vals. for carotenoids were reached somewhat earlier than those for chlorophyll. Carotenoids increased markedly immediately before the active growth season and probably act as growth promoters. Pigment production is mainly controlled by temp. and light intensity and increases with these factors up to an optimum corresponding with max. metabolic activity. Beyond the optimum pigment production falls. A. G. P.

**Genetics of *Verbena*. II. Chemistry of the flower colour variation.** G. H. BEALE, J. R. PRICE, and R. SCOTT-MONCRIEFF (J. Genetics, 1940, 41, 65—74; cf. A., 1940, III, 549).—The types of pigments in garden hybrids of *Verbena* are anthocyanidins (pelargonidin, delphinidin, or mixtures of

these with each other or with cyanidin) and acylated or non-acylated anthocyanins (which are either 3-monoglucosides or 3:5-diglucosides). The anthocyanins may be partly or completely replaced by anthoxanthins (luteolin in yellow flowers and an undetermined flavone in white flowers). The genetic distribution of these pigments is discussed.

F. O. H.

**Nornicotine as the predominating alkaloid in certain tobaccos.** L. N. MARKWOOD (Science, 1940, 92, 204—205).—Nornicotine forms 95% of the total alkaloids of certain Maryland low-nicotine strains of tobacco. L. S. T.

**Alkaloids of Chinese drug *Pai Pu*.**—See A., 1940, II, 383.

**Structure of aromadendrene.**—See A., 1940, II, 377.

**Sterols.**—See A., 1940, II, 378.

## (xxviii) APPARATUS AND ANALYTICAL METHODS.

**Electrical integrator for "action currents."** G. L. FREEMAN and E. L. HOFFMAN (Rev. Sci. Instr., 1940, 11, 283—284).—The integration of biological potentials ("action currents") is carried out by determining the no. of times a gas-filled tube discharges a condenser in which the rectified potentials are stored. A. J. M.

**Construction of a continuously evacuated experimental X-ray tube with a transmission target.** F. HAPPEY (J. Sci. Instr., 1940, 17, 273—275).

**Use of illuminating gas to check metabolism apparatus.** I. BUNNELL and F. R. GRIFFITH, jun. (Proc. Soc. Exp. Biol. Med., 1940, 44, 509—514).—Details are given of the use of gas in a metabolism apparatus with analysis of products of combustion. V. J. W.

**Laboratory juice extractor.** G. W. IRVING, jun., and T. W. LORING (Ind. Eng. Chem. [Anal.], 1940, 12, 548—549).—An extractor adapted to pressing operations in which relatively small amounts of material are handled, and in which both the press cake and liquid must be collected with a min. of loss and contamination, is described and illustrated. L. S. T.

**Sterile filtration of small amounts of fluid.** I. N. ASHESHOV (J. Bact., 1938, 36, 197—199).—A small Chamberland filter is attached to the lower end of a plugged sterile pipette, to the upper end of which suction is applied by means of a rubber bulb. A. G. P.

**Determination of chemical irritation.** J. H. WEATHERBY (J. Lab. clin. Med., 1940, 25, 1199—1204).—Solutions of irritants of differing concn. were injected subcutaneously into the dorsal surfaces of the ears of rabbits, usually at 3 sites on each ear. Trypan-blue was injected intravenously (1 c.c. of a 1% solution in 0.85% NaCl per kg.). Blue spots were produced which, within a limited range, were proportional in intensity to the concns. of the solutions. C. J. C. B.



**Colorimetric determination of 17-ketosteroids in urine extracts.** A. F. HOLTORFF and F. C. KOCH (*J. Biol. Chem.*, 1940, **135**, 377—392).—In a modification of Zimmermann's method (*A.*, 1937, III, 102), the procedure is standardised and a photo-electric colorimeter is used. Specificity experiments with sex hormones, related compounds, substances found in urine, and urine extracts show that the method is not sp. for androsterone or (entirely) for 17-ketosteroids and that, when their concn. is 20 mg.-%, many substances interfere, the absorption max. in some cases being at 520 m $\mu$ . and in others at 420 m $\mu$ . When urine extracts are used, the results are almost always considerably higher than those obtained by the capon assay method. The modified colorimetric method is of val. in the testing of methods for the recovery of pure androsterone and theelin, and in determining solubilities and partition coeffs. of pure compounds, but a combination of both methods should be used for study of the testosterone metabolism of the body.  
W. McC.

