

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

AUGUST, 1940.

(i) GENERAL ANATOMY AND MORPHOLOGY.

Quantitative growth of skin and subcutaneous tissue in relation to human surface area. H. A. WILMER (Proc. Soc. Exp. Biol. Med., 1940, 43, 386—388).—Wts. of skin and subcutaneous tissue in a 5-month foetus, at birth, and in the adult are tabulated.

V. J. W.

Transverse fibrous bands in spinal dural sac of man. W. D. SEYBOLD (Anat. Rec., 1940, 76, 55—63).—The incidence and distribution of small transverse ligaments in the ventral part of the spinal dural sac are recorded. Their anatomical and functional significance is discussed.

W. F. H.

Serosal and mucosal dimensions at different levels of dog's small intestine. R. WARREN (Anat. Rec., 1939, 75, 427—437).—The ratio of mucosal area to serosal area for the whole small intestine was 8.5/1. The total mucosal surface was 1.6 sq. m., of which 7% was in the duodenum. A formula is suggested which permits a crude estimate of mucosal area.

W. F. H.

Volume of colloid in follicles of normal human (Bantu) thyroid gland. H. B. STEIN (Amer. J. Anat., 1940, 66, 197—211).—The % of colloid present varies proportionately with the size of the follicle. The % of colloid in the lumen varies from 10—15% in follicles under 0.0002 cu. mm. to 55—60% in follicles between 0.0011 and 0.0043 cu. mm. in size. The val. of a volumetric analysis of the colloid and of its staining reactions as indicators of activity of the thyroid follicle is discussed. A graph paper reconstruction method was employed to estimate the vol. of colloid.

W. F. H.

X-Ray appearances of soft tissues in pregnancy. W. SNOW and M. ROSENHOHN (Amer. J. Roentgenol., 1939, 42, 709—717).—The site of the placenta, placenta prævia, premature separation, and extra-uterine pregnancy was demonstrated by X-rays.

W. F. F.

X-Ray appearances of soft structure in pregnancy. S. WEINTRAUB and W. SNOW (Amer. J. Roentgenol., 1939, 42, 718—720).—Fœtal subcutaneous fat gives rise to a black shadow in the X-ray film. Vernix caseosa casts a shadow of the density of muscle.

W. F. F.

Assessment of skeletal development of hand and knee between ages of 8 and 14. L. M. BAYER and R. R. NEWELL (Endocrinol., 1940, 26, 779—782).—10 normal children were X-rayed at intervals of 6 months. It was found impossible to

arrange the films chronologically by the criteria described in Todd's atlas.

V. J. W.

Factors influencing appearance of centres of ossification during early childhood. II. Comparative study of degree of epiphysal ossification in infancy under varying conditions of diet and health. C. C. FRANCIS (Amer. J. Dis. Child., 1940, 59, 1006—1012).—Epyphysal ossification is a more delicate objective indicator of constitutional health than is progress in height or wt. Gastro-intestinal sensitivity in infancy, even when so well controlled that there is no retardation of growth in length, retards epiphysal ossification. In healthy children the degree of epiphysal ossification is influenced by the amount of mineral available in the diet. Severe or prolonged illness holds back general progress, but epiphysal ossification shows the greatest retardation. The advance in precocity of the female child over the male child in epiphysal ossification disappears in severe prolonged illness.

C. J. C. B.

Fifty years ago. A. KEITH (Amer. J. phys. Anthropol., 1940, 26, 251—267).—A review of the author's researches on posture.

W. F. H.

Movements of shoulder joint, with special reference to rupture of supraspinatus tendon. C. P. MARTIN (Amer. J. Anat., 1940, 66, 213—234).

W. F. H.

Calcification of supraspinatus tendon. W. A. BISHOP (Arch. Surg., Chicago, 1939, 39, 231—246).—Report of a case. (3 photomicrographs.)

F. S.

Growth and chemical composition of human skeleton. W. W. SWANSON and V. IOB (Amer. J. Dis. Child., 1940, 59, 107—111).—The total wts. of the bony and cartilaginous skeleton are given for 5 foetuses aged from 4 to 10 lunar months. The bony skeleton increases during this time from 57.5 to 63.9% while the relative amount of cartilage decreases from 42.5 to 36.1%. The skeletal wt. changes from the 4th lunar month to term from 12 to 9.7% of the wt. of the body.

C. J. C. B.

Individual growth records of two healthy girls from birth to maturity. H. GRAY and H. K. FABER (Amer. J. Dis. Child., 1940, 59, 255—280).

C. J. C. B.

Joint cartilage under differing physiological demands. E. FREUND (Arch. Surg., Chicago, 1939, 39, 596—623).—The lesions in the joint cartilages of an idiot of 18 years with spastic quadriplegia and athetosis are described and are associated with the prolonged dysfunction of the joints. The changes were similar to those of hypertrophic arthritis or osteitis deformans. (12 photomicrographs.)

F. S.

Transplanted epiphysial cartilage. J. D. BIRGARD (Arch. Surg., Chicago, 1939, 39, 1028—1030).—In each of 8 goats approx. 1 month old two segments of the epiphysial cartilage plate were removed from opposite sides of the femur and transplanted to the middle of the shaft of the tibia. The transplanted epiphysial cartilage produced no increase in the length of the tibia. F. S.

Effects of oestrogen on bones, joints, and ligaments of castrated guinea-pigs. C. J. SUTRO and L. POMERANTZ (Arch. Surg., Chicago, 1939, 39, 992—1000).—12 male guinea-pigs were castrated; 8 of these were given 12,000—60,000 rat units of oestrogen in 28—80 days and in 4 of the latter part of the symphysis pubis was transplanted. The injected guinea-pigs were successfully feminised and the ligaments of their pubic arches, even when transplanted, became hypercellular, increased in thickness, and invaded the interpubic cartilages. There was no such reaction in the sacro-iliac or other joints. (9 photomicrographs.) F. S.

Factors affecting postnatal growth of lung. R. COHN (Anat. Rec., 1939, 75, 195—205).—Lung wt. is proportional to body wt. in the growing rat. Removal of lung tissue is followed by restitution of lung wt. proportional to the body wt. of the animal. The younger is the animal, the more rapid is the rate of restitution. Increase in lung wt. is a response to a purely mechanical stimulus. W. F. H.

Agensis of lung. W. P. KILLINGSWORTH and W. G. HIBBS (Amer. J. Dis. Child., 1939, 58, 571—580).—Review of the literature and report of a case. C. J. C. B.

Gynæcomastia in a 14-year-old boy. B. ŠKERLJ (Anthrop. Anz., 1939, 16, 105—106).—The external configuration is described and certain skeletal measurements, indices, and X-ray appearances are given. W. F. H.

Ectopic gastric mucosa in Meckel's diverticulum. G. A. FLEET (Canad. Med. Assoc. J., 1940, 42, 216—219).—Ulceration of the gastric mucosa caused massive rectal hæmorrhage. C. J. C. B.

Congenital hypoplasia of mandible. H. H. WEISENGREEN and E. D. SORSKY (J. Pediat., 1940, 16, 482—486). C. J. C. B.

Proportions of giants. H. GÜNTHER (Endokrinol., 1939, 22, 81—90). A. S.

(ii) DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Development of cerebral sulci. C. J. CONNOLLY (Amer. J. phys. Anthrop., 1940, 26, 113—149).—The calcarine fissure is seen at the 16th week and a true Y-shaped parieto-occipital and calcarine complex at the beginning of the 5th month. The presence or absence of a parieto-occipital furrow from the end of the 4th to the end of the 6th month depends on the relative degree of the development of the neighbouring cortex. Sulci on the lateral surface are seen at the end of the 5th or beginning of the 6th month, and by the middle of the 7th month the principal sulci are laid down in simple form. In the 8th month they become

tortuous and secondary sulci become marked. During the 9th month many secondary and tertiary sulci develop. W. F. H.

Relative growth of frontal brain during human onto- and phylo-genesis. R. BRUMMELKAMP and J. OFFRINGA (Acta. neerl. morph., 1940, 3, 202—206).—The ratio between the size of the frontal brain (pre-Rolandic) and of the entire neo-cortex was determined in three fœtuses, one newborn infant, one adult, and in an orang and a chimpanzee. In all cases the ratio is approx. const. (about 1 : 2.5), which points, the authors believe, to a general and equal development of the neo-cortex during the later stages of onto- and phylo-genesis. J. D. B.

Embryology of hip joint. D. A. DE SANTO and P. C. COLONNA (Arch. Surg., Chicago, 1939, 39, 448—456).—The development of the human hip joint was studied by means of horizontal serial sections in embryos and fœtuses from 6 to 30 weeks old. (14 photomicrographs.) F. S.

Metaplasia of epithelium of prostatic glands, utricle, and urethra of the foetus and newborn infant. H. BRODY and S. GOLDMAN (Arch. Path., 1940, 29, 494—504).—All fœtuses 23 cm. in crown-heel length and larger, up to term, show squamous metaplasia of the epithelium of the prostate glands and ducts, prostatic utricle, and prostatic urethra. The change is seen earliest in the utricle and latest in the prostatic urethra. In both the premature and the full-term infant there occurs several days after delivery a regression of the metaplastic change, traces of which, however, can still be found at 2 months. The metaplastic change indicates the action of oestrogenic substances derived by way of the umbilical circulation. The epithelial structures of the male acted on are those which, at least in part, are homologues of the vagina. In infants at term there occurs, in addition, focal hyperplasia of the prostatic epithelium, similar to that seen in the breast of the full-term infant, and possibly explained by similar factors. (12 photomicrographs.) C. J. C. B.

Development of hypophysis of dog. B. F. KINGSBURY and F. J. ROEMER (Amer. J. Anat., 1940, 66, 449—481).—The lumen of the buccal portion is extensive and persistent even in the expansions investing the neural portion dorsally. The neural portion is not an active outgrowth from the neural tube and is hollow only in its early stages. The stalk of the buccal portion tends to persist, particularly at its upper and lower ends, producing the parahypophysis and pharyngeal hypophysis respectively. W. F. H.

Longevity of sperm in female bat. C. E. FOLK (Anat. Rec., 1940, 76, 103—109).—Evidence is presented to show that spermatozoa remained alive for 90 days in a female bat held in artificial hibernation. W. F. H.

Fœtal membranes of the pocket gopher. I. From unfertilised tubal egg to beginning of allantois. H. W. MOSSMAN and F. L. HISAW (Amer. J. Anat., 1940, 66, 367—391).—Features of implantation and formation of fœtal membranes are intermediate between the primitive conditions found in the squirrels and the complex ones in the mice and guinea-pig.

The amnion is formed by folding and an open epamniotic cavity results. Inversion of the yolk sac is completed before the vitelline circulation is established and at the time of first appearance of the anlage of the allantois. At this time there is an endothelial heart tube and about 5 pairs of somites, and the neural groove is completely open. W. F. H.

Cytological study of centrifuged oocytes of mouse. R. A. R. GRESSON (Quart. J. Micr. Sci., 1940, 81, 569—582).—Ovaries of mice were ultra-centrifuged at a force of about 130,000 *g*. The resulting stratification and segregation of the different components of the egg is described for young, larger, and mature oocytes. J. D. B.

Modified technique for chorio-allantoic grafts in chick embryo. E. WOLFF and H. LUTZ (Compt. rend. Soc. Biol., 1939, 132, 117—120).—By a modified technique transplantation into the host is possible when the latter has been incubated only 4—5 days. When limb buds and potential cerebral vesicles are transplanted normal development and differentiation may occur. When fragments of the non-incubated blastoderm are transplanted the development is more difficult but differentiation may occur. P. C. W.

Orientation of unincubated fowl blastoderm. H. LUTZ (Compt. rend., 1940, 210, 450—452).—The blastoderms of Leghorn eggs incubated for 48—72 hr. show a marked tendency to be oriented according to von Baer's law. Unincubated blastoderms exhibit an area of growth "open" in one region which gives rise to the bird's head. J. L. D.

Growth-promoting substances liberated by traumatised tissues *in vitro*. J. C. FARDON, W. A. SULLIVAN, and M. B. ANDRUS (Stud. Inst. Divi Thomae, 1939, 2, 233—237).—In culture slides of embryonic chick intestine growth takes place most readily at the cut ends. D. B.

Polarity of ciliary action in anuran embryos. T. TUNG and Y. F. YEH-TUNG (Arch. Biol., 1940, 51, 203—218).—The ciliary beat on the epidermis of embryos of *Bufo* and *Rana* first appears during closure of the neural folds. Its direction normally coincides with the antero-posterior axis of the embryo. Experiments showed that the polarity is determined late in gastrulation. The underlying mesoderm exerts an effect on the determination of ciliary polarity, for when mesoderm under a normally oriented graft is rotated through 180°, the cilia of the graft beat in the reversed direction. It is suggested that in normal development there is double assurance in the determination of the polarity, the ciliated cell possessing a feeble polarity of its own which is reinforced by the effect of the underlying mesoderm. J. D. B.

Inductive activity of fresh and heated organ (kidney and liver) on explantation in different presumptive areas of early gastrulae of *Triton alpestris*. C. HSIAO-HUI (Arch. EntwMech. Org., 1939, 139, 556—638).—Three related problems are considered: (1) the inductive specificity of heterogeneous organs (*e.g.*, mouse and triton liver); (2) the regional influence of host tissue on induction; (3) the changes in the activity of inductions as the result of heating. J. D. B.

Effect of ultra-violet irradiation of axolotl gastrula. J. BRANDES (Compt. rend. Soc. Biol., 1939, 132, 80—82).—The notochord is little affected by ultra-violet irradiation up to 30 min. in duration. The somites are less resistant, being affected after 20 min. irradiation. P. C. W.

Development of Ascidian larvæ after early removal of presumptive germinal areas. L. VON UBISCH (Arch. EntwMech. Org., 1939, 139, 438—492).—An account of the effect of early removal of presumptive chorda, mesoderm, neuroderm, ectoderm, and endoderm on the course of later development. After removal of the different presumptive areas larvæ result which lack the organ system corresponding with the areas removed. Regulatory substitution only occurs with any regularity in the endoderm. Organ systems not interfered with by the operation develop normally. None of the removed presumptive areas acts as an organiser for other organ systems. This is particularly true for the nervous system which is in no way dependent on the presence of chorda or of mesoderm. The differentiation of organs and tissues is a self-differentiation. The boundary zones between different presumptive areas differ in different individuals and there appears to be a transitional area of labile prospective significance. J. D. B.

Chemical specificity in growth and development. F. S. HAMMETT and S. P. REIMANN (Ann. int. Med. 1940, 13, 1483—1488). A. S.

Two types of respiration in course of embryonic development. T. I. PRIVOLNEV (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 187—190).—Residual respiration unaffected by KCN is inversely related to the rate of growth of frog or trout embryos. R. L. E.

Oxidation processes in central nervous system during ontogenetic development. I. Catalase and peroxidase. L. E. ROZENFELD and S. S. GOLDMAN (Ukrain. Biochem. J., 1939, 14, 125—144).—Catalase activity of all parts of the brain of rabbits rises to a sharp max. 2—6 days after birth, and then falls irregularly, with well-defined max. on the 60th and 125th days. Peroxidase activity is max. on the 25th day, with secondary min. on the 80th and 125th days. In general the min. of this curve correspond with the max. of the catalase curve. R. T.

Cell metabolism and cell division. III. Oxygen consumption and cell division of fertilised sea urchin eggs in presence of respiratory inhibitors. G. H. A. CLOWES and M. E. KRAHL. **IV. Combined action of substituted phenols, cyanide, carbon monoxide, and other respiratory inhibitors on respiration and cell division.** M. E. KRAHL and G. H. A. CLOWES (J. Gen. Physiol., 1940, 23, 401—411, 413—427; cf. A., 1937, III, 64).—III. Eggs of *Arbacia punctulata* were exposed, 30 min. after fertilisation, to various agents inhibiting respiration. The min. concns. causing complete cleavage block were determined and also the level of O₂ consumption persisting. CO inhibition of O₂ consumption and cell division was reversed by light. The % inhibition of O₂ consumption by CO

in the dark is described by the usual mass action equation, the inhibition const. being about 60 instead of 5—10 as for yeast and muscle. Spectroscopic examination of fertilised and unfertilised *Arbacia* eggs reduced by $\text{Na}_2\text{S}_2\text{O}_4$ showed no cytochrome bands. K dithio-oxalate, diphenylthiocarbazone, and oximinoacetophenone, reagents poisoning Cu catalyses, did not inhibit division in fertilised *Arbacia* eggs.

IV. The stimulated respiration of fertilised eggs of *A. punctulata* in presence of 4:6-dinitro-*o*-cresol or 2:4:5-trichlorophenol is completely CN' - and CO-sensitive. The extra O_2 uptake thus passes through the metal-containing oxidase system; it also passes through oxidative steps which can be poisoned by non-stimulating phenols, phenylurethane, and 5-ethyl-5-isoamylbarbituric, malonic, and iodoacetic acids. As the concn. of the substituted phenols is increased above the optimum, the stimulatory effect gives place to an inhibitory effect on the CN' - and CO-sensitive respiration. It is in these concns. that the inhibitory effect on cell division appears. Thus the inhibition of cell division is associated with inhibition of a particular type of oxidative process, although the total O_2 uptake may be in excess of the control value. The substituted phenols have no inhibiting effect *in vitro* on the principal metal-containing respiratory catalysts or the principal dehydrogenases; they do not inhibit anaërobic glycolysis in *Arbacia* eggs. D. M. N.

Time-temperature relationships in the incubation of the whitefish, *Coregonus clupeaformis* (Mitchell). J. W. PRICE (J. Gen. Physiol., 1940, 23, 449—468).—Whitefish eggs incubated in aerated lake water at controlled temp. from 0° to 12° failed to hatch at either 0° or 12° . 0.6% hatched alive at 10° , 72.7% at 0.5° , and an intermediate proportion hatched at intermediate temp. The % of abnormal embryos which developed to the hatching stage varied directly with temp. between 4° and 12° , all embryos being abnormal at 12° , none at 0.5° or 2° . Normal development predominated from 0.5° to 6° . Total incubation time ranged from 29.6 days at 10° to 141 days at 0.5° . The results are discussed mathematically and with reference to their bearing on embryonic processes. D. M. N.

Influence of "vital" stains on carbohydrate mechanism of *in vitro* growing tissue. A. V. RUMJANTZEV (Compt. rend. Acad. Sci. U.R.S.S., 1939, 25, 248—252).—Methylene-blue stimulates sugar consumption of myoblasts of the heart of chicken embryos. Neither neutral-red nor pyrrole-blue does so. W. F. F.

Changes in respiratory activity accompanying fertilisation of marine eggs. R. BALLENTINE (J. Cell. Comp. Physiol., 1940, 15, 217—232).—In several eggs examined, the respiration and dehydrogenase activity were equiv. and varied similarly on fertilisation. The limiting link in the oxidation process is the rate of substrate activation. Addition of a redox indicator to unfertilised *Arbacia* eggs increases the rate of anaërobic reduction of $\text{Fe}(\text{CN})_6'''$. V. J. W.

Egg-agglutinin from sea-urchin eggs. A. TYLER (Proc. Nat. Acad. Sci., 1940, 26, 249—256).—Eggs of *Strongylocentrotus purpuratus* can be agglutinated by means of an extract obtained from eggs deprived of their jelly coat. The extract also inactivates the sperm-agglutinin which is the jelly-coat of the egg or a component of it. The egg-agglutinin is sp. in its action and various tests indicate its protein nature. J. D. B.

Effects of ultra-centrifuging and of p_{H} on development of *Fucus* eggs. D. M. WHITAKER (J. Cell. Comp. Physiol., 1940, 15, 173—188).—Eggs centrifuged at $5\text{--}20 \times 10^4 g$ become stratified. When they develop in sea water, they form rhizoids on the centrifugal half; if the water is acidified to p_{H} 6, they form rhizoids on the centripetal half. V. J. W.

Types of mutations induced in *Drosophila* by sodium thymonucleate. S. GERSCHENZON (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 601—603).—When *D. melanogaster* larvæ are fed with a 5% solution of the Na salt in yeast medium, various mutation types are produced. The Na salt induces mutations at all stages of development and, in all mutants, the structure of the wings is modified. J. N. A.

Polyploidy in paramecium. T. CHEN (Proc. Nat. Acad. Sci., 1940, 26, 239—240).—Polyploidy, very rare in animals, is commonly found in *P. bursaria*. Its mechanism is discussed. J. D. B.

Sex reversal in dove hybrids from a sub-family cross. O. RIDDLE and M. W. JOHNSON (Anat. Rec., 1939, 75, 509—527).—Crosses of male mourning doves with female ring doves gave hybrids of two sex types: an excess of normal males and a minority in which the nature of the gonad changes during post-natal life. Structurally the gonadal tissue is at first ovary retarded in development and largely restricted to one side. A single oviduct is present. In later stages the gland remains small and no recognisable germ cells develop; the formation of primary and secondary sex cords continues and the gland becomes filled with testicular-like tubules some having lumina, and an epididymis develops. W. F. H.

(iii) PHYSICAL ANTHROPOLOGY.

Stature, head form, and pigmentation of adult male Irish. E. A. HOOTON (Amer. J. phys. Anthrop., 1940, 26, 229—249).—Divisions into anthropological areas are made. (1) The Western peninsulas—tall stature, sub-brachycephaly, dark hair, and mixed eyes. This area includes the largest nos. of the Mesolithic stock which settled in Ireland from Scotland. (2) Central East Coast—the shortest and most dolicocephalic with highest proportion of light eyes and very dark hair. Possibly the area settled by Megalithic peoples. (3) The Blonde Crescent with its horns at Sligo and Galway Bays and its convexity at Longford and West Meath—the blondest, the tallest, and almost the longest headed in Ireland. Peopled by a majority of predominantly Nordic peoples and may contain the bulk of the descendants of any or all

of the Bronze Age peoples from Scotland, Iron Age Nordic invaders, Viking, and other Scandinavian colonists. W. F. H.

Colour of eyes, hair, and skin of population of Magarri. W. KEERS (*Acta neerl. morph.*, 1939, 3, 35—43).—An account of a population group in an island of the Timor archipelago in which the children's eyes are much darker than the adults', while their hair is much fairer. A large no. of cases of incomplete albinism were found. J. D. B.

Brain of Kenya natives. A. J. VAN BORK-FELTKAMP (*Acta neerl. morph.*, 1939, 3, 23—34).—Six brains were examined. The indices show them to be distinctly dolichocephalic with an elongated frontal lobe and a rather short temporal lobe. The development of the anterior branch of the Sylvian fossa is imperfect and in two of the brains the insula is imperfectly submerged. The sulcus lunatus was present in all the hemispheres. J. D. B.

Finger prints correlated with handedness. H. CUMMINS (*Amer. J. phys. Anthropol.*, 1940, 26, 151—166). W. F. H.

Status of *Australopithecus*. R. A. DART (*Amer. J. phys. Anthropol.*, 1940, 26, 167—186).—*Australopithecus* achieved human status in respect of environment, posture, and habits and also in many features of structure and mentality but he was not a Man. The distinctive, localised temporal expansions which appear to be concomitant with and necessary to articulate man are lacking. The relation to *Paranthropus* and the more primitive *Plesianthropus* is discussed. W. F. H.

Upper dental arch of *Plesianthropus transvaalensis*, Broom, and its relations to other parts of the skull. W. K. GREGORY and M. HELLMAN (*Amer. J. phys. Anthropol.*, 1940, 26, 211—228).—Reconstructions show that the combination of small, almost completely human canines and lateral incisors with huge ape-like molars is a workable mechanism. The almost human form of the upper dental arch and the ape-like upward slope of the posterior portion of the bony palate are consistent with the inferred downward pitch of the maxilla, the prominence of the articular eminence, and free rotary movements of the dental arches. W. F. H.

(iv) CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Extra-endothelial cells of living mammalian blood vessels. E. R. CLARK and E. L. CLARK (*Amer. J. Anat.*, 1940, 66, 1—49).—Adventitial cells on regenerating capillaries of rabbits develop from connective tissue cells. Fibroblast-like cells flatten out on the walls of new blood vessels during sprout formation and assume a longitudinal direction with processes parallel to the vessel wall. The fate of extra-endothelial cells depends on the fate of the vessels to which they are attached. On capillaries they usually increase slightly in no.; in venules or small veins the no. increases slightly, the arrangement is retained, and they remain inert as regards contractility. In larger veins fine connective tissue fibrillæ form a reticulum outside the adventitial cells. The change from capil-

lary to new arteriole involves a rapid increase in no. of extra-endothelial cells and a change in the axis of the outside cells to a transverse position. Longitudinally arranged adventitial cells on capillaries and small venules show no evidence of contractility. On arteries and arterioles active contractility develops in transversely arranged cells which become smooth muscle cells. W. F. H.

Localisation of vessels in the serosa and its barrier function. M. A. BARON (*Acta neerl. morph.*, 1939, 3, 44—80).—A detailed account of the structure of the peritoneum with special reference to its vascularisation. The blood and lymphatic vessels are located exclusively within the deepest latticed collagenous layer. The more superficial layers (the mesothelium, the superficial collagenous network, the superficial elastic network, and the deep longitudinal elastic network) are completely devoid of vessels. It is suggested that the absence of blood vessels in these layers, together with their ability to adsorb extraneous suspensions on the enormous surface presented by the collagenous and elastic fibres, is the basis for the "protective" action of the serosa in non-absorption of foreign suspensions in the peritoneal cavity. J. D. B.

Effects of acid dyes on explanted chick mesonephros. K. J. VAN DEEN and J. DE HAAN (*Acta neerl. morph.*, 1940, 3, 282—300).—Cultures of 8—10-day-old embryos, using the de Haan perfusion method, were studied after dyes (phenol-red, trypan-blue, etc.) were added. The results obtained with phenol-red were similar to those reported by Chambers. With trypan-blue the dye is found only in those situations where there is an accumulation of cellular detritus. The protoplasm of the living cells lining the wall of the tubules never contains any dye. J. D. B.

Mitoses in the anterior and intermediate lobes of the hypophysis. F. BAER (*Acta neerl. morph.*, 1940, 3, 97—128).—Using fetal and young mice (up to 45 days old) and a modification of the Azan technique for protoplasmic cytology and of the Flemming Fe-hæmatoxylin method for nuclear structure, the variations in the hypophysis were studied. Further, the effects of colchicine, pregnancy, castration, and oestrone injection on the cytology and mitotic rate were studied. In the anterior lobe mitoses were found in all three cell types but in varying proportions during embryonic life, infantile life, and sexual maturity. Mitoses were also found in the intermediate lobe. During pregnancy marked changes are found. J. D. B.

Neurosecretory cells in ganglia of Lepidoptera. M. F. DAY (*Nature*, 1940, 145, 264).—Modified nerve cells discovered in the ganglia of several species of moths may be the source of the moulting hormone in these insects. L. S. T.

Histological origin of images shown in pulmonary radiograms. A. POLICARD and M. BUCHARLAT (*Bull. Histol. Tech. micr.*, 1940, 17, 5—24).—Radiograms of 4 mm. thick slices of fixed lung were taken, using soft rays; the tissue was also examined by various histological methods including micro-

incineration. The clearest shadows are given by structure containing Ca, and by fibrous or fibroid structures containing little mineral matter.

E. E. H.

Histological structure of dentine. A. PÉRIER and M. GROSJEAN (Arch. Sci. phys. nat., 1939, [v], 21, Suppl., 107—112).—Using reflected light and a metallurgical microscope the tubular system of dentine was studied. The dentinal canals are more complicated than is usually described and are lined by a reticular substance network which is derived from the pulp. The dentine when it is studied in this way shows a marked resemblance to enamel in its arrangement of the calcified prisms in relation to a tubular network of interprismatic substance. J. D. B.

Cell autolysis in "cloudy swelling" and in "cadaverous changes." F. H. MÖNNIGHOFF (Beitr. path. Anat., 1939, 102, 87—96).—The autolysis of tissue slices of cadaverous mouse liver or kidney examined at 40° and in buffer solutions of p_H 6—8 started earlier than and was not as complete as that of tissue slices of normal organs or organs with cloudy swelling due to HgCl₂ poisoning. Cadaverous organs were less easily digested by papain than normal organs and those with cloudy swelling.

H. W. K.

Pancreatic necrosis. P. B. VAN WEIL (Acta neerl. morph., 1940, 3, 129—139).—A study of the histological changes in two cases of "spontaneous" pancreatic necrosis in female mice. The findings included the appearance within the cells of a curious fibrillar network (Nebenkerne). It is suggested that the changes may be the result of a degeneration following a stenosis of the pancreatic duct.

J. D. B.

Post-mortem auto-digestion of intestinal mucosa of turkey. L. E. ROSENBERG (Stain Tech., 1940, 15, 53—56).—Post-mortem changes begin immediately in the duodenal epithelium, almost at once in the jejunum, and only after some time in the ileum.

E. E. H.

Effect of frozen-dried plasma and frozen-dried embryo juice on tissue cultures. D. C. HETHERINGTON and J. S. CRAIG (Proc. Soc. Exp. Biol. Med., 1939, 42, 831—834).—Samples of plasma and embryo juice frozen and dried and stored for 3 months in ice gave for tissue cultures results which were identical with those from fresh specimens.

V. J. W.

Structure of nuclei of labial glands of *Chironomus* and effect of surrounding medium. C. GUARESCHI (Boll. Soc. ital. Biol. sperim., 1939, 14, 653—655).—The effects of solutions of varying tonicity are related to colloidal changes in the nucleoplasm.

F. O. H.

Micro-manipulation of nucleus of cells of salivary gland of *Chironomus plumosus*. A. STEFANELLI (Boll. Soc. ital. Biol. sperim., 1939, 14, 652—653).—Observations on cells in solutions of varying tonicity are discussed.

F. O. H.

Comparison of effects of colchicine on division in protozoa and certain other cells. R. L. KING and H. W. BEAMS (J. Cell. Comp. Physiol., 1940, 15, 252—254).—Colchicine does not hinder cell division

in protozoa, since no mitosis or spindle formation occurs in these organisms.

V. J. W.

Effects of X-rays on cell division. W. LUTHER (Strahlenther., 1939, 66, 40—49; cf. A., 1940, III, 160).

E. M. J.

Chemical effects on chromosome morphology. M. CALVIN, M. KODANI, and R. GOLDSCHMIDT (Proc. Nat. Acad. Sci., 1940, 26, 340—349).—Salivary gland chromosomes of *Drosophila melanogaster* were subjected to treatment with solutions of p_H varying from 14 to 1 and the details of the degenerative changes studied. The chromosomes are alkali-sensitive, there being a sharp decrease in the rate of disintegration as the p_H falls below 10. N-HCl produced no visible change even after prolonged treatment. N-NaCl produced general shrinkage due to dehydration but no changes in structure comparable with that produced by alkali. Accepting the Astbury interpretation of protein structure, it is suggested that secondary bonds linking polypeptide chains are released by alkali. The p_H at which this effect begins to occur corresponds with the isoelectric point of nucleoprotein and has no temp. coeff. This may indicate that the initial process in disintegration is one of neutralisation of the guanidine ion of the arginine residue which is so prevalent in nucleoproteins.

J. D. B.

Potassium, rubidium, and caesium in well washed collagen clots. L. GUYON and V. D. MARZA (Compt. rend., 1939, 209, 257—259).—Tendon (rat, rabbit) is treated with acetic acid (1 in 25,000) or 0.002N-HCl and the solution in collodion sacs is immersed in 2% NaCl, 3% KCl, 4% RbCl, or 6% CsCl. The clots are dialysed repeatedly against twice distilled water and examined histochemically. Only those immersed in NaCl show no adsorption of metal.

J. L. D.

Chlorazol-black E as aceto-carmine auxiliary stain. B. R. NEBEL (Stain Tech., 1940, 15, 69—72).—The stain can be used alone or followed by aceto-carmine; it has a high nuclear affinity and is relatively stable in acid solution.

E. E. H.

Biebrich-scarlet-picro-aniline-blue: new differential connective tissue and muscle stain. R. D. LILLIE (Arch. Path., 1940, 29, 705).—With this stain, red corpuscles are orange-scarlet, muscle deep salmon-pink, cytoplasm grey to pink, nuclei black, basement membranes, reticulum, and finely fibrillar connective tissue deep blue, and coarse and hyalinised connective tissues basically blue but perhaps showing red-violet areas.

C. J. C. B.

Fuchsin-formaldehyde method of staining acid-fast bacilli in paraffin sections. G. L. FITE (J. Lab. clin. Med., 1940, 25, 743—744).

C. J. C. B.

Decalcification fluid. R. A. C. WILKS (Nature, 1940, 145, 671—672; cf. A., 1939, III, 112).—A 25% solution of Na hexametaphosphate is miscible with all the usual fixing solutions, except those containing alcohol. An equal vol. of this solution should be added instead of water in the aq. fixatives described previously (A., 1933, 625). Decalcification takes place in the normal period of fixation.

L. S. T.

Time savers for fixing and dehydration. J. W. DUFFIELD (Stain Tech., 1940, 15, 57—59).—Description of a double wash-bottle for making up two-part fixing solutions, and of a method for dehydrating tissues placed in perforated brass baskets in a Buchner funnel closed at the bottom by rubber tube and clip, so that solutions can be drawn off at suitable time intervals. E. E. H.

(v) BLOOD AND LYMPH.

Comparative study of blood of Tunicates. W. C. GEORGE (Quart. J. Micr. Sci., 1940, 81, 391—428). J. D. B.

Hæmomyelogram. H. E. BOCK (Klin. Woch., 1939, 18, 1565—1568). M. K.

Routine blood counts with heparinised blood. L. J. WITTS (J. Path. Bact., 1940, 5, 544).—Heparinised blood is suitable for routine cytological examinations. C. J. C. B.

Bone marrow of rats made anæmic by administration of sulphanilamide. G. M. HIGGINS (Anat. Rec., 1939, 75, 529—536).—After 4 days' administration there is a greater myeloid than erythroid stimulation. At 6 days when anæmia of peripheral blood was well marked, erythroid was relatively greater than myeloid stimulation. Eosinophilic stimulation was not apparent. W. F. H.

Injections of opaque compounds into bone marrow of man. R. BENDA, E. ORINSTEIN, and (Mlle.) DEPITRE (Sang, 1940, 14, 172—178).—Injections into the sternal bone marrow at autopsy of lipidol or colloidal Th clearly demonstrate the vessels to the marrow. In the 2 living patients who were injected, the lipidol is at once reduced to small granules distributed throughout the marrow. There was no local or general reaction to the injections. C. J. C. B.

Blood changes induced by venesection in women with toxæmia of late pregnancy. F. W. OBERST and E. D. PLASS (J. clin. Invest., 1940, 19, 493—496).—Venesection in women with toxæmia of late pregnancy induces blood dilution and an associated elevation of the blood- p_{H} , which is not accounted for by changes in concns. of total acid and base. C. J. C. B.

Blood groups. P. DAHR (Klin. Woch., 1939, 18, 1173—1179).—A review. M. K.

Transfusion of plasma-free erythrocytes. H. BEUMER and K. SCHWARTZ (Klin. Woch., 1939, 18, 1604).—Erythrocytes obtained from blood after centrifuging and withdrawal of the plasma were injected intravenously without causing disturbances. After 2—3 injections made within 2 days the erythrocyte count of rabbits increased from 6 to 12 million. By the same method 120 c.c. of 250 c.c. of whole blood were injected into sick children. M. K.

Effect of iron deficiency on fragility of rat erythrocytes. J. V. DACIE (J. Path. Bact., 1940, 5, 541—543).—Fe deficiency lowers the hæmoglobin content and decreases the fragility of the erythrocytes of the young rat. C. J. C. B.

Reticulocyte-increasing action of gastric juice after parenteral administration of liver

extracts. G. LAMI (Klin. Woch., 1939, 18, 1604—1605).—Gastric juice of normal men, treated with liver extract, administered to white rats, doubled the reticulocyte count. M. K.

Diagnosis of polycythæmia. W. DAMESHEK and H. H. HENSTELL (Ann. int. Med., 1940, 13, 1360—1387).—Polycythæmia patients show an increase in red cell count in all bone marrow elements, hæmatocrit, and blood vol. Repeated venesections should be followed by Fe-poor diet, the daily Fe intake not exceeding 6 mg. Patients on a normal Fe intake of 12—25 mg. per day require more frequent venesections. A. S.

Lederer's anæmia. F. R. B. ATKINSON (Brit. J. Child. Dis., 1940, 37, 35—40).—A review of the literature. C. J. C. B.

Rôle of splenic action in altering erythrocytic fragility. C. TSAI, J. S. LEE, and C. H. WU (Chinese J. Physiol., 1940, 15, 165—180).—The temp. and p_{H} of laking were controlled. Increased fragility of splenic blood was not due to p_{H} , CO_2 , O_2 , or cell concn. Fragility was increased if the spleen was contracting, if blood was kept stagnant in the spleen or kidney, or *in vitro* whether stagnant or moving. N. H.

Anæmia of Cooley's type. M. PÉHU and F. LERICHE (Schweiz. med. Wschr., 1940, 70, 297—298).—Three children of an Italian family died of Cooley's anæmia (microcytosis, diminished red cell fragility, and generalised osteoporosis); another child is severely ill. A. S.

Erythroblastic (Cooley's) anæmia and neurologic complications (status dysmyelinatus). C. DAVISON and I. S. WECHSLER (Amer. J. Dis. Child., 1939, 58, 362—370).—A case of erythroblastic (Cooley's) anæmia with neurologic symptoms of an extrapyramidal syndrome is described. Histologically, there was status dysmyelinatus of the globus pallidus with pigmentary deposits, appearance of Alzheimer glia cells, and changes in the nerve cells of the corpus striatum. C. J. C. B.

Hæmolytic effects of ethyl and caprylic alcohol. P. L. McLAIN (J. Lab. clin. Med., 1940, 25, 869—872).—The relative hæmolytic powers of water, ethyl alcohol, and octyl alcohol were tested at room temp. over a period of 1 hr. by adding small amounts of blood to various dilutions of hæmolytic agent in 0.9% NaCl solution. In $\frac{2}{3}$ of the samples, water caused hæmolysis in dilutions of 2:1; ethyl alcohol had 8 times and octyl alcohol 200 times the laking power of water. These results were compared with analogous findings for direct additions of hæmolytic agents to defibrinated blood. The differences noted were not significant. Resistance of red blood cells to hypotonic laking was tested at room temp. in the presence of various concns. of ethyl and octyl alcohol. Ethyl alcohol caused no changes in 5 hr. at the dilutions employed. Octyl alcohol in dilutions of 1:500 and 1:250 and 1:125 increased the osmotic resistance for 15 min. in 90% of the samples. Such protective action was diminished in 3 hr.; decrease in osmotic resistance occurred after 4 hr. C. J. C. B.

Glutathione and red cells in blood in infancy and childhood. H. McNAMARA and M. J. E. SENN (Amer. J. Dis. Child., 1940, 59, 97—106).—Blood-glutathione and hæmoglobin content, red cell count and red cell vol. were measured in 45 newborn infants, 146 older infants, and 33 children less than 12 years old. Blood-uric acid and icteric index were also determined in the first week of life. In terms of whole blood concn. the average glutathione val. (54.1 mg.-%) was higher at birth than in adult life, fell rapidly during the neonatal period, and then decreased slowly, until by the 3rd month it had reached a concn. considerably below adult level, which it maintained with minor fluctuations through the 11th year. Hæmoglobin level, red cell count and cell vol. followed the same downward course, reaching their lowest levels in the 2nd month and gradually increasing thereafter.

C. J. C. B.

Pathogenesis of erythroblastic anæmias of adult. G. PITTALUGA (Sang, 1940, 14, 129—160).—A review.

C. J. C. B.

Preservatives and stored blood. F. X. AYLWARD, B. R. S. MAINWARING, and J. F. WILKINSON (Lancet, 1940, 238, 685—687).—Plasma of stored blood shows an immediate rise of K concn., an initial fall followed by a gradual rise of inorg. PO_4''' , and a delayed and gradual rise of hæmoglobin. Citrate-glucose is more effective than citrate alone or heparin in preventing these changes.

C. A. K.

Histamine release from blood cells in anaphylaxis *in vitro*. G. KATZ (Science, 1940, 91, 221).—Blood from rabbits injected with egg-albumin solution was incubated with egg-albumin solution. The plasma then gave 100—600% difference from controls for histamine assayed on isolated atropinised guinea-pig ileum. No differences were observed with blood from unsensitised animals. Blood cells from sensitised animals release histamine into plasma when in contact with antigen.

E. R. S.

Leucogenic bone marrow and leucocyte extracts. A. NETTLESHIP (Amer. J. clin. Path., 1940, 10, 265—274).—Aq. and alcohol-pptd. extracts of bone marrow and leucocytes produced a polymorphonuclear leucocytosis and, on prolonged injection, marked myeloid hyperplasia in rabbits. Control organ-extract injections gave no such results. The active principle is probably protein in nature. Lymphoid tissue extracts usually provoked a lymphocytosis. This response was sometimes mixed, both polymorphonuclear leucocytes and lymphocytes being increased. (2 photomicrographs.)

C. J. C. B.

Acute agranulocytosis in kala-azar. C. H. HUANG (Chinese Med. J., 1940, 57, 119—140).—Acute agranulocytosis, which occurred in 7.6% of cases, was due to the infection or to Sb intoxication; mortality was higher in the latter. Prognosis was better than in agranulocytosis from other causes and was related to the platelet count. Sb treatment must be resumed at the earliest moment to prevent relapse.

W. J. G.

Relation of lymphocytes to activity of *Mycobacterium tuberculosis*. L. A. TURLEY and T. F. DOUGHERTY (J. Lab. clin. Med., 1940, 25, 828—834).

—In guinea-pigs, the neutrophil-lymphocyte index is highest at the onset of the disease and again at approaching death. There is lymphocytosis, the magnitude of which varies with the progress of the disease.

C. J. C. B.

Congenital leukæmia with "chloroma." M. MORRISON, A. A. SAMWICK, and R. I. RUBINSTEIN (Amer. J. Dis. Child., 1939, 58, 332—338).—A case of congenital leukæmic myeloblastosis with "chloroma" is described.

C. J. C. B.

Case of myeloid leukæmia studied by regular spleen, liver, and bone marrow punctures. P. EMILE-WEIL and S. PERLES (Sang, 1940, 14, 161—171).—The improvement in the clinical and hæmatological condition of the patient following irradiation was not paralleled in the hæmatopoietic centres studied.

C. J. C. B.

Bleeding time. H. A. E. VAN DISHOEK and L. B. W. JONGKEES (Lancet, 1940, 238, 692).—A small circular horizontal cut with a razor blade on the lobe of the ear gives more reliable results for the bleeding time than the usual method of pricking with a needle. The average time was 3 min. 25 sec. in 450 tests.

C. A. K.

Lipins and blood conglutination. L. JÜHLING (Kolloid-Z., 1940, 91, 47—55).—Extraction of plasma with ether or light petroleum for 4—12 hr. prevents its coagulation by $CaCl_2$ but not by thrombin. If the extraction is continued for 48 hr. both plasma and a solution of fibrinogen become incoagulable by thrombin or by heating below 70° , are not pptd. by half-saturation with NaCl, and are not denatured by the usual concn. of alcohol. Addition of lecithin, cholesterol, or extracted plasma-lipins to the extracted solutions, or treatment with CO_2 , restores coagulability in the first phase but not by thrombin. It is suggested that a proteinase is responsible for the degradation of fibrin and of fibrinogen in material from which lipins have been completely removed.

F. L. U.

Clinical use of a synthetic substance resembling vitamin-K (2-methyl-1:4-naphthaquinone). J. G. ALLEN and O. C. JULIAN (Arch. Surg., Chicago, 1940, 40, 912—916).—Ten patients with low plasma-prothrombin were given 8 mg. of this substance daily. All responded well except 2 cases of advanced cirrhosis of the liver probably because the process of activation of prothrombin by the naphthaquinone was impaired.

F. S.

Hæmorrhagic tendency associated with prothrombin deficiency and its treatment with vitamin-K and bile. S. R. TOWNSEND and E. S. MILLS (Canad. Med. Assoc. J., 1940, 42, 541—546).—In 18 untreated cases with jaundice there were 3 deaths from hæmorrhage. In 17 comparable cases treated before operation with vitamin-K and bile or by synthetic -K substitutes there were no fatal hæmorrhages. No relationship was found between the degree of disturbance of the prothrombin time and the duration or intensity of the jaundice. The oral administration of 90,000 Dam units of -K per day with 2—3 g. of bile usually reduces the prothrombin time to normal in 3 days. 1—2 mg. of synthetic -K substitutes per day is effective. Treatment is

equally effective in other conditions associated with prothrombin deficiency, such as gastro-intestinal lesions with jaundice, and in cases where infection seems to be the only factor present. C. J. C. B.

Conversion of methæmoglobin into hæmoglobin by methylene-blue and thionin. F. HAUSCHILD (Klin. Woch., 1939, 18, 1580—1581).—Methylene-blue and thionin are of val. in methæmoglobin poisoning by converting methæmoglobin into hæmoglobin through the action of the leuco-bases of these redox dyes which are produced in the body. M. K.

Influence of intravenous glucose injections on abnormal erythrocyte sedimentation speed in relation to activity of infection. S. S. LIGHTMAN (Ann. int. Med., 1940, 13, 1297—1305).—Daily intravenous injections of 20—50 c.c. of 25 or 50% glucose over 4—6 days slowed the increased sedimentation rate in 7 out of 19 patients suffering from various diseases; glucose had no effect on the sedimentation rate if fever or leucocytosis was present. A. S.

Influence of temperature on sedimentation rate of erythrocytes. C. T. DECKER (Klin. Woch., 1939, 18, 1524—1527).—The sedimentation rate at temp. below 3—4° was normally half that at room temp. In scarlet fever and tuberculosis the reverse was the case. M. K.

Use of combination micro-hæmopipette. K. KATO (Amer. J. Dis. Child., 1940, 59, 310—321).—The methods and standards for the determinations of the sedimentation rate, the packed cell vol., and icteric index by use of the newly devised combination micro-hæmopipette are presented. Each individual series of these determinations was made from a single uniform small sample of capillary blood (50 cu. mm.) obtained by routine skin puncture. C. J. C. B.

Total differential and absolute leucocyte counts and sedimentation rates for healthy children. Standards for children 8 to 14 years of age. E. E. OSGOOD, R. L. BAKER, I. E. BROWNLEE, M. W. OSGOOD, D. M. ELLIS, and W. COHEN (Amer. J. Dis. Child., 1939, 58, 282—294).—There are no significant age or sex differences in the total, differential, or abs. leucocyte counts or in the sedimentation rates for children 8 to 14 years of age. C. J. C. B.

Weltmann reaction [coagulation band] and sedimentation rate during rheumatic fever of childhood. R. I. KLEIN, S. A. LEVINSON, and P. ROSENBLUM (Amer. J. Dis. Child., 1940, 59, 48—66).—The Weltmann reaction and the sedimentation rate were studied in 110 cases of rheumatic fever of childhood and in 10 of subacute bacterial endocarditis. The rheumatic fever group was made up of 26 cases of chorea, 32 of acute rheumatic arthritis without carditis, 39 of acute carditis, and 13 of cardiac decompensation. The sedimentation rate and Weltmann reaction with chorea, although usually normal, may at times be increased. This increased rate may be related to a previous infection. Acute rheumatic arthritis and carditis are characterised by a rapid sedimentation rate and a low coagulation band. The coagulation band returns to normal before the sedi-

mentation rate. In cases of cardiac decompensation the sedimentation rate tends to slow and the coagulation band tends to increase the vals. depending on the severity of the decompensation in relation to the degree of infection. C. J. C. B.

Relationship between plasma-proteins and erythrocyte sedimentation rates in chronic atrophic arthritis. R. DAVISON, M. WOOLEY, and E. DONOVAN (J. Lab. clin. Med., 1940, 25, 935—945).—Parallel studies of erythrocyte sedimentation and plasma-proteins in patients having atrophic arthritis demonstrated no relationship between the sedimentation rate and the % concn. of the plasma-proteins. Repeated small whole blood transfusions are frequently followed by reduction in sedimentation rate without improvement in plasma-protein relationships. C. J. C. B.

Calcium gluconate and blood viscosity. A. S. ROGEN (Lancet, 1940, 238, 780—781).—Ca gluconate reduced the blood viscosity in patients with cardiac failure (especially where peripheral congestion was marked). C. A. K.

Cryochem-preserved complement of guinea-pig serum. E. W. FLOSDORF, F. BOERNER, M. LUKENS, and T. S. AMBLER (Amer. J. clin. Path., 1940, 10, 339—344).—Complement dried on the Cryochem apparatus was kept under refrigeration without loss of potency for 3 years, the longest period tested. The improved results are attributed to close attention to the handling of the serum before drying, better apparatus for drying rapidly, and to completion and to better sealing of the containers after drying. Hermetically sealing under air rather than in evacuated containers has proved just as satisfactory up to 2 years, the longest period tested. Sealed tin cans or tubes appear to provide an excellent type of container. C. J. C. B.

Blood chemistry in trichinosis of dogs. E. HARTMAN, M. FOOTE, and H. B. PIERCE (Amer. J. Hyg., 1940, 31, 74—75).—Experiments with three dogs fed with light infestations of trichina larvæ showed a lowering of the blood-Ca and -P. Loss of appetite and lowered food consumption would account for these findings. B. C. H.

Postmortem glycolysis [and blood-sugar]. J. L. HAMILTON-PATERSON and E. W. M. JOHNSON (J. Path. Bact., 1940, 5, 473—482).—Hyperglycæmia may be diagnosed if a blood-sugar val. of 200 mg.-% or more is found after death in the left heart. Hyperglycæmia may develop in the right heart of non-diabetic subjects (8 out of 42 cases). Hyperglycæmic coma as a cause of death cannot be confirmed unless the blood is examined within 2 hr. of death. Diabetic blood glycolyses more slowly in the cadaver than *in vitro*. C. J. C. B.

Plasma-potassium level in avian malaria. S. F. VELICK and J. SCUDDER (Amer. J. Hyg., 1940, 31, c 92—94).—K analyses were made on the blood of canaries and ducks inoculated with *Plasmodium cathemerium* and the blood of chickens infected with *P. lophuræ*. A marked increase in plasma-K was observed in canaries during sporulation of the parasites. K metabolism was disturbed in ducks with

increase in plasma-K. No K increases were observed in chickens. B. C. H.

Effect of sexual hormones on blood-calcium. P. HEREDIA (Rev. Med. Buenos Aires, 1940, 2, 149—150).—In women with chronic parathyroid insufficiency, injection of oestrone produced a further decrease of blood-Ca and the appearance of symptoms of tetany. In cases of ovarian deficiency, with slightly increased blood-Ca, oestrone brought it down to normal. S. O.

Photometric blood-sugar determination by Folin-Wu method: new source of error. M. FLORENTINO and G. GIANNETTASIO (J. Lab. clin. Med., 1940, 25, 866—868).—The colour produced in the Folin-Wu glucose determination fades rapidly at room temp., thus affecting every photometric reading. It is suggested to stabilise the colour by 5 min. heating in a water-bath before reading. C. J. C. B.

Determination of ethyl ether in blood. W. ANDREWS, R. M. POTTER, T. E. FRIEDMANN, and H. M. LIVINGSTONE (J. Lab. clin. Med., 1940, 25, 966—970).—The use of precision syringes for accurate measurement of blood samples that may contain very volatile substances is described. The sample is delivered below the surface of cold pptg. reagents, acid HgSO_4 -Na tungstate, from which the ether is removed by rapid aëration with heating. The vapours are quantitatively absorbed in a bead tower containing CrO_3 - H_2SO_4 mixture. The residual oxidising agent is determined iodometrically. C. J. C. B.

Non-specificity of Widmark's blood-alcohol method when applied to the detection and behaviour of esters in blood. H. R. KANITZ (Z. Unters. Lebensm., 1939, 78, 433—448).—The method is affected by the presence of volatile esters in the blood. It was applied to the detection of esters in the blood of rabbits after oral ingestion of 0.01 mol., an amount which produced toxic effects in the case of all esters studied, viz., the ethyl esters of formic, acetic, cyanoacetic, butyric, malonic, benzylmalonic, fumaric, malic, citric, acetoacetic, and lactic acids, and glycine, propyl acetate, amyl formate, and amyl acetate (all of which produced a rise in volatile oxidisable matter in the blood), ethyl succinate and pyruvate, amyl butyrate, and synthetic heptyl ether. E. C. B. S.

Specific method for determination of blood-alcohol. H. KLUGE (Z. Unters. Lebensm., 1939, 78, 449—458).—Alcohol in a measured vol. of blood serum is converted into ethyl dinitrobenzoate, which is identified by its cryst. form, and is then saponified, the liberated alcohol being then determined by oxidation with $\text{K}_2\text{Cr}_2\text{O}_7$ in Liebesny's or Heiduschka's apparatus. The amount of $\text{K}_2\text{Cr}_2\text{O}_7$ used is determined by titration. E. C. B. S.

Determination of pyruvic acid in blood. A. LARSSON and I. LILJEDAHL (Svensk Kem. Tidskr., 67—70).—Lu's method (A., 1939, III, 540, 702) gives vals. for pyruvic acid in blood up to 3 times higher than Case's (A., 1932, 875), owing to incomplete removal of coloured 2:4-dinitrophenylhydrazones of other ketones (acetone or methylglyoxal?). Acidification of the final NaOH extract, followed by repetition

of the ethyl acetate- Na_2CO_3 purification, gives vals. in agreement with those found by Case's method. The pyruvic acid content of blood is unaffected by variations in acetone content. M. H. M. A.

Vagus effect on blood pressure and serum choline-esterase. F. ZINNITZ (Arch. exp. Path. Pharm., 1940, 194, 316—334).—The choline-esterase activity of a sample of cat's serum (determined manometrically) depends on the animal's arterial blood pressure at the time of removal of the sample; the activity is low when the blood pressure is low. A similar but more pronounced fall of serum-esterase activity results from vagus stimulation. During the blood pressure fall due to continuous infusion of acetylcholine the serum-esterase activity is also lowered. Vagus stimulation + acetylcholine infusion leads to a loss of 30% of the original esterase activity. The after-effect of an infusion of acetylcholine on the blood pressure is the longer the lower is the initial blood pressure. H. BL.

Rôle of co-enzymes I and II in blood of persons with pneumococcal pneumonia. R. W. VILTER, W. B. BEAN, J. M. RUEGSEGGER, and T. D. SPIES (J. Lab. clin. Med., 1940, 25, 897—899).—There was a decrease in the concn. of co-enzymes I and II in the blood of 17 of 20 patients with acute lobar pneumonia, as determined by the growth stimulation for the influenza bacillus. The concn. of co-enzymes I and II increased to normal limits in 24—48 hr. after a crisis induced by either serum or sulphapyridine. These findings are consistent with the clinical findings that pneumonia predisposes malnourished persons to attacks of pellagra. C. J. C. B.

Level of iodine in blood. H. J. PERKIN and F. H. LAHEY (Arch. intern. Med., 1940, 65, 882—895).—In 745 normal subjects the average blood-I level was 6.8 μg . per 100 g. (range 2—15 μg .). There were no significant variations due to age, sex, or season. In 1078 patients with hyperthyroidism the average blood-I level was 15.5 μg . per 100 g. (range 2—100 μg .). The literature is reviewed. C. A. K.

Acidosis and cedema. C. DIENST (Klin. Woch., 1939, 18, 1516—1519). M. K.

Lymphagogue action of adrenaline on thoracic duct lymph. H. YAMASAKI (Folia pharm. japon., 1940, 28, 53—70).—The intravenous injection of adrenaline in dogs increased the flow and protein content of the lymph from the thoracic duct. This lymphagogue action is attributed to rapid filtration of lymph from the capillaries in the liver and other abdominal organs. The greater permeability of the capillary wall in the liver accounts for the higher protein content. H. H. K.

(vi) VASCULAR SYSTEM.

Cardio-inhibitory action of visceral nerve of cephalopods (*Eledone moschata*). H. FREDERICQ (Bull. Acad. roy. Belg., 1939, [v], 25, 611—624).—After a single electric stimulus to the intact nerve a negative chronotropic action was observed affecting one cardiac cycle only, the latent period being 0.25—0.4 sec.; the negative inotropic action has a latent

period of less than 0.2 sec. The refractory period for consecutive stimuli was 4—5 m-sec.; summation of the chronotropic action was not always complete.

E. M. J.

Characteristics of normal heart sounds recorded by direct methods. N. H. BOYER, R. W. ECKSTEIN, and C. J. WIGGERS (*Amer. Heart J.*, 1940, 19, 257—274).—A survey of older mechanical and of new electric high- and low-frequency sound recorders and of the results obtained in normal adults.

G. SCH.

Electrocardiographic observations on pneumoperitoneum. B. J. ELWOOD, G. F. PILTZ, and B. J. POTTER (*Amer. Heart J.*, 1940, 19, 206—217).—The e.c.g. changes in pneumoperitoneum are the ones to be expected from the accompanying shift in the anatomical position of the heart.

G. SCH.

Electrocardiogram in pulmonary embolism. M. SOKOLOV, L. N. KATZ, and A. N. MUSKOVITZ (*Amer. Heart J.*, 1940, 19, 166—184).—50 cases of pulmonary embolism (27 autopsied) showed every kind of e.c.g. changes but no features characteristic for the condition.

G. SCH.

Interpretation of normal and pathological electrocardiogram. E. LEPESCHKIN (*Klin. Woch.*, 1939, 18, 1509—1516).

M. K.

Experimental methods for producing chronic, progressive, coronary arterial occlusion. J. J. THORNTON and F. R. MAUTZ (*Amer. Heart J.*, 1940, 19, 404—407).—A clamp which can be left in position and tightened to any degree of obstruction and released again whenever desired is described.

G. SCH.

Experimental coronary occlusion. C. G. McEACHERN, G. W. MANNING, and G. E. HALL (*Arch. intern. Med.*, 1940, 65, 661—670).—After removal of the left stellate and upper 5 thoracic sympathetic ganglia, acute ligation of the left anterior descending or the left circumflex branches of the coronary artery produced a much lower mortality rate in conscious dogs than when the sensory pathways from the heart were intact. It is suggested that the pain of coronary occlusion is associated with reflex coronary vasoconstriction.

C. A. K.

Effect of chronic constriction of aorta on arterial blood pressure in dogs: attempt to produce coarctation of the aorta. I. H. PAGE (*Amer. Heart J.*, 1940, 19, 218—232).—Partial clamping of the aorta of dogs at the site where coarctation occurs in man did not produce the elevation of blood pressure proximal to the clamp which is seen in clinical coarctation, presumably because the collateral circulation develops more extensively in dogs. Clamping the aorta distal to the origin of the renal vessels did not influence the blood pressure; clamping proximal to the origin of the renal vessels was more effective the closer to this point it was applied, and the effect was abolished by nephrectomy.

G. SCH.

Fusion beats. D. H. ROSENBERG (*J. Lab. clin. Med.*, 1940, 25, 919—925).—A clinical case, manifesting an ectopic ventricular parasystolic rhythm with various degrees of fusion with the normal sinus impulse, is recorded. The mechanism involved in

the production of fusion beats is demonstrated experimentally in the dog.

C. J. C. B.

Peripheral vascular status of one hundred unselected patients with diabetes. F. L. PEARL and A. KANDEL (*Arch. Surg.*, Chicago, 1939, 39, 86—96).—More than half complained of vascular symptoms and the majority showed abnormalities in the peripheral pulses and other signs of peripheral vascular derangement. Generalised arteriosclerosis was present in 50%.

F. S.

Dissecting aneurysm of aorta in experimental atherosclerosis. T. LEARY and S. WEISS (*Arch. Path.*, 1940, 29, 665—677).—A dissecting aneurysm of the aorta is reported arising in an atheromatous ulcer in a cholesterol-fed rabbit which was allowed to live for 3 years after cholesterol feeding was stopped. (6 photomicrographs.)

C. J. C. B.

Hyperactive carotid sinus mechanism in auricular flutter. N. HIATT and L. ADAMS (*Ann. int. Med.*, 1940, 113, 1489—1500).—Pressure on the carotid sinus produced auriculo-ventricular block, unconsciousness, and convulsions in a patient suffering from auricular flutter; the auricular rhythm remained unchanged. Atropine abolished the effect of sinus stimulation on ventricular rate. The ventricular rate was also lowered by pressure on the eye balls.

A. S.

Circulatory function in anæmias of children. IV. **Roentgenographic measurement of cardiac size.** C. G. PARSONS and F. H. WRIGHT (*Amer. J. Dis. Child.*, 1939, 58, 250—273).—In 5 anæmic children of whom 4 had been anæmic for 3 or more years, the heart was adversely affected. Changes are max. in anæmia of long duration and min. in moderate anæmia of short duration. An increase of cardiac output is the most important compensatory mechanism in the anæmic patient. Treatment of anæmia leads to improvement in cardiac function, the amount of recovery being inversely related to the duration of the anæmia.

C. J. C. B.

Cardiometer. W. F. FRAY (*Amer. Heart J.*, 1940, 19, 417—423).—An instrument for detection of cardiac enlargement by direct correlation of transverse diameter of heart with body wt. and height.

G. SCH.

Circulatory effects produced in patient with pneumopericardium by artificially varying intrapericardial pressure. J. D. ADCOCK, R. H. LYONS, and J. B. BARNWELL (*Amer. Heart J.*, 1940, 19, 283—291).—In a patient with pneumopericardium from tuberculous polyserositis intrapericardial pressure was varied with simultaneous recording of the relevant circulatory data. Venous pressure exceeded intrapericardial pressure by 35—40 mm. H₂O until intrapericardial pressure reached 145 mm. H₂O. Here the difference began to decrease and cardiac tamponade set in.

G. SCH.

Relation of clinical manifestations of angina pectoris, coronary thrombosis, and myocardial infarction to pathological findings. H. L. BLUMGART, M. J. SCHLESINGER, and D. DAVIS (*Amer. Heart J.*, 1940, 19, 1—19).—From 125 consecutive

autopsies 30 cases showed either angina pectoris in the history, or narrowing or occlusion of the coronaries, or myocardial infarction or fibrosis. The coronaries of these hearts were injected with a radio-opaque mass of different colours for the right and left coronaries. The normally functionally insignificant collaterals between right and left coronaries had developed into a complicated system of collaterals between proximal and distal parts of one artery and between different arteries. Adequate basal circulation can be maintained in spite of occlusion of all three main arteries. All branches of an occluded artery can be supplied by collaterals from another artery. Occlusion of one or more coronaries and myocardial fibrosis and infarction can occur without clinical symptoms. In hearts with valvular defects and gross hypertrophy with consequent inadequate blood supply, angina pectoris can occur without coronary disease and thrombosis can develop and cause infarction.

G. SCH.

Calcereous aortic stenosis. L. COHEN, I. GRAY, P. I. NASH, and H. FINK (Ann. int. Med., 1940, 13, 2091—2103).

A. S.

Electrocardiographic changes induced by exercise in diagnosis of coronary insufficiency. L. H. SIGLER (J. Lab. clin. Med., 1940, 25, 796—806).—E.c.g. studies were carried out in 112 persons before and after exercise. 54 had normal hearts, 26 had hypertension, 23 coronary sclerosis, and 9 doubtful coronary disease. Many showed increased voltage of *P*, increased or diminished voltage of *QRS*, slight elevation or depression of the *R-T* or *S-T* segment, and increased or decreased voltage of *T*. These changes occurred soon after exercise and lasted in some cases as long as 6 min. In 2 persons with coronary and in one with doubtful coronary disease a positive *T* wave in lead I or leads I and II before exercise became negative or isoelectric after exercise. In no normal persons did such changes occur in leads I and II, but several showed it in lead III. In the normal heart there was greater increase in the heart rate after exercise. The e.c.g. thus does not usually show characteristic changes after exercise to indicate coronary insufficiency.

C. J. C. B.

Paroxysmal tachycardia. J. D. KEITH and A. BROWN (Amer. J. Dis. Child., 1940, 59, 362—370).—2 cases of paroxysmal tachycardia in children showing no evidence of active heart disease are presented. In the second case the tachycardia was due to an ectopic focus in the auricle. The heart beat varied in its origin, being propagated from the ectopic focus at some times and from the sinus node at others.

C. J. C. B.

Surgical obliteration of patent ductus arteriosus in 7-year-old girl. R. E. GROSS, P. EMERSON, and H. GREEN (Amer. J. Dis. Child., 1940, 59, 554—559).—After operation there was a rise in the previously low diastolic pressure, disappearance of the precordial thrill, disappearance of all cardiac murmur, a decrease in the size of the heart, and a decrease in the work of the heart. In properly selected cases surgical obliteration of a patent ductus arteriosus is thus a rational procedure which has much to offer the patient.

C. J. C. B.

Water content of myocardium in hypertrophy and chronic congestive failure. H. GROSS (J. Lab. clin. Med., 1940, 25, 899—914).—The water content of the myocardium from persons with cardiac hypertrophy and with cardiac hypertrophy with congestive heart failure was determined and compared with normal controls. The hearts from patients with wasting diseases and the aged showed relatively low water contents. Children showed high myocardial water contents normally and in congestive heart failure. In cardiac hypertrophy without failure the water content was not increased. The increase in heart wt. in cardiac hypertrophy is due to an intrinsic increase in muscle mass and not to increased water. In congestive heart failure the water content of the myocardium was increased owing to anasarca which involved the myocardium. The greatest increase of water was observed in childhood (82% in one instance). Normal figures in aged patients with wasting diseases may represent actual water retention. The beneficial effects of diuresis in congestive heart failure may in part be due to reduction of excessive myocardial water content, thereby improving cardiac contractility.

C. J. C. B.

Spontaneous double rupture of heart. G. A. C. SNYDER (Arch. Path., 1940, 29, 796—799).—A unique example of thrombotic occlusion of the right coronary artery with extensive myocardial infarction and rupture through the posterior part of the muscular interventricular septum, with subsequent separate rupture through the posterior wall of the left ventricle, resulting in fatal hæmopericardium, is reported.

C. J. C. B.

Diseases of heart. A. GRAYBIEL (Arch. intern. Med., 1940, 65, 1053—1082).—A review of the literature for 1939.

C. A. K.

Capillary permeability and inflammation in narcotised rabbits. R. D. CRESSMAN and R. H. RIGDON (Arch. Surg., Chicago, 1939, 39, 586—595).—The inflammatory response was diminished in rabbits narcotised with alcohol or ether, as indicated by the amount of hyperæmia, œdema, and leucocytosis in response to the application of xylol and the injection of aleuronat or staphylococci. (6 photomicrographs.)

F. S.

Vasa vasorum of femoral vein. R. H. D. SHORT (J. Path. Bact., 1940, 5, 419—430).—The femoral vein receives its blood supply from a capillary plexus lying on the medial side of the internal elastic lamella; the intima contains no vasa. This sublamellar plexus is composed of capillary loops derived from paired elements in a wide network of arterial and venous branches situated in the outer layers of the media and adventitia. The efferent (venous) branches in the adventitia form complicated nodal plexuses, which are distributed on each side of the afferent (arterial) vasa, especially where the latter subdivide. In phlebosclerosis and thrombosis, vasa are found in the intima and frequently assume unusual patterns. In thrombosis the vasa plexuses disappear from those parts of the wall of the vein where the thrombus is not attached, from the valve sinuses, and from the distal edge of the mouth of an entering vein. A zone of intimal hæmorrhage is

frequently associated with the invasion of the intima by vasa. C. J. C. B.

Relation of volume of pulmonary circulation to respiration at birth. S. ABEL and W. F. WINDLE (*Anat. Rec.*, 1939, 75, 451—464).—Calculations based on the total Fe content of the blood-filled lungs and on estimates of blood-hæmoglobin in 12 foetal cats and a foetal guinea-pig revealed no significant increase in the vol. of blood in the lungs correlated with respiration at birth. The circulation in the lungs during late prenatal life is capable of caring for oxygenation pending the assumption of respiration. W. F. H.

Mode of development of collateral venous circulation in extremities. J. R. VEAL (*Amer. Heart J.*, 1940, 19, 275—282).—When in man venous pressure rises above 15 cm. H₂O, filtration of fluid into the tissues starts. After complete occlusion of the axillary vein, pressure rises during exercise above 80 cm. H₂O within 3 min. Collaterals form mainly in the superficial tissues and are often unsatisfactory because of lack of valves. By const. compression of superficial collaterals the development of deep collaterals better supported by tissue pressure may be encouraged. G. SCH.

α -Lobeline for measurement of circulation time. K. BERLINER (*Arch. intern. Med.*, 1940, 65, 896—901).—Intravenous injection of α -lobeline is a safe and simple method of determining the circulation time from cubital vein to carotid sinus, the end-point, cough, being sharp and readily perceptible. A mild choking sensation often occurred. In normal subjects the average time was 8.5 sec., in congestive heart failure 19 sec. C. A. K.

Cross-circulation. H. B. SHUMACKER, A. LAMONT, and W. METCALF (*Arch. Surg.*, Chicago, 1939, 39, 959—972).—The circulation of pairs of dogs was crossed by anastomosing the carotid artery of one dog and the jugular vein of the other and vice versa. A net loss of blood from one dog to the other was found only from a dog with a much larger blood vol. than the other. There was an increase in combined total blood vol. due to an increase in total circulating red cell vol. There was an initial fall in blood pressure followed by a rise to normal. The temp. of a normal dog rose when cross-circulation was established between it and a dog with experimentally induced fever (tetanus). Complete mixing of chemical and formed elements of the blood took place in 2½ min. F. S.

Circulation during spinal anæsthesia. W. GOLDFARB, B. PROVISO, and H. KOSTER (*Arch. Surg.*, Chicago, 1939, 39, 429—434).—There is a fall in cardiac output, pulse rate, and venous pressure and an increase in circulation time from arm to arm in procaine spinal anæsthesia in man. F. S.

Comparison of arm and retinal arterial pressure and of intra-ocular pressure during insulin shock. R. DE MONTMOLLIN and E. B. STREIFF (*Schweiz. med. Wschr.*, 1940, 70, 326—328).—Arterial pressure in the brachial artery is usually lowered (by as much as 50 mm. Hg) during hypoglycæmic coma; retinal blood pressure is also diminished. Intra-ocular pressure remains unchanged. A. S.

New plethysmograph. E. B. FERRIS and D. I. ABRAMSON (*Amer. Heart J.*, 1940, 19, 233—236).

G. SCH.

Variation of blood pressure with skeletal muscle tension and relaxation. II. Heartbeat. E. JACOBSON (*Ann. int. Med.*, 1940, 13, 1619—1625).—If, after lying down, skeletal muscular action-potentials decline sufficiently, a fall in systolic and diastolic pressure also takes place, usually associated with decreased cardiac voltage and rate. In some instances where the blood pressure did not change markedly, the heart rate and voltage were also unaltered. The results suggest that, on lying down, even individuals with "normal" blood pressure commonly show heart action a little faster and more forceful than would occur if the muscles were more relaxed. C. J. C. B.

Technique for producing carotid loops in dogs. M. J. RUMOLD (*J. Lab. clin. Med.*, 1940, 25, 990—992). C. J. C. B.

Peripheral vascular diseases. G. SALAND, C. KLEIN, H. ZURROW, A. GOOTNICK, and A. KATZ (*Arch. intern. Med.*, 1940, 65, 1035—1052).—Criteria for classification and diagnosis of peripheral vascular diseases are suggested. C. A. K.

Blood pressures in aortic coarctation. R. A. WOODBURY, E. E. MURPHEY, and W. F. HAMILTON (*Arch. intern. Med.*, 1940, 65, 752—762).—Direct optical blood pressure tracings were recorded simultaneously from various arteries of a patient with coarctation of the aorta. In the arteries above the coarctation the blood pressure was 160/88 mm. Hg; in the arteries below the coarctation the pressure was 105/82 mm. Hg. The pulse contours of the latter arteries were flat, smooth, and somewhat delayed. The effects of adrenaline and amyl nitrite are described. C. A. K.

Essential hypertension [relation to pituitary insufficiency]. H. STORZ (*Klin. Woch.*, 1939, 18, 1519—1521).—Most of 52 male patients with hypertension showed a decrease in the content of melanophore-expanding hormone in blood. M. K.

Rôle of kidney in pathogenesis of arterial hypertension. E. DICKER (*Amer. J. med. Sci.*, 1940, 199, 616—621).—2 cases are described. One, after an intoxication of undetermined origin, had anuria, without hypertension, and the other, secondarily to scarlet fever, showed marked hypertension without, for a long time, any accompanying signs of renal excretory insufficiency. C. J. C. B.

I. Incidence of coronary atherosclerosis in essential hypertension. II. Rôle of hypertension in development of coronary atherosclerosis. III. Factors in production of angina pectoris. D. DAVIES and M. J. KLAINER (*Amer. Heart J.*, 1940, 19, 185—192, 193—197, 198—205).—I. Patients with essential hypertension more commonly have coronary atherosclerosis than those with normal blood pressure.

II. No correlation was found between the level of hypertension and heart wt. on the one hand and the degree of coronary sclerosis on the other. Nephritic patients dying from uræmia with very high blood

pressure frequently showed little coronary sclerosis. The high blood pressure is not in itself the cause of coronary atherosclerosis.

III. Patients with hypertension develop angina pectoris with less coronary atherosclerosis than patients without hypertension. G. SCH.

Response of normal dogs and dogs with experimental hypertension to standard cold stimulus. C. B. THOMAS and T. A. WARTHIN (Amer. Heart J., 1940, 19, 316—329).—By immersion of the clipped left foreleg of normal and hypertensive unanæsthetised dogs in water at 3° cold tests were carried out. Rise of systolic or diastolic or both pressures of more than 22 mm. were regarded as positive. In normal dogs 83%, and after training 89%, of the tests were negative. Half the tests in untrained but 87% of the tests in trained dogs with renal hypertension, were negative. Dogs with hypertension after section of both depressor nerves and denervation of the carotid sinuses showed slightly more negative than positive tests. No persistently positive reactors were found in either group.

G. SCH.

Malignant hypertension. T. FAHR (Klin. Woch., 1939, 18, 1541—1543).—A review. M. K.

Significance of vascular hyper-reaction as measured by cold-pressor test. E. A. HINES (Amer. Heart J., 1940, 19, 408—416).—Review of the technique of the test. Of 66 subjects with normal blood pressure tested 6 years ago, none of the normal reactors are known to have developed high blood pressure but 38% of the hyper-reactors have done so.

G. SCH.

Pulmonary arterial pressure in experimental renal hypertension. L. N. KATZ and F. S. STEINITZ (Amer. J. Physiol., 1940, 128, 433—439).—A method is described for obtaining pulmonary pressures in trained unanæsthetised dogs. Systemic hypertension caused by renal ischaemia does not alter the pulmonary pressure (pressure in the central pulmonary artery averages 28/11 mm. Hg in normotensive and 28/9 mm. in hypertensive trained unanæsthetised dogs). The humoral mediator has a selective action on systemic blood vessels and does not act on the pulmonary vessels.

M. W. G.

Physiological consideration of hypertension. A. C. IVY and E. G. MCEWEN (Quart. Bull. N.W. Univ. med. Sch., 1940, 14, 72—79).—A review, with special reference to Goldblatt hypertension. A. S.

Attempt to produce increased susceptibility to renal ischaemia in rabbits by endocrine preparations. L. V. DILL and C. E. ISENHOUR (Endocrinol., 1940, 26, 863—870).—None of a no. of hormones tested raised the susceptibility of non-pregnant rabbits to the degree shown in pregnancy.

V. J. W.

Hypertension and obesity; statistical and clinical study of 10,883 individuals. S. C. ROBINSON, M. BRUCER, and J. MASS (J. Lab. clin. Med., 1940, 25, 807—822).—In the analysis of 7478 males and 3405 females, wt. alone was a poor measure of obesity. Consequently, a ponderal index (wt. ÷ height) was used as an index of relative overwt.

With an increase in ponderal index toward obesity there is a steplike rise in both mean systolic and diastolic blood pressures in the male and female.

C. J. C. B.

Hypertension in early childhood. H. C. CLARK (Amer. J. Dis. Child., 1940, 59, 353—361).—A case in a girl aged 13 is described.

C. J. C. B.

Histological changes in renal arterioles of hypertensive rabbits. F. W. DUNIHUE and B. H. CANDON (Arch. Path., 1940, 29, 777—784).—The juxtaglomerular apparatus of the normal rabbit kidney contains afibrillar, basophilic granular, and acidophilic granular cells which show signs of cyclic secretory activity. The granular cells are present only in the juxtaglomerular apparatus of the normal kidney, but the afibrillar cells are also present, in small nos. in the glomerular arterioles. In hypertension, produced by the Goldblatt or Drury technique, there is an increase in size and no. of the acidophilic granular cells in the juxtaglomerular apparatus, and all 3 types of cells, especially the acidophilic granular, are present in the glomerular arterioles. It is suggested that these 3 types of cells form a developmental series arising from smooth muscle cells, and that the acidophilic granular cells are the source of the renal pressor substance. (11 photomicrographs.)

C. J. C. B.

Effects of pressure on tissues. B. BROOKS and G. W. DUNCAN (Arch. Surg., Chicago, 1940, 40, 696—709).—Pressure (usually 130 mm. Hg) was applied to the tails of rats by means of a plethysmograph. Lesions were produced not by pressure *per se* but by obstruction of the circulation. The tails remained viable after being completely anæmic for 17—18 hr. With greater or more prolonged pressure massive necrosis occurred. Short of this, degenerative and hyperplastic changes such as sclerosing myositis occurred. (4 photomicrographs.)

F. S.

(vii) RESPIRATION AND BLOOD GASES.

Forces driving respiratory act. R. GESELL (Science, 1940, 91, 229—233).—Theoretical.

E. R. S.

Existence of respiratory neurohormone. T. KOPPANYI and C. R. LINEGAR (Science, 1940, 91, 297—298).—The existence of a neurohormonal mechanism involving the excitation of the chemoreceptors in the carotid sinus region which causes reflex stimulation of respiration is advanced.

E. R. S.

Alveolar lining of lung in relation to viability of foetus. M. ZELDES (Arch. Path., 1940, 29, 748—758).—The entire abortive group and most of the previable premature group revealed an immature, cuboidal alveolar lining, which is not compatible with respiration. Most of the full-term group revealed a normal (adult) flattened, mature cell lining. The transition from cuboidal immature to flattened mature alveolar lining cells was noted most frequently between the 24th and 33rd week of intrauterine life. Cuboid non-respiratory functioning cells persisted in 50% of the viable premature infants and in 20% of the full-term infants. In 12 unexplained deaths in

infants with no pathological condition postmortem, 7 had a complete or partial immature alveolar cell lining. (4 photomicrographs.) C. J. C. B.

Rôle of allergy in atelectasis in children. T. B. FRIEDMAN and C. J. MOLONY (Amer. J. Dis. Child., 1939, 58, 237—249).—6 cases of non-traumatic, non-postoperative atelectasis and 1 case of postoperative atelectasis occurring in allergic children are reported. The processes in bronchial asthma which may produce bronchial occlusion are bronchospasm, thickening of the bronchial walls, secretion of thick mucus, and paradoxical collapse of the bronchi during expiration. All evidence seems to point to bronchial occlusion as the principal cause of atelectasis. C. J. C. B.

Basal metabolism of tuberculous children. V. TUBERCULOUS PLEURISY. A. TOPPER and H. S. RUBIN (Amer. J. Dis. Child., 1940, 59, 535—541).—The basal metabolism was determined in 70 children with tuberculous pleurisy. 40 had active primary tuberculosis associated with tuberculous effusion. Most of the children had an increased basal metabolic rate (+14 to +53%, average +25%). When the infection was inactive the metabolism was generally normal again. Pleural effusion *per se* without demonstrable parenchymal or glandular involvement was without effect on basal metabolism. The pleural thickening did not influence basal metabolism. C. J. C. B.

Oxygen in aviation. W. M. BOOTHBY and W. R. LOVELACE (J. aviat. Med., 1938, 9, 172—195).—Description of an inhalation apparatus for the administration of O₂ to aviators. F. S.

Effect of acceleration on living organism. H. G. ARMSTRONG and J. W. HEIM (J. aviat. Med., 1938, 9, 199—214).—Upward acceleration in man caused cerebral anæmia so that at a force of 5 g these is loss of vision and at 5—7 g loss of consciousness, but caused no permanent injury in man or goat even at 12—16 g. Downward acceleration caused high intracranial blood pressure such that, in goats, at about -3 g concussion and at -5 g massive cerebral hæmorrhage resulted. F. S.

Pulmonary gaseous exchanges at low barometric pressure and in air mixed with nitrogen. D. B. DILL and H. T. EDWARDS (J. aviat. Med., 1939, 10, 3—11).—In man, the O₂ uptake by the blood was the same when the O₂ pressure of inspired air was 90 mm. Hg at a barometric pressure of 775 mm. as when the O₂ pressure was 86 mm. at a barometric pressure of 435 mm. This was despite the advantage that at the higher barometric pressure the addition of CO₂ and water vapour in the lungs reduces the O₂ pressure less than at the lower pressure. F. S.

Analysis of physiological and psychological characteristics of 200 civil air line pilots. R. A. McFARLAND, A. GRAYBIEL, E. LILJENCRANTZ, and A. D. TUTTLE (J. aviat. Med., 1939, 10, 160—208).—There was little evidence of premature ageing. F. S.

Toxicity of carbon monoxide at high altitudes. J. W. HEIM (J. aviat. Med., 1939, 10, 211—215).—It is deduced from the O₂-CO distribution law and from the hindering effect of CO on the dissociation

of oxyhæmoglobin, that the max. tolerance of 0.005% CO would be at about 7000 ft. F. S.

Asthma and hay fever. S. M. FEINBERG and T. B. BERNSTEIN (J. Allergy, 1940, 11, 281—306).—A review of the literature of 1939. C. J. C. B.

Laryngeal spasm and so-called tracheal collapse. W. H. COLE (Arch. Surg., Chicago, 1939, 39, 10—27).—The trachealis muscle in the dog is capable of contraction which is greater after stimulation of the muscle itself than after stimulation of the recurrent laryngeal nerve. Complete collapse in man would be possible when the cartilaginous support is lost through constitutional disease or pressure atrophy by an adenoma of the thyroid. (2 photomicrographs.) F. S.

(viii) MUSCLE.

Blood changes in dystrophia myotonica. J. N. CUMINGS and O. MAAS (Brain, 1939, 62, 422—425).—The effect of exercise on the serum-K level was measured in a series of 11 cases of myotonia. A significant fall was found in the three severest cases of myotonia with little or no atrophy. A. R. N.

Dystrophia myotonica. J. J. WARING, A. RAVIN, and C. E. WALKER (Arch. intern. Med., 1940, 65, 763—799).—The clinical features and treatment of dystrophia myotonica are described, with special reference to 13 reported cases. C. A. K.

Liberation of potassium from muscle by acetylcholine. V. H. CICARDO and J. A. MOGLIA (Nature, 1940, 145, 551).—The sciatic artery of a toad was perfused with K-free Ringer's solution containing acetylcholine (1 in 10⁻⁶). Contraction of the muscles was accompanied by an increase in K in the venous outflow. Denervated muscles, which respond more readily to acetylcholine, liberate 9 times as much K as normal muscles. Curarised muscles, which do not react to acetylcholine, liberate no K. E. R. S.

Rôle of choline-esterase in sensitisation of muscle to acetylcholine. C. W. MENG (Chinese J. Physiol., 1940, 15, 143—150).—The residual acetylcholine after digestion with the muscle was estimated on the eserine toad's rectus. Eserine affected the choline-esterase content of the toad's rectus more readily than its sensitivity to acetylcholine; 14 days after denervation it was more sensitive to acetylcholine but contained a normal amount of choline-esterase. The choline-esterase content of rat's gastrocnemius was diminished by denervation. N. H.

Acetylcholine sensitivity of a muscle and its aptitude to give contracture of the eserine type. T. P. FENG and T. H. LI (Chinese J. Physiol., 1940, 15, 197—212).—When the gastrocnemius and sartorius muscles of the toad were stimulated at high frequency through their nerves after injection of, or soaking in, eserine or Ba, the former showed the greater post-tetanic contracture. It was the more sensitive to acetylcholine, with or without eserine. Sartorius became more sensitive to acetylcholine, eserine, and Ba after soaking in Ringer's solution; they twitched and went into rigor on soaking in eserine. Ba-treated muscles were more sensitive to acetylcholine.

The inferior oblique muscle of the cat and rabbit was sensitive to acetylcholine and showed eserine contracture. N. H.

Neuromuscular transmission in turtle. L. Y. LEE and C. W. MENG (Chinese J. Physiol., 1940, 15, 213—218).—Acetylcholine and eserine had little effect on the gracilis muscle of the turtle *in situ*; injected guanidine removed curare block, increased the size of twitches, and caused spontaneous contractions. A slight inhibition occurred on stimulating through the nerve at high frequencies. N. H.

(ix) NERVOUS SYSTEM.

Nerve model. I, II. P. FABRE (Arch. int. Physiol., 1940, 50, 12—32, 185—196).—I. A model showing various features of nerve activity is described. Its essential feature is the use of thermionic valves.

II. A further development of the apparatus previously described. W. B.

Neuro-humoral control in cephalopods. H. FREDERICQ and Z. M. BACQ (Arch. int. Physiol., 1940, 50, 169—184).—No liberation of acetylcholine was observed from the median ventricle of *Octopus vulgaris* or *Eledone moschata* on stimulation of the visceral nerve. Eserinised Holothurian (*Stichopus regalis*) muscle was used for detecting acetylcholine. Attempts at humoral transmission from one perfused heart to another failed. Caffeine augmented inhibitory effects and inhibited augmentor effects on visceral nerve stimulation, and sensitised the heart and muscles of cephalopods to acetylcholine. It is concluded that no direct proof exists for a chemical transmission in the visceral nerves. W. B.

Nerve action potentials in experimental traumatic shock. R. D. CRESSMAN and E. W. BENZ (Arch. Surg., Chicago, 1939, 39, 720—727).—In shock produced by trauma to the hind limb of anaesthetised cats, there was no consistent barrage of nerve impulses. Increased nerve impulses were recorded in untraumatised as well as in traumatised limbs, indicating that these impulses were the result rather than the cause of shock. F. S.

Nerve supply of pericardium. F. MORIN and E. BONIVENTO (Arch. ital. Anat. Embriol., 1940, 43, 56—74).—A study on rabbits, guinea-pigs, cats, and human foetuses. Branches from both phrenic nerves enter the pericardium and form two main plexuses. There are three types of fibres: (a) with a thick myelin sheath, (b) with a delicate myelin sheath, and (c) amyelinated. Fibres of type (a) often end freely in a ring- or button-shaped expansion, sometimes in an oval capsulated body. After section of the phrenic the myelinated fibres degenerate; each phrenic supplies the corresponding half of the pericardium. No fibres degenerate after cutting the vagus, hence the amyelinated fibres may be of sympathetic origin. The phrenic fibres are probably afferent. S. O.

Method for study of arachnoid-pia. A. E. TAFT (Science, 1940, 91, 272).—Fragments of tissue are floated on to a glass slide with a drop of glycerin.

Slight pressure is exerted on the coverslip and the prep. can be examined in the dark field. E. R. S.

Gastric crisis of tabes dorsalis [treated by thoracic chordotomy]. O. R. HYNDMAN and F. J. JARVIS (Arch. Surg., Chicago, 1940, 40, 997—1013).—Eight cases were treated by bilateral chordotomy at the 2nd and 3rd thoracic segments. Complete section of the spinothalamic tracts abolished the pain and vomiting. F. S.

Types of nerve reflexes. J. H. PARKER (Proc. Nat. Acad. Sci., 1940, 26, 246—247).—The combinations presented by nerve and humoral elements in vertebrates (exemplified by *Ameiurus*) show three types of true reflexes, the long recognised purely nervous type and the two combination types neuro-humoral (illustrated by melanophore control with intermedin as the efferent limb) and humoroneural (illustrated by respiratory control with CO₂ or other metabolite as afferent limb). J. D. B.

Post-operative results in lesions involving spinal cord and cauda equina. K. G. MCKENZIE (Canad. Med. Assoc. J., 1940, 42, 209—213).—Good results were obtained in 42, and improvement in 12, of 83 patients. If the carcinoma patients are excluded, 75% of patients suffering from interference of function of the spinal cord or cauda equina can benefit from surgery. C. J. C. B.

Acute idiopathic hæmatoporphyria with acute ascending paralysis. H. W. PALMER (Ann. int. Med., 1940, 13, 1500—1508).—Acute hæmatoporphyria was observed in a patient suffering from ascending spinal paralysis. Degenerative signs were found in the motor cells of the brain and spinal cord. A. S.

Viscerospinal syndrome: new concept of visceromotor and sensory changes in relation to deranged spinal structures. N. T. USSHER (Ann. int. Med., 1940, 13, 2057—2090).—Conditions like bronchial asthma, cardospasm, pylorospasm, spastic constipation, and ureteral spasm are attributed, in a no. of cases, to deformities of the spine and cutaneous, muscular, or articular foci of irritation producing reflex changes in the viscera. Postural correction and physiotherapy cured the conditions. A. S.

McGill hammer. H. ELLIOTT (Canad. Med. Assoc. J., 1940, 42, 575).—The McGill hammer is a compact instrument for testing reflexes, light touch sensation, pain sensation, and two-point discrimination. It weighs 3 oz., measures 7 in., and easily fits into a suit-coat pocket. C. J. C. B.

Biochemical study of cerebral tissue, and of changes in cerebral oedema. A. M. STEWART-WALLACE (Brain, 1939, 62, 426—438).—Details are given of the water, Na, K, P, and Cl' contents of white matter of the centrum ovate, cerebral cortex, and of cerebellum. The proportions lying intra- and extracellularly are extrapolated from published observations on muscle. Similar estimations were made on 7 cases of cerebral oedema, and it is concluded that the increase in fluid is wholly interstitial. A. R. N.