**Micro-methods for determination of sphingomyelin and choline. Phospholipin partition in blood and tissues.** B. N. ERICKSON, I. AVRIN, D. M. TEAGUE, and H. H. WILLIAMS (*J. Biol. Chem.*, 1940, **135**, 671—684).—Sphingomyelin is calc. by determining the P content of the Reinecke salt (*A.*, 1937, III, 56). Choline is determined by Kirk's adaption of Roman's micro-method (*A.*, 1938, III, 861), using filter sticks to facilitate washing of the choline enneiodide, which is converted into iodate with Br before titration. Ba(OH)<sub>2</sub> is compared with HCl-methanol for hydrolysis of choline phospholipins. Re-extraction of phospholipins with light petroleum is criticised. Characteristic distribution of phospholipins in plasma, erythrocytes, and brain is observed.  
E. M. W.

**Micro-determination of copper in biological material.** A. EDEN and H. W. GREEN (*Biochem. J.*, 1940, **34**, 1202—1208).—An improved modification of Tompsett's method (*A.*, 1935, 377), applicable to less than 0.3  $\mu$ g. of Cu, is described.  
W. McC.

**Determination of sodium using the torsion balance.** L. JENDRASSIK and L. DZIOBEK (*Magyar Orv. Arch.*, 1936, **37**, 415—418; *Chem. Zentr.*, 1937, i, 3528).—The Kolthoff-Barber method is modified by collecting the triple acetate on filter-paper and weighing by torsion balance. Satisfactory results are obtained after removal of protein by trichloroacetic acid but not after deproteinisation with uranyl acetate.  
A. G. P.

## (xxix) NEW BOOKS.

**Electric Excitation of Nerve.** B. KATZ (Oxford University Press, 1939, 151 pp.).—The scope of this small book is wider than its title indicates. An

original discussion of the fundamental facts and conceptions leads to an easily accessible exposition of the current theories of electrical excitation and their experimental basis. The formal description of the two opposed processes of disturbance of the equilibrium and accommodative adjustment is interpreted and amplified by material assumptions in part necessitated and in part substantiated by recent observations, such as electrotonic time constant and local response. An extensive literature has been consulted and listed. The author critically discusses objections and alternatives, especially where his own work is concerned. In some instances, however, he presumes the reader to be in full possession of the evidence and omits to give a detailed explanation of the diagrams. Such minor difficulties should not prevent physiologists from the study of this comprehensive monograph. The striking advance in this field deserves recognition beyond the rank of specialists.  
H. Ro.

**Exposés annuels de biochimie médicale. Deuxième Série.** [Annual Reports on Medical Biochemistry. 2nd series.] É. M. POLONOVSKI (Masson & Cie., Paris, 1939, 263 pp.).—The volume consists of 12 articles: "Biological oxidations in cell," by A. Szent-Gyorgyi; "Physiological methods for diagnosing early stages of vitamin deficiency," by E. J. Bigwood; "Carbohydrates of central nervous system," by A. Baudouin; "Chemical constitution of the diastases," by M. Polonovski; "Virus proteins," by C. Sannie; "Immunochemistry," by M. Macheboeuf; "Magnesium in biochemistry," by M. Wolff; "Metabolism of naturally-occurring phosphorylated compounds," by P. Fleury; "Adrenocortical hormones," by P. Boulanger; "Uric acid," by G. Florence; "Fate of nitrates in the cell particularly of the higher vegetables," by M. Lemoigne, and "Biochemical problems of ossification," by J. Roche. Each article is a review of the whole subject and is not confined to the year in question. The treatment is generalised rather than detailed and the omission of bibliographies (apart from references to more detailed reviews), in most cases, makes for greater readability than is usually the case with such publications. The concentration on generally accepted facts and only passing reference to controversial matter should recommend the book to students, practitioners, and to specialist workers who wish to maintain contact with work outside their own field.  
P. C. W.

**Energetique, metabolisme de base, thermo-regulation (Janvier 1937—Janvier 1938).** [Energy, Basal Metabolism, and Thermo-regulation.] R. WURMSER and L. CHEVILLARD (*Physiologie (Revue annuelle)*, No. 8, Hermann et Cie., Paris, 1938, 34 pp.).—A review of the literature on photosynthesis, basal metabolism, sp. dynamic action, and thermoregulation in homeotherms. The technical papers on the measurement of respiratory exchange are also dealt with.  
P. C. W.