"Coupling" of phosphorylation with oxidation of pyruvic acid in brain tissue. S. OCHOA

(Nature, 1940, 145, 747).—In incubated pigeon brain preps. 2 atoms of P are esterified for 1 mol. of pyruvate disappearing and 1 mol. of O₂ taken up, and adenosine polyphosphate and hexose diphosphate are formed. The necessity of inorg. P and adenine nucleotide for the oxidative breakdown of pyruvate in brain is explained. E. R. S.

Method of studying availability of various substrates for human brain metabolism during therapeutic insulin shock. J. WORTIS and W. GOLDFARB (Science, 1940, 91, 270).—Substances were administered intravenously during insulin shock. O₂, glucose, and lactic acid uptakes of brain were obtained from arterial and internal jugular blood samples. In schizophrenics glucose is readily available, lactic acid scarcely; pyruvic acid and alcohol are not metabolised at all. The results contrast with those from surviving tissue. E. R. S.

Electrical shock therapy of psychosis. M. MÜLLER (Schweiz. med. Wschr., 1940, 70, 323—326).—32 patients were subjected to electrical shock treatment (413 shocks). The main advantage of electrical over cardiazol shock treatment is the absence of anxiety and fear preceding the shock seizure. A. S.

Faulty detoxication in schizophrenia. J. H. QUASTEL and W. T. WALES (Lancet, 1940, I, 402—403; cf. Quastel and Wales, A., 1938, III, 892, and Ström-Olsen *et al.*, A., 1939, III, 35).—Catatonic patients show faulty detoxication of benzoic acid (given by mouth or intravenously), as shown by diminished hippuric acid excretion in the urine. C. A. K.

Compulsive grasping, the grasp reflex, tonic innervation, and associated phenomena. I. M. ALLEN (Med. J. Austral., 1939, I, 717—727).—Observations on 16 patients with various lesions of the brain confirmed the presence of two groups of phenomena: one labile, fully co-ordinated and sometimes capable of being brought under voluntary control (compulsive grasping); the other of a fixed pattern, arising from a const. stimulus and usually incapable of being brought under voluntary control (tonic innervation, or grasp reflex in the hand). F. S.

Partial agenesis of corpus callosum. A. B. CASS and D. L. REEVES (Arch. Surg., Chicago, 1939, 39, 667—681).—Report of a case diagnosed by cerebral pneumography. F. S.

Bioelectrical phenomena in cerebrum. L. R. MÜLLER (Klin. Woch., 1939, 18, 51, 1589—1592).—A review. M. K.

Vitamin-C and epidemic encephalitis. P. GANGL and F. LUCKSCH (Klin. Woch., 1939, 18, 1193).—In a case of encephalitic Parkinsonism an intravenous injection of 5 c.c. of vitamin-C had a beneficial effect. M. K.

Recording system designed for investigation of the electrical relations in brains of small animals. G. A. WOONTON (Canad. J. Res., 1940, 18, A, 65—73).—Two identical recording channels, each consisting of a high-gain voltage amplifier and a cathode-ray oscillograph, enable simultaneous records

from several parts of the brain to be photographed side by side. An optical system collects the light from both cathode-ray tubes and projects them through the slit of a moving-paper camera. Fine, flexible camel-hair brushes, thoroughly soaked in Ringer-Locke solution, form satisfactory electrodes. The system is free from phase and frequency distortion between 10 and 800 cycles per sec. and is not seriously affected by either form of distortion between 5 and 1500 cycles per sec. C. R. H.

Kinæsthetically controlled maze habit in rat. W. S. HUNTER (Science, 1940, 91, 267—269).—An experiment is described demonstrating a habit built up and controlled by kinæsthetic impulses. E. R. S.

Familial cerebellar hypoplasia and degeneration in Hereford calves. J. R. M. INNES, D. S. RUSSELL, and A. J. WILSDON (J. Path. Bact., 1940, 5, 455—461).—The clinical and histological features of 5 examples of familial cerebellar hypoplasia, arrested development, and degeneration in calves are described. The pathological changes are confined to the cerebellar cortex. In cattle the condition appears to be restricted to the Hereford breed and is possibly due to a hereditary factor which has emerged as the result of intensive inbreeding. (5 photomicrographs.) C. J. C. B.

Cerebellum of man. G. HOLMES (Brain, 1939, 62, 1—30).—A review including tracings and records obtained by photographing lights attached to the fingers of patients showing disorders of movement of cerebellar origin. A. R. N.

Migraine caused by demonstrable pathologic conditions. O. R. HYNDMAN (Arch. Surg., Chicago, 1939, 39, 104—107).—Report of a case with cure by removal of a small hæmangioma in the calcarine fissure. (1 photomicrograph.) F. S.

Cerebrospinal fluid after cisternal and lumbar puncture. W. SCHEID (Klin. Woch., 1939, 18, 50, 1575—1578).—The increase of cells in the c.s.f. was smaller and less lasting after cisternal than after lumbar puncture. A slight aseptic meningitis is the apparent cause of these symptoms. M. K.

Frontal puncture for ventriculography. S. W. GOSS and W. EHRLICH (Arch. Surg., Chicago, 1939, 39, 122—124). F. S.

Tumour of thalamus, a ventriculographic entity. O. R. HYNDMAN and C. VAN EPPS (Arch. Surg., Chicago, 1939, 39, 792—797).—Report of 4 cases. F. S.

(x) SENSE ORGANS.

Development of eye. W. S. KNIGHTON (Arch. Pediat., 1940, 57, 199—206).—A lecture. C. J. C. B.

Eye signs in intracranial disease. R. J. P. McCULLOCH (Canad. Med. Assoc. J., 1940, 42, 236—239).—A lecture. C. J. C. B.

Paralysis of divergence. M. B. BENDER and N. SAVITSKY (Arch. Ophthal., N.Y., 1940, 23, 1046—1051).—A patient in whom diplopia of distant vision was the main symptom was found at autopsy to have a small cavernous hæmangioma in the grey

matter surrounding the aqueduct of Sylvius at the level of the lower part of the oculomotor nuclei. The evidence for the existence of a divergence centre is discussed. W. T. A.

Blue sclerotics. B. EL QORASHY (Bull. Ophthal. Soc. Egypt, 1939, 32, 144—150).—Description of a case showing blue sclerotics associated with fragile bones, otosclerosis, and poor physical development. Two other members (mother and maternal grandmother) of the patient's family had blue sclerotics but many members both male and female were unaffected. It is suggested that this inherited syndrome may be associated with deficiency in parathyroid function. K. T.

Keratomalacia and cystic fibrosis of pancreas. R. C. GAMBLE (Amer. J. Ophthal., 1940, 23, 539—544).—Primary pancreatic deficiency in an infant of 3 months was associated with clinical evidence of avitaminosis-A. Local application of vitamin-A greatly improved the keratomalacia, but dietary treatment did not affect the general condition. W. T. A.

Rosacea keratitis and conditions with vascularisation of cornea treated with riboflavin. L. V. JOHNSON and R. E. ECKARDT (Arch. Ophthal., N.Y., 1940, 23, 899—907).—36 patients with rosacea keratitis were treated with riboflavin orally, 3 mg. or more daily. In 32 the corneal lesions healed promptly; the 4 who proved refractory were found to have achlorhydria. 9 of the patients also had cutaneous rosacea of the face; in 4 this improved. W. T. A.

Experimental production of so-called bullous keratitis. D. G. COGAN (Arch. Ophthal., N.Y., 1940, 23, 918—925).—Corneal vesiculation, similar to that in the clinical condition of bullous keratitis, was produced in the enucleated eyes of dogs and cats by saturating the eye with hypertonic saline and then exposing the cornea to a relatively hypotonic solution. A similar mechanism, promoting the absorption of water by the cornea from without, may be operative in the clinical condition. W. T. A.

Permeability of blood-aqueous humour barrier. H. DAVSON and J. P. QUILLIAM (J. Physiol., 1940, 98, 141—154).—The surviving isolated head was perfused from a pump oxygenator circuit, the concns. of K⁺, Na⁺, and Cl⁻ in the perfusion fluid were varied, and the rate of penetration of the ions into the aqueous was determined chemically. In response to a raised K content of the perfusing fluid K penetrates into the eye. In response to a decreased Na content of the perfusing fluid Na penetrates from the eye into the blood; the rate of penetration is about $\frac{1}{2}$ of the rate for K. In response to a decreased Cl⁻ content of the perfusing fluid Cl⁻ diffuses out of the eye; the rate is about the same as that of Na. The membrane separating the eye fluids from the blood is not specifically impermeable to cations, as claimed by Gaedertz and Wittgenstein, nor does it show unidirectional permeability as claimed by Robertson. The membrane does not secrete K and probably not Na or Cl⁻. J. A. C.

Transmission of light by eye media. K. J. W. CRAIK (J. Physiol., 1940, 98, 179—184).—Stiles and

Crawford discovered that subjective brightness is not proportional to pupil area in man. Their explanation of this, in terms of directional sensitivity of the retina, is corroborated by direct measurements of the relative light transmission at the margin and centre of the lens etc. in the excised eyes of the cat. Persistent irregular variations in transmission up to 10%, and a steady decline at the extreme margin, are found but the curve is totally different from that obtained by subjective investigation in man, the discrepancy being often as much as 50%. J. A. C.

Regeneration of lens from body epithelium following its implantation into optic cup in amphibian embryos. W. W. POPOFF (Acta neerl. morph., 1939, 3, 81—88).—The body epithelium is unable to form a lens in the embryos of *Bufo viridis* and *Bombina bombina* under the influence of an optic cup grafted under it. In *Rana arvalis* and *R. esculenta* regeneration of a lens occurs in less than 50% of the experiments. If, however, epithelium from the trunk is transplanted into the optic cup in the embryos of these four species a lens is regenerated from it in nearly 100% of cases. It is suggested that the removal of the epithelial fragments from the influence of the epithelial system facilitates the change into lens tissue. K. T.

Induction and regeneration of lens in chick embryo. J. H. M. G. VAN DETH (Acta neerl. morph., 1940, 3, 151—169).—Presumptive lens epithelium was cultivated *in vitro* both alone and in combination with the optic vesicle and the latter was also cultivated in combination with ectoderm from other parts of the body. The following results were obtained. (1) The presumptive lens epithelium of the chick is incapable of spontaneous differentiation to form a lens before it is 52 hr. old. (2) An optic vesicle 2—5 days old can induce lens formation from ectoderm from any part of the body as well *in vitro* as *in vivo*. (3) Under the influence of an optic vesicle ectoderm from the back can form a lens up to the age of 2 days, from the head up to the age of 4 days, and the presumptive corneal epithelium up to the age of 5 days. Lens tissue can be regenerated from the iris epithelium up to the age of 4 days and from the retina and the pigment epithelium up to the age of 3 days. The similarities and differences between the induction and regeneration of the lens from various tissues under the influence of the optic vesicle in amphibia and birds are discussed. (Illust.) K. T.

Glucose content of cornea and lens in normal state and in experimental variations of blood-sugar. R. WEEKERS (Compt. rend. Soc. Biol., 1940, 133, 698—700).—Glucose was determined in the plasma, aq. humour, cornea, and lens of rabbits after death by a blow in the cervical region. The results are expressed as mg. per 100 g. of fresh tissue and also as mg. per 100 c.c. of water after correcting for the water content of the tissue. The fluid of the cornea has a higher, and of the lens and plasma a lower, concn. of glucose than the aq. humour. In experimental hyper- and hypo-glycaemia the glucose content of the eye tissue rose and fell respectively. M. C. B.

Familial progressive juvenile cataracts (parathyroid deficiency). R. VON DER HEYDT (Amer. J. Ophthal., 1940, 23, 434—436).—Three children, aged 11, 12, and 21 years, of a family of 8 were affected with lens changes which had progressed rapidly during 5 years. Their immediate antecedents all had normal eyes; all the children appeared healthy and the patients had normal vision after the lenses were removed. The lenses showed a thin layer of dust-like spots, crystals, and some flat vacuoles, directly under the anterior and posterior capsules, changes which are characteristic of tetany cataract. In 2 cases there was antero-posterior flattening of the lens. The changes were more marked in the posterior axial cortex with toxic manifestations of complicated cataract at the posterior pole. Serum-Ca in the three patients was 9.25, 8.9, 7.6 mg.; serum-P 4.47, 4.53, 4.7 mg. It is suggested that the condition is a recessive hereditary parathyroid deficiency sufficiently severe to give rise to cataracts of the tetany type. The absence of physical signs of tetany is attributed to the relatively high P content of the blood. M. C. B.

Amaurotic idiocy with congenital cataract in two brothers. M. HEUYER and BERNARD-PICHON (Rev. Neurol., 1939—40, 72, 395).—Two brothers, aged 12 and 17, were affected with idiocy and congenital bilateral cataract. Family history on the maternal side showed cases of defective vision and one case retarded mental development, probably due to myxœdema. The authors believe that the disease was neither the Tay-Sach infantile amaurotic idiocy nor the Spielmeyr-Vogt juvenile form, but a new type of familial disease symptomatic of degeneration. M. C. B.

Heredity of glaucoma. I. BIRÓ (Ophthalmologica, 1939, 98, 43—50).—Glaucoma was inherited in 43 out of 761 cases. The 43 cases were members of 36 families, in 4 of which the heredity extended through 3 generations. The mode of inheritance was that of a dominant, and there was a preponderance of affected females. The phenomenon of anticipation was observed, and the earlier was the age at which the disease appeared, the more difficult was it to cure. M. C. B.

Hormone of fish retina. H. H. MEYER (Endokrinol., 1939, 22, 261—279).—Intramuscular injection of aq. extracts of retina of *Pleuronectes platessa* expands the melanophores of fish skin; the factor is present in blood of fish exposed to light; it is heat-stable. The hormone was not found in blood of fish kept in darkness. The hormone also acts on invertebrates (*Crangon vulgaris*). A. S.

Congenital fibrous semi-transparent membrane over part of disc. G. BADIR (Bull. Ophthal. Soc. Egypt, 1939, 32, 222—226).—Description of a case in which a semi-transparent membrane hung over most of the nasal half of the optic disc. The membrane was thought to be an incompletely degenerated remnant of the structures associated with the hyaloid artery. K. T.

Coloboma of macula. H. AYOUB (Bull. Ophthal. Soc. Egypt, 1939, 32, 195—201).—A crit. review of

the theories of the ætiology of macular coloboma illustrated by the description of a case. K. T.

Temperature and critical intensity for response to visual flicker. IV. **Critical thermal increments and theory of response contour.** W. J. CROZIER and E. WOLF (Proc. Nat. Acad. Sci., 1940, 26, 60—67).—In the turtle *Pseudemys* the max. crit. flicker frequency is directly proportional to the % dark-time in the flicker cycle. The temp. characteristic of crit. flicker is independent of the flash-frequency and % dark-time. K. J. W. C.

Theory of the visual threshold. I. **Time and intensity.** II. **Kinetics of adaptation.** W. J. CROZIER (Proc. Nat. Acad. Sci., 1940, 26, 54—60, 334—339).—I. Existing data on the relation between exposure time and intensity required to produce a just visible flash fall into two main groups, those showing *I.t* to be const. up to a certain crit. time and those showing *I.t* to pass through a min. It is calc. that the theory of Gaussian distribution of thresholds among receptors will account for both cases, the discord between results being attributed to variations in the area of the test patch.

II. $1/\Delta I$ when plotted against log dark-time agrees with the curve of a Gaussian probability integral. It is inferred that the time-course of the threshold change during dark adaptation displays the statistical result of fluctuating recovery of excitability by retinal elements and does not reveal the kinetics of the photochemical processes involved. K. J. W. C.

New method of subjective refraction involving identical techniques in static and in dynamic tests. M. LUCKIESH and F. K. MOSS (Arch. Ophthal., N.Y., 1940, 23, 941—956).—The test object, a horizontal line 1° in length, is brought from a sub-threshold visibility by increasing its contrast and brightness. A graded light filter, calibrated in terms of relative visibility, placed in front of the eye is reduced in density until the test object is first perceived, when a reading is taken. A vaguely defined vertical band of light in the plane of the test object forms a target for convergence; this is viewed binocularly during the monocular examination of the eyes. Throughout the test there is thus no special stimulus to accommodation, and the relation between convergence and accommodation remains natural and comfortable. The visibility of the test object is altered, without affecting the convergence target, by means of cylindrical trial lenses. The absence of stimulus to accommodation is shown by the symmetrical relation between visibility and refraction; equal over- and under-corrections cause equal decrements in visibility. The apex of max. visibility is sharply defined; it is obtained by selecting trial lenses which bracket the correction giving max. visibility. Determination of the far point in emmetropic subjects showed that the normal eye at rest, in the absence of stimulus to accommodation or convergence, is myopic to a variable degree, averaging -1 D. The provision of a target for convergence at infinity reduced the myopia to 0.75 D. During distant vision, when stimulus to accommodation is present, all or part of this myopia is probably abolished by relaxation of accommodation. W. T. A.

Effect of field size and pattern on change of visual sensitivity with time. B. H. CRAWFORD (Proc. Roy. Soc., 1940, B, 129, 94—106).—When a circular conditioning field with a test area at its centre is viewed continuously the threshold of the test area is independent of the size of the conditioning field when this is from 3° to 60° in diameter; below 3° complex effects are found and explanations in terms of spatial interaction and perceptual interference suggested. For threshold measurements made after the conditioning field is cut off the recovery of dark adaptation follows the same course if the brightnesses have been adjusted to give the same val. of threshold during exposure of the conditioning field; *i.e.*, if the test patch of the retina is brought to a given steady state of adaptation it will recover its dark adaptation in the same way, irrespective of the size and pattern of the conditioning field.

K. J. W. C.

Induced size effect with eyes in asymmetric convergence. K. N. OGLE (Arch. Ophthalm., N.Y., 1940, 23, 1023—1038).—The induced size effect is the apparent rotation about a vertical axis of a fronto-parallel test field when lenses magnifying in the vertical meridian are placed before one eye. The amount of apparent rotation plotted as co-ordinate against the power of the lens as abscissa gives a sigmoid curve. When the eyes are in symmetrical convergence and a lens magnifying in all directions is kept before one eye, the induced size effect curve is shifted horizontally owing to the vertical component of the overall magnification of the spherical lens. When the eyes are in asymmetric convergence the image in the laterally directed eye is larger, as this eye is nearer the test field. The expected horizontal shift in the induced size effect curve, as with a spherical magnifying lens, does not occur. It is suggested that there is a change in the relative functional sizes of the ocular images in the vertical meridian when the eyes are turned in asymmetric convergence which offsets the difference in the distance of the observed object from the two eyes. W. T. A.

Scintillating scotoma and other subjective visual phenomena. J. E. WEEKS (Amer. J. Ophthalm., 1940, 23, 513—519).—A no. of cases are reviewed in which bilateral homonymous scotomata edged with glittering fortification figures appeared at intervals, without subsequent hemicrania. The cause is probably an angioneurosis resulting in transient vascular spasm in the region of the visual cortex. Homonymous hallucinations accompanying the onset of hemianopia are described; they are ascribed to irritation of the cells of the visual cortex preceding their destruction. W. T. A.

Experimental aspects of psychology of colour. D. E. ROE (J. Oil Col. Chem. Assoc., 1940, 23, 126—144).—Data obtained in colour preference and related tests are grouped according to age and sex of the subjects and their significance is discussed. S. M.

Optical system of newt (*Triturus taeniatus*). W. F. H. STRÖER (Acta neerl. morph., 1940, 3, 178—195).—The structure and course of the optic nerve system of *Triturus* carrying impulses from the retina to the brain are described and models of the whole

system showing the destination of fibres from the different quadrants of the retina are illustrated. The nervous structure of the retina of *Triturus* is similar to that of the frog. None of the optic nerve fibres ends in the nucleus præopticus and the anterior accessory optic tract is therefore a misnomer for the collection of fibres which end in this nucleus. Most of the optic nerve fibres go on from the chiasma (where there is complete decussation) to the tectum opticum although some (the posterior accessory optic tract) are diverted to end in the nucleus ectomammilaris. Although fibres can be traced from the nucleus præopticus to the hypophysis these are not optic fibres and it seems probable, therefore, that the effect of light stimuli on pituitary function must be hormonal and not nervous, at least in *Triturus*. (Illust.) K. T.

Blindness in cattle due to papilloedema. Autopsy report on six cases. J. O. WETZEL and L. A. MOORE (Amer. J. Ophthal., 1940, 23, 499—513).—Calves on a diet deficient in vitamin-A developed blindness, epileptiform seizures, and disturbances of gait. The blindness was preceded by papilloedema and was caused by constriction of the optic nerve at its exit from the skull owing to narrowing of the optic foramen. It is suggested that the papilloedema and the faulty development of the optic foramen were due to increased intracranial pressure resulting from deficiency of -A. W. T. A.

Study of brains of developing amphibia after removal of embryonic sense organs. H. M. DE BURLET and W. F. H. STRÖER (Acta neerl. morph., 1940, 3, 170—177).—A method for keeping nos. of developing amphibian embryos in separate containers but under the same conditions of temp., aërating, etc. is described. The method was used for the raising of animals from which various combinations of the sense organs anlage had been removed with a view to investigating the effect of such operations on the development of the brain. K. T.

Significance of aphasia as a symptom of otogenic extradural abscess. F. ALTMANN (Arch. Otolaryng. Chicago, 1940, 31, 819—826).—Aphasia may be produced by the external pressure on the temporal lobe exerted by an otogenic extradural abscess, but this is a comparatively rare cause of the condition. More commonly aphasia is due to inflammation involving the leptomeninges and superficial layers of the brain with accompanying oedema. K. T.

(xi) DUCTLESS GLANDS, EXCLUDING GONADS.

Relation between thyroxine, prolan, progynon, and vitamins. E. H. WIESENER (Klin. Woch., 1939, 18, 1488—1490).—White mice were given 0.2 c.c. subcutaneously of thyroxine every 24 hr. on 5 consecutive days; on the 6th day the animals were poisoned with acetonitrile. A 400% increase in their resistance to toxins (Reid Hunt's reaction) was observed. The influence of vitamins on the resistance to toxins was established by injecting subcutaneously a certain amount of a vitamin on 5 consecutive days 12 hr. after thyroxine administration. -B, -D, and

-B increase the resistance; -A antagonised the effect of thyroxine. The action of follicular hormone was synergic with that of thyroid hormone, -C, and anterior pituitary hormone, and antagonises that of -A. M. K.

Histological changes in endocrine organs produced by anoxia and hunger. H. SCHUBOTHE (Endokrinol., 1940, 22, 305—318).—Guinea-pigs were killed by anoxia in a low-pressure chamber or by starvation. Considerable hyperæmia was found in various endocrine organs; the cells were small and the no. of eosinophil cells in Langerhans islets and anterior pituitary decreased. A. S.

Pituitary and retinitis pigmentosa. H. ZONDEK and G. WOLFSOHN (Schweiz. med. Wschr., 1940, 70, 162—163).—A patient suffered from pituitary diabetes, osteoporosis of the skull, especially of the sella turcica, high blood-Ca, and retinitis pigmentosa. A. S.

Extrasellar extensions of pituitary adenomas. G. JEFFERSON (Proc. Roy. Soc. Med., 1940, 33, 433—458). W. J. G.

Acromegaly and nephritis. K. H. RIWOLDT (Endokrinol., 1939, 22, 255—261).—A woman suffering from acromegaly and eosinophil adenoma of the pituitary died of nephritis and uræmia. A. S.

Effect of hypophysectomy on nitrogenous constituents of blood of dogs: influence of fasting and of protein-rich diet. L. GAS (Biochem. Z., 1939, 303, 174—185; cf. A., 1937, III, 301).—In the hypophysectomised dog the fasting (48 hr.) blood-urea-N and "residual" N are both increased, the increase in the latter being largely determined by that in the urea-N. The 100% increase in residual N which follows ingestion of protein is not affected by hypophysectomy, the non-urea residual N fraction being increased as well as the urea-N, possibly due to a rise in excretion. The alterations in the ratio urea-N/residual N suggest that in the hypophysectomised dog urea production is diminished. W. McC.

Posterior pituitary dosage and Brunn reaction in frogs. E. M. BOYD and F. M. YOUNG (Quart. J. Pharm., 1940, 13, 64—69).—The effect of doses of pituitrin from 10^{-10} to 5 i.u. per 10 g. of body-wt. is determined. Very small doses do not cause the Brunn reaction (increase of 10—30% in body-wt. depending on the season, during 3—6 hr. after injection of approx. 1 i.u. per 10 g.) but cause a loss of water, whilst larger doses stimulate uptake of water. The results confirm those of Boyd *et al.* (A., 1939, III, 578) on the effect of pituitrin on added water in birds and mammals and point to a similar action with frogs. J. N. A.

Antagonism *in vitro* of the oxytocic hormone of the posterior pituitary and adrenaline. Determination of minute amounts of adrenaline. G. TIXIER and J. BECK (Bull. Soc. Chim. biol., 1940, 22, 43—47).—The inhibiting effect of adrenaline on the contraction of guinea-pig uterus by submax. amounts of the oxytocic hormone is used as a basis for the determination of 0.005—0.1 μ g. of adrenaline. A. L.

Pressor action of vasopressin [after adrenalectomy]. P. VON MARSOVSZKY, jun. (Arch. exp. Path. Pharm., 1940, 194, 473—476).—The rise in blood pressure after a dose of vasopressin ("tonephin") in cats is less marked after removal of the adrenals. H. Bl.

Effect of pituitary on moulting of birds. A. A. VOITKEVITSCH (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 406—408).—Premature moulting is induced in quails by the injection of anterior pituitary extract. Extracts of the basophilic zone act more rapidly than those of the eosinophilic zone. Thyroidectomised birds did not respond to the extracts or moult at the normal time. E. M. W.

Pars intermedia of pituitary gland in man and cattle. W. BERBLINGER (Endokrinol., 1939, 22, 225—228).—Nests of anterior pituitary cells were found in the pars intermedia of bulls, cows, and calves. A. S.

Melanophore hormone in fish pituitary. H. H. MEYER (Endokrinol., 1939, 22, 137—144).—The pituitary of *Gadus morrhua* contains a substance which expands the melanophores of *Pleuronectes platessa*, *Raja clavata*, *Rhombus maximus*, and *Cottus scorpius*; the factor is active in these species after destruction of their central nervous systems. Trans-section of the optic nerve in *Pleuronectes* produces darkening of the skin which is intensified by injection of pituitary extracts of *G. morrhua*. A. S.

Distribution of melanophore-dispersing hormone in anterior lobe of cetaceans and armadillo. F. K. OLDHAM, J. H. LAST, and E. M. K. GEILING (Proc. Soc. Exp. Biol. Med., 1940, 43, 407—410).—This hormone is found in greatest concn. in the antero-ventral part of the hypophysis. V. J. W.

Anterior pituitary fractions and carbohydrate metabolism. I. Preparation and properties of diabetogenic extracts. F. G. YOUNG (J. Endocrinol., Lond., 1939, 1, 339—355).—By fractionation at 0° with $(\text{NH}_4)_2\text{SO}_4$, globulin, pseudoglobulin, euglobulin, and albumin fractions were prepared from ox anterior hypophysis. Only the globulin and pseudoglobulin fractions contained diabetogenic activity. These fractions contained thyrotrophic, gonadotrophic, and glycotrophic activities but preps. with such activities were not necessarily diabetogenic. The diabetogenic fractions possessed more growth-promoting activity than non-diabetogenic fractions. Unlike glycotrophic activity, diabetogenic activity does not withstand heating at 100° for 1 hr. Various protein tests were applied to the different fractions. The N content of the pseudoglobulin fraction was higher than in the euglobulin or albumin fractions. Dogs made temporarily diabetic by treatment with anterior pituitary extracts have less muscle-glycogen and more liver-fat than have normal dogs under similar conditions. The liver-glycogen is apparently unaffected. In an appendix E. A. WOOLLETT describes a simple apparatus for the automatic filtration of large vols. of liquid. P. C. W.

Species variation in thyrotrophic, gonadotrophic, and prolactin activities of anterior hypophyseal tissue. M. R. A. CHANCE, I. W.

ROWLANDS, and F. G. YOUNG (J. Endocrinol., Lond., 1939, 1, 239—260).—The 3 types of activity were assayed in the acetone-desiccated anterior pituitary tissue from man, horse, sheep, pig, and ox. The greatest amounts of the 3 activities were present in the tissue from pig, man, and sheep respectively. The gonadotrophin content assayed by the ability to produce ovulation in oestrous rabbits was substantially present in all 5 species, but when assayed by capacity to produce ovarian growth in immature rats the pituitary of man and horse contained large amounts while the glands of pig, sheep, and ox contained only small amounts. Comparison was made of the efficiency of various extraction methods. Acid-buffer extraction (van Dyke) and alkaline aq. alcohol extraction (Bates-Riddle) were both satisfactory for the extraction of thyrotrophin. The latter method was suitable for prolactin extraction. The former method and aq. alkaline extraction were suitable for the extraction of gonadotrophin; in this case the alkaline aq. alcohol method was inferior (ovarian growth assay).
P. C. W.

Relationship between diabetes mellitus and pituitary and subthalamic region. G. KÖHNE (Endokrinol., 1939, 22, 241—254).—In addition to histological changes in the pancreas, several patients suffering from diabetes mellitus showed changes in the pituitary (diminished no. and size of the eosinophils and increased no. of chief cells); one patient suffered from acromegaly with tumour of the eosinophils and changes in the paraventricular nucleus; two patients had tumours of the stalk of the hypophysis.
A. S.

Chemical studies on pituitary "antagonist." F. BISCHOFF (J. Biol. Chem., 1940, 133, 621—627). In disagreement with the findings of others, follicle stimulation can be promoted by intraperitoneal injection and the "antagonistic" effect by subcutaneous injection of pituitary gonadotrophic extracts. Either effect is produced by regulation of the resorption rate. No difference between the response of the antagonistic and the gonadotrophic factor to acetylation, methylation, or reaction with β -naphthoquinonesulphonate, I, diazobenzenesulphonate, cysteine, or heat-treatment was observed.
A. L.

Anterior hypophysis and kidney function. H. CURSCHMANN (Klin. Woch., 1939, 18, 1464—1465).—Injection of extract of anterior hypophysis (1 c.c. daily) restores normal renal function in cases of Simmonds' disease.
M. K.

Urinary gonadotrophic extracts and anaphylaxis *in vitro*. M. VAN DEN ENDE (J. Endocrinol., Lond., 1939, 1, 356—365).—Experiments in which antibodies were demonstrated by anaphylactic sensitisation confirm those of precipitin tests on anti-gonadotrophic serum. The isolated uterus of sensitised guinea-pigs reacts specifically to contact with urinary extracts irrespective of their hormone content. Sensitivity to human serum is also induced, but anaphylactic reaction to urinary extract is present even after sp. desensitisation to serum. By active sensitisation to urinary extracts a higher degree of sensitivity to species (serum) antigen is induced than by passive sensitisation. This may be explained by

the presence of traces of serum-protein in the urinary extracts. The demonstrable antibodies evoked by urinary gonadotrophin are not hormone-sp.

P. C. W.
Castration and size of pituitary. S. E. BROLIN (Endokrinol., 1940, 22, 331—344).—The size of the pituitary increases after castration of adult male rats, that of females decreases; these changes are entirely due to modification of the size of the anterior lobe of the pituitary.
A. S.

Are gonadotrophic hormones destroyed while they exert their action on ovary? H. SELYE (Proc. Soc. Exp. Biol. Med., 1940, 43, 404—406).—In hypophysectomised rats, injection of 1—10 r.u. of follicle-stimulating and luteinising hormone causes the same hypertrophy in each ovary as in the single remaining ovary when the other has been previously removed.
V. J. W.

Modification of effectiveness of gonadotrophic extracts. R. DEANESLY (J. Endocrinol., Lond., 1939, 1, 307—322).—The effects of adding augmenting substances, of dividing the doses, and of combining various gonadotrophic extracts were investigated. The extracts were in all cases injected in immature female rats in 5 daily doses and the wts. of the ovaries recorded. Addition of $ZnSO_4$ to extracts of the pituitary glands of pig, sheep, and ox increased the ovarian response to these extracts. Horse pituitary extracts were not augmented. Pig pituitary extract was more effective if given in 10 twice-daily injections. Horse and human pituitary extracts were not so effective when given in a single dose as when given in divided doses. While in the pig and sheep extracts the activity was not removed in the ppt. formed when the $ZnSO_4$ was added, this was not so with the ox extract. Urine of pregnancy extracts were not augmented by addition of $ZnSO_4$ or by being given in twice-daily doses. With pregnant mare serum extract no lessening of the response was obtained when the injection was made in one dose but the addition of $ZnSO_4$ diminished the ovary-wt. obtained. When extracts of sheep, horse, ox, and pig pituitaries were injected in combination with pregnancy urine extracts only the horse extract showed synergism. Extract of menopause urine in a dose which by itself had only very slight gonadotrophic action augmented the response to pig pituitary extracts. It had no effect on pregnancy urine and sheep pituitary extracts. The response of the ovaries to pregnant mare serum is partially inhibited when injected in combination with doses of pig, sheep, and ox pituitary extracts (in doses of these latter which are only slightly gonadotrophic) and also by large doses of pregnancy urine extract. Horse pituitary had no inhibitory effect. Horse pituitary gonadotrophic activity may be inhibited by combination with sheep pituitary extract. The literature is fully reviewed.
P. C. W.

Changes in adrenal glands during infections and intoxications. B. A. PHOTAKIS and S. N. LIBÉRATO (Bull. Soc. Chim. biol., 1940, 22, 25—35).—Results of histological examination of the adrenal cortex of humans who had accidentally died are reported, together with the nature of the accident.
A. L.

Status thyreo-suprarenalis (M. B. Schmidt). H. KOTHE (Endokrinol., 1939, 22, 229—240).—A case of Addison's disease is reported. The adrenals and the thyroid showed widespread degeneration of the parenchyma with lympho-plasma cellular infiltration and sclerosis. The thyroid also showed changes corresponding with colloid goitre. A. S.

Effect of subcutaneous implantation of adrenaline tablets on blood-sugar and milk composition in lactating ruminants. A. C. BOTTOMLEY, S. J. FOLLEY, F. H. A. WALKER, and H. M. SCOTT-WATSON (J. Endocrinol., Lond., 1939, 1, 287—299).—Adrenaline tablets were implanted in lactating goats (50-mg. tablets) and a lactating cow (500-mg. tablet). There was a rise in blood-lactic acid, increase in % lactose in the milk, and hyperglycæmia which lasted for many hr. (in 2 cases 42 hr.). The milk yield was not increased. There was no uniform effect on milk fat but the non-fatty solids tended to increase. The arterial blood-lactic acid in the normal lactating goat ranged from 5 to 15 mg.-%. P. C. W.

Metabolic studies on patients with pemphigus. [Treatment with adrenal cortex and saline.] J. H. TALBOTT, W. F. LEVER, and W. V. CONSOLAZIO (J. invest. Dermat., 1940, 3, 31—67).—Metabolic studies in 34 patients with pemphigus are reported, 10 of them acute. An increase in plasma, blood, and interstitial fluid vols. was observed in all patients with generalised skin lesions. Blood studies in the patients with acute pemphigus showed abnormal concns. of certain constituents, which were consistent with acute adrenal insufficiency. 5 patients with acute pemphigus were given large amounts of adrenal cortex extract and aq. NaCl parenterally. Clinical improvement followed with restoration of the acid-base changes. 2 patients have enjoyed a remission which has persisted for 3½ and 3 years respectively, without further treatment. The changes in the concn. of constituents in the blood of the patients with chronic pemphigus were less const. Therapeutic data from these patients were not conclusive. C. J. C. B.

Adrenalectomy and pregnancy of albino rat. T. McKEOWN and W. R. SPURRELL (J. Physiol., 1940, 98, 255—262).—Adrenalectomy between the 1st and 4th days of pregnancy either prevents implantation or leads to abortion; between the 7th and 9th day adrenalectomy leads to abortion or resorption. A salt diet prevents in part these effects; thus the majority of adrenalectomised mothers deliver litters but are unable to rear young. The adrenals of the young of salt-treated, adrenalectomised mothers do not differ in wt. from controls. The increase in survival period of rats adrenalectomised during pregnancy is not due to the activity of the foetal adrenals. J. A. C.

Action of ferrous iron [antagonism to adrenaline]. W. STRAUB and K. STEFÁNSSON (Arch. exp. Path. Pharm., 1940, 194, 269—276).—In single injections, the min. lethal dose of Fe⁺⁺ ions in the rabbit is 20 mg. of Fe⁺⁺ per kg. In a prolonged infusion the lethal dose is higher. Infusion of Fe⁺⁺ leads to fall of blood pressure with maintained heart action. Under the action of Fe⁺⁺ adrenaline is ineffective. There is an antagonism between the adrenaline and Fe⁺⁺.

The extinction of the adrenaline effect can be used to measure the resorption of Fe⁺⁺ salts. H. BL.

Ferrous iron-adrenaline complex. G. VOGELER (Arch. exp. Path. Pharm., 1940, 194, 281—283).—Fe⁺⁺ salts form a complex compound with adrenaline of deep blue colour which is more stable than the green colour of adrenaline with Fe⁺⁺⁺ salts. The complex has a pressor action almost as strong as that of adrenaline itself. H. BL.

Diagnosis and treatment of adrenal deficiency. F. G. ALVÁREZ, O. ORIAS, and J. B. S. GALLARDO (Schweiz. med. Wschr., 1940, 70, 271—275).—A review. A. S.

Fulminating meningococæmia with bilateral adrenal hæmorrhage (Waterhouse-Friedrichsen syndrome). J. A. DANCIGER (J. Pediat., 1940, 16, 495—499).—A case report with review of the literature. C. J. C. B.

Insulin hypoglycæmia and adrenaline output from adrenal glands. J. M. ROGOFF and E. N. NIXON (Proc. Soc. Exp. Biol. Med., 1940, 43, 347—349).—In hypoglycæmia adrenaline output, determined by the Stewart and Rogoff method, was not significantly altered, and the rate of a denervated heart became increased in the absence of both adrenals. V. J. W.

Effect of sodium chloride and deoxycorticosterone on body weight and carbohydrate stores of adrenalectomised rats. E. ANDERSON and V. V. HERRING (Proc. Soc. Exp. Biol. Med., 1940, 43, 363—366).—Adrenalectomised rats provided with drinking water containing 1% NaCl gained wt. and stored glucose as well as if they received 0.5 mg. of deoxycorticosterone daily, and as well as normal rats. V. J. W.

Effects of adrenalectomy on blood count of rat. A. J. DALTON and G. MASSON (Proc. Soc. Exp. Biol. Med., 1940, 43, 370—372).—Rats were maintained for 3 days on cortin following operation. When this was discontinued there was an immediate increase in red cells. Large lymphocytes, small lymphocytes, and neutrophils only increased in 24 hr. before death. V. J. W.

Lack of androgenic activity of deoxycorticosterone acetate. R. R. GREENE and M. W. BURRILL (Proc. Soc. Exp. Biol. Med., 1940, 43, 382—384).—4 mg. daily failed to prevent prostatic atrophy in castrated rats. V. J. W.

Prevention of histamine and surgical shock by adrenal cortical hormone and saline. D. PERLA, D. G. FREIMAN, M. SANDBERG, and S. S. GREENBERG (Proc. Soc. Exp. Biol. Med., 1940, 43, 397—404).—Rats and mice survived lethal doses of histamine if they received intraperitoneal saline, or adrenal cortical extract, or preferably both, either before or after the histamine. NaCl by mouth, with deoxycorticosterone acetate intramuscularly, was found to protect human subjects against shock in severe operations. V. J. W.

Blood changes in adrenal insufficiency. O. RIML (Arch. exp. Path. Pharm., 1940, 194, 284—295).—Dialysates of autolysed rabbit's liver and

muscle are injected intraperitoneally into guinea-pigs; the adrenals become hypertrophied and hyperæmic. Administration of cortical hormone partly prevents the development of these symptoms.

H. BL.

Action of thyroxine on pituitary in rats. A. NEUHAUS (Endokrinol., 1939, 22, 90—112).—Repeated injections of thyroxine (total dose 14.5 mg.) into male rats produce degenerative changes in the chromophils of the pituitary; the eosinophils are small, pyknotic, and lose their granules. Similar changes were found in the basophils. The cells of the pars intermedia are very small.

A. S.

Insulin inactivation in blood in various diseases. H. KOHL, W. RÖSSEL, and F. SCHIPPER (Arch. exp. Path. Pharm., 1940, 194, 461—472).—Blood from patients with carcinoma, hypertension, pulmonary tuberculosis, or diseases of the kidney or thyroid inactivates insulin at the same rate as normal blood. Inactivation is slower in the blood of patients with cirrhosis of the liver.

H. BL.

Insulin sensitivity of cats with hypothalamic lesions and cats with cervical cord section. J. R. BROBECK (J. Lab. clin. Med., 1940, 25, 725).—Following subcutaneous injection of insulin in normal cats, hypoglycæmia was more prolonged and more marked than after intravenous injection. Normal fasting blood-sugars and normal insulin reactions were noted in many cats with lesions in the hypothalamus. Insulin hypersensitivity was observed in 4 cats with lesions in the medial part of the anterior tubular portion of the hypothalamus. Spinal cats recovered as well as normal cats from 0.5 unit of insulin per kg. body-wt. injected intravenously.

C. J. C. B.

Level of [blood-]glucose and non-fermentable reducing substances in therapeutic insulin shock. W. F. FORBES and Y. CZARSKI (J. Lab. clin. Med., 1940, 25, 679—683).—In therapeutic insulin shock in schizophrenic patients the blood-glucose may fall below 10 mg.-% and remain there for periods up to an hr. without doing obvious harm. The non-fermentable reducing substances do not change in amount as the blood-sugar falls.

C. J. C. B.

Influence of œstrogen on insulin requirement of the diabetic. A. R. SPIEGELMAN (Proc. Soc. Exp. Biol. Med., 1940, 43, 307—308).—10,000 i.u. of œstrogen given twice a week to diabetic women decreased the insulin need of pre-menopausal women by 63% and of post-menopausal women by 41%.

V. J. W.

Possible physiological significance of zinc content of insulin. O. HECHTER, R. LEVINE, and S. SOSKIN (Proc. Soc. Exp. Biol. Med., 1940, 43, 361—363).—The inhibitory action of cryst. insulin on succino-oxidase is due to its Zn content, and is exerted equally by ZnSO₄.

V. J. W.

Changes in [islets of] pancreas of pigeons during pregnancy. H. SCHULZ (Endokrinol., 1940, 22, 319—330).—Female pigeons had an increased no. and size of islet cells during the breeding season; the connective tissue capsule of the islets was stronger than usual in both sexes. The islets con-

tained dark and light types of cells. During moulting, the cells in both sexes were small with degenerative changes in the nuclei. Lymph channels and follicles were found in male and female pigeons.

A. S.

(xii) REPRODUCTION.

Sperm agglutination in keyhole limpet and sea-urchin. A. TYLER and S. W. FOX (Science, 1939, 90, 516—517).—In both limpet and sea-urchin, the highest titre of agglutinin is obtained when the jelly around the eggs is dissolved by acid. The agglutinins are stable in isotonic NaCl but not in distilled water, and are inactivated in NaCl with p_H above 2 but below 11.

W. F. F.

Resistance of sperm of *Rana pipiens* to hydrostatic compression; effect on embryonic development. D. A. MARSLAND and R. RUGH (Proc. Soc. Exp. Biol. Med., 1940, 43, 141—143).—No effect was produced by a pressure of 544 atm. for 3 hr.

V. J. W.

Comparative study of metabolic effects of testosterone propionate in normal men and women and in eunuchoidism. A. T. KENYON, K. KNOWLTON, I. SANDIFORD, F. C. KOCH, and G. LOTWIN (Endocrinol., 1940, 26, 26—45).—Daily injections of 25—50 mg. of testosterone propionate caused a decrease of urinary N, Na, K, Cl, and inorg. P together with a gain in body-wt. Results were similar in a eunuchoid and controls but the eunuchoid retained twice as much N.

V. J. W.

Continued use of male sex hormone over long periods. J. EIDELBERG and E. A. ORNSTEIN (Endocrinol., 1940, 26, 46—53).—Administration of 50—75 mg. of testosterone propionate per week to eunuchoid patients for several years has produced no undesirable results.

V. J. W.

Inhibition of lactation by testosterone propionate. J. S. BELL and S. SOLOMON (Endocrinol., 1940, 26, 236—240).—Injection of 3 doses of 25 mg. each at 12-hr. intervals to women post partum caused complete inhibition of lactation in 58% and partial inhibition in 40% of 108 cases.

V. J. W.

Mode of action of testosterone propionate on female genital tract. J. W. HUFFMANN and L. H. BOS (Endocrinol., 1940, 26, 259—263).—Pregnant mare serum extract produces similar responses in the rabbit ovary before and after administration of 2.5 mg. of testosterone propionate every other day for 30 or more days.

V. J. W.

Effects of testosterone propionate on epiphyseal closure, sodium and chloride balance, and on sperm counts. E. P. McCULLAGH and F. J. MCGURL (Endocrinol., 1940, 26, 377—384).—Doses of over 60 mg. weekly caused increased epiphyseal age in several eunuchoid cases. 50 mg. daily caused increase of wt. with Na and Cl⁻ retention, and marked decrease in spermatozoa count.

V. J. W.

Effect of testosterone on monkey uterus, and administration of steroidal hormones as Deanesly-Parkes pellets. C. G. HARTMAN (Endocrinol., 1940, 26, 449—471).—Administration to monkeys of 10—50 mg. per day of testosterone for

13—19 days did not produce a progestational endometrium, nor was it antagonistic to oestrogen or progesterone when given simultaneously. On the sex skin its effect was oestrogenic. Reported effects of pellet-implantation are confirmed. V. J. W.

Effect of male sex hormone on developing ovaries of young fowls. E. H. HERRICK and C. H. LOCKHART (Endocrinol., 1940, 26, 508—510).—Total dosage of 2.5 mg. of testosterone propionate caused a slight decrease in ovarian wt. V. J. W.

Precocious copulatory activity induced in male rats by subcutaneous injections of testosterone propionate. C. P. STONE (Endocrinol., 1940, 26, 511—515).—Daily injections of 0.62 mg. advanced the age of first copulation by approx. 20 days. V. J. W.

Pharmacodynamic effects of testosterone propionate on contractions of rabbit oviduct determined by CO₂ insufflation. I. C. RUBIN and A. M. DAVIDS (Endocrinol., 1940, 26, 523—525).—Total dosage of 200 mg. caused reduction of muscle tone so that the utero-tubal junction admitted CO₂ at 15—30 mm. Hg instead of 60—130 mm., and intratubal pressure oscillated between 5 and 20 mm. Hg instead of between 40 and 60 mm. The effects were reversed by injections totalling 1000—10,000 i.u. of oestrogen. V. J. W.

Variations in effectiveness of percutaneously applied androgens in rat. D. NELSON, R. R. GREENE, and J. A. WELLS (Endocrinol., 1940, 26, 651—655).—Testosterone and its propionate are more effective in alcohol than in ointment. Testosterone given subcutaneously in oil is intermediate in effect between alcoholic solution and ointment given percutaneously. The propionate when given subcutaneously in oil is more effective than percutaneously in alcohol. V. J. W.

Effect of inhibitory hormone of testes on pituitary, thyroid, and adrenal of adult male rat. B. VIDGOFF and H. VEHRIS (Endocrinol., 1940, 26, 656—661; cf. A., 1939, III, 1057).—Extract of bull testis causes decrease in wt. of pituitary and an increase in size of basophil cells. The zonæ fasciculata and reticularis of the adrenals are hypertrophied and the thyroid shows larger acini and paler staining colloid. V. J. W.

Effects of testosterone propionate on ovariectomised mature rat. M. MAZER and C. MAZER (Endocrinol., 1940, 26, 662—666).—2 mg. were given daily to rats in which oestrus had been brought about by 2 doses of 2 r.u. of oestradiol. It caused progressive uterine growth, evident in 3 days, and a pregnancy-like endometrium, evident on the 8th day but progressing until the 15th, and later becoming cystic. Vaginal cornification was absent but the preputial glands were greatly enlarged. V. J. W.

Bioassays for urinary androgens in men with endocrine disturbances. E. P. McCULLAGH and H. V. LILGA (Endocrinol., 1940, 26, 753—764).—Urine was extracted by acid hydrolysis and assayed on capons. Results are tabulated for cases of pituitary tumour, hypogonadism, and Addison's disease as well as for normal controls. V. J. W.

Biological indicators of androgenic activity. D. NELSON and R. R. GREENE (Endocrinol., 1940, 26, 824—826).—The ventral prostate of the rat is the most sensitive indicator for androgen assay. V. J. W.

Inhibition of pelvic changes of pregnancy in mice by testosterone propionate. W. U. GARDNER and J. VAN HEUVERS WYN (Endocrinol., 1940, 26, 833—836).—Injection of 4.5 mg. (1.25 mg. every 2 days) caused inhibition of the pubic separation which took place in controls. Smaller doses had less effect. V. J. W.

Effect of testosterone propionate on black-crowned night heron. G. K. NOBLE and M. WURM (Endocrinol., 1940, 26, 837—850).—Testosterone propionate causes the appearance of breeding plumage and male behaviour in birds of both sexes as well as an enlargement of the oviduct in the spayed hen. Oestrogens do not bring about these changes but cause hyperplasia of oviduct mucosa. V. J. W.

Androgenic effects from percutaneous administration in castrate rats. B. L. SCOTT (Proc. Soc. Exp. Biol. Med., 1940, 43, 216—219).—By rubbing into the skin in ointments, potencies were determined to be in descending order methyltestosterone, testosterone, and testosterone propionate. V. J. W.

Effect of testosterone propionate on genital tract of adrenalectomised and ovariectomised immature female rats. I. T. NATHANSON and R. W. RAWSON (Proc. Soc. Exp. Biol. Med., 1939, 42, 482—484).—5 mg. of testosterone caused in these animals the same results as in rats not ovariectomised, viz., uterine enlargement and vaginal cornification, with follicle stimulation when the ovaries were present (cf. A., 1939, III, 268). V. J. W.

Androgen production in normal intact and castrate immature female rats. M. W. BURRILL and R. R. GREENE (Proc. Soc. Exp. Biol. Med., 1939, 42, 764—766).—Ventral prostates from male rats implanted in 10-day-old females remained functionally negative, although the ventral prostates occasionally found in the same females, whether castrated or intact, showed some signs of activity. V. J. W.

Effect of testosterone propionate on creatinuria. J. R. COFFMAN and F. C. KOCH (Proc. Soc. Exp. Biol. Med., 1939, 42, 779—782).—Castration does not affect creatine excretion, but creatinuria following creatine feeding is greatly reduced by daily injection of 0.9 mg. of testosterone propionate. V. J. W.

Effects of testosterone propionate on the female viviparous teleost *Xiphophorus helleri*. F. M. BALDWIN and H. S. GOLDIN (Proc. Soc. Exp. Biol. Med., 1939, 42, 813—819).—Administration of 0.5 mg. weekly for 19 weeks to female fish caused external masculinisation in all cases, and in 50% either atrophy of the ovary or some phase of spermatogenesis. V. J. W.

Masculinisation of adult female rabbit following injection of testosterone propionate. C. K. HU and C. N. FRAZIER (Proc. Soc. Exp. Biol. Med., 1939, 42, 820—823).—Injection of 1 mg. per day for 21—32 days caused marked enlargement of clitoris, partial fusion of labia, and male behaviour in 3 female

rabbits. Dewlap and nipples were not affected. Ovariectomy did not modify the result. V. J. W.

Direct gynæcogenic and indirect œstrogenic action of testosterone propionate in female rats. R. L. NOBLE (J. Endocrinol., Lond., 1939, 1, 184—200).—Testosterone propionate was injected daily (generally 2 mg. per day) into adult rats, either hypophysectomised or ovariectomised or both. Immature rats, intact or hypophysectomised, were similarly treated. In the ovariectomised adults the vagina was mucified, the uterus, mammae (ducts and acini), and nipples hypertrophied. In the hypophysectomised and ovariectomised animals the changes were the same except that the mammary ducts and acini were not stimulated. In the hypophysectomised adults the injections caused stratification of the vaginal epithelium, followed by the appearance of an œstrous smear, the nipples were enlarged, but the glandular parts of the mammae unaffected. These changes were elicited even if the injections were commenced only 3 weeks after operation. In intact immature rats testosterone produced vaginal opening with an œstrous smear on that day but not in the succeeding period, and follicular stimulation. The vaginal epithelium was mucified. These effects were not produced by progesterone (1 mg. daily). In the hypophysectomised immatures the vaginal changes were the same but there was no follicular stimulation. Progesterone had no demonstrable effect nor did it alter the effects of testosterone when injected simultaneously. Following the injection of pregnant mare serum corpora lutea were present in the ovaries and testosterone treatment resulted in stratification of the vaginal wall. The appearance of the vagina and uterus in controls injected with pregnant mare serum alone gave no evidence of œstrogen secretion. In all types of rat injected there was stimulation of the preputial glands and lining of its groove with thick, stratified and keratinised epithelium, stimulation of the uterus, nipples, clitoris, and female prostate. These actions are direct (androgenic or gynæcogenic). The direct effect on the vagina (mucification) is modified in the presence of corpora lutea to a stratification (indirect œstrogenic action). P. C. W.

Morphological changes in female mice receiving large doses of testosterone. H. SELYE (J. Endocrinol., Lond., 1939, 1, 208—215).—Adult female mice were injected with testosterone (5 mg. daily for 20 days). There was a decrease in the size of the ovaries, disappearance of the normal corpora lutea, with follicle stimulation producing follicular cysts and occasional corpus luteum cysts. The adrenal cortex atrophied together with the pituitary, the latter showing no degranulation of the chromophil cells. In the kidneys there was hypertrophy of the proximal and distal convoluted tubules and of the parietal lamina of Bowman's capsules. The liver and spleen showed no significant changes. P. C. W.

Reproductive system of alligator. V. **Effects of injections of testosterone propionate in immature alligators.** T. R. FORBES (Anat. Rec., 1939, 75, 51—57).—The oviducts of injected females showed uniform development. Penis and clitoris

were markedly hypertrophied. The mesonephros and mesonephric ducts were not affected in either sex. W. F. H.

Testis hormone secretion in rat under conditions of vasectomy or isolation. H. POYNTER (Anat. Rec., 1939, 74, 355—379).—Vasectomised animals at ages from 15 days to 15 months showed no degeneration of the germinal epithelium or hypertrophy of the interstitial cells. No acceleration or inhibition of spermatogenesis occurred and no significant variation in the wt. of accessory reproductive organs. Isolation from the female, from weaning until 11 months old, produced no significant differences in the wt. or histological appearance of the testes and accessory reproductive organs. W. F. H.

Effect of antenatal androgens on sexual development of female rats. R. R. GREENE, M. W. BURRILL, and A. C. IVY (Amer. J. Anat., 1939, 65, 415—469).—Various degrees of masculinisation of female offspring resulted from the administration of testosterone, testosterone propionate, androsterone, and androstenedione to pregnant rats. The degree of masculinisation was related to dosage and the period of pregnancy. Oviducts, uteri, and an upper vagina combined with epididymides, vasa deferentia, seminal vesicles, prostates, bulbourethral glands, and a penis were found in well modified animals. Theories on the influence of sex hormones on embryonic sexual development are discussed. W. F. H.

Excretion of androgens by eunuchs: isolation of 17-ketosteroids from urine. N. H. CALLOW and R. K. CALLOW (Biochem. J., 1940, 34, 276—279).—The ketonic fraction of a eunuch's urine contained approx. 0.5, 0.9, and 2.0 mg. per l. of androsterone, æticholan-3(α)-ol-17-one, and *trans*-dehydroandrosterone respectively. The amount of the last-named was considerably higher than in normal urine. None of the compounds is of purely gonadal origin and the results are consistent with the assumption that *trans*-dehydroandrosterone is derived from the adrenal cortex, which may be more active in eunuchs than in normal men. J. N. A.

Effect of testosterone on serum-lipins in schizophrenia. L. O. RANDALL (J. Biol. Chem., 1940, 133, 137—140).—Injections of testosterone propionate dissolved in sesamé oil into schizophrenic patients over a period of 3 weeks produced a continuous rise in phospholipin, total, free, and ester-cholesterol, neutral fat, and total serum-lipin. This was followed by a decrease to the initial levels when injections ceased. No changes occurred in controls receiving sesamé oil only. A. L.

Test for androgen activity. M. T. REGNIER (J. Pharm. Chim., 1940, [ix], 1, 147—155).—Young *Lebistes reticulatus* kept in aquarium water at 26° containing testosterone propionate (1.4 mg. per l.) develop an elongated anal fin (gonopod) in 4 days. J. L. D.

Metabolism of testosterone to androsterone. R. I. DORFMAN and J. B. HAMILTON (J. Biol. Chem., 1940, 133, 753—764).—Increased androsterone excretion in the urine follows injection of testosterone,

androsterone, *ætioallocholane-3(α):17-diol*, *ætioallocholane-3:17-dione*, and $\Delta^{4,5}$ -*ætiocholene-3:17-dione*. Methyltestosterone and dehydroisoandrosterone cause increased excretion of unidentified ketonic androgens. There are small variable increases in the non-ketonic androgens excreted. R. L. E.

Assay of male hormones with chicken test. M. DANBY (*Acta brev. neerl. Physiol.*, 1940, 10, 56—59).—Male sex hormones, in 0.1 c.c. of sesame oil, were applied to the comb of white Leghorn chickens from the 6th to the 16th day after birth. The wt. of the comb increases after administration of androsterone, testosterone, testosterone propionate, or dehydroandrosterone; bigger responses were obtained with larger doses of the hormones. Spontaneous comb growth is inhibited by œstrone; this effect is annulled by testosterone. Simultaneous administration of 2500 μ g. of œstrone and 15 μ g. of testosterone produces less increase in comb wt. than 15 μ g. of testosterone alone. Deoxycorticosterone acetate has no effect on the chicken comb. Colchicine (1000 μ g.) inhibits comb development. A. S.

Hyperæmia and male sex hormone. E. STEINACH and H. KUN (*Lancet.*, 1940, 238, 688—689).—Testosterone propionate induces hyperæmia of the scrotal region and descent of the testicles in infantile male rats. The hyperæmia also occurs after castration. Androsterone benzoate, œstradiol benzoate, and progesterone are ineffective. C. A. K.

Action of testosterone acetate on blood-sugar regulation. E. ZUNZ and J. LA BARRE (*Arch. int. Physiol.*, 1939, 49, 474—489).—Testosterone acetate in doses of 1 to 1.75 mg. per kg. body-wt. given intramuscularly raised the sugar of the carotid blood of chloralosed dogs and to a smaller extent that of non-anæsthetised dogs. Similar dosage lowers the blood-sugar of dogs with ligated adrenal vessels. Vagus or splanchnic nerve section did not alter these findings. Similar injection of testosterone acetate did not alter the blood-sugar of thyroidectomised dogs. In thyroidectomised dogs with ligated suprarenal vessels injection usually lowered the blood-sugar. Using the intestinal loop (rabbit) method, no increase of adrenaline in the adrenal venous blood was shown in dogs injected with testosterone acetate, in the 2 hr. following injection. It was not possible to determine whether the hypoglycæmia in dogs with ligated adrenal vessels was due to excess insulin secretion. W. Bv.

Protective action of testosterone against kidney-damaging effect of sublimate. H. SELYE (*Canad. Med. Assoc. J.*, 1940, 42, 173—174).—The degenerative changes which usually develop in the kidneys under the influence of sublimate intoxication are not observed in mice receiving testosterone in addition to such doses of sublimate as produce marked renal damage in otherwise untreated controls. Other androgens such as methyl testosterone, androstene-3:17-diol 17-acetate benzoate, dehydroisoandrosterone, and androstenedione have a similar effect, and their ability to enlarge the kidney runs roughly parallel with their androgenic action. C. J. C. B.

Clinical use of male sex hormone. W. O. THOMPSON and N. J. HECKEL (*J. Amer. Med. Assoc.*, 1939, 113, 2124—2128).—A lecture and discussion. C. A. K.

Treatment of benign prostatic hypertrophy with testosterone propionate. A. TRASOFF (*J. Lab. clin. Med.*, 1940, 25, 377—383).—27 ambulatory patients with severe symptoms as a result of prostatic hypertrophy were injected intramuscularly with testosterone propionate in doses of 5—10 mg. twice weekly for periods of 2—3 months. Of the 27 patients 23 were markedly improved, and 4 failed to respond. C. J. C. B.

Testosterone propionate and vasomotor phenomena. E. P. S. SCHAFER (*Lancet.*, 1940, 238, 161—164).—The injection of large doses, e.g., 50—100 mg., of testosterone propionate into men and women with normally functioning gonads produced skin flushes; the effect was inhibited by œstrogens. In castrate women spontaneous flushes were stopped by doses of 50—500 mg. The mechanism of these actions is discussed. C. A. K.

Respiration of human spermatozoa and their response to various gases and low temperatures. L. B. SHETTLES (*Amer. J. Physiol.*, 1940, 128, 408—415).—Rate of respiration of spermatozoa varies inversely with the age of the specimen and directly with the no. of cells per unit vol. R.Q. varies inversely with age of the specimen and directly with rate of O₂ consumption. Spermatozoa remain active for several hr. in pure N₂, N₂O, He, and in air reduced to very low pressure. In He and in O₂ a marked increase in activity occurs. CO₂ produces complete immobility. Motility is restored when CO₂ is replaced by air, N₂, or O₂ as soon as all movement ceases. Ether and alcohol vapours also produce quiescence; spermatozoa cannot be revived if exposed for more than a few min. Spermatozoa which do not survive freezing are not fragmented, and those revived from very low temp. remain active for several hr. M. W. G.

Changes in testes of rats with chronic iodine poisoning. W. EGER (*Frankf. Z. Path.*, 1938, 52, 355—362).—Daily subcutaneous injections of 10—40 mg. of KI into 11 rats caused atrophic changes in the testes of one animal only. Similar injections of 3 mg. of I together with 6 mg. of KI into 11 rats caused in all cases widespread cutaneous abscesses and necroses, and an inhibition of spermatogenesis with atrophy of the testes in 4 animals. These testicular changes are probably not due to a sp. effect of I on the testes, but to a deterioration in the general condition of the animals. H. W. K.

Experimental testicular ascent as produced in marsupial (*Trichosurus vulpecula*). A. BOLLIGER and A. CARRODUS (*Austral. J. Surg.*, 1939, 9, 155—163).—Testicles tend to leave the scrotum and ascend to the abdominal ring if œstrogenic material is given to sexually immature opossums. The process is rapid in the 5½-month-old animal, slower in older animals, and then requires larger or lethal doses. After ascent the scrotum atrophies and a rudimentary

pouch appears on the abdomen. Six animals were used in the experiments. F. W. W.

Functional capacity of undescended testis. C. E. REA (Arch. Surg., Chicago, 1939, 38, 1054—1107).—A review with over 180 references, including a study of cryptorchidism and the effects of orchidopexy in dogs. The val. of orchidopexy in promoting the development of the undescended testis has been proved clinically and experimentally. (5 photomicrographs.) F. S.

Study of male castrate. L. FEINER and T. ROTHMAN (J. Amer. Med. Assoc., 1939, 113, 2144—2146).—A 53-year-old man had been surgically castrated 30 years previously. There was a feminine distribution of fat and pubic hair, the penis was normal, and sexual libido and prowess were unimpaired. There was no urinary excretion of testosterone or androsterone. Migraine attacks developed shortly after castration. C. A. K.

Endocrine therapy of cryptorchidism. H. J. KRAETSCH (Münch. med. Wschr., 1939, 86, 1638—1640).—Surgical treatment of cryptorchidism at the age of 4—6 years was successful in 9 out of 24 boys. 10 children with operative failure were treated with intramuscular injections of chorionic gonadotrophin (up to 3000 r.u.) at the age of 8—10 years. Descent of the testes was achieved in 6 boys. A. S.

Effect of pregnancy urine on seminiferous tubules in rat. J. H. GAARENSTROOM (Acta brev. neerl. Physiol., 1940, 10, 14—18).—Purified extracts of human pregnancy urine (pregnyl) were given in daily doses of 5 i.u. over a period of 14 days to normal immature and hypophysectomised immature and mature rats. Growth of seminiferous tubules in normal immature rats was stimulated, and the stimulating effect of gonadotrophic pituitary hormone was potentiated, by pregnyl; testosterone propionate had no effect on the tubules and did not intensify the action of gonadotrophic hormone. In mature and immature hypophysectomised rats, pregnyl or testosterone propionate maintained the tubules but did not stimulate growth. In immature hypophysectomised rats, pregnyl potentiated the stimulating effect of gonadotrophic anterior pituitary hormone. A. S.

Recovery of testes after androgen-induced inhibition. R. R. GREENE and M. W. BURRILL (Endocrinol., 1940, 26, 516—518).—0.1 mg. daily of testosterone propionate given to rats from 11th to 30th day of life inhibited testis growth. At the age of 7 months the testes were normal. V. J. W.

Spermatogenesis in rats. E. CUTULY and E. C. CUTULY (Endocrinol., 1940, 26, 503—307).—3 mg. daily of testosterone propionate in normal 29-day-old rats caused atrophy of interstitial cells but did not modify spermatogenesis. In rats hypophysectomised at 34 days this dosage induced spermatogenesis, but not in those hypophysectomised at 29 days. In rats hypophysectomised between 47 and 177 days it maintained testis wt. at the normal level. Similar results were obtained with dehydroandrosterone acetate. V. J. W.

Endoepithelial glands of prostate. T. HUZINO (Keijō J. Med., 1939, 10, 99—101).—In the prostate of

a 34-year-old man numerous endoepithelial glands were found within the walls of the alveoli. They were situated exclusively within epithelial ridges of the alveoli. They are spherical or oval cysts which do not communicate with the main lumen of the prostate. Their mode of origin is discussed. F. J. A.

Masculinising effect of some gonadotrophic hormones on pullets compared with spontaneous ovariogenic virilism in hens. U. U. UOTILA (Anat. Rec., 1939, 74, 165—187).—Follicle-stimulating hormone produces proliferation of ovarian medullary cord cells and to a smaller degree of interstitial cells with masculinisation of comb and wattles in pullets. Hypertrophy of interfollicular cells and increase in the wt. of the oviducts were also observed. Luteinising hormone stimulates the medullary tubules and causes masculinisation. Pregnant mare serum hormone produces medullary cord and interstitial cell hypertrophy with slight masculinisation. Pregnancy urine hormone stimulates interstitial cells slightly. Androsterone causes masculinisation and hypertrophy of ovaries. Estrin in small doses produces marked atrophy of ovaries, increase in wt. of oviducts, and slight inhibition of comb growth. Marked similarities between experimental results and spontaneous masculinising ovarian tumours in hens are noted. The results indicate a passive participation of the adrenal glands in experimental masculinisation. W. F. H.

Effect of irradiation of testes by short and long waves. M. CAVAZZINI (Boll. Soc. ital. Biol. sperim., 1939, 14, 718—720).—Histological changes due to irradiation of the testes (rabbit) by short (λ 6 m.) or long waves (λ 300—500 m.) are described. F. O. H.

Preservation of seminiferous epithelium and fertility in male rats on vitamin-E-low rations supplemented by α -tocopherol. H. M. EVANS, G. A. EMERSON, and O. H. EMERSON (Anat. Rec., 1939, 74, 257—267).—Rats on a standardised vitamin-E-low diet were protected against extensive degeneration of seminiferous epithelium by daily administration of 0.75 mg. of α -tocopherol. The same protection was afforded by daily administration of 80 mg. of wheat-germ oil. Normality of the accessory organs of reproduction was found in the -E-low group but slight subnormality occurred in the α -tocopherol and wheat-germ oil group. W. F. H.

Total nitrogen content of *Arbacia* egg. R. BALLENTINE (J. Cell. Comp. Physiol., 1940, 15, 121—122).—N content per g., per c.c., and per 10^6 cells is recorded. V. J. W.

Water-permeability of vitelline membrane of hen's egg. A. ORRÙ (Arch. Sci. biol., Napoli, 1940, 26, 32—50; cf. A., 1940, III, 125).—At const. salt concn., the permeability to water is affected by both H⁺ and OH⁻. Min. permeability occurs at p_H 4.6—5.0. At const. p_H , the permeability varies with the salt concn. S. O.

Population physiology. IX. Effect of imago population density on duration of larval and pupal stages of *Tribolium confusum*. Duval. T. PARK, E. V. MILLER, and C. Z. LUTHERMAN (Ecology, 1939, 20, 365—373).—In mixed populations

of imagoes with larvæ and pupæ of *T. confusum* (flour beetle) a high imago density increases the duration of the larval period, retards the growth of the larvæ, but is without effect on the duration of the pupal period. L. G. G. W.

Temperature-tolerance and rates of development in eggs of amphibia. J. A. MOORE (Ecology, 1939, 20, 459—478).—Range of temp.-tolerance exhibited by various species of frogs is similar to the environmental temp. to which the eggs are subjected in nature. In all the species the time taken by the embryo to reach a given morphological stage is reduced as the temp. rises from 10° to a max. of 23—33°. The temp. at which breeding occurs affects the temp.-tolerance of the eggs. Frogs breeding when the temp. is low have lower normal and max. temp. and they develop more rapidly than frogs breeding at higher temp. The effect of temp. on development is less in northern than in southern species of frogs.

L. G. G. W.

Chemical determinants of sexual maturation. V. DANTCHAKOFF (Compt. rend., 1940, 210, 270—272).—Frequent subcutaneous injections of an aq. ovarian extract into newborn rats or guinea-pigs hasten the onset of ovulation and conception.

J. L. D.

Respiratory pigment from eggs of marine worm. N. H. HOROWITZ (Proc. Nat. Acad. Sci., 1940, 26, 161—163).—Eggs of *Urechis caupo* contain a pigment *urechrome* which exists in yellow (oxidised) and pink (reduced) forms. Interconversion of the two forms is very easy, and the pigment is probably involved in cellular respiration. The yellow form is sol. in water whilst the pink form is only slightly sol. in acid solution and although readily sol. at neutral and alkaline p_H it is immediately oxidised to the yellow form if O_2 is present. Strong alkali rapidly destroys the pigment. The redox potential E_0' at p_H 7.39 is +0.163 v. (250°). E_0' decreases by 0.059 v. per unit increase of p_H over the p_H range 5—10. J. N. A.

Lipin content of blood, liver, and yolk sac of newly hatched chick and changes occurring in these tissues during the first month of life. C. ENTENMAN, F. W. LORENZ, and I. L. CHAIKOFF (J. Biol. Chem., 1940, 133, 231—241).—The chick on hatching has large stores of lipins in the liver, blood, and yolk sac. The blood contains up to 1% of total lipins, the liver 7.3% of cholesterol (90% as esters) and 9.0% of fatty acids, and the yolk sac 1.3% of cholesterol, 12.0% of fatty acids, and 1.6% of phospholipin. The lipin content of the blood and liver rapidly decreases 3 days after hatching. Triglycerides disappear most rapidly from the yolk sac, resulting in a relative increase in cholesteryl esters, and the whole contents are completely absorbed in 5 days.

P. G. M.

Relation between manganese, sunlight, and winter hatchability of hen's eggs. J. B. CHRISTIANSEN, J. G. HALPIN, and E. P. HART (Science, 1939, 90, 356—357).—The Mn requirement of laying hens is increased in the absence of sunlight. W. F. F.

Localisation of pentosenucleic acids during development of amphibians. J. BRACHET (Compt. rend. Soc. Biol., 1940, 133, 90—91).—There is a

decrease in pentosenucleic acids during oogenesis followed by an increase during segmentation.

H. G. R.

Individual hen and breed difference in egg weight losses during incubation. A. B. GODFREY and M. W. OLSEN (Poultry Sci., 1937, 16, 216—218).—Loss of wt. during incubation was greater in Rhode Island than in White Leghorn eggs and was similar for fertile and infertile eggs. The loss varied less among eggs from an individual than among those of different birds.

A. G. P.

Rhythmical impedance changes in trout's egg. (LORD) ROTHSCHILD (Nature, 1940, 145, 744).—The effect is not associated with the cytochrome system, but suitable concns. of phenylurethane abolish it. The curves relating the resistive and capacitative components are approx. sinusoidal.

E. R. S.

Influence of spermathecal stimulation on physiological activities of *Anopheles subpictus*. D. N. ROY (Nature, 1940, 145, 747).—The presence of sperm in the theca is necessary for egg formation in *A. subpictus*, but not in *stephensi* or *annularis*.

E. R. S.

Parthenogenetic activation of rabbit eggs. G. PINCUS and H. SHAPIRO (Proc. Nat. Acad. Sci., 1940, 26, 163—165).—Activation of unfertilised rabbit ova occurs when they are maintained at 17—21° for 2—3.5 hr. or 6° for 10—85 min., or treated with hypotonic rabbit serum, or hypotonic or hypertonic balanced salt solutions, the most effective treatment being cooling to 6° for 10—30 min., which causes approx. 50% activation. After cooling *in situ* the right Fallopian tube containing freshly ovulated ova to 0° for 5—20 min. there is practically no evidence of activation.

J. N. A.

Living tubal ovum of horse. E. C. AMOROSO, W. F. B. GRIFFITHS, and W. J. HAMILTON (Vet. Rec., 1939, 51, 168).—Photographs and measurements are given before and after fixation. Zona pellucida thickness is 13.2 and 4.3 μ ., and vols. are 1.21 and $0.69 \times 10^6 \mu^3$.

E. R. S.

Living tubal ova of goat. E. C. AMOROSO, W. F. B. GRIFFITHS, and W. J. HAMILTON (Vet. Rec., 1939, 51, 1009—1010).—An uncleaved, a two-celled, and two four-celled goat ova are photographed and measurements given of each type. Zona thicknesses are 14.0, 14.5, 9.25 μ .; vol. of the zonal cavities was $1.6 \times 10^6 \mu^3$ in all cases.

E. R. S.

Determination of ovulation by Samuel's method. P. LACHENICHT (Münch. med. Wschr., 1939, 86, 1804—1807).—The method is useless.

A. S.

Value of Campbell staining method with benzidine [for study of ovaries]. E. SOTRIADOU (Acta brev. neerl. Physiol., 1940, 10, 19—20).—3 types of vascularisation were found in the rat's ovary, using Campbell's benzidine staining technique. There are diffuse capillaries in the stroma; in the adult rat, the capillaries form concentric circles in the theca of the follicles; during luteinisation, capillaries penetrate radially into the corpus luteum within the first 24 hr. of its development.

A. S.

Influence of temperature on internal secretory activity of transplanted ovaries in female rat. A. K. LAMPTON and A. J. MILLER (Endocrinol., 1940, 26, 519—522).—The ovaries were removed and transplanted subcutaneously into the ears. 55—122 days later the animals were killed. In those which had been kept at 33° the genital tracts were normal. In those kept at 22° they were atrophied. V. J. W.

Composition of fluid from ovarian cysts. G. STOLFI (Boll. Soc. ital. Biol. sperim., 1939, 14, 657—659).—Data for contents of glucose, protein, NaCl, P, and residual N of the fluids and corresponding blood samples are tabulated and discussed.

F. O. H.

Relation between corpus allatum and ovaries in adult flies (*Muscidae*). E. THOMSEN (Nature, 1940, 145, 28—29).—Maturation of ovaries in adult female flies is arrested by extirpation of the corpus allatum. Removal of the ovaries is followed by enlargement of the corpus allatum. W. F. F.

Corpus luteum in Centetidae. F. STRAUS (Biomorphosis, 1939, 1, 489—544).—The development of the corpus luteum in *Ericulus* and *Hemicentetes* differs from that in all other Eutheria. There is no folding of the granulosa but a fungiform protrusion develops from it. No cavity is formed in the granulosa either during maturation of the follicles or during ovulation. W. F. H.

Histology of ovaries of rabbits irradiated with short and long wave-lengths. U. CASABONA and M. CAVAZZINI (Boll. Soc. ital. Biol. sperim., 1939, 14, 722—724).—Irradiation with λ 300—500 m. produces greater congestion and degree of follicular maturation than does irradiation with λ 6 m. F. O. H.

Effect of progesterone on mouse ovary as influenced by gestation. H. SELYE (Anat. Rec., 1939, 75, 59—73).—Daily administration of 1 mg. of progesterone for 5 days suffices to cause corpus luteum involution and marked ovarian atrophy in the adult mouse. In pregnant mice these changes are not appreciable even with larger doses. Hypophysectomy causes rapid involution of corpora lutea in non-pregnant mice but is without effect on the corpora lutea of gestation. It is suggested that ovarian atrophy caused by progesterone is due to inhibition of the gonadotrophic function of the hypophysis and that the gonadotrophic hormone of the placenta which maintains the corpora lutea of gestation is not inhibited by progesterone.

W. F. H.

Factors influencing ovarian response of normal and hypophysectomised rat to pregnant mare serum. R. I. PENCHARZ (Proc. Soc. Exp. Biol. Med., 1939, 42, 525—529).—2 r.u. daily for 3 days are twice as effective for the ovary when given intraperitoneally as subcutaneously, and twice as effective for normal rats as for hypophysectomised. If 2 r.u. are given for 12 days, intraperitoneal administration is 3 times as effective as subcutaneous in the normal and 11 times in the hypophysectomised, but if the 24 units are given in 4 days both routes are equally effective. V. J. W.

Influence of œstriol, œstradiol, and progesterone on secretion of gonadotrophic hormones in parabiotic rats. C. BIDDULPH, R. K. MEYER, and L. G. GUMBRECK (Endocrinol., 1940, 26, 280—284).—In 31—41-day-old female-female pairs, 0.025 μ g. of œstradiol, 1.5 μ g. of œstriol, or 1 mg. of progesterone per day is required to prevent hypersecretion of gonadotrophic hormone following castration. In female-male pairs 0.15 μ g. of œstradiol or 10 μ g. of œstriol is needed to prevent ovarian stimulation after castration of the male partner. Œstrone has been previously shown to be intermediate in potency, and this order is the same as that of their ability to cause vaginal cornification. V. J. W.

Comparative action of international standard gonadotrophic substance on normal infantile male and female rats. J. L. SEALEY and C. W. SONDERN (Endocrinol., 1940, 26, 813—820).—Tables are given to show changes in body-wt. and sex organs produced by various doses. V. J. W.

Action of keten on gonadotrophic hormones. C. H. LI, M. E. SIMPSON, and H. M. EVANS (J. Biol. Chem., 1939, 131, 259—266).—The physiological activity of the pituitary follicle- and interstitial cell-stimulating hormones and of the gonadotrophic hormone of pregnant mare serum is dependent on free NH₂ groups, whereas that of human chorionic gonadotrophin depends on free phenolic OH.

H. G. R.

Action of sex hormones in disturbances of peripheral circulation. E. FRÖHLICH (Münch. med. Wschr., 1939, 86, 1771—1773).—Satisfactory results in male and female patients suffering from intermittent claudication and Raynaud's disease were obtained with intramuscular injections of œstrogen (progynon oleosum); repeated daily dose 10,000 units, followed by 2—3 injections of 50,000 units. A. S.

Effect of pituitary secretion of castrated rats on gonads of male rats joined in parabiosis. I. T. ZWECKER (Amer. J. Physiol., 1939, 128, 169—174).—Normal male rats united in parabiosis with gonadectomised male or female rats show no significant enlargement of the testes, but a marked enlargement of prostate and seminal vesicles was observed. The castrate rat's pituitary secretes a hormone which stimulates follicles in the female and acts in the male solely on the interstitial cells, not on the germinal epithelium. The adrenal cortex plays no rôle in the effect of pituitary secretion on the gonads.

M. W. G.

Androgenic action of progesterone. L. DESCLIN (Compt. rend. Soc. Biol., 1939, 132, 43—45).—The androgenic action of progesterone in rats is demonstrated by prolonged injection (15 days) or injection together with colchicine. H. G. R.

Influence of uterus on corpus luteum. O. HECHTER, M. FRAENKEL, M. LEV, and S. SOSKIN (Endocrinol., 1940, 26, 680—683).—Hysterectomy in pregnant rats is known to cause persistence of corpora lutea. If œstrous rat uteri are implanted at the same time the corpora lutea regress, as shown by onset of œstrus, whereas dicœstrous rat or œstrous rabbit uteri have no effect. V. J. W.

Assay of progesterone by intrauterine application in rabbit. A. L. HASKINS, jun. (Proc. Soc. Exp. Biol. Med., 1939, 42, 624—628).—Immature rabbits which had received 150 i.u. of amniotin gave a local progestational response to 0.25 μ g. of progesterone injected into a tied-off section of the uterus. Similar results followed injection of 0.2 c.c. of pregnant guinea-pig serum. (Cf. McGinty *et al.*, A., 1939, III, 756.) V. J. W.

Vascular actions of sex hormones. M. RATSCHOW and M. L. STECKNER (Z. klin. Med., 1939, 136, 140—150).—Subcutaneous daily injections of 0.5 mg. of ergotamine tartrate in rats produce severe vascular disturbances and gangrene of the tip of the tail within 5 days; this effect is intensified by simultaneous injection of 0.002 mg. of adrenaline (widespread gangrene after 24—48 hr.). Ergotamine gangrene is prevented by oestradiol benzoate (1 mg.) in females and testosterone propionate (2.5 mg.) in males; daily injections of 0.5 mg. of dihydroxydiethylstilbene diacetate protect both sexes. Oestradiol and testosterone have no effect against the ergotamine-adrenaline gangrene; stilbene protects most of the animals. Ergotamine necrosis is not prevented by eupaverin, atropine, histamine, vasopressin, and acetylcholine. Acetylcholine acts only if injected under the skin of the tail (0.1 mg. per day); this action is intensified by administration of vitamin-B₁; both substances partly protect against the ergotamine-adrenaline gangrene. A. S.

Relative effects of progesterone and testosterone propionate on ovipositor lengthening of female bitterling. I. S. KLEINER (Endocrinol., 1940, 26, 534—535).—Progesterone is active in greater dilution than is testosterone but its max. effect is less and is exerted within 6—8 hr. Max. effect of testosterone occurs in 24—72 hr. V. J. W.

New technique for staining vaginal smears. E. SHORR (Science, 1940, 91, 321—322).—A modification of the Masson trichrome stain is used. E. R. S.

Biological therapy in gynaecology and obstetrics. C. J. GAUSS (Dtsch. med. Wschr., 1940, 66, 1—3, 37—41).—A lecture. A. S.

Effect of normal male urine extract on immature female cats. W. F. STARKEY and J. H. LEATHEM (Endocrinol., 1940, 26, 499—502).—10 daily injections of 20 r.u., given to 5—13-week-old cats, caused follicle stimulation. More prolonged treatment caused in addition the formation of atretic corpora lutea. V. J. W.

Effect of extracts of gelding urine on reproductive system of rat. C. E. REA (Endocrinol., 1940, 26, 913).—No changes were produced in male reproductive organs. V. J. W.

Experimentally induced endocrine imbalance in female mice. C. A. PFEIFFER (Anat. Rec., 1939, 75, 465—491).—Endocrine imbalance between hypophysis and ovary was induced by grafting testes from litter mates at birth. A const. production of oestrogen by the ovary and great hypertrophy of the genital tract resulted. The ovaries became prematurely senile and contained numerous cells often

organised to resemble corpora lutea. Developing follicles were present, ovulation sometimes occurred, but the corpora lutea were pale and atypical. Hypertrophy of genital tract affected all elements but was most marked in oviduct epithelium, endometrial glands, and cervical and vaginal epithelium. Pelvic symphyses were resorbed and replaced by ligaments and extensive hyperossification occurred in long bones. Hypophysis was enlarged due to increase in chromophobes. The adrenals retained the X-zone and thyroid and parathyroids remained normal. The probable mechanism of production of the imbalance is discussed. W. F. H.

Histophysiological investigations of sex cycle in [female] guinea-pig. K. DUX and S. SORZKA (Arch. Biol., 1940, 51, 1—47).—In favourable conditions the female guinea-pig shows a regular sex cycle of 16—19 days' duration. This regularity is easily upset when external circumstances are unfavourable. The subdivision of the cycle on the basis of vaginal smears and the correlated changes in the uterine horns are described and compared with sectioned material. The hormonal influences controlling the cycle are discussed. J. D. B.

Action of gonadotrophic hormones in A-avitaminotic female rats. G. C. HERINGA and J. H. C. RUYTER (Acta brev. neerl. Physiol., 1940, 10, 27—28).—Corpora lutea in A-avitaminotic rats are small and highly vascularised; their functional activity is diminished. Graafian follicles degenerate and corpora atretica are formed. Injections of gonadotrophic hormones (purified gonadotrophic anterior pituitary and human pregnancy urine extracts) for 7 days increased the size of the corpora lutea and re-activated the follicles (swelling and mitoses of theca interna cells). A. S.

Effect of sex hormones, cortin, and vasopressin on water-retention in the reproductive organs of monkeys. S. ZUCKERMAN (J. Endocrinol., Lond., 1939, 1, 147—155).—Large doses (100—400 μ g. per day) of oestrone injected into the pig-tailed monkey during the post-ovulation of the menstrual cycle lead to swelling of the sexual skin due to retention of water in the skin. Since this is not seen in the normal cycle, progesterone cannot retain the water accumulated during the pre-ovulation phase. Neither testosterone propionate (300 mg. injected over 6 days) nor cortin (total dose equiv. to 3.2 kg. of fresh ox gland over 7 days) prevented the subsidence of the swelling produced in spayed monkeys by previous oestrone injections. The injection of vasopressin (2 units every 4 hr.) delayed but did not prevent the subsidence in a similar prep. Neither cortin nor vasopressin in similar or higher doses prevented oestrone-withdrawal bleeding in spayed monkeys; testosterone (50 mg. every 3 days) prevented the bleeding. P. C. W.

Action of oestradiol benzoate on sexual activity of male rats treated with testosterone propionate. O. MÜHLBOCK (Acta brev. neerl. Physiol., 1940, 10, 69—74).—The sexual activity of normal rats is diminished by prolonged administration of oestradiol benzoate. The action of testosterone propionate on sexual activity of adult castrated male rats is not

antagonised by simultaneous administration of oestradiol benzoate in 10 times larger dose. A. S.

Estrogens with oxygen in ring B. II. Δ^6 -isoEquilin from 7-hydroxycestrone.—See A., 1940, II, 180.

Experimental reversal of sex in salamanders by injection of oestrone. R. J. ACKART and S. LEAVY (Proc. Soc. Exp. Biol. Med., 1939, 42, 720—724).—Out of 15 larvæ which received 12 injections of 25 μ g. of oestrone in 6 weeks 9 females were unaffected but 6 others had gonads which appeared histologically to be ovo-testes resembling retarded ovaries with irregular medullary remains. V. J. W.

Action of oestrone on sexual organs of immature male cats. W. F. STARKEY and J. H. LEATHAM (Anat. Rec., 1939, 75, 85—89).—Hypertrophy of the glandular epithelium of the prostate resulted together with squamous metaplasia of the urethral epithelium. W. F. H.

Relative cholinergic effects of selected oestrogens. S. R. M. REYNOLDS and F. I. FOSTER (Amer. J. Physiol., 1939, 128, 147—153).—The oestrogens "amniotin," oestradiol, oestradiol benzoate, oestradiol dipropionate, and triphenylethylene raised within 1 hr. the acetylcholine content of the uterus of the ovariectomised rabbit. Stilbœstrol even in a high dosage was not effective. A second injection of oestrogen at the 12th hr. after a first injection again raises the acetylcholine content of the uterus. Esterification which delays and prolongs the uterine growth effects of oestrogens does not affect their capacity to increase the concn. of acetylcholine within 1 hr. after injection. M. W. G.

Effect of oestrogens on pouch of the marsupial *Trichosurus vulpecula*. A. BOLLIGER and A. CARRODUS (Nature, 1939, 144, 1049).—The common Australian opossum responds to injections of oestrogens (200—1000 i.u.) by development of pouch and mammary glands, particularly in sexually immature animals. The pouch development includes hyperplasia of muscles and onset of secretion of a pigment. Large doses produce pouch contractions. W. F. F.

Oestrogen depot formation. P. G. ESPINASSE (Nature, 1939, 144, 1013—1014).—A pseudo-oestrogenic effect in mice occurred with arachis oil injections. W. F. F.

Results of attempted induction at labour with oestrin. S. LUBIN and R. WATTMAN (Surg. Gynec. Obstet., 1939, 69, 155—158).—Although in certain animals pregnancy can be terminated by giving oestrogens, the results in women are quite inconclusive, only 8 out of 36 cases at or near term responding. The dose given apparently bore no relationship to the onset of labour. C. R. S.

Effects of oestrogens on urinary creatinine of castrate and menopausal women. E. P. SHARPEY-SCHAFFER and I. SCHRIRE (Clin. Sci., 1939, 4, 185—191).—Large doses of oestrogens were given to menopausal and ovariectomised women and to suitable controls. The creatinine output in the urine of 7 normal subjects was unaffected; 2 showed a

slight rise. 5 out of 7 menopausal women and 2 ovariectomised women showed creatinine diminution. B. I.

Oestrogen and pituitary. I. W. ROWLANDS and E. P. SHARPEY-SCHAFFER (Brit. Med. J., 1940, I, 205—207).—Oestradiol benzoate (10 mg. daily) was given for 3—54 days to 5 post-menopausal women. Examination of the pituitary after death showed a diminished content of gonadotrophic hormone as assayed on hypophysectomised rats. An ovariectomised woman showed diminished gonadotrophic hormone in the urine after injection of oestradiol. C. A. K.

Effect of liver and uterus on oestrone, oestradiol, and oestriol. C. G. HELLER (Endocrinol., 1940, 26, 619—630).—Oestradiol is destroyed by incubation with liver slices. This destruction is inhibited by 0.01M-NaCN and is probably oxidative. Oestrone is also destroyed by liver tissue, but in presence of NaCN its potency is increased, probably by reduction to oestradiol. Incubation with uterus slices increases 20-fold the potency of oestrone, probably by the same process. Oestriol is only slightly affected. V. J. W.

Clinical method for determining monthly output of oestrin from single bioassay on pooled night specimens of urine. J. LANSBURY and J. HUGHES (Endocrinol., 1940, 26, 609—611).—Night urine is collected for a month and kept on ice, and assayed on recently castrated mice by the vaginal smear method. V. J. W.

Oestrogen-induced hypospadias in the female rat. R. R. GREENE, M. W. BURRILL, and A. C. IVY (Proc. Soc. Exp. Biol. Med., 1940, 43, 32—35).—Administration to pregnant rats of 3—50 mg. of oestradiol dipropionate caused, in the female offspring, arrested development of the genitalia which resembled those of a 21-day-old foetus. V. J. W.

Vaginal cycle of *Microtus guentheri* and its response to oestrogenic and gonadotrophic hormones. B. ZONDEK and F. SULMAN (Proc. Soc. Exp. Biol. Med., 1940, 43, 86—88).—5000 i.u. of oestrogen cause cornification which does not normally occur in this species. Pregnancy urine extract (2000 r.u.) has no effect. Pregnant mare serum (10—1000 r.u.) causes follicle maturation but no corpus luteum formation. Pituitary extract (8 r.u.) causes both. V. J. W.

Follicular hormone in progynon dragees. W. KOLL and F. KÜLZ (Arch. exp. Path. Pharm., 1940, 194, 265—267).—Polemical. H. Bl.

Inactivation of oestrone. W. W. WESTERFELD (Biochem. J., 1940, 34, 51—58).—Inactivation of the oestrone mol. may be due to oxidation to a dihydro phenol; *o*-substitution would give 2:3- or 3:4-dihydroxy-17-keto-oestratriene, and *p*-substitution 10-hydroxy-3:17-diketo-oestra-1:4-diene. The introduction of any substituent into the phenolic nucleus of a synthetic oestrogen reduces or abolishes its activity. Oestrone, but not its methyl ether, is inactivated by H₂O₂ in alkaline solution. Tyrosinase, but not pyrocatechol oxidase, inactivates oestrone, oestradiol, and diethylstilbœstrol. Catalase prevents

the inactivation of oestrone by H_2O_2 but not by tyrosinase.

P. G. M.

Influence of oestrogen on electrolyte pattern of immature rat uterus. N. B. TALBOT, O. H. LOWRY, and E. B. ASTWOOD (J. Biol. Chem., 1940, 132, 1—9).—After administration of oestrogen there is an increase in the water and extracellular electrolyte, including an increase in the K : P ratio, in the uterus. During the next 24 hr. there is rapid growth of new protoplasm with return of the electrolyte to normal.

H. G. R.

Peripheral vascular action of oestrogen, observed in the ear of the rabbit. S. R. M. REYNOLDS and F. I. FOSTER (J. Pharm. Exp. Ther., 1940, 68, 173—184).—Oestrogen causes dilatation of the capillaries and venules of the ear of the ovariectomised rabbit. Previous administration of atropine inhibits or delays the action.

E. M. S.

Oestrogens and urinary volume. E. P. SHARPEY-SCHAFFER and I. SCHREIRE (Lancet, 1939, 237, 973—974).—Injections of oestrogens produced no change in the urinary vol. of normal women, castrate women, or normal men.

C. A. K.

Determination of folliculin in urine. A. CHEVALLIER and S. MANUEL (Compt. rend. Soc. Biol., 1939, 132, 521—523).—The spectrophotometric method of Chevallier, Cornil, and Verdollin has been applied to urine. During the last month of pregnancy a woman excretes 6—40 mg. of folliculin in 24 hr., the quantity being very irregular.

H. G. R.

Effects of synthetic oestrogens and carcinogens when administered to rats by subcutaneous implantation of crystals of tablets. R. L. NOBLE (J. Endocrinol., Lond., 1939, 1, 216—229).—27 different synthetic org. substances were implanted in rats in the form of tablets or crystals. 14 of the substances were oestrogenic and 3 were carcinogenic. In adult animals there was a decrease in the size of the gonads, reduction or cessation of body-growth, and increase in size of the adrenals and pituitary gland only in those animals receiving the oestrogenic substances. In the immature rats receiving oestrogens the gonads remained in an infantile condition but body-growth was only slightly retarded until a body-wt. of 100—120 g. was attained. While the response of female rats to pregnancy urine extract was quite normal 3 weeks after implantation of oestrogen crystals, the response was similar to that in hypophysectomised rats 18 weeks after a similar implantation.

P. C. W.

Recovery of injected oestrogenic substances from rabbit urine. S. W. STROUD (J. Endocrinol., Lond., 1939, 1, 201—207).—3 synthetic oestrogens and oestrone were injected into rabbits in large doses over a period of 20 days and the urine was collected and the oestrogenic material extracted. The dosage and recoveries were: $\gamma\delta$ -di-*p*-hydroxyphenyl-*n*-hexane (600 mg.) 21.3%, $\gamma\delta$ -di-*p*-hydroxyphenyl- $\beta\delta$ -hexadiene (600 mg.) 7.2%, 4 : 4'-dihydroxy- $\alpha\beta$ -diethylstilbene (3 g. and 1.5 g.) 25.2% and 16.8%, and oestrone (1.5 g.) 1.5%. The oestrogen was higher in the "free" extract than in the "combined" extract in the cases of the synthetics and lower with oestrone. A non-

ketonic phenolic metabolic product, probably β -oestradiol, was isolated from the urine of the animals receiving large doses of oestrone.

P. C. W.

Duration of action of certain natural and synthetic oestrogens when administered orally or by injection. C. W. EMMENS (J. Endocrinol., Lond., 1939, 1, 142—146; cf. A., 1939, III, 264).—The durations of action of diethylstilbœstrol, its dipropionate, dibenzoate, dipalmitate, and dimethyl ether, of oestrone and oestrone dimethyl ether, of ethinyl-dihydroequilin, and of ethinylœstradiol di-*n*-butyrate were compared when given orally or by injection to spayed mice. While the esters have a more prolonged action than the parent compounds when injected, this is not so when they are given orally. The min. effective dose of an orally administered ester is similar to that of the parent substance. Diethylstilbœstrol dimethyl ether *per os* has a slightly longer action than diethylstilbœstrol in terms of the min. effective doses.

P. C. W.

Oestrogenic substance in treatment of premature infant. M. B. EINHORN (Arch. Pediat., 1940, 57, 115—118).—14 premature infants were treated with œstrin and showed an average birth loss of 4.3 oz. as compared with 6.9 oz. in 14 controls. The return to birth wt. in the treated cases was 12.7 days and in those not treated 17 days.

C. J. C. B.

Reversibility of hyalinisation in mouse uterus produced by oestrogen, and changes in mammary gland and ovaries after cessation of injections. V. SUNTZEFF, R. S. BABCOCK, and L. LOEB (Amer. J. Cancer, 1940, 38, 217—223).—The hyaline substance which is deposited in the uterus, cervix, and vagina of the mouse after treatment with large doses of oestrogen is replaced by ordinary connective tissue after cessation of the injections of oestrogen. The replacement becomes noticeable after 1 month and is complete after 4 months. The reversion occurs quickly in those parts where normally the formation of dense collagen structures is least pronounced. Simultaneously with the reversion of the stroma ovulation is resumed and corpora lutea form. In the mammary gland the growth and secretion processes and development of carcinoma progress even when retrogressive changes are occurring in the vagina and uterus. These growth and secretion processes were accelerated and intensified in mice which had received a series of oestrogen injections during the early period of their lives, as compared with non-injected mice.

F. L. W.

Influence of follicular hormone on sex differentiation in *Hynobius retardus*. K. I. HANAOKA (Proc. Imp. Acad. Tokyo, 1939, 15, 265—268).—Injections of follicular hormone (5 m.u.) were made every 5—7 days into the larvæ of the Japanese salamander (*H. retardus*). At the time of metamorphosis there were no abnormalities in the gonads. 1 month later large germ cells with vesicular nuclei and dense protoplasmic substance were present in the gonads of both sexes. 2 months after metamorphosis fully developed oocytes were present in the male and female gonads. Male differentiation still takes place in the male gonads.

P. C. W.

Action of female sex hormones [œstrogens] on cock's comb. O. MÜHLBOCK (Acta brev. neerl. Physiol., 1940, 10, 52—56).—The regression of the cock's comb was studied after injection and percutaneous or direct application of œstrogens. On application on the comb, a 10 times higher dose of œstradiol benzoate is required than on intramuscular injection. Diethylstilbœstrol is ineffective on percutaneous administration of a 7 times larger dose than that acting on the comb after intramuscular injection. Progesterone, up to a total dose of 360 mg., testosterone propionate (10 mg. per day), and deoxycorticosterone acetate had no effect on the comb.

A. S.

Site of action of anti-masculinising effect of œstrone. I. Confirmation of Moore's theory. II. Refutation of criticism. III. Hypophysis or sexual centre. J. H. F. LAHR (Acta brev. neerl. Physiol., 1940, 10, 59—62, 63—66, 66—68).—I. Atrophy of the gonads in hypophysectomised rats was prevented by a maintenance dose of pituitary and placental gonadotrophic substance. Daily administration of 100 µg. of œstrone for 2 weeks had no effect on testes or seminal vesicles.

II. Male rats were castrated and, after a week, treated for one week with 20 µg. of œstrone per day; their pituitaries were grafted intraperitoneally into male and female mice of 6 g. wt. In the male recipients, œstrone treatment halved the effect of the graft on the seminal vesicles.

III. The action of œstrone is attributed to an effect on a cerebral centre which influences pituitary secretion.

A. S.

Maintenance of corpus luteum function in women by œstrogenic substances. A. WESTMAN (Endocrinol., 1940, 26, 774—778).—Amenorrhœa was caused in one patient by injection of 10,000 i.u. of œstradiol benzoate twice weekly, and relief of menorrhagia in another by 6000 i.u. daily by mouth. In each case the uterine mucosa became of the secretory type.

V. J. W.

Effect of œstriol glucuronide on spontaneous activity of senile male rats. R. G. HOSKINS and S. BEVIN (Endocrinol., 1940, 26, 829—832).—0.5—5 c.c. of "emmenin" 3—7 times weekly caused marked increase in activity as measured by the revolving cage.

V. J. W.

Ineffectiveness of œstrogens in preventing polyneuritis. W. W. WESTERFELD (Biochem. J., 1940, 34, 59—60).—Intramuscular injection of œstrone acetate and benzoate and œstradiol dipropionate has no effect on development of polyneuritis in pigeons on a vitamin-B₁-free diet, and there is no significant increase in respiration of avitaminous brain tissue when the hormones are added *in vivo* or *in vitro* (cf. Sánchez-Rodríguez and Sardá, A., 1937, III, 364).

J. N. A.

Relation of hyperæmia to action of œstrin. O. HECHTER, M. LEV, and S. SOSKIN (Endocrinol., 1940, 26, 73—79).—The usual effects produced by œstrin on the uterus in castrated mice are partly inhibited if hyperæmia is prevented by large doses of atropine, and the hyperæmia of the uterus produced by

yohimbine is not accompanied by proliferation of uterine lining and glands.

V. J. W.

Composition of bones of mice receiving œstrogens and androgens. J. H. WENTWORTH, P. K. SMITH, and W. U. GARDNER (Endocrinol., 1940, 26, 61—67).—Mice received once or twice a week either 16.6 µg. of œstradiol benzoate, or 1.25 mg. of testosterone propionate, or both. After different intervals the pelvis and femora were ashed and analysed. The bones of those receiving œstrogen contained more ash than any of the other groups, and in their femora the Ca:P ratio was significantly higher.

V. J. W.

Tolerance of male and female mice to œstrogens and androgens. C. D. KOCHAKIAN (Endocrinol., 1940, 26, 54—60).—Daily doses of 0.2 mg. of testosterone propionate decreased growth rate in males but had little effect in females. œstradiol dipropionate in daily doses of 0.1 mg. caused a higher death rate in females than in males. Death rate was decreased by the addition of 4 times as much of testosterone propionate.

V. J. W.

Free and combined œstrogenic substances in human liquor folliculi. O. MÜHLBOCK (Acta brev. neerl. Physiol., 1940, 10, 1—2).—Free and combined œstrogenic hormones were found in the liquor folliculi of two women suffering from ovarian cysts. The concns. were in one case 255 (free) and 50 (combined), in the other case 15 (free) and 15 i.u. (combined).

A. S.

Identification of œstradiol in pregnancy urine. K. G. DAVID (Acta brev. neerl. Physiol., 1940, 10, 30—32).—Pregnancy urine contains, besides œstrone and œstriol, α-œstradiol which provides 20% of the total œstrogenic activity of the urine. The non-keto-phenol fraction was taken up in ether and shaken with 0.1N-NaOH. œstriol was found in the alkaline fraction; 0.14 mg. of α-œstradiol per l. of urine was chromatographically isolated from the ether fraction.

A. S.

Intravaginal administration of œstrogenic substances in ovariectomised mice. O. MÜHLBOCK (Acta brev. neerl. Physiol., 1940, 10, 42—44).—Ovariectomised mice were subcutaneously injected with œstrone. 0.01 c.c. of œstrogenic substance was instilled three times into the vagina and vaginal smears were studied. The threshold doses were, if 50% aq. glycerol was used as vehicle: 0.00025 µg. of œstrone, 0.0005 µg. of œstradiol, and 0.00075 µg. of œstriol.

A. S.

Growth of genital tissues in response to œstrone as studied by the colchicine technique. R. V. WORTHINGTON and E. ALLEN (Yale J. Biol. Med., 1939, 12, 137—153).—Ten mature female rhesus monkeys had both ovaries and one Fallopian tube removed. 625 i.u. of theelin were injected intramuscularly twice daily for 10 days and the monkeys were killed at intervals from 2 to 17 days from the first injection. 0.5 or 1.0 mg. of colchicine was injected 9½ to 11 hr. before death. Most mitoses were found in the glands of the uterus and, in descending order, in the uterine surface epithelium, vaginal epithelium, tubal epithelium, endometrial stroma,

tubal muscularis, myometrium, and least in vaginal propria, cervical corium, and epithelium. In addition, other well-known oestrogenic effects were noted. (8 photomicrographs.) F. S.

Oestrogens of fowl. H. W. MARLOW and D. RICHERT (*Endocrinol.*, 1940, **26**, 531—534).—New-laid egg-yolk contains 5 r.u. of oestrogen per kg. Immature ova of more than 10 mm. diameter contain 44 r.u. per kg. Whole ovaries contain 37 r.u. per kg. V. J. W.

Oestrogen metabolism in cancerous and non-cancerous women. G. PINCUS and M. GRAUBARD (*Endocrinol.*, 1940, **26**, 427—432).—Oestrogenic analysis of urine was carried out in a no. of women after injection of 2.1 mg. of oestrone or of 2.1 mg. of oestrone with 10 mg. of progesterone. Normal women convert some oestrone into oestriol, more after progesterone. Menopausal and hysterectomised women do not effect this, but do excrete more oestrogen after progesterone than without it. Cancerous (uterine) women do not effect the conversion and their oestrogen excretion is not increased by progesterone. V. J. W.

Clinical use of stilbœstrol. R. M. LEWIS (*Yale J. Biol. Med.*, 1939, **12**, 235—238).—The response of women to stilbœstrol is the same as to the natural oestrogens. Stilbœstrol may produce nausea and vomiting, contraindicating its further use. Periods of several weeks' rest from the drug at intervals are recommended. F. S.

Effects of stilbœstrol on labour. J. H. PEEL (*Proc. Roy. Soc. Med.*, 1939, **32**, 1230—1232).—Stilbœstrol acts like the natural oestrogenic hormone on the pregnant and parturient uterus. It is of val. in increasing uterine tone and the efficiency of uterine contractions during labour, particularly if mechanical errors are absent. Its val. in inducing labour is doubtful. W. J. G.

Action of "trasentin" on rabbit ovary and uterus. R. KURZROK, E. G. MILLER, jun., H. GEGERSON, and A. GEGERSON (*Endocrinol.*, 1940, **26**, 827—828).—75—300 mg. had a follicle-stimulating effect on the ovary, and in normal, but not in castrated, rabbits caused increase in uterine wt. V. J. W.

Effect of stilbœstrol on ovaries of hypophysectomised rats. P. C. WILLIAMS (*Nature*, 1940, **145**, 388—389).—Immature (40—50 g.) female rats were hypophysectomised and had a tablet of synthetic diethylstilbœstrol implanted subcutaneously. Ovarian atrophy was retarded and the response of the ovaries to pregnant mare serum was increased with pronounced luteinisation of the membrana granulosa. W. F. F.

Oestrogenic action of porphyrins. W. RODEWALD (*Arch. exp. Path. Pharm.*, 1939, **194**, 76—77).—Injection of hæmatoporphyrin (4 successive doses of 0.8 mg.) or of protoporphyrin causes œstrus in the castrated rat. H. BL.

Effects of continuous oral administration of aqueous diethylstilbœstrol solutions to rats. R. L. NOBLE (*J. Endocrinol.*, Lond., 1939, **1**, 128—141).—Aq. solutions of diethylstilbœstrol (max. concn. 5 µg. per ml.) were substituted in place of

rats' drinking water. In adults a daily intake of 2—3 µg. produced a reduction of body-growth and lactation. Atrophy of the gonads occurred when the dosage was raised to 7 µg. per day. Larger doses caused more pronounced effects together with enlargement of the adrenals and pituitary gland. Daily dosages of up to 30 Riddle units of prolactin did not restore lactation in treated animals. Fluid intake was reduced even in hypophysectomised rats. In immature rats the effects on body-growth were only partly present and the effects on fluid intake were absent. P. C. W.

Use of stilbene preparations in extragenital ovarian insufficiency symptoms. H. FRANKE (*Münch. med. Wschr.*, 1939, **86**, 1612—1614).—6—8 mg. of dihydroxydiethylstilbene dipropionate were given by mouth or by injection in 3—4 weeks to 80 women suffering from extragenital symptoms of ovarian insufficiency. Untoward effects were not observed. Various menopausal disturbances of the peripheral circulation were successfully treated. Genital hæmorrhage in menopausal women did not occur with the doses used. A. S.

Clinical use of triphenylchloroethylene. A. I. S. MACPHERSON and E. M. ROBERTSON (*Lancet*, 1939, **237**, 1362—1366).—Triphenylchloroethylene can be used clinically by mouth, by injection, or as a local application in daily dosage of 0.2—1.8 g. It produces uterine growth, endometrial proliferation, withdrawal bleeding, conversion of menopausal into œstrous vaginal smear, relief of menopausal symptoms, and inhibition of lactation. Its duration of action by mouth is similar to that of stilbœstrol, but on intramuscular injection its action is much more prolonged (up to 6—9 weeks). Minor digestive symptoms, the only signs of toxicity, were rarely seen. C. A. K.

Clinical use of stilbœstrol. C. L. BUXTON and E. T. ENGLE (*J. Amer. Med. Assoc.*, 1939, **113**, 2318—2320).—Stilbœstrol was as effective as natural oestrogens in 17 women with ovarian deficiency. Nausea and vomiting occurred in 4 cases, and were partly relieved by giving the drug in gelatin capsules. One patient with severe nausea and vomiting also developed albuminuria with casts. There were no signs of liver damage and no allergic phenomena. C. A. K.

Clinical use of stilbœstrol. C. M. MACBRYDE, H. FREEDMAN, and E. LOEFFEL (*J. Amer. Med. Assoc.*, 1939, **113**, 2320).—Stilbœstrol (0.1—5.0 mg. daily, by mouth or by injection) given to 37 patients with ovarian deficiency produced full oestrogenic effects. Toxic actions were nausea in 8 cases (21%), and vomiting in 3 cases after large doses. No skin or urinary changes were seen, and liver function tests were normal in 9 cases. Toxic signs never demanded withdrawal of the drug. C. A. K.

Clinical use of stilbœstrol. E. SHORR, F. H. ROBINSON, and G. N. PAPANICOLAOU (*J. Amer. Med. Assoc.*, 1939, **113**, 2312—2318).—Stilbœstrol was given by mouth and by injection to 44 women with amenorrhœa or at the menopause. Its oestrogenic activity by mouth is greater than that of œstradiol benzoate but less than that of ethinyl-

œstradiol. It relieves menopausal symptoms but in 35 (80%) cases produced nausea, vomiting, abdominal distress, anorexia, diarrhoea, lassitude, paræsthesias, vertigo, thirst, skin rashes, and an acute psychotic reaction; these effects are largely central in origin, and are not proportional to dosage. There was no evidence of acquired tolerance.

C. A. K.

Comparative action of œstradiol and dihydroxydiethylstilbene on vaginal p_H . J. A. SCHOCKAERT, G. DELRUE, and J. FERIN (Compt. rend. Soc. Biol., 1939, 131, 1309—1311).—Stilbœstrol is more active than œstradiol on oral administration but less active and less const. by injection. The changes observed in the vaginal mucosa are identical.

H. G. R.

œstrogenic therapy by implantation of stilbœstrol pellets. C. M. MACBRYDE, H. FREEDMAN, E. LOEFFEL, and D. ALLEN (Proc. Soc. Exp. Biol. Med., 1940, 43, 212—214).—Good results were obtained by subcutaneous implantation of 100-mg. pellets.

V. J. W.

Action of diethylstilbœstrol in gynæcological dysfunctions. R. KURZROK, L. WILSON, and W. H. PERLOFF (Endocrinol., 1940, 26, 581—586).—Physiological actions were the same as those of œstrogens but nausea and vomiting were sometimes troublesome.

V. J. W.

Effect of stilbœstrol on basal metabolism of experimental hyperthyroid rats. T. C. SHERWOOD (Endocrinol., 1940, 26, 693—695).—Thyroidectomised rats received 1 g. of dried thyroid daily for 3 days. Basal metabolic rate returned to hypothyroid level in 22—28 days, but when they received 30 mg. daily of stilbœstrol the return took only 10—18 days.

V. J. W.

Biological properties of stilbœstrol and stilbœstryl dipropionate. C. H. MELLISH, A. J. BAER, and A. C. MACIAS (Endocrinol., 1940, 26, 273—279).—Results of various other investigations are confirmed.

V. J. W.

Clinical use of stilbœstrol dipropionate and hexœstrol. P. M. F. BISHOP, R. K. BOWES, M. BOYCOTT, R. KELLAR, T. N. MACGREGOR, and B. C. MURLESS (Lancet, 1940, 238, 629—633).—Stilbœstrol dipropionate and hexœstrol were shown clinically to have the same properties as stilbœstrol in inducing uterine hæmorrhage in amenorrhœa, relieving menopausal symptoms, producing cornification of vaginal mucous membrane, restoring the vagina to normal in senile atrophic vaginitis, relieving pain of dysmenorrhœa, and inhibiting lactation. Toxic effects (nausea and vomiting) were seen in 21.6% of cases given stilbœstrol dipropionate and in 4.5% of cases given hexœstrol, but were not severe.

C. A. K.

Clinical use of stilbene preparations. R. WENNER (Schweiz. med. Wschr., 1940, 70, 277—280).—Diethylstilbœstrol and its dipropionate and diacetate were successfully used in the treatment of symptoms following double ovariectomy. It was used in all conditions where œstrogens were indicated. Large doses, up to 50 mg. of stilbene, are required to prevent lactation. Nausea and vomiting were observed in 2 out of 80 cases.

A. S.

Intersexuality or pseudo-hermaphroditism. A. C. IVY, R. R. GREENE, and M. W. BURRILL (Ann. int. Med., 1939, 13, 68—80).—256 pregnant rats were treated with testosterone, testosterone propionate, androsterone, dehydroandrosterone, and androstenedione. The female offspring of 118 rats which carried their pregnancies to term was masculinised; 214 intersexed or masculinised female rats were obtained (oviduct, uteri, and upper vagina were present with epididymides, ejaculatory ducts, prostate, male urethra, and Cowper's glands). 212 pregnant rats were treated with œstradiol and œstradiol dipropionate. 125 feminised male or intersexed rats were examined (nipples, vagina, portions of the uteri and oviducts were found; prostates were not found; seminal vesicles are small, vasa deferentia and epididymides were partly or completely absent; the external genitalia are feminised). Paradoxical effects were observed; 19 out of 20 genetic female offspring of mothers which had received œstrogenic substances showed evidence of masculinisation and inhibition of female structures.

A. S.

Interactions between various steroid hormones. H. SÆLYE (Canad. Med. Assoc. J., 1940, 42, 113).—In rats œstradiol causes marked atrophy of the gonads. This effect is inhibited by progesterone and testosterone. The wt. of the kidneys is increased by testosterone and decreased by œstrin. The adrenals are greatly enlarged in the œstradiol-treated animals of both sexes, whilst testosterone, especially when given in combination with deoxycorticosterone, causes a decrease in their size which on histological examination proves to be due to cortical atrophy. The non-sp. adrenal enlargement caused by formaldehyde is only slightly inhibited by deoxycorticosterone in the female and not at all in the male. Testosterone, on the other hand, markedly inhibits this enlargement in both sexes. Progesterone or testosterone alone and in combination with deoxycorticosterone or progesterone seems to stimulate body growth in females but not in males.

C. J. C. B.

Relation between thymus and sexual organs. H. CHIUDI (Endocrinol., 1940, 26, 107—116; cf. A., 1929, III, 475).—Castration causes hypertrophy of the thymus in rats but the time-wt. curves are parallel in castrates and normals. Male or female sex hormone causes atrophy in either sex.

V. J. W.

Relationship of ovarian masculinising tumours and hermaphroditism. G. SPILLING (Frankf. Z. Path., 1938, 52, 229—242).—Two cases are described of arrhenoblastoma in young women, an ovarian tumour of testicular structure which may vary from a simple adenoma to a sarcoma. In both cases, male secondary sexual characters developed simultaneously with the growth of the tumour and disappeared again after its removal. Arrhenoblastomata probably are teratomata with preponderant development of cells secreting male sex hormone.

H. W. K.

Morphogenesis of intersexuality. S. ZUCKERMAN and J. R. GROOME (J. Anat., 1940, 74, 171—200).—An intersexual pig, with testes, vasa deferentia, vesiculæ seminales, and prostate, together with

uterus, vagina, and female external genitalia, was studied experimentally. Specimens of uterus, vas, and testis were examined at the beginning of the experiment, after a 2½ months' course of male hormone injections, after a 2½ months' course of oestrogenic hormone, and finally 4 months later. The uterus was the same in structure at the beginning and after oestrogenic treatment, differing from the involution produced by androgenic treatment and castration. The gonads consisted of degenerate seminiferous tubules with Sertoli cells and swollen interstitial cells; oestrogenic treatment caused enlargement of the interstitial cells, otherwise there was very little change. The vas at the beginning showed the same structure as after oestrogenic treatment; it was activated by androgenic hormone, and involuted after castration. It is concluded that at the start of the experiment the gonads were secreting mostly oestrogenic hormone. The theories of the morphogenesis of intersexuality are discussed. E. E. H.

Male behaviour of female starling (*Sturnus v. vulgaris*, L.) in autumn. W. S. BULLOUGH and R. CARRICK (Nature, 1940, 145, 629).—The autumn song of the female British starling is attributed to the secretion of androgens by the ovary, indicated by the bill turning yellow. E. R. S.

Seasonal variations in weight and chemical composition of ovary and testes of *Bufo arenarum*. P. MAZZOCCO (Rev. Soc. argent. Biol., 1940, 16, 35—43).—The wt. of the ovaries increased as the ova developed, reaching a max. in July; at this time the animals do not eat. During ovulation a great decrease in wt. with a relative increase in water occurred. Wt. of testes diminished slowly from January to August; a great decrease was observed during the season of sexual activity (September to November); then a rapid increase was observed, reaching a max. in December or January. J. T. L.

Lymphatics of reproductive tract of female *Macaca mulata*. C. B. WISLOCKI and E. W. DEMPSEY (Anat. Rec., 1939, 75, 341—363).—Rich intrinsic lymphatic plexuses are demonstrable in uterus, vagina, and sexual skin. The networks in the endometrium and muscularis hypertrophy in pregnancy. A plexus is present in the tunica propria of the vagina and in the corium of the sexual skin. The latter connects with a coarser plexus in the subcutaneous tissue. Reasons are given for believing that the rich lymphatic supply of the mammalian female reproductive tract is related to the physiological oedema to which these tissues are periodically subjected under the influence of the sex hormones. W. F. H.

Influence of external factors on development of sex glands of sparrow. E. POLIKARPOVA (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 91—95).—In male sparrows, the rate of development of the sex glands is accelerated and, during the seasons of sexual quiescence, the development of the glands is stimulated by supplementing the natural periods of daylight, during 50—55 days, with illumination for 10 hr. with electric light. The supplementary illumination is much less effective in female sparrows which are favourably affected only when they live in

the presence of males and of nests or nest-building materials. In the females, supplementary illumination for periods exceeding approx. 80 days retards development of the sex glands. W. McC.

Artificial sex regulation in mammals by means of electrophoresis and biological control. V. SCHRÖDER (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 687—691).—When rabbit sperm in dil. glycine buffer is submitted to electrophoresis, the sperms with X and Y chromosomes migrate to the anode and cathode respectively. The higher is the charge on the sperms (16—18 mv.) the greater is the degree of separation. When female rabbits are fertilised with the "anode" sperm, the offspring are approx. 80% female, whilst with "cathode" sperm, a corresponding no. of males are produced. The best conditions for max. separation are pH 7.10 and temp. 10—15°. In presence of Th^{+++} there is irregular migration of the X sperm to anode and cathode, whilst Ca citrate has an injurious effect. The charge on the sperms depends not only on the ions in the buffer solution, but also on the ions in the sperm serum and the composition of the latter varies according to the season. The sperm which migrates to the cathode has an increased positive charge when the amount of Ca^{++} and the ratio $Ca : Na$ in the serum are increased. J. N. A.

Physico-chemical analysis of sperm physiology (mammal sperm). Lipins of rabbit sperm which migrate to anode and cathode. V. SCHRÖDER (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 692—697).—An extract of the lipins from anode sperm stimulates the sexual organs of immature female mice, whilst an extract from cathode sperm has a corresponding effect on male mice. The lipins from anode sperm produce a strong oestrous response in castrated females, whilst those from cathode sperm are only slightly active. J. N. A.

Irradiation with small doses in the treatment of functional gynaecological conditions. I. I. KAPLAN (Amer. J. Roentgenol., 1939, 42, 731—744; cf. A., 1940, III, 125).—Cases of functional disorders of the ovary and of sterility were treated with small doses of X-rays applied in the pelvic region and, sometimes, to the pituitary. Children both of mothers so treated showed no abnormalities. W. F. F.

Influence of glycerin on determination of sex of *Bonellia*. C. HERBST (Arch. Entw. Mech. Org., 1939, 139, 282—302).—The sexually undetermined larvæ of *B. viridis* develop male features in sea-water containing 0.06% or more of glycerin. The development of female features is prevented by such concn. W. J.

Sex hormones in mental disorder. A. GUIRDHAM (Brit. Med. J., 1940, I, 10—12).—4 case records. C. A. K.

Sex hormone studies in male homosexuality. S. J. GLASS, H. J. DEUEL, and C. A. WRIGHT (Endocrinol., 1940, 26, 590—594).—In 17 cases the androgen: oestrogen ratio in the pooled urine was significantly lower than in 31 controls. V. J. W.

Sex hormones and Foa-Kurloff cell. J. C. G. LEDINGHAM (J. Path. Bact., 1940, 50, 201—219).—

The response of the Foa-Kurloff cells in the blood to injections of sex hormones, particularly œstradiol, and to castration is described. Their quant. variations in the blood of guinea-pigs both male and female depend on the integrity of the sex organs and hormonal influences proceeding therefrom. C. J. C. B.

Action of mammalian sex hormones in the lizard *Sceloporus occidentalis*. A. GORBMAN (Proc. Soc. Exp. Biol. Med., 1939, 42, 811—813).—0.1 mg. of theelin or 5 mg. of testosterone propionate was given. (Estrogen caused reduction in size of testes and epididymis, and androgen an increase. Both caused marked increase in diameter and wall of the oviduct. V. J. W.

Effect of sex hormones on gonads of frog larvæ (*Rana clamitans*): sex inversion in females; stability in males. C. L. FOOTE and E. WITSCHI (Anat. Rec., 1939, 75, 75—83).—Transformation of ovaries into testes is induced in sexually differentiated larvæ by testosterone propionate. (Estrogenic hormones have little effect on the testes. W. F. H.

Experimental intersexuality: paradoxical effects of œstrogens on sexual development of female rat. R. R. GREENE, M. W. BURRILL, and A. C. IVY (Anat. Rec., 1939, 74, 429—438).—Large doses of œstradiol and œstradiol dipropionate were administered to pregnant rats and the new-born females were examined in serial section. Stimulation of uteri and nipples and inhibition of lower vagina and ovarian capsule were observed. In most there was partial or complete preservation of the Wolffian ducts. W. F. H.

Embryonic extracts and sex organs. H. L. MEYERHOF and A. ZIRONI (J. Physiol., 1940, 97, 495—508).—Subcutaneous injections into guinea-pigs and rats of saline extracts from cattle or guinea-pig embryos inhibit growth of the testes but not the general growth and development of the animals. Female sexual organs are not influenced. The injections into male rats inhibit sexual activity but this returns on suspension of the injections. In females the injections produce irregular effects on fertility. The injections increase the content of *R* factor in the rat's testis. Embryonic extracts possess no spreading power but increase the spreading effect of testicular extracts of rats if injected simultaneously into the rabbit's skin. The sp. sexual hormones do not appear to be involved in this action. The embryonic extracts used did not contain œstrogenic substances in detectable amounts. J. A. C.

Androgenic function of [anterior pituitary-like hormone] stimulated ovaries in immature rats. R. R. GREENE and M. W. BURRILL (Proc. Soc. Exp. Biol. Med., 1939, 42, 761—764).—Prostates were implanted into 10-day-old female rats which were treated with 25—100 r.u. daily of chorionic gonadotropin. In castrated animals no effect was caused, but in intact animals these prostates showed stimulation from 18 to 25 days of age but none after 28 days. V. J. W.

Effect of simultaneous administration of growth complex and œstradiol on mammary

gland of hypophysectomised rat. I. T. NATHANSON, D. T. SHAW, and C. C. FRANSEEN (Proc. Soc. Exp. Biol. Med., 1939, 42, 652—655).—Rats received daily doses of 1000 i.u. of œstradiol benzoate, or of 2 Collip rat units of growth extract, or of both for 3—5 weeks. Only in the last case did any mammary growth occur and then only in those animals which did not lose wt. V. J. W.

Determination of pregnanediolglycuronic acid in urine. R. CRISMER (Compt. rend. Soc. Biol., 1939, 132, 50—52).—The glycuronide is extracted from the urine with butyl alcohol (cf. Venning and Browne, A., 1938, III, 118) and the glycuronic acid is determined by the method of Florkin and Crismer. (œstriolglycuronide (Cohen *et al.*, A., 1937, III, 74) is also sol. in butyl alcohol and its presence leads to a small error. H. G. R.

Sterols from sow pregnancy urine. R. E. MARKER and E. ROHRMANN (J. Amer. Chem. Soc., 1939, 61, 3476—3477).—Sow pregnancy urine (2nd or last month of pregnancy) contains pregnan-3(α)-ol-20-one, *allopregnan*-3(β)-ol-20-one, androsterone, cholesterol, the hydrocarbon, C₂₈H₅₈, and, probably, other 3(β)-sterols, but not β -equistanol or the three common pregnanediols. Thus, the *in vivo* reduction of progesterone in the sow does not reduce CO in position 20 to CH·OH. R. S. C.

Failure to recover pregnanediol glycuronidate in monkeys, rabbits, and cats. U. WESTPHAL and C. L. BUXTON (Proc. Soc. Exp. Biol. Med., 1939, 42, 749—750).—None was found in the urine during normal cycles or pregnancy or, in monkeys, after 80 mg. of progesterone. V. J. W.

Occurrence and properties of lactation hormone. E. RABALD and H. E. VOSS (Z. physiol. Chem., 1939, 261, 71—81).—From the livers of healthy cattle and pigs a lactation-promoting substance was obtained which resembled in chemical and biological properties prolactin from the anterior pituitary. J. H. B.

Lactation fever and nest formation in rat. C. P. LEBLOND (Ann. Physiol. Physicochim. biol., 1939, 15, 863—864).—A temp. oscillating between 37.6° and 39° or more is observed in the lactating rat. Nest building, which is increased by exposure to cold, is attributed to reflex stimuli arising from the fever. C. C. N. V.

Relation of fat to utilisation of lactose in milk. E. J. SCHANTZ and C. F. KREWSON (Proc. Soc. Exp. Biol. Med., 1939, 42, 577—579; cf. A., 1938, III, 213).—Even-chain fatty acids, containing 12 or more C atoms, when added to skim milk up to 3—4%, prevent loss of galactose in urine. Acids of less than 12 C, pentadecic acid, or 10% glucose do not prevent it. Galactose loss is increased by adding to skim milk 2% of NaCl or Na₂HPO₄.

Blood volume changes in mammary gland. J. C. SHAW and W. E. PETERSEN (Proc. Soc. Exp. Biol. Med., 1939, 42, 520—524).—Excitement causes large changes in blood concn. in blood of cow's mammary gland, and these affect concn. of non-diffusible substances apart from any results of secretion. V. J. W.

Factors affecting reliability of arterio-venous differences in study of blood precursors of milk. W. E. PETERSEN and W. L. BOYD (J. Dairy Sci., 1939, 22, 437—438).—Only samples showing little or no blood vol. changes should be used in studying milk secretion. J. G. D.

Recent advances in endocrinology of milk secretion. C. W. TURNER (J. Dairy Sci., 1939, 22, 436—437). J. G. D.

Normal oestrous cycle of ferret: correlation of vaginal smear and histology of genital tract, with notes on distribution of glycogen, incidence of growth, and reaction to intravital staining by trypan-blue. W. J. HAMILTON and J. H. GOULD (Trans. Roy. Soc. Edin., 1940, 40, 87—106).—The vaginal smear in the ferret differs from that of most rodents in that there are a series of substages between ancestrus and oestrus due to the slow onset of heat. The oestrous stages of the vulva and vaginal smear do not always correspond. Vaginal cornification starts at the upper end of the vagina; the cervix and fused part of the uterus do not become cornified and diapedesis of leucocytes is const. The epithelia of the whole tract become thicker as oestrus approaches and mitotic activity as shown by colchicine injection increases. Glycogen is most widely distributed in the uterine horns, where it increases during oestrus. Trypan-blue is more readily taken up by the ovaries than by other parts of the tract; all parts show an increased staining at oestrus. Free cells resembling histiocytes are present throughout the connective tissue and are increased at oestrus and after trypan-blue injection. P. C. W.

Cyclic changes in chromatin of the nuclei of endometrium. R. CLEVELAND (Surg. Gynec. Obstet., 1939, 69, 18—38).—Two types of nuclei can be distinguished in the gland and stroma cells of the human endometrium, granular and non-granular. In the granular form the chromatin distribution tends to be of aggregate type when under the influence of follicular hormone only, as in the proliferative phase, and of a diffuse type in the secretory phase. These observations may furnish a basis for determining fluctuations in endocrine levels. C. R. S.

Metaplasia and adenoma-like changes in uterus of rats injected with sex hormones. V. KORENCHESKY and K. HALL (Nature, 1939, 144, 1048).—Adenoma-like changes and severe metaplasia only occur in the uterus of rats following the administration of male hormones in addition to oestrogens. W. F. F.

[Experiments on reproductive organs in female monkeys.] A. H. MORSE (Yale J. Biol. Med., 1939, 12, 103—112).—In rhesus monkeys, with a uterine insufflation apparatus, pituitrin raises the intra-uterine pressure, after 5 sec.—2 min., to 40—92 mm. Hg, for 3—15 min. Monkeys had one ovary removed and the other fractionally excised at intervals. $\frac{1}{16}$ of the total ovarian tissue was sufficient for regular menstruation and frequent ovulation. Cystic changes in the ovary and menstrual dysfunction produced by gonadotrophic substances were transitory and were followed by normal pregnancy and lactation.

The administration of testosterone propionate to pregnant monkeys resulted in a genetic female foetus having the appearance of a male in respect of external genitalia and prostate even in the presence of uterus and ovaries. F. S.

Structure of uterus and placenta of a few Indian elasmobranchs. G. MAHADEVAN (Proc. Indian Acad. Sci., 1940, 11, B, 1—44).—Detailed anatomical descriptions are given of the uterus and placenta in *Scoliodon sorrakowah* and *S. palasorrah* with notes on *S. walbeehmi* and *Carcharinus dussumieri*. In *S. sorrakowah* the uterus is divided into as many compartments as there are embryos (3—5 in each uterus). The compartments are oblique, more longitudinal than lateral. The partitions consist of two layers of uterine epithelium divided by a glandular sheet and are presumably formed by the growth of 2 folds of the uterus which fuse. The uterus is highly vascular and its internal epithelium is non-ciliated and consists of glandular cells. These cells secrete a non-mucoidal fluid probably nutritive for the embryo. The ova are small (size of frog eggs) and have correspondingly small yolk-sac. The yolk is soon exhausted and the sac is transformed into spongy tissue with large blood supply and connected to the embryo by a placental cord. At this stage the former yolk-sac becomes attached to an invaginated outgrowth from the uterine wall—the trophonema. This latter organ is also glandular and highly vascular. There is no invasion of maternal tissue by the foetal tissue. Although viviparous, the embryo is surrounded by a shell membrane. Long unbranched appendicula are given off from the placental cord. These are supplied with two blood vessels and presumably absorb the nutrient fluid secreted by the uterine wall. The embryos may be 135 mm. in length before being expelled. During the later stages the trophonema degenerates. In *S. palasorrah* the structures are somewhat different in that the ova are bigger and can subsist longer on the contained yolk in the yolk-sac. As the yolk is absorbed the sac becomes folded and intimately attached to an already formed trophonematus cup which is supplied with villi. The uterus and partitions are thicker and contain tubular glands as well as a glandular inner surface. There are only 2—3 embryos in each uterine horn. The appendicula are shorter but branched. P. C. W.

Reproduction and associated endocrines. E. ALLEN (Yale J. Biol. Med., 1939, 12, 51—67).—A review of recent publications. F. S.

Uterine innervation. F. GUERCIO and Z. M. PEZZINI (Arch. Sci. biol., Napoli, 1939, 25, 495—505).—In female cats and rabbits, stimulation of the hypogastric nerves produces contraction of the uterus which may be followed by a decrease of tonus to a lower level than before, and increase of both heart rate and blood pressure. Adrenaline (intravenous) also produces the same effects on the uterus. The effects are potentiated by cocaine. Intra-arterial injection of ergotamine paralyses the motor effects of hypogastric stimulation only at high concns. Neither atropine nor eserine alters the effects of hypogastric stimulation. S. O.

Reaction to pituitrin and adrenaline of the myometrium of sow. E. ADAMS (Endocrinol., 1940, 26, 891—894).—The sow's uterus is contracted by pituitrin and relaxed by adrenaline in all conditions of the organ. V. J. W.

Physiology of uterine musculature. A. C. IVY and L. RUDOLPH (Surg. Gynec. Obstet., 1938, 67, 188—198).—Four types of uterine muscle activity during labour are described. In the 1st stage auxotonic and isometric contractions occur, together with brachystasis of the upper segment and mecystatic contraction of the lower segment, no descent taking place. The 2nd stage consists first of isometric and then of auxotonic contractions, again with brachystasis; descent now occurs. This is followed by a period of "incomplete tetanus" after the birth of the child, and finally auxotonic contraction expels the placenta and blood clot. The metabolism of uterine muscle is discussed. C. E. S.

Effects of adrenaline and nerve stimulation on mechanical and electric responses of uterine muscle. R. S. MORISON (Amer. J. Physiol., 1940, 128, 372—381).—Uteri of non-pregnant cats and rabbits were used. (Estrogen (20,000 r.u., progynon B) in oil was injected intramuscularly 3—8 days before experiments. The mechanical and electrical responses of the 2 ends of a single uterine horn in oestrus were recorded. The experiments indicate that the uterus may on occasion behave as a modified syncytium. Spontaneous rhythmic contractions and the responses to electrical or mechanical stimulation are conducted throughout the muscle. Changes brought about by adrenaline or nerve stimulation, however, are confined to that part of the muscle to which the stimuli are delivered. M. W. G.

Sexual cycle of bitch: histological study. N. ARENAS and R. SAMMARTINO (Bull. Histol. Tech. micr., 1939, 16, 229—259).—An illustrated description is given of histological changes occurring during the sexual cycle in the reproductive organs of the bitch. The phases described for the sterile cycle are rest, follicular maturation, luteinisation, and regression, and the phases of gestation and involution for the fertile cycle. E. E. H.

Menstrual cycle of baboon. VI. Effect of progesterone on first part of cycle. J. GILLMAN (Endocrinol., 1940, 26, 80—87).—Small doses (3—10 mg.) early in the cycle cause rapid deturgescence of sexual skin and postpone the next menstrual bleeding for 3—7 days. Large doses (20 mg.) cause a similar deturgescence but bleeding occurs a few days after the injection when turgescence has disappeared. V. J. W.

Response of rat uteri to hormone injections. G. PINCUS and M. GRAUBARD (Endocrinol., 1940, 26, 684—692).—30-day-old rats were injected with 0.05—3 µg. of oestriol and killed after 6 hr. Uterine O₂ consumption was the same as in controls. There was some increase in dry wt. and more in wet wt. O₂ uptake is inhibited by iodoacetamide, glyceraldehyde, or CN'. V. J. W.

Adolescence of [female] macaques. R. M. SMITH and B. B. RUBINSTEIN (Endocrinol., 1940, 26,

667—679).—In young monkeys the menstrual cycle is irregular and often non-ovulatory. Ovulation can be detected by vaginal cornification, the sexual skin, and rectal palpation of the ovaries. V. J. W.

Actions of oestradiol, progesterone, and testosterone on contractions of human uterus. L. WILSON and R. KURZROK (Endocrinol., 1940, 26, 587—589).—Progesterone alone had no effect but testosterone propionate, after total dosage of 200 mg., caused contractions like those seen after oestrogen-progesterone treatment, and resembling those of the luteal phase. V. J. W.

Endometriosis. F. B. BLOCK (Amer. J. med. Sci., 1940, 199, 579—586).—A review. C. J. C. B.

Biochemistry of growth [of uterus]. J. SLÁDEK and J. BÁLINT (Časop. Českoslov. Lék., 1937, 17, 161—163).—The amount of glycogen in muscles of the rat uterus decreases with growth of the uterus promoted by administration of follicular hormone. The hormone does not affect the growth of abdominal muscles nor their glycogen content. The decrease of glycogen in the uterus depends on its growth and is not sp. for the follicular hormone. F. R.

Disturbances of menstruation of white women in tropical climate. M. HASSELMANN-KAHLERT (Med. Welt, 1940, 14, 38—41).—A review. A. S.

Menorrhagia, with special reference to occult hyperthyroidism. E. V. SHUTE (Canad. Med. Assoc. J., 1939, 41, 115—119).—A general discussion of diagnosis and treatment. C. J. C. B.

Experimental uterine fibromyoma. A. LIP-SCHÜTZ (Congr. Chileno y Americano de Cirugía, 1939, 252—282).—Administration of follicular hormone (oestradiol benzoate, dipropionate, octoate, or butyrate) to ovariectomised guinea-pigs for 2—3 months (total dose 2—3 mg.) produces a tumoral proliferation of both epithelial and connective elements of the uterus. In the 1st case there is a glandular hyperplasia of an adenomatous character; in the 2nd case fibromyomatous tumours are formed. The localisation and degree of development of the latter are variable; they are rich in connective tissue. Extrauterine fibromyomas are also produced; they are found in various places in the abdominal cavity (spleen, stomach, liver, kidney, mesentery) but not elsewhere. Free oestradiol or oestrone are less effective. The tumours are less easily obtained in non-castrated females. S. O.

Effect of treatment of depression in menopause with oestrogenic hormone. H. S. RIPLEY, E. SHORB, and G. N. PAPANICOLAOU (Amer. J. Psychiat., 1940, 96, 905—914).—7 cases of involutional depression, 6 of manic-depressive depression, and 7 of reactive depression were treated either with oestradiol benzoate (500—6000 r.u. daily) or oestrone (1250—3750 r.u. daily). The treatment lasted 10—70 days. Whilst the partial or complete relief of the vasomotor symptoms led to an increased feeling of well-being, the depressive illness was neither specifically influenced nor shortened in its course. G. D. G.

Total urinary excretion of oestrogens during menstrual cycles of six normal women. LIN AI-CH'UN (Chinese Med. J., 1940, 57, 141—144).—Both the daily and the monthly excretion of oestrogens showed wide variations in different subjects, and in the same subject from time to time, but there were indications of a mid-interval rise and of a second rise about one week before the onset of menstruation. Examination of a single specimen of urine is valueless.

W. J. G.

Percutaneous administration of testosterone propionate for dysmenorrhœa. A. R. ABARBANEL (Endocrinol., 1940, 26, 765—773).—Inunction into the skin of 20—90 mg. per month proved beneficial in several cases.

V. J. W.

Persistent menstruation until 71, associated with ovarian tumour. J. H. PEEL (Proc. Roy. Soc. Med., 1939, 32, 1232—1234).—Menstruation had continued from puberty until the age of 71, except for a few months' interruption at 40, in a patient with a right-sided ovarian tumour.

W. J. G.

Diagnostic value of hystero-graphy. A. DAVIS (Proc. Roy. Soc. Med., 1939, 32, 1211—1219).—Lipiodol is injected slowly under direct screen vision until the uterine outline is sharply defined. Normal shadows are described and it is shown that the method is of val. in diagnosis of placental remains, carcinoma, and fibromata. There are, however, fallacies which detract from its routine use.

W. J. G.

Mechanism of œstrin therapy in relief of dysmenorrhœa. S. H. STURGIS and F. ALBRIGHT (Endocrinol., 1940, 26, 68—72).—Injection of 1.5 mg. of œstradiol benzoate every 3 days for 6 injections gives a painless menstruation provided that the 1st injection is not later than the 6th day of the cycle. Biopsy shows that the endometrium is thus rendered proliferative and not secretory, and it is suggested that ovulation is prevented by the inhibitory action of œstrin on gonadotrophic hormones.

V. J. W.

Use of ovarian or pituitary hormones in menstrual disturbances. E. L. SEVRINGHAUS (Ann. int. Med., 1939, 13, 629—635).—A lecture. A. S.

Dysmenorrhœa relieved by thyroid. H. GRAY (Endocrinol., 1940, 26, 536—537).—Report of a case.

V. J. W.

Mechanism and treatment of premenstrual distress with ammonium chloride. J. P. GREENHILL and S. C. FREED (Endocrinol., 1940, 26, 529—531).—Symptoms are attributed to Na retention by reason of increased blood-œstrogen. Benefit has followed withdrawal of NaCl from the diet and taking of 0.6 g. of NH₄Cl 3 times daily.

V. J. W.

Quantitative study of œstrogen-progesterone interaction in formation of placentomata in castrate rat. I. ROTHCHILD, R. K. MEYER, and M. A. SPIELMAN (Amer. J. Physiol., 1940, 128, 213—224).—Female rats were treated with progesterone or progesterone-œstradiol combinations from the 4th to 8th day of pseudopregnancy inclusive, after being castrated and the uterus traumatised on the 4th day. The larger was the progesterone dose the larger was the placentomata. Addition of œstradiol in varying doses to a const. progesterone dose caused an increase

in the size of placentomata until an optimal level of œstradiol was reached; further increases in œstradiol level resulted in the formation of smaller placentomata and finally in complete inhibition of the reaction. Placentomata could be formed in the absence of the pituitary gland after appropriate progesterone treatment.

M. W. G.

Adolescent sterility. M. F. MONTAGU (Quart. Rev. Biol., 1939, 14, 13—34, 192—219).—A review.

J. D. B.

Treatment of female sterility. O. GRAGERT (Med. Klin., 1939, 35, 1565—1568, 1596—1598).—A review.

A. S.

Influence of thyroidectomy on period of gestation in rabbit. B. KRICHESKY (Amer. J. Physiol., 1939, 127, 234—236).—Thyroid ablation did not interfere with the length of the period of gestation in the rabbit nor did it alter the histology of the ovary. Although some of the animals were mated again after their first delivery, and successfully passed through a second pregnancy, a no. died at delivery or exhibited paralysis of the hind limbs.

M. W. G.

Correlation between movements of gravid uterus and formation of histamine. H. HANDOVSKY (Proc. Soc. Exp. Biol. Med., 1939, 42, 643—645).—In 3 out of 7 pregnant cats, naturally occurring contractions of the uterus were accompanied by falls of blood pressure of approx. 10 mm. Hg.

V. J. W.

Maintenance of gestation in castrate pregnant rat with androgens. R. R. GREENE and M. W. BURRILL (Proc. Soc. Exp. Biol. Med., 1939, 42, 585—587).—5 mg. daily of testosterone propionate, 20 mg. of testosterone, or 15 mg. of androstenedione are able to maintain pregnancy to term, with living fetuses, in rats castrated not earlier than 11th day of pregnancy.

V. J. W.

Implants of embryonic tissue inhibit parturition in rat. A. TAYLOR (Science, 1939, 90, 472—473).—In 10 female albino rats, artificial teratomata, induced by implantation of embryonic tissue in the visceral cavity, inhibited parturition of fetuses which developed normally.

W. F. F.

Xenopus laevis, Daudin, pregnancy test. W. LAVES (Dtsch. med. Wschr., 1940, 66, 5—7).—This test was used in 32 cases of pregnancy. A positive result was obtained within 12 hr.

A. S.

Spermatotoxic sera in prevention of pregnancy. E. I. PARSONS and R. R. HYDE (Amer. J. Hyg., 1940, 31, B, 89—113).—Antibodies to ox, sheep, guinea-pig, rat, and rabbit sperm were demonstrated serologically. The complement-fixation test proved the most reliable method. Pregnancy was not prevented or delayed by treatment of the rat or rabbit with sperm antigens. Guinea-pig sperm contains heterophile antigen which produced in rabbits an antibody for sheep cells which was removed by absorption with boiled sheep cells. This antigen injected into the vagina of rabbits produced a hæmolysin for sheep cells. The uterine tissues of the treated rabbit may be saturated with antibody. Passive immunisation of the rabbit by vaginal injection of immune guinea-pig serum may temporarily arrest fertility.

B. C. H.

Placental infarction and eclampsia. H. F. HUNT, W. B. PATTERSON, and R. E. NICODEMUS (Amer. J. clin. Path., 1940, 10, 319—331).—There are 2 types of placental infarcts: fibrin masses beginning with fibrin formation about damaged villi and true placental infarcts caused by thrombosis of a stem vessel. Placental infarcts may become organised by decidual cells or by fibroblasts giving rise to placental fibrosis. Endarteritis, sclerosis, and perifibrosis lead to thrombosis of placental vessels and to villous degeneration. These changes are pathological if found in the placenta although they do not lead to degeneration unless extensive. Placental infarcts and degenerating placental tissue liberate autolysates which if massive, or if renal function is poor, produce severe late toxæmia and eclampsia. (10 photomicrographs.)

C. J. C. B.

Pregnancy diagnosis in mares by colorimetric estimation of oestrogens. S. KOBER (Endocrinol., 1940, 26, 914—915).—5000 diagnoses by the method already described (A., 1938, III, 397) had an error of 0.24% in pregnant and of 0.55% in non-pregnant animals.

V. J. W.

Ancient pregnancy tests in light of contemporary knowledge. H. P. BAYON (Proc. Roy. Soc. Med., 1939, 32, 1527—1538).

W. J. G.

Factors influencing the attitude of foetus in utero. G. F. GIBBERD (Proc. Roy. Soc. Med., 1939, 32, 1223—1229).—Attitude is not entirely due to the proximity of the surrounding uterine wall; the shape of the foetal bones, the resistances of the foetal ligaments, and the skeletal muscles of the foetus determine its attitude. These factors and their rôle in the production of abnormalities are discussed.

W. J. G.

Limits of concentration of gonadotrophic hormone in serum during normal and pathological pregnancy. L. GERNEZ (Compt. rend. Soc. Biol., 1939, 132, 111—112).—Determinations of the gonadotrophic hormone content of human serum during various conditions of pregnancy by means of the rabbit test show that exceptions may occur in the accepted limits of the concns. In 65 cases of normal pregnancy there were 3 with abnormally high vals. (10,000—12,000 r.u.) and 3 with low vals. (250—700 r.u.). 25 cases of retention of the dead foetus showed 3 cases with high (2000—2850 r.u.) vals. 3 cases with persistent vomiting gave normal vals. in 1 (2500 r.u.) and high vals. in 2 instances (10,000 r.u.). The vals. found in 2 out of 8 cases of hydatidiform mole (25,000 and 4000 r.u.) were lower than usual. (The vol. factor of the concn. is not given.)

P. C. W.

Biological potency of international standard chorionic gonadotropin. F. E. D'AMOUR and M. C. D'AMOUR (Endocrinol., 1940, 26, 93—96; cf. A., 1938, III, 486).—Various methods of assay were tried. The most satisfactory was the combined effect on uterus and vagina, controls being carried out on castrated females to ensure absence of œstrin.

V. J. W.

Premature quintuplets. R. K. RAU, A. A. AIYAR, and T. V. MATHEW (Brit. Med. J., 1940, I, 127—128).—A case of premature birth of identical quintuplets is described.

C. A. K.

Childbirth after presacral neurectomy. T. V. PEARCE (Brit. Med. J., 1940, I, 87—88).—Normal labour occurred in a woman who had had presacral neurectomy 2 years previously.

C. A. K.

Hyperemesis gravidarum and other pregnancy intoxications. NABER (Münch. med. Wschr., 1939, 86, 1536—1538).—The importance of psychotherapy in patients suffering from hyperemesis gravidarum is emphasised.

A. S.

Use of Friedman test for pregnancy in chimpanzees. J. H. ELDER and J. M. BRUHN (Yale J. Biol. Med., 1939, 12, 155—160).—138 Friedman tests were made at intervals on 18 pregnant chimpanzees. In a large % tests were positive from the 30th to 120th days from conception. During the last 2 or 3 months all were negative. Parturition varied from 202 to 246 days.

F. S.

"False" Friedman pregnancy tests. L. M. RANDALL, T. B. MAGATH, and F. N. PANSCH (J. Amer. Med. Assoc., 1940, 114, 471—474).—17 out of 645 Friedman pregnancy tests were "false". Positive results occurred in hydatidiform mole, chorioepithelioma, menopause, and primary ovarian failure.

C. A. K.

Therapy with chorionic gonadotropin. COUNCIL ON PHARMACY AND CHEMISTRY (J. Amer. Med. Assoc., 1940, 114, 487—489).—A review of the present status.

C. A. K.

Measurement of placental permeability with radioactive sodium: relation of placental permeability to foetal size in the rat. L. B. FLEXNER and R. B. ROBERTS (Amer. J. Physiol., 1939, 128, 154—158).—Placental permeability in the rat was measured with radioactive sodium (^{24}Na). During the last 4 days of pregnancy there is a high inverse correlation between foetal mass and the placental transmission of radioactive Na per unit wt. of foetus, leading to the conclusion that foetal wt. in the rat is determined by genetic forces. The total amount of ^{24}Na transmitted to a foetus is independent of foetal size.

M. W. G.

Relation between birth weight and litter size, in mice. W. J. CROZIER (J. Gen. Physiol., 1940, 23, 309—320).—In multiparous animals the relation $W = aN^k$ exists between mean litter wt., W , and no. of young, N , where a is the ideal litter wt. in a litter of 1 and k is a const. Two strains of mice obeyed this rule, an albino strain (AA) and a flex-tail foetal anæmic (aa). By crossing mixed litters were obtained and aa wt., W_a , and AA wt., W_A , were found to be related by $W_a = aW_A^k$, the const. k having the same val., 0.83, as in the original parabolic law.

W. F. F.

Hormone content of human tissues in pregnancy. F. PARKER, jun., and B. TENNEY, jun. (Endocrinol., 1940, 26, 527—529).—Chorionic gonadotrophin is not present in the foetus or amniotic fluid. It is found only in the placenta, uterus, and maternal blood and urine.

V. J. W.

Prolongation of pregnancy in hypophysectomised rabbit by progesterone and oestrogens. J. M. ROBSON (J. Physiol., 1940, 97, 517—524).—Pregnancy is prolonged, in rabbits hypophysectom-

ised on the 28th—29th days after mating, by subcutaneous injection of (1) 1.9—2.5 mg. of progesterone per day, (2) 2 μ g. of œstradiol benzoate per day, (3) triphenylethylene. Activity of the corpus luteum is responsible. In the normal rabbit the daily administration of 2 μ g. of œstradiol benzoate from the 29th day of pregnancy is less effective. (Cf. A., 1938, III, 489.)
J. A. C.

(xiii) DIGESTIVE SYSTEM.

Second proteolytic enzyme of gastric juice; cathepsin. E. FREUNDENBERG and S. BUCHS (Schweiz. med. Wschr., 1940, 70, 249—250).—Gastric juice of infants and adults digests protein not only at p_H 2 but also at 4.7. Infants' gastric juice has, at p_H 4.7, 60% of the activity of that at p_H 2. The protease acting at p_H 4.7 (cathepsin) has its optimum activity at 60° and is activated by H_2S . Addition of $MnCl_2$ or $HgCl_2$ inhibits pepsin but potentiates cathepsin digestion. Cathepsin can be separated from pepsin by pptn. with acetone-cholesterol; cathepsin remains in solution and can be separated from acetone. It digests casein, lactalbumin, and egg-albumin; it is ineffective against peptones and peptides. A. S.

Effect of aluminium hydroxide gel on gastric secretion in dog. S. A. KOMAROV and L. KRUEGER (Amer. J. digest. Dis. Nutr., 1940, 7, 170—175).— $Al(OH)_3$ introduced into the main stomach of dogs inhibits gastric secretion (of HCl and pepsin) in a Pavlov pouch. The application produces a greater effect when given some time before a meal. There is also an inhibitory after-effect. C. J. C. B.

Precipitability of pepsin by colloidal aluminium hydroxide. S. A. KOMAROV and O. KOMAROV (Amer. J. digest. Dis. Nutr., 1940, 7, 166—169).—Colloidal $Al(OH)_3$ mixed *in vitro* with canine gastric juice in quantities sufficient to buffer its free HCl completely also removes all the pepsin from the solution. Complete removal of pepsin from gastric juice can be achieved with much smaller quantities of colloidal $Al(OH)_3$ if the gastric HCl is neutralised beforehand by Na_2CO_3 . Colloidal $Al(OH)_3$, when mixed with acid gastric juice in quantities smaller than those required for complete buffering of free HCl in the juice, causes the formation of a characteristic protein-like ppt., which carried down pepsin in quantities proportional to the vols. of the ppt. HCl, in concns. comparable with its concns. in normal gastric juice, slowly dissolves the ppt. and liberates pepsin, sometimes quantitatively. These reactions also take place in experimental animals. C. J. C. B.

Chemical changes in blood of patients with pyloric obstruction. P. H. NOTH and D. L. WILBUR (Ann. int. Med., 1940, 13, 1285—1296).—151 patients with pyloric obstruction showed a close correlation between the amount of vomiting and the lowered plasma-Cl, and raised blood-urea and CO_2 -combining power of the blood. The diminution in plasma-Cl is mainly due to loss of Cl in the vomit. Similar changes were observed in patients suffering from achlorhydria. Blood-urea is higher and plasma-Cl lower in cases with pyloric obstruction + hæmorrhage than in those with pyloric obstruction only. The blood composition returned to normal following

intravenous injections of physiological NaCl and of 5—10% glucose. A. S.

Gastroscopic observations in chronic gastritis. J. B. CAREY (Amer. J. digest. Dis. Nutr., 1940, 7, 160—164).—A review of findings in 15 cases. C. J. C. B.

Gastric emptying time and acidity in avitaminosis-A in dogs. R. C. HERRIN (Amer. J. digest. Dis. Nutr., 1940, 7, 164—166).—The free and total acidity of gastric juice and its rate of secretion in response to histamine were unrelated to vitamin-A intake. C. J. C. B.

Reasons for survival of the Ewald-Boas test meal. D. SANDRONI and Z. SAGAL (Ann. int. Med., 1940, 13, 2134—2140).—The single aspiration method and the carbohydrate test meal are satisfactory and give sufficient information in 90% of the cases; the remaining 10% may be further studied by fractional method, using histamine, neutral-red, or similar methods. The conclusions are based on 2153 gastric analyses. A. S.

Gastric secretion [preparation of gastric pouch]. O. COPE, C. E. MACMAHON, A. HAGSTRÖMER, and R. H. THOMPSON (Arch. Surg., Chicago, 1940, 40, 717—732).—Description of a two-stage operation on the dog providing a gastric pouch with a non-leaking stoma and an intact nerve supply. F. S.

Changes in plasma volume due to decompression of the distended small intestine. J. FINE, F. FUCHS, and S. GENDEL (Arch. Surg., Chicago, 1940, 40, 710—716).—The small intestine in dogs was distended by air to a pressure of 20 cm. H_2O for 4 hr., a period sufficient to reduce the plasma vol. to 30—40%. A return of part or most of the lost plasma occurred after decompression by suction in the lower part of the jejunum. F. S.

Pseudo-megacolon. A. OPPENHEIMER (Ann. int. Med., 1940, 13, 2128—2133).—22 patients suffered from constipation with inability to defæcate for periods of 6—11 days. The Ba meal reached the ascending and transverse colon within 24 hr. but did not move beyond the splenic flexure for a further 6—7 days. There was no mechanical obstacle. Repeated injections of posterior pituitary extracts (5—10 units) produced mass peristalsis of the transverse colon within 50 min.; the patients were cured. A. S.

Localised absence of ganglion cells of myenteric plexus in congenital megacolon. M. E. TIFFIN, L. R. CHANDLER, and H. K. FABER (Amer. J. Dis. Child., 1940, 59, 1071—1082).—A case is described of megacolon in which the sigmoid flexure was of normal calibre and the entire colon above that segment was enormously dilated and hypertrophied. The production of spinal anaesthesia and the administration of mecholyl and prostigmine caused contraction of the bowel without propulsion of its contents. Sympathectomy did not influence the condition favourably. Syntropan had no effect. The cells of Auerbach's plexus were normal in no. and appearance throughout the hypertrophied and dilated portion of the bowel but were greatly diminished or absent in the undilated sigmoid colon. C. J. C. B.

Cellular exudates of bowel discharges. I. Control observations in 1123 patients, 7 autopsies, and 3 dog experiments. Z. BERCOVITZ (J. Lab. clin. Med., 1940, 25, 788—795).—From the 3 sets of observations, the conclusion is drawn that if no pathological condition is present, cells will not be found when microscopic examination is made of the bowel discharges. C. J. C. B.

Appendical stump. J. KROSS (Arch. Surg., Chicago, 1939, 39, 1016—1027).—In rabbits, 3—4 in. of the appendix were amputated after ligation; in 23, the stump was inverted and buried, in 16, the stump was left free in the peritoneal cavity. The process of healing in the buried stump was accompanied by adhesions, lymphadenitis, hæmorrhagic infarction, and other complications, absent after operation by simple ligation. (4 photomicrographs.) F. S.

Appendicitis. W. F. BAWERS (Arch. Surg., Chicago, 1939, 39, 362—422).—In 372 cases there was organic obstruction to the lumen in 80%. Normal excised appendices respond to faradic stimulation for 3½ hr. whereas inflamed appendices have such damaged musculature that they do not respond after 26 min. Distention of the lumen by injecting saline causes severe abdominal pain, relieved by cutting the meso-appendix. (7 photomicrographs.) F. S.

Ætiology of acute appendicitis. C. DENNIS, R. E. BURGE, R. L. VARCO, and O. H. WANGENSTEEN (Arch. Surg., Chicago, 1940, 40, 929—948).—Simple ligation obstruction of the rabbit cæcal appendage resulted in acute appendicitis similar to the human disease. The lowest continuous pressure required was 10 cm. H₂O. The rate of fluid secretion was reduced by pressure and arrested by adrenaline. (2 photomicrographs.) F. S.

Perforation of gastro-intestinal tract of newborn infant. H. E. THELANDER (Amer. J. Dis. Child., 1939, 58, 371—393). A complete review. C. J. C. B.

Allergic reaction in passively sensitised mucous membranes of ileum and colon in man. I. GRAY, M. HARTEN, and M. WALZER (Ann. int. Med., 1940, 13, 2050—2056).—The exteriorised mucous membrane of 2 patients with colostomy was sensitised by local injections of 0.05 c.c. of peanut serum. Allergic reactions in the bowel were produced after 24—26 hr. by oral administration of the antigen (peanut suspension), introduction of the antigen through a catheter into the lumen of the colon, or direct application of the antigen to the sensitised mucous membrane. The allergic reaction is characterised by œdema, hyperæmia, and excessive mucous secretion of the bowel. A. S.

Rectal injection of serum. R. W. VIERTHALER and R. VON BLUMENTHAL (Klin. Woch., 1939, 18, 1578—1580).—Some protein may be absorbed intact by the mucous membrane of the colon of guinea-pigs and rabbits when serum enemata are given. M. K.

Absorption of protein from the rectum; comparative study of absorption following oral, duodenal, and rectal administrations. I. GRAY

and M. WALZER (J. Allergy, 1940, 11, 245—250; cf. A., 1940, III, 38).—The average absorption rate following rectal administration of the peanut antigen approximates to that following its intraduodenal introduction and is more rapid than that following its oral ingestion. In patients with gastric hyperacidity, absorption of peanut antigen from the rectum is retarded; this was also noted following the oral and intraduodenal administration of the antigen of these cases. C. J. C. B.

Acute pancreatic necrosis and acute interstitial pancreatitis. M. A. CASBERG (Arch. Surg., Chicago, 1939, 39, 247—263).—5 patients with acute interstitial pancreatitis and 5 with acute pancreatic necrosis were treated conservatively; the former all survived and the latter all died. The latter condition can be diagnosed from the low val. of blood-amylase. F. S.

(A) **Fæcal residue of fat, protein, and carbohydrate in normal dog.** (B) **Effect of exclusion of bile on absorption of foodstuffs.** (C) **Influence of the pancreas on utilisation of foodstuffs.** (D) **Substitution therapy in experimental pancreatic deficiency.** R. J. COFFEY, F. C. MANN, and J. L. BOLLMAN (Amer. J. digest. Dis. Nutr., 1940, 7, 141—143, 143—144, 144—149, 149—151).—(A) The utilisation of foodstuffs by normal dogs is highly efficient. Fæcal excretion of fat varied from 2.11% to 3.99%, most of which was fatty acids. Fæcal N was proportional to fæcal bulk; when calc. as % of the protein intake, fæcal N increased in % as the protein intake decreased. With low-protein diets as much as 50% of the N intake may be excreted in the fæces. Carbohydrate excretion in the fæces is only slightly affected by diet, varying from 3 to 10%. (B) When bile was excluded from the intestine of a dog there was diminished absorption of fat; carbohydrate utilisation was not impaired. There was increased N loss which was independent of the protein intake diet, but proportional to the fæcal bulk.

(C) Following complete pancreatectomy, the production of a complete pancreatic fistula, or evulsion of the pancreatic ducts, there was a marked loss of fat and carbohydrate in the fæces. An increased excretion of fæcal N was related to the increased bulk of the fæces, which was less when diets rich in protein were employed. The loss of utilisation of fat and carbohydrate appeared immediately following removal of the pancreas or the production of a complete pancreatic fistula but only after several weeks following evulsion of the ducts. Gross alterations of digestive functions appear only in the complete absence of the external pancreatic secretion, and small amounts of pancreas are adequate to maintain complete digestion.

(D) Replacement therapy with pancreatic juice, raw pancreas, or pancreatin preps. reduced the loss of carbohydrate in the fæces; the bulk of the fæces was decreased and the amount of N lost was reduced. Fat utilisation was not influenced by the treatments tried. Continuous instillation of pancreatic juice into the upper jejunum by way of a jejunal fistula gave no better results than the single administration of the daily dose by stomach tube. C. J. C. B.

Reactions of peritoneum to trauma and infection. F. A. COLLIER, H. K. RANSOM, and C. S. RIFE (Arch. Surg., Chicago, 1939, 39, 761—769).—Colostomy and particularly subcutaneous implantation of a loop of colon in dogs conferred on the peritoneum slight transient protection against inoculations of *B. coli*. F. S.

Intra-abdominal pressure. C. R. LAM (Arch. Surg., Chicago, 1939, 39, 1006—1015).—This was measured in dogs by inserting a rubber glove finger, partly inflated with 4 c.c. of air and connected to a water manometer, in various parts of the abdominal cavity. The abdominal pressure was increased by distension of the alimentary canal but only after a considerable increase in the vol. of the abdominal contents because of reflex relaxation of the abdominal wall. In the erect position a negative pressure was usually found under the diaphragm. F. S.

(xiv) LIVER AND BILE.

Azorubin S test of liver function: evaluation with comparative study of the bromsulphalein and hippuric acid tests. D. H. ROSENBERG and S. SOSKIN (Ann. int. Med., 1940, 13, 1644—1654).—The azorubin S test of liver function was performed on 14 normal subjects, and a comparative study of this test with the bromsulphalein and hippuric acid tests was made in 19 cases of cirrhosis, 2 of acute toxic hepatitis, one of subsiding acute hepatitis, one of fatty metamorphosis of the liver, and 4 of early chronic hepatitis. The azorubin S test was as reliable as the bromsulphalein test and better than the hippuric acid test in cirrhosis. In the early chronic hepatitis, the azorubin S test was superior to both the other tests. Although the azorubin S test requires duodenal intubation, the method lends itself to a simultaneous crystallographic study of the bile. C. J. C. B.

Rôle of food intake in restoration of liver following partial hepatectomy in albino rats. T. E. MACHELLA, G. M. HIGGINS, and F. C. MANN (Amer. J. digest. Dis. Nutr., 1940, 7, 152—154).—There is a correlation between the amount of food ingested and the degree of restoration of hepatic mass following partial hepatectomy. The loss in body-wt. of animals that eat what they please can be prevented by forced feeding, which promotes and accelerates hepatic regeneration; in part this is due to accumulation of fat in the hepatic cells. C. J. C. B.

Rôle of liver in conversion of indole into indoxyl in dog. G. BARAC (Arch. int. Physiol., 1940, 50, 1—11).—Chloralosed dogs showed conversion of indole into indoxyl in presence of the liver, and to a smaller extent after hepatectomy. W. BU.

Effect of diet on formation of acetaldehyde in liver. I. Dogs on normal, mixed diet. K. RI (J. Biochem. Japan, 1939, 30, 251—263).—Perfusion experiments show the formation of acetaldehyde in the liver. The production of acetaldehyde is increased by addition of Na_2SO_3 — NaHSO_3 to the perfusion fluid (the increase not being proportional to concn. of SO_3) or by addition of fructose or glucose but not glycogen or lactose; insulin has no effect. F. O. H.

Liver-arginase. II. Arginase activity of liver autolysates. III. Effect of arginase on acetyl-*l*-phenylalanyl-*d*-arginine. M. KAIJU (J. Biochem. Japan, 1939, 30, 265—269, 271—275; cf. A., 1939, III, 272).—II. The arginase activity in rabbit's liver pulp is completely destroyed (with or without addition of MnSO_4) by autolysis at p_{H} 5.0 and 37° for 24 hr.; partial destruction of the enzyme occurs during autolysis at p_{H} 7.0 or 7.6. The loss in activity is due to ereptic hydrolysis.

III. The acetylpeptide is only slowly hydrolysed by purified arginase preps. from ox liver but is rapidly hydrolysed by macerates of raw liver or pancreas.

F. O. H.

Metal content of liver and bile of vertebrates. I. O. J. GUSHOVSKAJA (Ukrain. Biochem. J., 1939, 14, 519—548).—The decreasing series K, Fe, Na, Mg, Ca, Cu, Mn is found for the liver and bile of male and female herons and turtles. The same order is found for frogs, except that Ca and Cu are transposed, and for susliks, Fe and Na being transposed, in the liver. For bile, the series in decreasing order is Na, Ca, K, Mg, Fe for male frogs, K, Fe, Na, Mg, Ca for female frogs, and Na, K, Ca, Mg, Fe for male and female susliks. R. T.

Lipin, carbohydrate, and moisture content of liver in diabetes mellitus. N. HALLIDAY (J. Lab. clin. Med., 1940, 25, 926—932).—Human livers from diabetic and non-diabetic persons were analysed for lipins, moisture, glycogen, and free sugar. There were no outstanding differences, except that there was more variation in total fatty acids in the diabetic group. One third of the livers of persons with diabetes, and 1 out of 7 livers of normal persons, contained more than 5% total fatty acids. I vals. in both groups showed that the excess fat was of depot nature. The phospholipin-fatty acids and total cholesterol vals. were const. As liver-fatty acids increased above normal the moisture decreased. The glycogen and free sugar vals. varied greatly, but showed little relationship to severity of the disease, recent blood-sugar determinations, total fatty acids, and in some cases, to time after death. C. J. C. B.

Liver damage after oral administration of oestrogenic substances. P. GRUMBRECHT and A. LOESER (Klin. Woch., 1939, 18, 1195—1196).—Degenerative changes were found in the liver cells of rats 44—54 days after daily administration of 1 mg. of dihydroxydiethylstilbene. M. K.

Obliterating hepatic endophlebitis in sucklings. H. WURM (Klin. Woch., 1939, 18, 1527—1531). M. K.

Production of cirrhotic changes in liver by furfuraldehyde feeding. W. NAKAHARA and K. MORI (Proc. Imp. Acad. Tokyo, 1939, 15, 278—281).—In an investigation into the high incidence of hepatoma in the Far East, various chemical constituents of saké were fed to rats. Furfuraldehyde mixed with a polished rice and carrot diet (40—100 ml. per kg. of rice) produced cirrhotic changes in the liver in 70% of rats 40—170 days after the start of feeding. 10—40 ml. per kg. of rice only produced the liver changes after 200—500 days. P. C. W.

Lipin amino-nitrogen content of blood in diseases of liver and biliary tract. W. DE W. ANDRIES and R. A. MOORE (Arch. Surg., Chicago, 1939, 39, 3—9).—The normal lipin $\text{NH}_2\text{-N}$ averages 1.24 mg. per 100 g. of whole blood. In patients with obstructive or hæmolytic jaundice without liver damage it is normal. In obstructive jaundice with liver damage it is more than 2 mg. per 100 g. of whole blood. F. S.

Liver and biliary tract. C. H. GREENE and E. FARRELL (Arch. intern. Med., 1940, 65, 847—869).—A review of the literature for 1939. C. A. K.

Drainage of common bile duct with resultant extrarenal azotæmia. K. E. LEMMER and J. P. MALEC (Arch. Surg., Chicago, 1939, 39, 125—130).—Description of a case in which drainage of bile was 1800—2600 c.c. per day and non-protein-N rose to 135 mg.-% on the 9th day. F. S.

Relation of anterior pituitary to bile production. O. B. HOUGHIN and C. W. TURNER (Endocrinol., 1940, 26, 821—823).—Injection of 25 mg. of anterior pituitary extract into guinea-pigs caused after 4—8 hr. an increase of 85% per hr. in bile secretion. V. J. W.

Bile acids of tortoises. Trihydroxysterolcholic acid lactone. C. H. KIM (J. Biochem. Japan, 1939, 30, 247—249).—The bile of *Emys obicularis* contains trihydroxysterolcholic acid lactone, m. p. 207—208°, shown to be identical with the lactone from bile of alligator tortoises by prep. of the formyl ester and the triketo-acid (Yamasaki and Yuuki, A., 1937, II, 20). F. O. H.

(xv) KIDNEY AND URINE.

Limitations of renal function determination. L. MCGEE and J. E. MARTIN, jun. (Ann. int. Med., 1940, 13, 1626—1636).—The 15-min. excretion of phenol-red gave expected results more often than any other measure employed. When combined with the urea clearance determination, laboratory confirmation of renal disease was obtained in all but six of a group of 290 patients presenting good clinical or urinary sediment signs of renal disease. C. J. C. B.

Sex differences in structure of Bowman's capsule [of kidney] in mouse. C. CRABTREE (Science, 1940, 91, 299).—Two different histological types of capsule were observed in normal male mice, one described in textbooks, the other by Selye (J. Urol., 1939, 42, 637). The second type was found in 89% of adult males, 25% of 5.5-g. males, 13% of mature and immature females. E. R. S.

Preparation of renal extracts capable of reducing blood pressure of animals with experimental renal hypertension. A. GROLLMAN, J. R. WILLIAMS, jun., and T. R. HARRISON (J. Biol. Chem., 1940, 134, 115—121).—Fresh kidneys are extracted with dil. HCl, inert protein is removed by adjustment to p_{H} 4.0, and the active material pptd. with 1.5 vols. of saturated aq. $(\text{NH}_4)_2\text{SO}_4$ at p_{H} 2—3. The material is active orally, non-protein in nature, and insol. in org. solvents. H. G. R.

Renal blood flow in women with hypertension and renal impairment. L. C. CHESLEY and E. R. CHESLEY (J. clin. Invest., 1940, 19, 475—482).—In most of 27 patients with essential hypertension the renal blood flow, as measured by the diodrast clearance, is considerably reduced; this is often associated with efferent glomerular arteriolar constriction and, consequently, with a high filtration pressure which may maintain normal renal function by tests other than the diodrast clearance. In hypertension in women starting with toxæmia of pregnancy, the filtration fraction is usually normal; the glomerular capillaries rather than the efferent arterioles may be the site of resistance to blood flow in these cases. The urea clearance often parallels the renal blood flow except where efferent glomerular arteriolar constriction exists. In 70 subjects, the coeff. of correlation between urea clearance and blood flow was 0.79. Marked diminution in renal blood flow, as measured by the diodrast clearance, may be found in patients with normal blood pressure. Since destruction of the renal parenchyma may have occurred, renal ischæmia may not be present in these cases. C. J. C. B.

Effect of nephrectomy on hypertension associated with organic renal disease. H. A. SCHROEDER and G. W. FISH (Amer. J. med. Sci., 1940, 199, 601—616).—In 7 patients with arterial hypertension associated with organic renal disease the kidney which showed the poorer functional tests was removed. 2 patients were markedly improved and 2 slightly improved, but all remained actually or potentially hypertensive. This form of therapy may prove of benefit, but, it seems, only in patients in whom the existence of hypertension is of short duration and in whom arteriolar sclerosis of the other kidney is not advanced. Its use is limited, therefore, to a small no. of individuals. C. J. C. B.

Rate and site of "nephrotoxin" fixation in experimental glomerular nephritis. H. SARRE and E. WIRTZ (Klin. Woch., 1939, 18, 1548—1550).—Experimental diffuse glomerular nephritis was produced in rabbits by Masugi's method. During and after injection of anti-kidney serum the left renal artery was occluded. The right kidney developed Masugi nephritis after a few days, but the left kidney remained unaffected, except in severe cases, and then only to a slight extent. A rapid fixation in the kidney of sp. nephrotoxin, which is contained in anti-serum, is assumed. M. K.

Acidosis in chronic glomerulonephritis. E. R. MARZULLO (Ann. int. Med., 1940, 13, 1638—1643).—Severe acidosis is a frequent finding in uræmia. The symptoms of toxæmia in uræmia are similar to those of severe acidosis from other causes. In uræmia without severe acidosis subjective symptoms are mild. The greater is the acidosis the shorter is the duration of life. A CO_2 -combining power determination in advanced nephritis is a valuable test of renal function. C. J. C. B.

Tender points in diseases of renal pelvis and ureter. M. S. LEVITAS (Arch. Surg., Chicago, 1939, 39, 457—477).—In an analysis of 100 cases 5 points of deep hyperalgesia were observed: at the first

lumbar nerve, near the spine of the vertebra; in the posterior part of the iliac crest; 2.5 cm. medial to the anterior superior iliac spine; above and lateral to the crest of the pubis; within the femoral triangle.

F. S.

Post-partum urinary suppression. G. F. MADDING, M. W. BINGER, and A. B. HUNT (J. Amer. Med. Assoc., 1940, 114, 1038—1041).—A non-fatal case of post-partum urinary suppression resembling bilateral cortical necrosis of the kidneys is described. Quinine, used for induction of labour, may have been a causative factor.

C. A. K.

Formation of urine. J. G. EDWARDS (Arch. intern. Med., 1940, 65, 800—824).—A review.

C. A. K.

Chemical studies on icteric urine. A. MUELLER (Klin. Woch., 1939, 18, 1190—1191).— p_H vals. of icteric urine in cases of cirrhosis of the liver were almost normal except in the last stage of illness, where there was an increase to 7.1—7.2 in the p_H of the morning urine.

M. K.

Cloudy urine. B. JURUKOFF (Klin. Woch., 1939, 18, 1555).—Cloudiness of urine due to bacteria does not disappear after addition of $\frac{1}{2}$ —1 vol.-% of Nylander's reagent.

M. K.

Blood-urea and urea clearance. F. MORTON and A. M. NUSSEY (Lancet, 1940, 238, 636—640).—The administration of 15 g. of urea before measuring urea clearance was found in 50 normal subjects to eliminate the low vals. obtained with Van Slyke's technique in healthy persons. The blood-urea was raised to a relatively stable level $\frac{3}{4}$ —1 $\frac{3}{4}$ hr. after taking urea. A practical test is suggested.

C. A. K.

Influence of vitamin-A on urea clearance in man. R. C. HERRIN and H. J. NICHOLS (J. clin. Invest., 1940, 19, 489—492).—Vitamin-A was administered in daily doses of 50,000—75,000 i.u. to 10 men and 3 women. In 2 subjects there was no change in urea clearance, in 4 the clearance increased by 11—15%, and in 7 it rose by 24—91%. The increase in clearance in 2 subjects was not accompanied by changes in blood pressure or O_2 consumption.

C. J. C. B.

Application to urine of Bandier and Hald's method for determination of nicotinic acid. L. A. ROSENBLUM and N. JOLLIFFE (J. Biol. Chem., 1940, 134, 137—141).—The method of Bandier and Hald (A., 1939, II, 196) can be successfully applied to nicotinic acid and nicotinamide in urine. The average 24-hr. excretion of nicotinic acid and nicotinamide is 3.4—10.2 mg. (as nicotinic acid); it is low in pellagra but increased on administration of nicotinic acid in the diet.

H. G. R.

Determination of urinary indican. J. BROEKMEYER (Klin. Woch., 1939, 18, 1471—1472).

M. K.

Spectrography of urinary porphyrins. E. M. KAPP (Proc. 7th Conf. Spectros., 1939, 124—127).—The ultra-violet absorption band of coproporphyrin in HCl solution differs in shape and position from that of coproporphyrin in non-polar solvents and is similar to that of the metallic porphyrin derivatives.

Fine structure in the ultra-violet absorption bands of the porphyrins is noted.

O. D. S.

Chloralose in urine. P. CHERAMY (J. Pharm. Chim., 1940, [ix], 1, 233—234).—Urine (20 c.c.), conc. H_2SO_4 (1 c.c.), and C are boiled (5—10 min.) and filtered, and treated with pyridine (2—3 c.c.) and an equal vol. of NaOH at 100° (1—2 min.), the pyridine being coloured pink with 0.01% of chloralose. Chloral, $CHCl_3$, $CHBr_3$, and CHI_3 give the reaction.

J. L. D.

Significance of urinary chlorides in cases of pneumonia treated with sulphapyridine. W. ANTOPOL and J. CHURG (J. Lab. clin. Med., 1940, 25, 946—950).—The urinary Cl⁻ rise in 17 persons with pneumonia treated with sulphapyridine occurred 2—6 days after defervescence (mainly 4th or 5th day). The rise is related to a mechanism similar to that occurring after the spontaneous crisis in pneumonia. The rise is uninfluenced by extrapulmonary complications. In 13 of these patients there was a secondary temp. rise after defervescence. This occurred between the day of the increased urinary Cl⁻ output and 3 days before this rise. This secondary rise in temp. is not influenced by sulphapyridine and may be either a "crisis effect" or a delayed reaction to sulphapyridine.

C. J. C. B.

Urinary bromides. D. MCG. KELLEY (J. Lab. clin. Med., 1940, 25, 1002—1004).—A review is given of some of the more usual clinical methods for the qual. demonstration of Br⁻ in the urine, and a new modification of the Todd and Sanford method is described.

C. J. C. B.

Iodine content of urine. B. PURYESZ and L. DAVID (Klin. Woch., 1939, 18, 1572—1575).—I content in urine (determined by Winkler's method) was unaffected by the fat intake in the diet.

M. K.

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

Rheumatism and arthritis. P. S. HENCH, W. BAUER, M. H. DAWSON, F. HALL, W. P. HOLBROOK, J. A. KEY, and C. MCEWEN (Ann. int. Med., 1940, 13, 1655—1739).—Review of American and English literature for 1938.

C. J. C. B.

Effect of carcinogenic substances, especially carcinogenic azo-compounds, on animal growth. W. NAKAHARA and K. TAKAHASHI (Sci. Papers Inst. Phys. Chem. Res., 1940, 37, 131—136).—Dimethylaminoazobenzene (17.5 mg.) and *p*-aminoazotoluene (17.5 mg.) administered intraperitoneally in olive oil to young rats do not affect growth rate (cf. Sasaki *et al.*, A., 1936, 626), but 3:4-benzpyrene (10 mg.) and methylcholanthrene (10 mg.) injected similarly produce a temporary decline in growth rate (cf. Haddow *et al.*, A., 1937, III, 256).

J. L. D.

Biochemistry of carbohydrates. XLIX. Submaxillary mucin and mucoid. Y. TANABE. **L. Prosthetic group of corneal mucoid. LI. Carbohydrate grouping of mucin from vitreous humour.** M. SUZUKI. **LII. Determination of free amino-sugar in normal and diabetic urine.** M. YOSITAKE (J. Biochem. Japan, 1939, 30, 181—

184, 185—191, 193—198, 199—203).—XLIX. Submaxillary mucin and mucoid appear to be identical with sublingual mucin and mucoid, respectively (A., 1939, III, 156, 987, 1062).

L. Mucoid (N 11.39—11.70%) from cornea contains galactose (1 mol.) and glucosamine (1 mol.); 1 equiv. of acetyl and 0.81—0.91 of SO_4'' were present per equiv. wt. of the mucoid. These data and direct analysis of the carbohydrate group show that the prosthetic group of the mucoid is a sulphuric ester of an equimol. complex of acetylglucosamine and galactose (cf. Karlberg, A., 1936, 879).

LI. Mucin (N 9.68—10.09) affords mucoitin containing only equimol. equivs. of glucosamine, glycuronic acid, and acetyl group, thus resembling the mucoitin from umbilical cord (cf. A., 1939, III, 394, 1062).

LII. The method of Elson and Morgan (A., 1934, 175), as applied by Masamune *et al.* (A., 1938, III, 321), is further modified for use with urine. F. O. H.

Statistical study of lead in human blood and urine. R. A. SAYWER, R. W. WAGGONER, and A. A. ERICKSON (Proc. 7th Conf. Spectros., 1939, 47—50).—By spectroscopic determination the mean Pb contents of blood (794 samples) and urine (1124 samples) are 18 $\mu\text{g.}$ and 57 $\mu\text{g.}$ per 100 c.c., respectively. Large fluctuations in Pb content occur from time to time in the urine of the same individual. Urine contents were analysed according to sex, occupation, and diagnosis. Significant differences were found between exposed and non-exposed occupations. High urine-Pb is associated with Pb poisoning but is not sp. No correlation between blood- and urine-Pb in the simultaneous samples was observed. O. D. S.

Composition of dolphin milk. L. EICHELBERGER, E. S. FETCHER, jun., E. M. K. GEILING, and B. J. Vos, jun. (J. Biol. Chem., 1940, 134, 171—176).—Dolphin milk contains fat 108—180, protein 94.2—111, and lactose 3.9—7.7 g. per l. H. G. R.

Ionic regulation in *Carcinus maenas*. D. A. WEBB (Proc. Roy. Soc., 1940, B, 129, 107—136).—The regulation depends on (a) active absorption by the gills of Na^+ , K^+ , Ca^{++} , and Cl^- at a rate greater than that at which they are lost by diffusion; (b) differential excretion by the antennary gland, which tends to conserve K^+ and eliminate Mg^{++} and SO_4'' ; (c) inward diffusion across the gills of Mg^{++} and SO_4'' determined by the concn. gradient. In normal conditions, active absorption of water occurs. Osmoregulation is achieved by a cessation of water absorption; possibly by a passive fall in gill permeability to water; and by intensification of (a), (b), and (c). F. B. P.

Biology of growth of silkworms. A. AKAO (J. Biochem. Japan, 1939, 30, 303—349; cf. A., 1932, 1283).—Data for growth rates, initial and dry wt., and ash, C, H, Na, K, Ca, Mg, Fe, Zn, Mn, and Cu contents of silkworms at various stages of development are tabulated and discussed, especially with respect to nutrition of the worms. Ca levels are high in the discarded skin and in the cocoons. Zn appears to be an important catalyst in the biological stages and during metamorphosis. The distribution of Zn in the different tissues is oppositely related to that of

Fe; the distribution of catalytic metals in the tissues gives a series of decreasing concn. of Zn, Fe, Mn, and Cu. F. O. H.

Physical and chemical properties of insect cuticle. G. FRAENKEL and K. M. RUDALL (Proc. Roy. Soc., 1940, B, 129, 1—35).—In cyclorrhaphous flies, as the larval cuticle (*L*) is converted into the puparium (*P*), a lengthwise contraction is brought about by a reorientation of the chitin crystallites. The freedom of rotation of the *L* crystallites is lost in *P*. *L* swells much more than *P* in water. The dry wt. of *P* is about 125% of *L*. The water content of *L* is about 70%, that of *P* (36 hr.) 40%. The dehydration is due to chemical change and is followed by further physical drying. The abs. wt. of chitin is unchanged. The water-sol. fraction of *L* is 33%, of *P*, 8%, but the acid- or alkali-sol. fraction increases from 40% to 53%. Almost all the non-chitin material in *L* and *P* is protein, which loses its water-solubility and holds the crystallites firmly together. Hardening is due to (a) greater chitin orientation; (b) closer packing, by dehydration; (c) increasing insolubility of protein; (d) change in nature of chitin-protein physical relation; (e) loss of swelling power. F. B. P.

Acetyl content of marinobufagin, arenobufagin, and acetylmarinobufagin.—See A., 1940, II, 257.

(xvii) TUMOURS.

First effects on mouse skin of polycyclic hydrocarbons. B. D. PULLINGER (J. Path. Bact., 1940, 5, 463—471).—One application of methylcholanthrene, benzpyrene, or 9 : 10-dimethyl-1 : 2-benzanthracene is injurious and is followed on the 2nd, 3rd, and 4th days by a characteristic and possibly sp. reaction. Squamous epithelial cells and nuclei swell, the cytoplasm becomes vacuolated, and multiplication at first by direct and later by indirect division follows. The increase in size of cells and nuclei is progressive; further cytoplasmic degenerations appear in some of the cells while others show signs of recovery. Cloudy swelling is not detectable and premature death of cells is relatively rare. A similar reaction follows the application of a large amount of 3 : 4 : 5 : 6-dibenzcarbazole on the 2nd, 3rd, and 4th days and in the majority of mice on the 5th and 6th days following similar treatment with 2-methyl-3 : 4-benzphenanthrene. Treatment with small and large amounts of non-carcinogenic hydrocarbons and chemicals shows that all those tested except naphthacene are injurious to the squamous epithelium of the mouse but none evokes the reaction which follows the application of the active carcinogens. C. J. C. B.

Volume of injection and concentration of carcinogenic chemical as factors in initiation of malignant process and their bearing on somatic mutation hypothesis. W. F. DUNNING, M. R. CURTIS, and F. C. WOOD (Amer. J. Cancer, 1940, 39, 70—71; cf. A., 1940, III, 588).—Tumours were induced by benzpyrene in paraffin wax injected into rats and mice at many sites subcutaneously. The induced tumours showed a random distribution in the injected foci. An increase in the no. of foci per animal coincidentally with an increase in dose of benzpyrene

increased the % of animals in which tumours were induced and decreased the latent period. Increasing the surface area of tissue exposed by injecting a given quantity of benzpyrene in more foci each of smaller vol. increased the latent period. With a fixed area of exposure more tumours developed more rapidly on increasing the concn. of benzpyrene. The concn. of the carcinogen may also be a factor in determining the degree of malignancy and the morphology of the induced tumours.
F. L. W.

Sarcomata and carcinomata induced in cotton-tail rabbits by methylcholanthrene. J. T. SYVERTON and G. P. BERRY (Science, 1940, 91, 298).—The hydrocarbon (1 g. in 4 ml. of tricapyrylin) produced tumours by injection into four sites, and by skin application of 1% solution in benzene. Metastases occurred in 8 of 12 tumours.
E. R. S.

Effect of diet supplemented by fresh liver on induced skin tumours in inbred mice. G. M. BONSER and L. M. WAINMAN (J. Path. Bact., 1940, 5, 548—550).—By supplementing the diet of *IF* mice, which are highly susceptible to carcinogenic agents applied to the skin, with fresh ox liver, a slight acceleration of benign tumour formation was obtained. There was, however, a delay in the development of malignant tumours.
C. J. C. B.

Production of tumours in mice by deoxycholic acid. J. W. COOK, E. L. KENNAWAY, and N. M. KENNAWAY (Nature, 1940, 145, 627).—Spindle-celled tumours were produced by subcutaneous injection. One mouse out of 100 developed an epithelioma following skin application.
E. R. S.

Photodynamic hæmolysis by carcinogenic hydrocarbons. M. WOLMAN (Nature, 1940, 145, 592).—Irradiation of sheep red blood cells treated with colloidal carcinogenic hydrocarbons produced photodynamic hæmolysis. Paramecia are killed when so treated. No such effect was observed when three similar non-carcinogenic hydrocarbons were used.
E. R. S.

Photodynamic hæmolysis by 3:4-benzpyrene. I. DONIACH and J. C. MOTTRAM (Nature, 1940, 145, 748).—Wolman's work (preceding abstract) is confirmed and extended. Evidence is obtained that benzpyrene enters the red cell before photodynamic action occurs.
E. R. S.

Histology of rat's liver during course of carcinogenesis by butter-yellow. J. W. ORR (J. Path. Bact., 1940, 5, 393—408).—In 136 white rats fed butter-yellow (*p*-dimethylaminoazobenzene) over long periods there was proliferation of connective tissue cells in the portal systems, extension of granulation tissue from the latter into the parenchyma, with degeneration of the contiguous liver cells, atypical regenerative proliferation of bile duct and liver epithelium leading ultimately to non-architectural nodular hyperplasia and a macroscopically hob-nailed liver, in which in a certain proportion of cases tumours arose. Butter-yellow administration was stopped after 232 days and the livers then returned to normal, apart from the presence of tumour, in 2—3 months. (20 photomicrographs.)
C. J. C. B.

Liver cell regeneration and butter-yellow carcinogenesis. T. OHTA (Gann, 1940, 34, 186—187).—The injection of acacia into rats treated with butter-yellow increased the liver regeneration without changing the incidence of hepatomata.
E. B.

Castration and ultra-violet irradiation in hepatoma production. T. TOMITA (Gann, 1940, 34, 182—185).—Both castration and irradiation with ultra-violet light increased the incidence of hepatomata in small groups of rats treated with *o*-aminoazotoluene. The effects of irradiation and castration were not summated.
E. B.

Behaviour of chromosomes in experimental hepatoma production. S. AMANO and T. ANDO (Gann, 1940, 34, 169—172).—Treatment of rats with *o*-aminoazotoluene increases the no. of polyploid cells in the liver.
E. B.

Changes in the liver of the rat caused by 4-dimethylaminobenzene-1-azonaphthalene etc. R. KINOSITA (Gann, 1940, 34, 165—167).—4-Dimethylaminohydrazobenzene, 4-sulphodimethylaminoazobenzene, or *o*-toluene-1-azo-2-hydroxynaphthalene did not produce liver tumours in rats. *p*-Dimethylaminobenzene-1-azonaphthalene produced atypical bile duct adenomata with fibrous proliferation. The unsaponifiable extract of the liver from a patient with cancer of the stomach was injected subcutaneously into mice; in one case a spindle-celled sarcoma was produced. Administration of dinitrophenol produced changes in the pituitary, thyroid, and follicular epithelium.
E. B.

Occurrence of leukæmia in rats. S. ITO (Gann, 1940, 3, 133—137).—Rats fed on a diet of rice containing *o*-aminoazotoluene lose wt. The incidence of liver tumours and the loss in wt. are not so great if methylene-blue is also given to the rats but myeloid leukæmia develops.
E. B.

Aniline bladder tumours. S. MORIGAMI and I. NISIMURA (Gann, 1940, 34, 146—147).—Daily injection of 20 mg. of *o*-toluidine in olive oil into rabbits induced papillomatous changes in the bladder after 100 days. Rats painted on alternate days with 0.5% *o*-toluidine in CHCl_3 developed hæmorrhage and small cysts in the bladder.
E. B.

Induction of sarcomata in white rats with concentrated salt solutions. Y. TOKORO (Gann, 1940, 34, 149—155).—Repeated subcutaneous injection of 15% aq. NaCl into white rats produced sarcomata in about 300 days.
E. B.

Development of sarcoma in mice following long-continued injections of a buffered solution of hydrochloric acid. V. SUNTZEFF, R. S. BABCOCK, and L. LOEB (Amer. J. Cancer, 1940, 39, 56—60).—Of 8 mice injected subcutaneously with a 0.5% solution of HCl (buffered to p_{H} 5.0 with 1.02% K H phthalate) for periods of 10.5—16 months, 4 developed sarcomas at the site of injection. Injections of distilled water, Na_2SO_4 , glycerol, and gelatin gave no tumours.
F. L. W.

Stomach lesions in rats kept on diets deficient in vitamin-A. L. S. FRIDERIGIA, S. GUDJONSSON, B. VIMTRUP, S. CLEMMESSEN, and J. CLEMMESSEN (Amer.

J. Cancer, 1940, 39, 61—69).—114 rats were subjected to a vitamin-A-deficient diet either intermittently or continuously. 74 rats were used as controls. Post-mortem examination showed proliferative changes in the stomach mucosa of 91 experimental and 13 controls. In one case from each group the change was possibly malignant. Of 21 rats bearing lesions established by laparotomy only 2 still showed such lesions after restoration to normal diet for 1 year.

F. L. W.

Experimental gastric carcinoma. A. J. KLEIN and W. L. PALMER (Arch. Path., 1940, 29, 814—844).—A crit. review.

C. J. C. B.

Production of experimental tumours of brain with the Shope rabbit papilloma. II. B. WOODHALL and R. W. GRAVES (Arch. Surg., Chicago, 1939, 39, 1041—1048; cf. A., 1939, III, 598).—Intracerebral implants of this tumour in rabbits grew very rapidly, intradural implants more slowly, and extradural implants grew very slowly and, in many cases, failed entirely.

F. S.

Tumour incidence in line A albino mice following injections of progynon-B. E. E. JONES (Amer. J. Cancer, 1940, 39, 94—99).—30 castrated males and 20 virgin females of line A albino mice were injected weekly for 49 weeks with 50 rat units of oestradiol benzoate in oil. 9 of the castrated males and 3 of the females developed adenocarcinoma. No adenocarcinoma were observed in control castrated and normal males. One adenocarcinoma developed in 20 control virgin females.

F. L. W.

Possible method of transmission of susceptibility to breast cancer in mice. J. J. BITTNER (Amer. J. Cancer, 1940, 39, 104—113; cf. A., 1939, III, 763, 989, 1063).—The development of mammary carcinoma in high-cancer strains of mice is probably due to 3 influences: a "breast-cancer-producing influence," transmitted in the milk of breast-cancer stock mothers; an inherited susceptibility of one or more dominant factors; a hormonal stimulating influence. The breast tumour incidence of a high-tumour stock is reduced by fostering one generation of young to low-tumour females. No increase in breast tumour incidence occurs on fostering low-cancer young to high-cancer females. The incidence of breast tumours in first generation hybrid mice which inherit susceptibility and have the hormonal stimulation may be increased or decreased by nursing.

F. L. W.

Hyperplasias of mammary gland in women and mice. H. C. TAYLOR and C. A. WALTMAN (Arch. Surg., Chicago, 1940, 40, 733—820).—The characteristic lesion arising spontaneously in the mammary gland of mice susceptible to carcinoma and that produced by oestrogenic substances are diffuse adenomatous proliferations of acini. Morphologically similar structures are sometimes seen in human mammary disease, but are not an essential feature of chronic mastitis. The diffuse fibrosis or adenofibrosis of human chronic mastitis is never seen in mice. The human disease characterised by retained secretion in dilated ducts, moderate hyperplasia, and periductal inflammation is similar to lesions in mice after

prolonged administration of oestradiol. (29 photomicrographs.)

F. S.

Chemical studies on nature of susceptibility to spontaneous carcinoma of mammary gland in mice. L. C. STRONG (Yale J. Biol. Med., 1940, 12, 255—268).—The tolerance of male mice to the anti-oxidant salicylaldehyde (0.008 c.c. subcutaneously in olive oil daily) is determined, in part, by body-wt., age, and genetic constitution. The 3 strains of mice, C3H, A, and J.K., could be classified according to susceptibility to cancer in females and intolerance to salicylaldehyde in that order. The oxidation-reduction phenomena of the body may be involved in the mechanism that determines susceptibility to cancer.

F. S.

Spontaneous primary hepatomas in mice of strain C3H: incidence, sex distribution, and morbid anatomy. E. L. BURNS and J. R. SCHENKEN (Amer. J. Cancer, 1940, 39, 25—35).—A high incidence of liver tumours and a low incidence of mammary gland tumours was observed in male mice of strain C3H, while females showed a high incidence of mammary gland tumours and a low incidence of liver tumours. The incidence of liver tumours in 48 treated and untreated male mice was 54%, as compared with an incidence of 7.7% in 39 treated and untreated females.

F. L. W.

Spontaneous tumours in white rats. M. ARAI (Gann, 1940, 34, 137—143).—Ten different tumours are described.

E. B.

New heterologous tumour, "Budapest 1938," successfully propagated in Hungarian white rats. E. DE BALOGH (Amer. J. Cancer, 1940, 39, 45—55; cf. A., 1940, III, 507).—In order to replace the Ehrlich-Putnoky tumour (lost by disease) a new strain of Ehrlich mouse carcinoma was transplanted into young rats. 11 of 12 grafts were successful. The new tumour, "Budapest 1938," is a highly cellular kataplastic growth. Anaphylactic experiments show that the tumour in its 30th to 50th passages does not consist of unchanged mouse cells, but also possesses properties of rat protein.

F. L. W.

Transplantable carcinoma of rat breast. M. J. EISEN (Amer. J. Cancer, 1940, 39, 36—44).—A spontaneous adenocarcinoma of the breast in an inbred female rat of the August strain is described. Subcutaneous, intraperitoneal, intravenous, and intra-ocular transplantation was successful in 100% of the animals of the same strain. No evidence of immunity was observed. The tumour failed to grow after implantation in animals of alien inbred strains. The lethal dose of Roentgen radiation *in vitro* was 5000—5500 r.

F. L. W.

Mixed tumours of mammary gland of dog and man, with special reference to problem of cartilage and bone formation. A. C. ALLEN (Arch. Path., 1940, 29, 589—624).—The cartilage in 3 of 4 canine neoplasms appears to be derived directly from adult epithelium. The transition stages of the conversion of the epithelium into cartilage consist of (1) loosening of the acinar epithelium, (2) isolation of the epithelial cells in a matrix so as to simulate

myxomatous tissue, (3) collagenisation of the mucoid matrix, and (4) homogenisation and lacunar formation. This "epithelial cartilage" is considered to be true cartilage as judged by known morphological, biochemical (pancreatic digestion), and tinctorial criteria. (11 photomicrographs.) C. J. C. B.

Histo-pathological studies on endemic vesical tumour in Formosan yellow cattle (*Boszebu indicus*). I. WAKE and J. GOTO (Gann, 1940, 34, 127—132).—The tumour occurs in 21% of the bulls and 47% of cows examined although in some districts 80% of the cattle are affected. The tumours occur most frequently in cattle over 3 years old, but the cause is unknown. E. B.

Histological analysis of tumours: critical review. L. FOULDS (Amer. J. Cancer, 1940, 39, 1—24). F. L. W.

Metabolism of tissue cultures of Walker rat sarcoma 319. C. L. GEMMILL, G. O. GEY, and R. AUSTRIAN (Johns Hopkins Hosp. Bull., 1940, 66, 167—184).—An average val. of $Q_{O_2} = -4.5$ was found for the respiration of Walker rat sarcoma 319. During the *in vitro* growth of the tumour a decrease in the glucose content of the medium was observed whilst the lactate and urea concns. did not vary significantly. T. F. D.

Glycolysis of erythrocytes during tumour growth. H. WERNER and A. KLEINZELLER (Amer. J. Cancer, 1940, 39, 100—103).—The glycolytic activity of the erythrocytes of rats and mice following tumour transplantation showed 2 waves: an early increase followed by an abrupt fall, and a subsequent rise. These changes are inversely related to the catalase content of the blood. F. L. W.

Nucleic acid [of liver tissue] in tumour production. T. MASAYAMA and T. YOKOYAMA (Gann, 1940, 34, 174—175).—Normal rat liver contained 230 mg. of thymus-nucleic acid per 100 g. of tissue, which rose gradually to 440 mg. per 100 g., when hepatomata were produced by feeding butter-yellow. E. B.

Histological and biochemical detection of phosphatase in tumours. H. TAKAMATSU (Gann, 1940, 34, 81—83).—Phosphatase was detected by a histological method in the capillary walls of some tumours but not in the tumour tissue itself. The cells of a rectal carcinoma, a spindle-celled sarcoma, and some other tumours contained phosphatase. The occurrence of phosphatase depends on the tissue in which the tumour arose. E. B.

Action of phosphatase in liver tumours. T. MASAYAMA and M. SHUTO (Gann, 1940, 34, 176—178).—Tumour tissue showed less β -glycerophosphatase and nucleic acid phosphatase activity than liver tissue at p_H 6.8 but more at p_H 8.8. E. B.

Tumour and growth substance. K. SUZUE, M. OKITA, and M. SAITO (Gann, 1940, 34, 191—192).—Treatment with pituitary hormones and vitamin-A increased tumour growth in rabbits. E. B.

Effects of thyroid and calcium therapy on growth of sarcoma transplants in thyroparathyroidectomised rats. R. L. FERGUSON, R. D.

TEMPLETON, M. C. PATRAS, and F. A. McJUNKIN (Arch. Path., 1940, 29, 785—789).—The influence of thyroid on tumour growth was proportional to its effect on the general metabolism, and the addition of 1% of $CaCO_3$ to the diet had no significant effect on the growth of the host or of the sarcoma transplant. C. J. C. B.

Experimentally induced benignancy of neoplasm. IV. Suppression of mitotic activity by so-called immunisation. A. M. BRUES and W. T. SALTER (Arch. Path., 1940, 29, 741—747).—A series of "immune" tumours (sarcoma 180 in strain A mice) shows a significantly lower mean mitotic rate than is seen in their controls. The mitotic rate is closely correlated with size in individual tumours, and in these characteristics immunised tumours and controls are shown to form a continuous series. Colchicine exaggerates the visible evidence of mitotic division. This exaggeration is proportionally higher in the group having a higher rate. The process of "immunity" to tumours involves retardation of the mitotic rate. This mitotic criterion of immunity appears in control tumours about 30 days after the mice have been inoculated, suggesting self-immunity. C. J. C. B.

Effect of toxic carbohydrate complex from *S. enteritidis* on transplantable rat tumours in tissue culture. C. J. SHAPIRO (Amer. J. Hyg., 1940, 31, B, 114—126).—Although causing hæmorrhage and necrosis in a reactive rat tumour, the carbohydrate complex produced no effects *in vitro*. B. C. H.

Cancer of rectum: analysis of 1000 cases. C. E. DUKES (J. Path. Bact., 1940, 5, 527—539).—(13 photomicrographs.) C. J. C. B.

Multiple myeloma. M. BATTS (Arch. Surg., Chicago, 1939, 39, 807—823).—Review of 40 cases. (1 photomicrograph.) F. S.

Evaluation of cancer control methodology. E. J. MACDONALD and F. A. MACDONALD (Amer. J. Publ. Health, 1940, 30, 483—490).—Discussion of the assessment of the effectiveness of cancer diagnosis and treatment. E. B.

(xviii) NUTRITION AND VITAMINS.

Nutrition of the people of Benoni. C. C. P. ANNING (S. Afr. J. med. Sci., 1939, 4, 117—124).—The results of a food census of the native and European residents are given. P. C. W.

Pelidisi index in Chinese children. Y. T. TANG (Chinese J. Physiol., 1940, 15, 219—230).—7440 children of 0—12 years were classified clinically as under-, well-, or over-nourished; the mean index for the well-nourished was higher than for the under-nourished, but the groups overlapped considerably. The index decreased with age, and was the same for boys and girls. N. H.

Nutritional anæmia: survey of debilitated children in Manchester. A. E. SOMERFORD (Brit. J. Child. Dis., 1940, 37, 1—16).—Poverty, slackening of home discipline re bedtime and foods, and psychological disturbance are the 3 main factors in the production of malnutrition and nutritional anæmia. C. J. C. B.

Influence of fluid and evaporated milk on mineral and nitrogen metabolism of growing children. H. J. SOUDERS, H. A. HUNSCHER, F. C. HUMMEL, and I. G. MACY (Amer. J. Dis. Child., 1939, 58, 529—539).—Increased formation of soft tissue resulted from the substitution of evaporated for fluid milk, as shown by the parallel increases in retention of N, S, and K unaccompanied by increased retention of other elements. When irradiated evaporated milk was included in the diet, the increased Ca-P ratio of the retentions, the higher level and more consistent trend of the acid-base balance, and the increase in rate of gain in recumbent length all indicated a more rapid and stable rate of formation of bone. C. J. C. B.

Study of 240 breast-fed and artificially fed infants in St. Louis area. E. C. ROBINSON (Amer. J. Dis. Child., 1940, 59, 1002—1005).—Breast-fed infants had the lowest incidence of both diarrhoea and rash. No advantage was seen in the use of lactic acid formulæ as regards early feeding difficulties such as colic, constipation, or regurgitation. Infants fed on whole milk were more liable to diarrhoea than those fed on evaporated milk. Infants fed on irradiated milk had a higher incidence of rashes than those fed on non-irradiated milk; all rashes cleared up without change of milk. C. J. C. B.

Coprophagy in rabbit: origin of "night" faeces. A. EDEN (Nature, 1940, 145, 628).—Differences in protein and fibre content between "day" and "night" faeces of the rabbit, and similarities of caecal contents and "night" faeces, are recorded. An explanation is suggested, involving more extensive emptying of the caecum at night. E. R. S.

Autophagia in rats traumatised during inanition. C. B. NASH (Science, 1940, 91, 342).—50% of wounded and starved rats ate around their wound. This appears to be due only to a combination of desire to mouth the wound and a strong enough hunger drive. E. R. S.

Diet of Rumanian peasants. Value of the coefficient of utilisation of nitrogen in the diet. M. D. MEZINCESCO and F. SZABO (Compt. rend. Soc. Biol., 1940, 133, 745—748).—The average utilisation of N is 72.6% for a Rumanian peasant diet consisting of maize flour 200 g., dry haricots 150 g., onions 50—75 g., cucumber 50—75 g., lard 30—50 g., and prunes 150 g. per day. H. G. R.

Protein requirements in diet of athletes. M. WENK (Schweiz. med. Wschr., 1940, 70, 302—307).—The diet of 158 athletes (not vegetarians) was rich in animal proteins. A. S.

Enrichment of diet with vegetable protein. F. LOMMEL (Klin. Woch., 1939, 18, 1596—1598). M. K.

Biological value of the proteins of Bengal fish. K. C. SAHA (J. Indian Chem. Soc., 1940, 17, 223—226).—The ratios of increase in wt. to protein intake for young rats fed on diets containing 5 or 10% of dried chingri, singhi (*Saccobranthus fossilis*), or air (*Arius arius*) are greater than the val. for casein. Air is superior to both chingri and singhi at 5% level, but all are equiv. at 10%. A. LI.

Digestibility of oxidised soya oil (Palsgaard emulsion oil). H. R. KANITZ (Z. Unters. Lebensm., 1939, 78, 385—386).—91.2—92.3% of the oil (a 1:2 mixture of oxidised soya-bean and arachis oil) fed to rats was assimilated. No harmful effects, in spite of the large amounts ingested, were observed. E. C. B. S.

Fat-deficiency disease of rats. (A) Relative curative potencies of methyl linoleate and arachidonate. Action of methyl esters of fatty acids of cod-liver oil. E. M. HUME, L. C. A. NUNN, I. S. MACLEAN, and H. H. SMITH. **(B) Effect on fat metabolism of methyl arachidonate and linoleate. Determination of arachidonic acid.** I. S. MACLEAN and L. C. A. NUNN (Biochem. J., 1940, 34, 879—883, 884—902; cf. A., 1939, III, 162, 173; Turpeinen, A, 1938, III, 593).—(A) Methyl arachidonate from the arachidonic acid of pig's liver and ox adrenal gland is superior to methyl linoleate as growth-promoter for rats on the fat-free diet of Burr *et al.* (A., 1932, 961) but is not superior as a cure for skin lesions. The effect of the arachidonate continues for some time after dosage is suspended. The methyl esters of the fatty acids of cod-liver oil have scarcely any growth-promoting effect on rats on the diet and give practically no protection against skin lesions.

(B) In rats on the fat-free diet, the proportions of neutral fat and phospholipin in the fresh liver, muscle, and kidney are not affected by administering curative doses of methyl linoleate or arachidonate. The proportion of lipins in the liver of rats receiving fat-free diet supplemented with arachidonate decreases when the administration of the supplement is discontinued. The fat content of the tissues (especially skin and carcass) of rats which are fat-starved after receiving supplements of linoleate or arachidonate is greater than that of those which continue to receive the supplements. Wt. increase in rats receiving supplements of arachidonate is due entirely to accumulation of excess of fat when the dose of arachidonate is low. The neutral fat of rats, fat-starved for a long period, contains no arachidonic acid and the phospholipins of their liver and muscle contain very little. Comparison of the intake of arachidonic acid with the amounts of it stored in the organs of rats receiving various doses of the unsaturated acids indicates that the cells of the fat depôts become loaded with fat only if there is a certain min. intake of arachidonic acid; much of this acid disappears during the period of true growth which follows. The approx. determination of arachidonic acid by pptn. as bromide is discussed. W. McC.

Vitamins and vitamin preparations in small animal practice. M. L. MORRIS and W. C. RUSSELL (J. Amer. Vet. Med. Assoc., 1939, 95, 555—565).—Pathological conditions related to vitamin deficiency in the dog and cat and pathological effects of excessive dosage with some of the vitamins are described. Little is known of the vitamin requirements of the cat. E. G. W.

Vitamins and constants of free and extracted oils from canned sockeye salmon. A. W. STEERS and L. FRISCHER (J. Amer. Pharm. Assoc., 1940, 29, 166—171).—The free and extracted oils [d_{25}^{20} 0.9164, 0.9173; n_{20}^{20} 1.4783, 1.4783; sap. val. 183.8, 183.3;

unsaponifiable fraction 0.53, 1.23%; I val. (Hanus) 134.5, 131.7; acid val. 0.52, 1.48, respectively] contained (biological assay) 80 and 88 i.u. of vitamin-D and 5.5 and 8 i.u. of -A per g., respectively. F. O. H.

Mobilisation of vitamin-A from its stores in tissues by ethyl alcohol. S. W. CLAUSEN, W. S. BAUM, A. B. MCCOORD, J. O. RYDEEN, and B. B. BREESE (Science, 1940, 91, 318).—Administration by stomach tube of 60 ml. of alcohol as 20% solution to dogs starved for 2 days resulted in an increase of serum-vitamin-A. Intravenous injection of alcohol raised the serum-A. E. R. S.

Importance of carotene and vitamin-A in serum. W. THIELE and T. SCHERFF (Klin. Woch., 1939, 18, 1208—1211).—Serum-carotene and -vitamin-A vals. are temporarily depressed in hyperthyroidism and gastric or duodenal ulcers, but are permanently decreased in chronic malignant disease. The high vals. of carotene and -A in serum of diabetics are due to the associated lipæmia. M. K.

Effect of the basal diet on the biological assay of vitamin-A. N. T. GRIDGEMAN, H. LEES, and H. WILKINSON (J.S.C.I., 1940, 59, 120—125).—The errors in the biological assay of vitamin-A are less with Morgan's -A-free- diet (A., 1934, 1040) than with the British Pharmacopœia 1932, Addendum 1936, diet. When high doses (40 i.u. per day) of β -carotene are fed to animals receiving the Pharmacopœia diet, some carotenoid is excreted in the faeces, whereas when similar doses of β -carotene are fed to animals receiving Morgan's diet no such excretion occurs. No excretion of -A was detectable either in these experiments or in similar ones in which -A was given in place of β -carotene. Since the inclusion of 30% of coconut-cake meal in the Pharmacopœia diet produces a diet with all the characteristics of Morgan's, it is concluded that coconut-cake meal contains some factor governing the proper conversion of β -carotene into -A and utilisation of the -A so formed. The lower error obtained by the use of Morgan's diet may be due, in large part, to the presence of this factor in the diet.

Assay of vitamin-A with photo-electric colorimeter. R. B. FRENCH (Ind. Eng. Chem. [Anal.], 1940, 12, 351—352).—The oil is mixed with $SbCl_3$ in $CHCl_3$ solution and the light transmission of the blue solution is measured photo-electrically. The method gives reproducible and consistent results, but as the blue colour fades rapidly, accurate timing is necessary. J. D. R.

Nutrition studies in Bihar. III. Determination of carotene and ascorbic acid in common fruits and vegetables. K. MITRA, H. C. MITTRA, and A. C. ROY (J. Indian Chem. Soc., 1940, 17, 247—253).—The determination of carotene (by comparison of the ethereal extract with standard dye) and ascorbic acid (by dichlorophenol-indophenol titration) in 66 vegetables and 29 fruits is recorded. A. LI.

Biogenesis of vitamin-B₁.—See A., 1940, II, 260.

Bisulphite-binding substances and thiamin deficiency. M. SHILS, H. G. DAY, and E. V. MCCOLLUM (Science, 1940, 91, 341).—Urinary bisulphite-

binding compounds of young adult rats increase more on thiamin-deficient diets, less on high-fat-thiamin-deficient diets, and return to normal after thiamin is restored to the diet. E. R. S.

Choline-esterase in sciatic nerve of vitamin-B₁-deficient pigeons. G. PIGHINI (Biochim. Terap. sperim., 1940, 27, 114—117).—The choline-esterase activity of suspensions of sciatic nerve was low in avitaminous birds and was min. in cases with leg paralysis. S. O.

Colorimetric determination of vitamin-B₁. Y. SAKURAI, T. INAGAKI, and S. OMORI (J. Agric. Chem. Soc. Japan, 1940, 16, 331—339).—The method of Prebluda and Melnick (A., 1939, III, 401) which involves the use of diazotised *p*-aminoacetophenone is modified as follows: the sample is extracted with water or aq. alcohol at p_H 4.5, and an aliquot of the extract is treated with 0.2 g. of refined acid clay for 10 min. and, after centrifuging, the adsorbate is mixed with 3 c.c. of water, 3 c.c. of alcohol containing phenol, and 6 c.c. of freshly prepared reagent. After 1 hr. 8 c.c. of alcohol and 5 c.c. of xylene are added, and after mixing for 2 min. the xylene layer is separated and centrifuged and the extinction determined in the Pulfrich photometer using S53 filter. J. N. A.

Determination of aneurin. W. GAHLEN (Klin. Woch., 1939, 18, 1446—1447). M. K.

Adenylic acid in human nutrition. T. D. SPIES, W. B. BEAN, and R. W. VILTER (Ann. int. Med., 1940, 13, 1616—1618).—Pellagrins in relapse are benefited by treatment with nicotinic and adenylic acids. 6 patients with malnutrition, who had intense burning of the oral mucous membranes, but no diagnostic evidence of pellagra, were relieved following treatment with adenylic acid alone. Since severe reactions were produced by the intravenous injection of 3 preps. of adenylic acid, this compound is not recommended for administration in man. C. J. C. B.

Pellaga, polyneuritis, and beri-beri heart. S. B. B. CAMPBELL and R. S. ALLISON (Lancet, 1940, 238, 738—739).—Case report. C. A. K.

Chemical nature of growth factors required by mosquito larvæ. II. Pantothenic acid and vitamin-B₆. Y. SUBBAROW and W. TRAGER (J. Gen. Physiol., 1940, 23, 561—568).—Larvæ of *Aedes aegypti* grew normally in sterile conditions in a medium consisting of killed yeast, flavin complex or riboflavin, and two fractions ("Ba filtrate" and "Ba ppt.") derived from liver extract; the Ba ppt. fraction could be replaced by yeast-nucleic acid or glutathione. Larvæ grew also at almost optional rate in a medium of killed yeast, flavin-purine complex, vitamin-B₆, pantothenic acid, and glutathione. All these constituents except glutathione were essential. Replacement of flavin-purine complex by pure riboflavin led to slower growth, but some larvæ reached the adult stage. D. M. N.

Identification of rice factor. H. J. ALMQUIST, E. L. R. STOKSTAD, E. MECCHI, and P. D. V. MANNING (J. Biol. Chem., 1940, 134, 213—216).—Chondroitin in presence of glycine, which is essential for optimum growth, has a growth-promoting action

and a mixture of these two can replace the chick growth-factor in rice. H. G. R.

Absorption of vitamin-C from the intestinal tract in health and disease. C. J. FARMER, A. F. ABR, and H. CHINN (Quart. Bull. N.W. Univ. med. Sch., 1940, 14, 114—119).—Judging from the ascorbic acid content of the gastro-intestinal tract of rats, 6 hr. after its administration by stomach tube, -C absorption increases with administration. Injection of 12 mg. per 100 g. body-wt. of Na iodoacetate or of 100 mg. of phloridzin does not diminish the absorption in rats or guinea-pigs. There is no enhanced faecal excretion of -C in cases of high plasma-C concn. as shown in patients with complete obstruction of the oesophagus where -C was intravenously injected. Marked loss of -C occurs in patients suffering from diarrhoea or ulcerative colitis; plasma-C is low in such cases. *l*-Ascorbic acid is destroyed by members of the *Mucosus capsulatus* group, *B. coli*, and certain enterococci, when freshly cultured from human gastric contents or guinea-pig's faeces. A. S.

Influence of ascorbic acid on liver function and mutual relation between vitamins-B₁ and -C. I. Influence of ascorbic acid on pigment-excreting function of liver. II. Sodium santonium-managing function of liver. III. Indole-detoxifying function the liver. IV. Relationship between vitamins-B₁ and -C regarding detoxicating function of liver for indole. V. Effect of ascorbic acid on peripheral blood vessels. VI. Relationship between vitamin-B₁ and -C regarding action on blood vessels. O. MURAKAMI (Jap. J. Gastroenterol., 1939, 11, 1—6, 7—12, 13—23, 24—30, 31—39, 40—48).—In guinea-pigs fed on a diet deficient in vitamin-C, the pigment-excreting function of the liver and the capacity of the liver for detoxicating Na santonium and indole are decreased. Recovery follows injection of ascorbic acid. Addition of 0.1 mg. of -B₁, which alone has no effect, to the daily dose of 10 mg. of ascorbic acid greatly increases the effect in restoring the indole-detoxicating function of the liver. Perfusion of the ear vessels of the rabbit with ascorbic acid in concns. of 50—100 mg.-% causes marked temporary dilatation of the blood vessels of the ear. The addition of a small amount of -B₁ to a low concn. of ascorbic acid greatly increases the vasodilator action of ascorbic acid. F. S.

Effect of ascorbic acid on iminazole rings and allied substances *in vivo*. I. J. GREENBLATT and A. PECKER (J. Biol. Chem., 1940, 134, 341—344; cf. Edlbacher *et al.*, A., 1937, II, 307).—Ascorbic acid rapidly deaminates thioneine *in vitro*, but when injected intravenously has no appreciable effect on the thioneine, uric acid [determined by the methods of Hunter (A., 1928, 316) and Folin (A., 1933, 845) respectively], histamine (determined by its effect on the gastric free HCl), or urea content of the blood in human beings, or (with or without Fe^{III} NH₄ citrate) on the thioneine content of the blood of rabbits or guinea-pigs. A. LI.

Effect of ascorbic acid on blood-calcium and -potassium. G. FIGHERA and E. RIGGIO (Biochim. Terap. sperim., 1940, 27, 10—16).—Intravenous

injection of 9 mg. per kg. of ascorbic acid into rabbits produces variable and unrelated changes in blood-Ca and -K. F. O. H.

Urinary excretion of combined ascorbic acid in pulmonary tuberculosis. S. BANERJEE, P. B. SEN, and B. C. GUHA (Nature, 1940, 145, 706—707).—Urinary total ascorbic acid is reduced in tuberculosis, but the proportion of combined ascorbic acid is increased. Ascorbic acid probably functions as a detoxicating agent. E. R. S.

Vitamin-C requirement of Chinese patients with scurvy. K. C. CHEN, T. F. YÜ, S. H. LIU, and H. I. CHU (Chinese J. Physiol., 1940, 15, 119—142).—In 4 males, whose urinary vitamin-C was determined by Harris and Ray's method and plasma-C by Yu's method (Chinese Med. J., 1940, 56, 334), the daily requirement, by van Eekelen's standard, was 1.46—1.68 mg. per kg. N. H.

Activity of brain- and muscle-cathepsin in avitaminosis-C. N. M. ROMANIUK (Ukrain. Biochem. J., 1939, 14, 341—355).—The cathepsin activity of guinea-pig muscle, liver, and kidney rises after 10—11 days on a diet deficient in vitamin-C; that of the brain does not vary. R. T.

Antiscorbutic properties of 2-keto-*l*-gulonic acid. E. G. BALL (J. Biol. Chem., 1940, 134, 177—180).—The antiscorbutic activity of 2-keto-*l*-gulonic acid is low and may be due to ascorbic acid (0.1—0.2%) present as an impurity. H. G. R.

Refractory rickets. H. BAKWIN, O. BODANSKY, and R. SCHORR (Amer. J. Dis. Child., 1940, 59, 560—570).—A boy contracted rickets at the age of 6 years. The disease was characteristic, clinically and roentgenologically, and the blood showed a marked reduction of P and increase in phosphatase. Almost all the Ca was lost from the body in the stools. Doses of vitamin-D up to 40,000 units daily failed to cure the rickets. Examination of the blood while the disease was active showed that large amounts of -D were being absorbed. With massive doses of -D (1,000,000 units, equal to 100 c.c. of viosterol) the rickets healed promptly. Withdrawal of -D resulted in recurrence of the rickets. A daily supplement of about 440,000 units of -D was necessary for maintenance. C. J. C. B.

Rôle of vitamin-D in calcium metabolism in osteomalacia. S. H. LIU (Chinese Med. J., 1940, 57, 101—118).—Osteomalacia results from deficient absorption of Ca from the intestine due to vitamin-D deficiency, one of the first signs of which is a fall in urinary Ca, followed by increased faecal Ca. Pregnancy, lactation, and periods of mineral shortage accelerate the process. Administration of -D and Ca is immediately effective. W. J. G.

Vitamin-D in the treatment of acne. C. A. SIMPSON, F. A. ELLIS, and H. KIRBY-SMITH (Arch. Dermat. Syphilol., 1940, 41, 835—837).—Vitamin-D alone or combined with -A was of no val. as an adjunct in the treatment of a limited no. of patients with acne. C. J. C. B.

Vitamin-D in treatment of acne and of diseases due to altered usage of calcium. M. T. MAYNARD (Arch. Dermat. Syphilol., 1940, 41, 842—857).—70

patients with acne in one series and 60 in a second series treated with vitamin-D studied over a period of 3 months gave 76% and 83% satisfactory results, respectively. A similar study of 27 patients with acne treated with carotene gave 50% satisfactory results. Scleroderma and roentgen ray sclerosis both improved noticeably with -D. C. J. C. B.

Constitution of vitamin-K₂.—See A., 1940, II, 283.

(xix) METABOLISM, GENERAL AND SPECIAL.

Inhibition of respiration at sub-optimum substrate concentrations. W. F. FLOYD (Nature, 1940, 145, 592).—A new theory. E. R. S.

Coupled phosphorylation and oxidation in kidney extracts. H. KALOKAR (Enzymologia, 1939, 6, 209—212; cf. A., 1939, III, 424).—Respiration and phosphorylation in kidney extracts are stimulated by alanine and by glutamic, citric, malic, and fumaric acid. The respiration of heat-inactivated kidney cortex is greater in presence of succinate than of malate but the rate of phosphorylation is approx. the same. The coupling of oxidation-reduction with phosphorylation is possibly due to the presence of a nucleotide which transfers H and PO₄". W. McC.

[Lipins.] E. F. TERROINE (Rev. ann. Physiol., 1938, 6, 1—57).—A review of 275 papers on lipin metabolism published between Dec., 1936, and Dec., 1937. E. R. S.

Synthesis of phospholipin in rats on fat-deficient diet. G. C. HEVESY and I. S. MACLEAN (Biochem. J., 1940, 34, 903—905).—When the diet is fat-free, the turnover of P in the muscle-phospholipin, as measured by uptake of injected radioactive Na phosphate, is approx. 33% greater than when the fat-free diet is supplemented with methyl arachidonate or linoleic acid. The turnover of P in liver and kidney is scarcely affected by the supplements. The ratio of the rates of phospholipin-P turnover in muscle, kidney, and liver is approx. 1 : 12 : 21. W. McC.

Sterols. E. F. TERROINE (Rev. ann. Physiol., 1938, 7, 1—23).—A review of 108 papers on sterol metabolism published between Dec., 1936, and Dec., 1937. E. R. S.

Disturbances of water metabolism in patients with steatorrhœa (endemic sprue). H. W. HORTZ (Schweiz. med. Wschr., 1940, 70, 317—320).—Severe cases of steatorrhœa often show signs of extreme dehydration, with unconsciousness and tonic-clonic convulsions. One case is reported where a state of dehydration was followed by generalised and pulmonary œdema. A. S.

Lipodystrophy. Report of case with metabolic studies. J. S. HARRIS and R. REISER (Amer. J. Dis. Child., 1940, 59, 143—166).—A patient with progressive lipodystrophy showed normal absorption of fat, deficient oxidation of fat compared with 2 controls, abnormal increase in serum fats after a fat meal, lowered glucose tolerance, and creatinuria. These results suggest a general fault in the metabolism in addition to local changes which may be

present in the tissues affected by the lipodystrophic process. C. J. C. B.

Glucose tolerance tests of newborn. R. C. KETTERINGHAM (Amer. J. Dis. Child., 1940, 59, 542—553).—By the Jeghers-Myers modification of the Folin-Malmros ferricyanide micro-method, the blood-sugar vals. of 16 normal newborn infants 5—10 days old were 70—95 mg.-% 3½ hr. after feeding (mean 81 mg.). Glucose tolerance tests were made on 15 normal infants. Oral administration of 1.75 g. of glucose per kg. body-wt. as a 10% solution, with blood-sugar determination ½, 1, 2, 3, and 4 hr. after the midpoint of the period necessary for ingestion, produced an average max. level of 143 mg.-%. C. J. C. B.

Reverse or paradoxical blood-sugar response to ingested glucose. H. WHEELON (Endocrinol., 1940, 26, 743—752).—Details are given of 40 patients who showed a fall in blood-sugar after taking 100 g. of glucose. V. J. W.

Effect of human diabetic plasma on blood-sugar curves in rabbits following insulin. A. MARBLE, A. T. FERNALD, and R. M. SMITH (Endocrinol., 1940, 26, 735—742).—10 c.c. of heparinised plasma did not modify hypoglycœmia in rabbits except in the case of two patients who required very large insulin dosage. V. J. W.

Effect of insulin on metabolism of pyruvic acid. G. DELRUE and J. DEKEYSER (Compt. rend. Soc. Biol., 1940, 133, 709—710).—No increase in blood-pyruvic acid (rabbit) is observed on injecting Na pyruvate into the marginal vein of the ear if the animal has previously received insulin. H. G. R.

Chemical and metabolic studies on phenylalanine. II. Phenylalanine content of blood and spinal fluid in phenylpyruvic oligophrenia. G. A. JERVIS, R. J. BLOCK, D. BOLLING, and E. KANZE (J. Biol. Chem., 1940, 134, 105—113; cf. A., 1939, III, 80).—Phenylalanine, but no phenylpyruvic acid, is found in the blood (15—41 mg.-%) and c.s.f. in cases of phenylpyruvic oligophrenia. Ingestion of phenylalanine, protein, or phenyl-pyruvic or -lactic acid causes an increase in blood- and c.s.f.-phenylalanine but no appearance of phenyl-pyruvic or -lactic acid in the blood. H. G. R.

Metabolic cutaneous calcinosis (case with scleroderma). T. N. GRAHAM (Arch. Dermat. Syphilol., 1940, 41, 864—873).—A case of metabolic cutaneous calcinosis with an associated scleroderma in a man aged 61 is described. The extremities presented the greatest involvement, particularly the flexor surfaces over the distal phalanges of the hands and areas over the tibia. The skin of the hands and the extensor surfaces of the legs showed sclerodermatous changes. There were a no. of subcutaneous deposits of Ca in other areas with no overlying scleroderma. The blood-Ca, -P, and -phosphatase were normal; blood-sugar and -uric acid were raised. The nodules consisted mainly of CaCO₃, with a small amount of Ca phosphate. C. J. C. B.

Biological reduction of l-menthone to d-neomenthol and of d-isomenthone to d-isomenthol in the rabbit. Conjugation of d-neomenthol with glucuronic acid.—See A., 1940, II, 255.

(xx) PHARMACOLOGY AND TOXICOLOGY.

Chemotherapy of experimental staphylococcal infection in mice with drugs of the sulphanilamide group. P. BROWNING (J. Path. Bact., 1940, 5, 431—438).—Monoacetyldiaminodiphenyl sulphone has a therapeutic effect in staphylococcal infections in mice, prolonging life or increasing no. of survivors as compared with untreated controls. C. J. C. B.

Sulphanilamide and fibrinolytic activity of hæmolytic streptococci. L. E. HINES, A. H. HOOVER, and E. GRAFF (Arch. intern. Med., 1940, 65, 744—751).—The fibrinolytic activity of hæmolytic streptococci was much diminished in 9 patients who were given sulphanilamide. C. A. K.

Comparative therapeutic activity of sulphanilamide, sulphapyridine, and diamino[diphenyl] sulphone in streptococcus infections in mice. E. K. MARSHALL, jun., J. T. LITCHFIELD, jun., and H. J. WHITE (J. Pharm. Exp. Ther., 1940, 69, 89—102; cf. A., 1940, III, 152).—On the basis of median survival blood concns., the activity ratios are 1.00, 1.09, and 2.92, respectively. A description and discussion of the method used in the comparison are given. E. M. S.

Comparative therapeutic activity of sulphanilamide, sulphapyridine, sulphathiazole, and diamino[diphenyl] sulphone in type I pneumococcal infections in mice. J. T. LITCHFIELD, jun., H. J. WHITE, and E. K. MARSHALL, jun. (J. Pharm. Exp. Ther., 1940, 69, 166—170; cf. A., 1940, III, 152).—Comparison of sulphanilamide, sulphathiazole, and diaminodiphenyl sulphone with sulphapyridine gave, on the basis of median survival blood concns., activity ratios of 0.43, 0.21, and 6.86, respectively. E. M. S.

Thiazole derivatives of sulphanilamide and experimental β -hæmolytic streptococcal and pneumococcal infections in mice. O. W. BARLOW and E. HOMBURGER (Proc. Soc. Exp. Biol. Med., 1940, 43, 317—323).—Sulphathiazole, sulphamethylthiazole, and sulphaphenylthiazole are more effective than sulphanilamide or sulphapyridine and are less toxic. V. J. W.

Bacteriostatic effects of sulphathiazole on various micro-organisms. Its therapeutic effects in experimental pneumococcal infections. P. H. LONG and E. A. BLISS (Proc. Soc. Exp. Biol. Med., 1940, 43, 324—327).—Sulphathiazole was equally effective *in vitro* with sulphapyridine on a no. of organisms tried but was slightly inferior in pneumococcal infections in mice. It is absorbed and excreted by mice more rapidly than sulphapyridine. V. J. W.

Response of different strains of type I pneumococcus to sulphapyridine. L. H. SCHMIDT and C. HILLES (Proc. Soc. Exp. Biol. Med., 1940, 43, 288—293).—Different strains varied in their resistance to sulphapyridine but not so much as different types (cf. A., 1939, III, 1082). Reinfection experiments showed that differences in their antigenic properties were not correlated with differences in resistance. V. J. W.

Specific treatment of pneumococcal pneumonias: analysis of results of serum therapy and chemotherapy at Boston City Hospital (July, 1938, to June, 1939). M. FINLAND, W. C. SPRING, jun., and F. C. LOWELL (Ann. int. Med., 1940, 13, 1567—1593; cf. A., 1940, III, 244).—Sp. sera and sulphapyridine were each found to be effective in reducing the death rate and in bringing about rapid clinical improvement. The combination of serum and sulphapyridine was effective in the cases with the worst prognosis. Both horse and rabbit sera were effective, but the latter were more conc. and were used in the poorer risks. Rabbit sera gave fewer allergic reactions than horse sera. Severe untoward reactions from either serum or sulphapyridine were infrequent. C. J. C. B.

Comparative effectiveness and toxicity of sulphathiazole and sulphapyridine in pneumococcal pneumonia. H. F. FLIPPIN, L. SCHWARTZ, and S. B. ROSE (Ann. int. Med., 1940, 13, 2038—2049).—2 groups of 100 patients each, suffering from pneumococcal pneumonia, were treated with sulphapyridine or sulphathiazole. Both drugs were equally effective, the mortality rate being 15 and 12%, respectively. The previous mortality rate at the same hospital was approx. 35%. Sulphapyridine lowers body temp. to normal more rapidly than sulphathiazole. Incidence of complications was the same in both groups. Nausea and vomiting were much less marked in severity and frequency in the sulphathiazole patients than in those treated with sulphapyridine. A. S.

Treatment of pneumococcal infections in children with sulphapyridine. H. S. CHRISTIAN, G. M. JORGENSEN, and C. ELLIS (Amer. J. Dis. Child., 1940, 59, 1—18).—Sulphapyridine was used in the treatment of 140 patients with pneumococcal infections. Among the 100 patients with pneumonia only 1 death occurred. For 9 of the 13 patients with pneumococcal bacteræmia the blood cultures were negative within 24 hr. after treatment was started. C. J. C. B.

Sulphapyridine in treatment of post-operative pneumonia. H. C. HINSHAW and H. J. MOERSCH (Arch. Surg., Chicago, 1939, 39, 275—281).—Sulphapyridine arrests the progress of post-operative as well as of primary pneumonia. Of 21 post-operative cases the causative organisms were pneumococci in 13. The drug was equally effective when pneumococci were not found in the sputum. F. S.

Meningitis caused by pneumococcus type III. Sulphanilamide therapy. J. L. STEIN and M. M. STEINER (Amer. J. Dis. Child., 1939, 58, 274—281).—A case of meningitis caused by pneumococcus type III is described in which treatment was by oral and intrathecal administration of sulphanilamide. An adequate concn. of the drug in the c.s.f. was maintained by oral administration. There was temporary improvement together with prolongation of life. C. J. C. B.

Sulphonamides in Pfeiffer bacillus meningitis. J. C. H. MACKENZIE, A. P. M. PAGE, and E. M. WARD (Lancet, 1940, 238, 785—786).—3 cases of Pfeiffer bacillus meningitis were unsuccessfully treated (2 with

sulphanilamide, 1 with sulphapyridine). Autopsy reports are given. C. A. K.

Action of sulphapyridine in meningococcal meningitis. W. JACKLI (Schweiz. med. Wschr., 1940, 70, 280—281).—Excellent results in the treatment of meningococcal meningitis in children were obtained by drop transfusion of sol. sulphapyridine, especially in unconscious children or in cases with severe vomiting. 16 children were successfully treated. A. S.

Action of sulphapyridine sodium succinate in cerebrospinal meningitis. W. WOKUREK (Wien. klin. Wschr., 1940, 53, 167—169).—19 children from 1 to 14 years suffering from meningococcal meningitis were treated with the sulphapyridine Na succinate; 2 children and 4 infants (1—11 months old) died in spite of treatment. Vomiting or other untoward effects were not observed. A. S.

2-N'-Sulphanilamidothiazole in plague infection. S. S. SOKHEY and B. B. DIKSHIT (Current Sci., 1940, 9, 116—117).—The curative action of 6 derivatives of sulphanilamide in cases of plague infection in mice is examined. 2-N'-Sulphanilamidothiazole is almost as effective as a good antiplague serum and superior to sulphapyridine. F. R. G.

In vitro action of certain sulphanilamide derivatives on the PR-8 strain of influenza virus. D. R. CLIMENKO (J. Pharm. Exp. Ther., 1940, 69, 165; cf. A., 1940, III, 59).—The observation that Na salts of sulphanilyl sulphanilate, disulphanilamide, and 2:5-bis-sulphanilamidobenzenesulphonate were capable of inactivating influenza virus suspensions *in vitro* has not been confirmed. E. M. S.

Effect of sulphapyridine on growth in vitro of tubercle bacillus. H. GREEN (Proc. Soc. Exp. Biol. Med., 1940, 43, 344—347).—Sulphapyridine in concn. of 1 in 4000 delays and of 1 in 2000 stops growth of human tubercle bacilli. V. J. W.

Sulphanilamide in urinary tract infections. L. A. RANTZ and C. S. KEEFER (Arch. intern. Med., 1940, 65, 933—956).—The use of sulphanilamide in 17 cases of urinary tract infection due to *B. coli* is fully described. Sterilisation of the urine was much more easily attained in recent than in chronic cases. Doses of 2—5 g. daily produced concns. of 23—139 mg. of drug %. 7 strains of *B. coli* isolated from the urines of these patients showed great differences in sensitivity to the drug and there was no correlation between *in-vitro* and *in-vivo* activity. Mandelic acid was less effective than sulphanilamide *in vivo*. C. A. K.

Sulphanilamide in acute otitis media. V. G. HORAN and S. G. FRENCH (Lancet, 1940 238, 680—682).—The incidence of mastoiditis in 621 cases of acute otitis media who were given sulphanilamide was 3.4%. In previous untreated cases the incidence was 22.7%. C. A. K.

Treatment of Ritter's disease [infantile exfoliative dermatitis] with sulphapyridine. N. W. RYAN and L. GOLDMAN (Amer. J. Dis. Child., 1940, 59, 1057—1062).—Report of a case with recovery. C. J. C. B.

Chemotherapy of bacterial diseases. J. A. KOLMER (Arch. intern. Med., 1940, 65, 671—743).—A review of the action of sulphonamides. (B.) C. A. K.

Distribution of 2-sulphanilylaminopyridine in body. H. CHINN and J. BELLOWS (J. Lab. clin. Med., 1940, 25, 735—738).—The max. concn. in body fluids of the dog is reached 4—6 hr. after administration of 0.2 g. C. J. C. B.

Distribution of free and conjugated sulphanilamide and sulphapyridine between corpuscles and plasma in human and rabbit blood. L. HANSEN (J. Lab. clin. Med., 1940, 25, 669—679).—*In vivo* and *in vitro* sulphanilamide, and especially conjugated sulphanilamide, are generally found in higher concn. in the corpuscles than in the plasma of human and rabbit blood, while sulphapyridine, and especially conjugated sulphapyridine, are generally found in higher concns. in the plasma than in the corpuscles. Relative concns. of sulphanilamide and of sulphapyridine and of their conjugated forms in corpuscles and plasma vary considerably from day to day and there appears to be no tendency to accumulation of any form of either drug in either corpuscles or plasma. C. J. C. B.

Acetylation of sulphanilamide and sulphapyridine in the cat. W. VAN WINKLE, jun., and W. C. CUTTING (J. Pharm. Exp. Ther., 1940, 69, 40—44).—Both drugs are conjugated readily in the intact cat. Sulphanilamide is acetylated in isolated perfused liver, and in hepatectomised, but not in hepato-splenectomised or eviscerated, cats. Sulphapyridine is not acetylated by isolated liver, and results of hepatectomy vary. E. M. S.

Acute toxicity, absorption, and excretion of sulphathiazole and certain derivatives. P. H. LONG, J. W. HAVILAND, and L. B. EDWARDS (Proc. Soc. Exp. Biol. Med., 1940, 43, 328—332).—Na sulphathiazole, injected into mice, is one third more toxic than sulphanilamide and half as toxic as sulphapyridine, sulphamethylthiazole, or sulphaphenylthiazole. V. J. W.

Sulphanilamide and glucose antidote. M. M. BROOKS (Nature, 1940, 145, 707).—It is suggested that the formation of dangerous amounts of methæmoglobin in the blood by oxidation by sulphanilamide or sulphapyridine can be counteracted by intravenous isotonic glucose, which reduces methæmoglobin to hæmoglobin. E. R. S.

Sulphanilamide and sulphapyridine and hæmoglobin metabolism. C. J. WATSON, W. W. SPINK, and R. L. EVARTS (Arch. intern. Med., 1940, 65, 825—846).—Sulphanilamide and sulphapyridine usually increase urobilinogen excretion in the faeces and cause varying increases in reticulocyte %. The severe hæmolytic æmæmia, occasionally reported, is merely a much exaggerated degree of this increase in hæmoglobin breakdown. Sulphanilamide caused jaundice in 16 cases and raised serum-bilirubin in many others, the direct van den Bergh reaction being frequently seen. Sulphapyridine appears to be much less toxic to the liver. C. A. K.

Increased urobilinogen excretion and acute hæmolytic anæmia in patients treated with sulphapyridine. L. A. ERF and C. M. MACLEOD, (*J. clin. Invest.*, 1940, 19, 451—457).—Out of 26 patients with pneumonia 20 received sulphapyridine. In 12 of these, as well as in the remaining 6, urobilinogen excretion was normal. Increased excretion took place in the other 8, of whom 3 developed hæmolytic anæmia. C. J. C. B.

Fatal case of agranulocytosis from sulph-anilamide. J. P. ROBB (*Canad. Med. Assoc. J.*, 1940, 42, 268).—The patient took 540 grains of sulphanilamide over 3 weeks. C. J. C. B.

Hypersensitivity to sulphanilamide following Roentgen therapy. M. B. MARKS (*J. Pediat.*, 1940, 16, 503—506).—Photoallergy sometimes follows slight or moderate exposure to Roentgen rays, ultra-violet rays, or even sunshine when combined with sulphanilamide therapy. If sensitisation occurs, substitution of one sulphanilamide derivative for another should be tried. C. J. C. B.

Urinary obstruction due to crystalline concretions following sulphapyridine therapy in pneumonia. M. M. SCURRY and M. H. WITTENBERG (*Ann. int. Med.*, 1940, 13, 2164—2166).—A patient suffering from pneumonia and treated with 33 g. of sulphapyridine developed severe hæmaturia and anuria due to concretions in the renal pelvis. Catheterisation and irrigation of the ureter was successful. A. S.

Pneumococcal pneumonia of type XIV in children treated with specific serum. J. G. M. BULLOWA and M. GLEICH (*Amer. J. Dis. Child.*, 1940, 59, 84—94).—Pneumococcus type XIV is the organism most frequently found in infants and very young children with pneumonia. The mortality is higher under 3 years of age. With the use of sp. serum fewer patients die and complications are fewer. C. J. C. B.

Antipneumococcus serum treatment of pneumonia. H. I. KINSEY, W. H. BROWN, and W. R. FEASBY (*Canad. Publ. Health J.*, 1940, 31, 56—61).—50 cases were treated with antipneumococcus serum, 38 receiving rabbit serum with a mortality of 10%. In a control group of patients in same wards receiving no serum, mortality rate was 25%. No anaphylactic reactions occurred and patients receiving serum required a shorter period of hospitalisation. C. G. W.

Chemical properties of azorhodan. H. RIEDEL (*Arch. exp. Path. Pharm.*, 1940, 194, 190—194).—Azorhodan, the 4-thiocyanate of 2:4-diaminoazobenzene, has m.p. 115° (decomp.); its solubility in water at 18° is 1:5000, at 45° 1:2600. Solutions are not stable at temp. above 45°. Other properties are recorded. H. BL.

Expectorant action of resyl (glycerol guaiacolate) and other guaiacols. W. F. CONNELL, G. M. JOHNSTON, and E. M. BOYD (*Canad. Med. Assoc. J.*, 1940, 42, 220—223).—Clinically, Resyl-Ciba does not disturb digestion, aids expectoration, and ameliorates cough. Experimentally, guaiacol, guaiacol carbonate, and resyl increased the water content of

the trachea in white rats for 3 days from the time of administration. K guaiacolsulphonate was inactive. C. J. C. B.

Anti-cough action of sedulon. A. HOTINGER (*Schweiz. med. Wschr.*, 1940, 70, 214—217).—Sedulon (2:4-dihydroxy-3:3-diethylpiperidine) had a marked central anti-cough action in 340 children and adults suffering from various types of pharyngitis, tracheitis, and bronchitis, and post-pertussis cough. The drug was given by mouth in doses of 0.1—0.8 g., according to age. A. S.

Use of expectorants. R. E. LIESEGANG (*Klin. Woch.*, 1939, 18, 1543—1545).—A review. M. K.

Treatment of gonococcal vulvovaginitis in children. R. W. DAFFINEE (*Arch. Pediat.*, 1940, 57, 295—301).—Local treatment, embracing most of the known non-toxic antiseptics by way of douches, suppositories, or instillations, was found to be ineffective. Oestrogenic treatment gave poor results. Of 16 courses given to 14 patients, only 3 could be classified as apparent cures. Gonococcus filtrate was immediately effective in 12 cases, but recurrences developed within 6 weeks in 8 of these. 3 of the apparently cured patients were lost to follow-up studies. Sulphanilamide was administered to 7 patients in a total of 16 courses of treatment. 2 patients were apparently cured. There were recurrences in the remaining five within a month. Acidulated sugar tablets (Floraquin) were used in 6 patients, with immediately favourable results in all but one patient. This one patient was too small to allow introduction of the tablet, and satisfactory acidulation of the vagina could not be obtained. C. J. C. B.

Treatment of impetigo contagiosa with rubber containing 8-hydroxyquinoline. M. SELDOWITZ (*Amer. J. Dis. Child.*, 1940, 59, 67—76).—35 of 38 patients were successfully treated with rubber containing 8-hydroxyquinoline. The average time for the disappearance of the crusts was 3 days. The skin returned to a normal appearance in 8 days. The lesions in 3 of the 38 cases were refractory to this form of therapy. C. J. C. B.

Biological aspect of infected wounds. L. E. H. WHITBY (*Lancet*, 1940, 238, 655—657).—A review. C. A. K.

Apple therapy. I. A. MANVILLE (*Arch. Pediat.*, 1940, 57, 302—312).—A lecture. C. J. C. B.

Effect of iodine iontophoresis in actinomycosis. L. GREEN (*Schweiz. med. Wschr.*, 1940, 70, 189—190).—A patient suffering from actinomycosis of the lower jaw was cured by I iontophoresis (negative electrode with 10% KI outside; positive electrode inside the mouth; galvanic current of 12 ma.). A. S.

Actions of methyladrenaline; methadren. J. W. STUTZMAN and O. S. ORTH (*J. Pharm. Exp. Ther.*, 1940, 69, 1—12; cf. A., 1939, III, 1087).—Pressor, bronchiolar, gastro-intestinal, and glycogenolytic activity, duration of infiltration anaesthesia, and toxicity of methadren (3:4-dihydroxyphenyl- α -dimethylaminoethanol) are compared with adrenaline in experimental animals. *cyclo*Propane anaesthesia does not enhance the activity of methadren on the

automatic tissue of the dog's heart as it does with primary or *sec.* sympathomimetic amines.

E. M. S.

Relation of atropine to adrenaline and the sympathetic system. L. J. BUSSELL (J. Pharm. Exp. Ther., 1940, 69, 128—139).—Atropine antagonised the vasoconstrictor action of adrenaline in perfused dog's leg, and rabbit's ear, and caused vasodilatation in the small intestine and spleen. The effects of cervical and thoracic sympathetic stimulation were reduced by atropine. In large concns., atropine, like cocaine, may block access of adrenaline to effector cells.

E. M. S.

Effect of morphine and its derivatives, notably dihydro-oxycodone, on action of acetylcholine. G. DASTUGUE and A. BRESSON (Bull. Sci. pharmacol., 1940, 47, 25—28; cf. Kahane *et al.*, A., 1939, III, 612).—Dihydro-oxycodone (eucodal) and eserine sensitise, equally, leech muscle to the action of acetylcholine. Codeine and morphine have less effect, and other morphine derivatives none. Heroin markedly antagonises the action of eserine; morphine and codeine are less active, whilst eucodal, cotarnine, and apomorphine are without effect. Eserine does not antagonise the sensitising action of eucodal.

J. L. D.

Choline β -glycerophosphate.—See A., 1940, II, 265.

Effect of benzedrine and paredrine (*p*-hydroxyphenyl- α -methylethylamine hydrobromide) on circulation, metabolism, and respiration in normal man. M. D. ALTSCHULE and A. IGLAUER (J. clin. Invest., 1940, 19, 497—502).—Benzedrine and paredrine in doses of 20 mg. or more caused a marked rise in systolic and diastolic blood pressures in normal man. The cardiac output, pulmonary circulation time, vital capacity, basal metabolic rate, and respiratory dynamics were not changed. The effects of adrenaline in man were quite different from those of benzedrine and paredrine. They consisted in a slight rise in systolic pressure, no change or a fall in diastolic pressure, marked increase in cardiac output, and shortening of the circulation time. Benzedrine in doses ordinarily used clinically, *i.e.*, 5—10 mg., has no significant effect on the cardiovascular dynamics. The prolonged pressor action, with no increase of cardiac output and no psychic stimulating effect, suggests that paredrine may be useful in the treatment of certain types of vascular collapse, especially where stimulation of the myocardium may be undesirable.

C. J. C. B.

Action of acetylcholine on isolated guinea-pig uterus. W. LAUBENDER and B. MERTZ (Arch. exp. Path. Pharm., 1940, 194, 389—425).—The contraction of the guinea-pig's uterus by acetylcholine is analysed as to latent period, rate of contraction, height of contraction, and time taken in relaxation, at various temp. and concns. of the drug.

H. Bl.

Pharmacology of areca alkaloids. (A) Arecaidine hydrochloride and methiodide. (B) Arecaidine methylbetaine. C. KADONAGA (Folia pharm. japon., 1940, 28, 72, 73).—(A) Arecaidine hydrochloride has no effect on the isolated frog's heart and

rabbit's intestine and uterus. Arecaidine methiodide inhibits frog's heart and stimulates smooth muscle. This action is antagonised by atropine.

(B) Large doses of arecaidine methylbetaine produce a transient inhibition of the isolated frog's heart and contraction of the intestine and uterus of rabbits. This action is not antagonised by atropine. The parasympathetic action of other areca alkaloids depends on the presence of quinquevalent N in the mol. The betaine belongs to the zwitterion group and has no parasympathetic action.

H. H. K.

Action of secacornin, pituitrin, and acetylcholine on uterus and tube. I. FUJITA (Folia pharm. japon., 1940, 28, 76).

H. H. K.

Effect of sclerotia [of ergot] from *Phragmites communis*. R. ZADINA and O. VOŽEH (Časop. Českoslov. Lék., 1937, 17, 27—29).—By the method of Broom and Clark the action of 1 g. of ergot of *P. communis* is shown to correspond with 0.026 g. of ergotamine tartrate.

F. R.

Axon reflex responses to acetylcholine in skin. S. ROTHMAN and J. M. COON (J. invest. Dermat., 1940, 3, 79—97).—The goose flesh elicited by acetylcholine is due to its nicotine-like action. Drugs with nicotine-like action erect the hairs through a sympathetic axon reflex in the skin. Sweat secretion from intradermal injection of acetylcholine is due to (a) a direct action on the sweat glands (muscarine-like effect) and (b) an indirect action through an axon reflex (nicotine-like effect). The receptor ends of the axon reflex pathways are similar to ganglion cells: they are stimulated by small concns. and paralysed by high concns. of nicotine. The effector ends of the fibres carrying the pilomotor reflex are adrenergic, those of the sweat reflex are cholinergic. Drugs with nicotine-like action elicit a cutaneous vasoconstriction which may be the result of an independent axon reflex or may be associated with the pilomotor action of these drugs.

C. J. C. B.

Liberation of acetylcholine in skin. S. ROTHMAN and J. M. COON (J. invest. Dermat., 1940, 3, 99—106).—Acetylcholine could not be demonstrated after cutaneous stimulation in skin and outflowing venous blood. In liquid obtained by scarification of histamine wheals in human skin a substance was demonstrated which caused contraction of the eserine-leech muscle, but the evidence for it being acetylcholine is not conclusive. In cases of pathological inflammatory cutaneous lesions liquid from the diseased tissue also contracted the leech muscle prep.

C. J. C. B.

Action of oxidising agents (potassium permanganate, benzoyl peroxide, and benzoquinone), veratrine, and mistletoe on tone of frog's heart. H. RICHTER (Arch. exp. Path. Pharm., 1940, 194, 362—368).—These substances increase the tone of the isolated frog's heart and counteract lack of Ca.

H. Bl.

Action of helborsid in cardiac failure. M. GROSSMANN and B. BENZON (Schweiz. med. Wschr., 1940, 70, 251—254).—Helborsid is a solution of helleborin, the glucoside of *Helleborus niger*. Its action is similar to that of strophanthin. The glucoside was

successfully used, in intravenous doses of 0.25—0.5 mg., in 74 patients suffering from various types of severe cardiac failure. A. S.

Comparison of the coronary vasodilator activity of certain alkyloxanthines. G. V. LE ROY and J. H. SPEER (J. Pharm. Exp. Ther., 1940, 69, 45—51).—The coronary sinus outflow in intact, anaesthetised dogs is augmented by Na salts of 1 : 3-dimethyl-8-ethyl-, 8-methyl-1 : 3-diethyl-, and 1 : 3-diethyl-xanthine. These salts are more active than Na salts of theophylline and theobromine, but theophylline ethylenediamine and theobromine Na acetate are more active than any of the Na salts. E. M. S.

Action of cardiac extracts of *Buccinum undatum*, L., on the heart of *Raja clavata* and *Gadus morrhua*. H. H. MEYER (Endokrinol., 1940, 22, 347—351).—Aq. extracts of hearts of *B. undatum*, injected into the truncus aortae of *R. clavata* and *G. morrhua* slow the heart and diminish its force of contraction. The extracts were free from K and contained acetylcholine. A. S.

Whealing capacity of skin of newborn or young infant. M. B. SULZBERGER and R. L. BAER (Arch. Dermat. Syphilol., 1940, 41, 1029—1036).—In intracutaneous tests with solutions of histamine phosphate and codeine sulphate in infants 5 hr.—2 days of age urticarial reactions are obtained in all the tests. They are slightly smaller than those found in an adult control group. C. J. C. B.

Kallikrein and histamine. M. R. E SILVA (Nature, 1940, 145, 591).—The pharmacological activity of kallikrein does not involve liberation of histamine. Kallikrein produces abnormal filtration of colloidal matter through capillary walls. E. R. S.

Histamine iontophoresis for varicose ulcer. S. V. G. HURST (Lancet, 1940, 238, 739—740).—Successful case reports. C. A. K.

Influence of various fat-containing diets on reaction to histamine acid phosphate in skin of white rats. J. L. CALLAWAY and R. O. NOOJIN (J. Lab. clin. Med., 1940, 25, 933—934).—The cutaneous reaction in white rats to 1 : 1000 histamine acid phosphate with skin prick and intradermal injections is not influenced by the amount of fat in the diet. C. J. C. B.

Influence of hydrogen-ion concentration on absorption of alkaloids from the stomach. J. TRAVEL (J. Pharm. Exp. Ther., 1940, 69, 21—33).—Strychine, nicotine, cocaine, atropine, and eserine were absorbed from the ligated stomach, in the cat and dog, when the gastric juice was rendered alkaline, but not when it was strongly acid. Absorption of strychnine, 5 mg. per kg., was rapid at p_H 6.5, negligible at p_H 3.5. Rate of penetration of alkaloid through cell membrane varies with concn. of undissociated alkaloidal base in solution. E. M. S.

Therapeutics of experimental hypertension. A. GROLLMAN, T. R. HARRISON, and J. R. WILLIAMS, jun. (J. Pharm. Exp. Ther., 1940, 69, 76—80; cf. A., 1939, III, 660).—Administration of renal extract to rats with experimental hypertension reduced the blood pressure to normal. $NaNO_2$, KCNS, erythrol

tetranitrate, *Allium sativum*, and acetyl- β -methylcholine were without effect. E. M. S.

Relation between cortical hormone and size of the testis in drake : effect of different oils as solvents ; deoxycorticosterone acetate. E. BÜLBRING (J. Pharm. Exp. Ther., 1940, 69, 52—63; cf. Physiol. Abs., 1917, 22, 414).—The amount of cortical extract which will keep adrenalectomised drakes alive varies seasonally, becoming larger during the breeding season. The increased requirement is related to, but precedes, changes in the wt. of the testes. Injection of testosterone propionate does not necessitate increase in the amount of cortical extract. Increased requirement is due to need for cortical hormone while the testes are growing, and not to the large amounts of male hormone in the circulation. E. M. S.

Effect of various sterol derivatives on blood pressure of rat. A. GROLLMAN, T. R. HARRISON, and J. R. WILLIAMS, jun. (J. Pharm. Exp. Ther., 1940, 69, 149—155).—Pressor effects caused by administration of oestradiol, testosterone, deoxycorticosterone (but not adrenal cortical hormone), progesterone, and diethylstilbcestrol were abolished by administration of renal extracts, and were attributed to renal injury. Hypertension, in certain endocrine disorders, may be due to formation of abnormal steroid products. (Cf. A., 1940, III, 666.) E. M. S.

Respiratory alkalosis during anaesthesia. III. Hæmoglobinæmia following prolonged hyperventilation. R. T. STORMONT, M. H. SEEVERS, F. E. SHIDEMAN, and T. J. BECKER (J. Pharm. Exp. Ther., 1940, 69, 68—73; cf. A., 1940, III, 524).—Respiratory alkalosis in the anaesthetised and unanaesthetised dog is accompanied by hæmoglobinæmia, occurring $\frac{1}{2}$ —4 hr. after the onset of prolonged hyperventilation. It is prevented by the use of air-CO₂ mixtures, and by continuous gastric lavage with 0.3% HCl during hyperventilation. Hæmolysis is related to rise in p_H rather than to reduction in CO₂ tension. E. M. S.

Anæsthetic characteristics of methylacetylene. V. E. HENDERSON (J. Pharm. Exp. Ther., 1940, 69, 74—75; cf. A., 1938, III, 66).—In conc. up to 15%, an abnormal type of anaesthesia is produced, with cardiac irregularities and convulsive movements. E. M. S.

Effect of variations in atmospheric conditions on nitrous oxide and vinesthene anaesthesia. C. J. M. DAWKINS (Brit. Dental J., 1940, 68, 361—364).—The time taken to induce anaesthesia in adults and children with N₂O and vinesthene increases as the atm. pressure decreases from 1041 to 1000 millibars. With N₂O the time increases as the R.H. increases from 38 to 92%. There is no correlation between the electric potential (—405 to —150 v.) and temp. (wet and dry bulb) of the air and the induction time. Atm. pressure of approx. 1025 millibars and R.H. approx. 65% seem optimal for dental anaesthesia. W. McC.

Concentration of procaine in cerebrospinal fluid of man after subarachnoid injection. H. KOSTER, A. SHAPIRO, and R. WARSHAW (Arch. Surg., Chicago, 1939, 39, 97—103).—Procaine (300 mg. in

3.5 c.c. or 7.0 c.c. of c.s.f.) when injected in the lumbar region, with the patient in the Trendelenburg position, spreads rapidly towards the head. At no time does the concn. of procaine in the dorsal region reach as high a level as in the lumbar region. This does not support the assumption that the Trendelenburg position causes conc. solutions of procaine to flow to the cisterna. F. S.

Removal of procaine from cerebrospinal fluid during anaesthesia. H. KOSTER, A. SHAPIRO, R. WARSHAW, and M. MARGOLICK (Arch. Surg., Chicago, 1939, 39, 682—685).—The duration of paralysis can be shortened by withdrawing c.s.f. and irrigating with saline. 100 mg. of 150 mg. of procaine injected can be removed if washing is begun immediately. F. S.

Effect of cardiazol on reflexes in frogs. F. K. KÖLLENSPERGER (Klin. Woch., 1939, 18, 1521—1524).—In frogs administration of 1—5 mg. of cardiazol increased the reflexes after a short latent period. Large doses (10 mg.) caused tonic convulsions. Repeated administration has a cumulative effect. Symptoms of fatigue and effects of curare were annulled. M. K.

Clinical comparison of picrotoxin, metrazol, and coriamyrtin used as analeptics and as convulsants. W. J. BLECKWENN, E. R. HODGSON, and R. P. HERWICK (J. Pharm. Exp. Ther., 1940, 69, 81—88).—Intravenous injection of Na amytal or nembutal, in man, to the stage of corneal anaesthesia, was followed by analeptic treatment. Picrotoxin was more effective than metrazol. Coriamyrtin, although most potent, had undesirable convulsive effects. Because of their delayed action, picrotoxin and coriamyrtin are unsuitable for clinical use as convulsants. E. M. S.

Pharmacological actions of cularine. A. K. REYNOLDS (J. Pharm. Exp. Ther., 1940, 69, 112—116).—Cularine, a fumariaceous alkaloid, is a convulsant poison. It causes anaesthesia of rabbit cornea, increased contraction and tonus in frog heart and guinea-pig uterus, but it relaxes the intestine. It is compared with hydrastine and papaverine. E. M. S.

Micro-determination of mercury in biological material in [cases of] chronic poisoning. J. F. REITH and C. P. VAN DIJK (Chem. Weekblad, 1940, 37, 186—193).—Org. matter in the sample (urine) is destroyed by oxidation with HCl-KClO₃, Mn⁺⁺ being added in the case of faeces or organs. The solution is filtered, excess of Cl₂ removed with NH₂OH, and Cu⁺⁺ is added. H₂S is passed through the solution and the pptd. sulphides are filtered off and dissolved in aq. Cl₂ containing H₂SO₄. Excess of Cl₂ is removed with a solution of dithizone in CHCl₃ until the extract is green. The extract is decolorized by two treatments with KMnO₄ in H₂SO₄ and the aq. solution separated after addition of NH₂OH. Hg is again extracted with dithizone and the final extract compared colorimetrically with standards. Alternatively the Hg is determined by indirect titration with dithizone. The method is rapid and sp. for Hg in presence of Cu, Ag, Au, Pd, and Pt. The loss is 5—10% for 5—100 3 E (A., III.)

µg. of Hg. The urine of persons with artificial teeth contained 2—6, with Ag-amalgam stoppings 1—4, and, in one case, with a Cu-amalgam stopping, 18 µg. Hg per l. S. C.

Acute mercurial poisoning. B. H. PAGE and C. WILSON (Lancet, 1940, 238, 640—643).—3 cases of fatal Hg poisoning after cystoscopy are reported. Hg oxycyanide [HgO, 20.3%, Hg(CN)₂ 79.6%] in 1/4000 solution was used and about 28 mg. of Hg were left in the bladder. C. A. K.

Influence of arsenobenzene and its derivatives on respiration and circulation. K. KONDO and S. KIM (Folia pharm. japon., 1940, 28, 78).—Large doses of Na arsenobenzene or oxidised neoarsenobenzene in rabbits produced disturbances of the circulation and respiration and death within 30 min. The life of these animals could be prolonged by coramine or lobeline. H. H. K.

Change of toxicity of two derivatives of arsenobenzene and phenylarsenoxide. K. KONDO (Folia pharm. japon., 1940, 28, 76). H. H. K.

Arsphenamine poisoning with report of four cases. G. C. PARKER and O. C. PERKINS (Ann. int. Med., 1940, 13, 1306—1316).—4 patients suffering from syphilis developed pericapillary encephalorrhagia during treatment with arsphenamine. The lesions consisted of haemorrhage, and arteriolar embolism due to red cell agglutination. 3 patients died. A. S.

Morphological changes in kidney of rat during establishment of tolerance to tryparsamide. C. H. BUNTING and B. J. LONGLEY (J. Pharm. Exp. Ther., 1940, 69, 171—176; cf. A., 1939, III, 864).—24 hr. after intravenous injection of tryparsamide (1 g. per kg.), the kidney showed general cortical degeneration, complete necrosis of groups of convoluted tubules, but slight glomerular injury. After weekly injections of increasing doses the effect decreased. After a month, 3 g. per kg. was without effect. During the susceptible period tubular regeneration was rapid and extensive. E. M. S.

Erythema of ninth day following bismuth therapy for syphilis. J. L. GRUND (Arch. Dermat. Syphilol., 1940, 41, 1076—1077).—A case is reported. C. J. C. B.

Glycosuria in lead poisoning. E. GOETSCH and H. H. MASON (Amer. J. Dis. Child., 1940, 59, 119—128).—A single case of Pb poisoning with glycosuria is reported in detail. Blood-sugar vals. were not above normal and the urinary concn. of sugar was unaffected by the diet. Glycosuria persisted for 5 weeks, and the concn. of urinary sugar fell as convalescence progressed. The condition in Pb poisoning may be regarded as a renal glycosuria. The suggestion is supported by a survey of 8 cases of Pb poisoning with glycosuria in children. In 5 of the cases in which determinations were made the blood-sugar vals. were normal; in 3 cases in which glucose tolerance curves were obtained the curves were not of the diabetic type. Glycosuria does not alter the prognosis in cases of Pb poisoning in children. C. J. C. B.

Pharmacology of trypsin. I. Action on guinea-pig's small intestine and uterus. Re-

lease of histamine from perfused lung. II. Action on blood pressure in cat, dog, and rabbit. M. ROCHA E SILVA (Arch. exp. Path. Pharm., 1940, 194, 335—350, 351—361).—I. Cryst. trypsin increases tone and spontaneous contractions of the small intestine of guinea-pig, cat, dog, rat, and rabbit, but not of mouse; it also increases the tone of the uterus in guinea-pig, rabbit, and rat. Doses of trypsin desensitise the muscle to subsequent doses of the enzyme. The isolated guinea-pig's lung releases histamine into the perfusion fluid.

II. Trypsin lowers blood pressure. Min. lethal dose in cats is less than 1.5 mg., in rabbits 3 mg., per kg. H. BL.

Pathological changes in organs of rats produced by chronic nitrite poisoning. W. C. HUEPER and J. W. LANDSBERG (Arch. Path., 1940, 29, 633—648).—Oral and subcutaneous administration of erythrol tetranitrate and NaNO_2 respectively to young, immature rats over a period of several months results in the production of degenerative vascular and parenchymatous lesions in the heart, lung, brain, kidney, and testis. The chief factor is an anoxia from slowing of the blood flow caused by the vasodilatation due to NaNO_2 . The experimentally produced changes are identical with those seen in man following chronic nitrite poisoning and are similar to those observed in hypertension in man and animals. (8 photomicrographs.)

C. J. C. B.

Endemic fluorosis in S. India. C. G. PANDIT (Office int. Hyg. publ., 1940, 32, 450—458).—F' content of 1118 samples of drinking waters from various districts has been determined. Results are tabulated and F' incidence of mottling of enamel among 1115 children is given, together with data on the incidence of chronic fluoride poisoning in adults based on the examination of 1192 subjects. C. G. W.

Circulatory effects of venom of the Indian cobra (*Naja naja*). F. GOTTDENKER and M. WACHSTEIN (J. Pharm. Exp. Ther., 1940, 69, 117—127).—Intravenous injection (6—9 μg . per kg.) caused a prolonged rise in arterial blood pressure in cats and rabbits, and e.c.g. changes associated with impairment of conduction and fibrillation in the cat's heart *in situ*. The venom caused systolic contracture in isolated heart, vasoconstriction in perfused rabbit's ear, and coronary dilatation in heart-lung prep. of the dog. E. M. S.

Action of *Kalmia agustifolia* (lambkill). R. A. WAUD (J. Pharm. Exp. Ther., 1940, 69, 103—111).—Intraperitoneal injection of extract, in mice, caused salivation, nausea, defaecation, dyspnoea, convulsions, and death; in rabbits, additional effects were preliminary drowsiness, and blindness. The actions of the drug on isolated heart, uterus, intestine, and lung showed no const. relationship to the autonomic nerve supply of the organs. E. M. S.

Clinical experiences with some curare preparations and curare substitutes. M. S. BURMAN (J. Pharm. Exp. Ther., 1940, 69, 143—148; cf. Arch. Neurol. Psychiat., 1939, 41, 307).—Compared with

preps. previously used clinically, intravenous erythroidine hydrochloride (1000 mg.) gave a fairly good, brief effect. Extracts of *Erythrina glauca*, *Strychnos toxifera*, and *S. castelneana* were ineffective in doses used. Prep. 385 C (native powdered curare of unknown composition), up to 7 c.c., was the most potent. Disparity exists between clinical potency and biologically assayed activity. E. M. S.

Voluntary running activity of rats fed propylene glycol and other glycols. W. VAN WINKLE, jun., and N. K. KENNEDY (J. Pharm. Exp. Ther., 1940, 69, 140—142; cf. A., 1939, III, 998).—The running activity, unimpaired by propylene glycol, was depressed by ethylene, diethylene, and dipropylene glycols. E. M. S.

Toxicological studies on cubé. H. B. HAAG and I. TALIAFERRO (J. Pharm. Exp. Ther., 1940, 69, 13—20).—L.D. 50 of a sample of cubé, administered orally to rats, was 170 mg. per kg. in aq. suspension, 245 mg. per kg. in oil. Addition of small doses to the diet for 150 days did not affect growth, nor produce pathological changes in the tissues. Cubé retained its full toxicity after boiling for 30 min. and after keeping for 2 years. E. M. S.

[Pharmacological] actions of *Crataegus oxyacantha*. J. D. P. GRAHAM (Quart. J. Pharm., 1940, 13, 49—56).—When given intravenously, extracts of hawthorn have a paralysing action on the respiratory centre and are toxic to the mammalian heart. Chronic poisoning causes necrosis of the liver. The frog heart is inhibited, whilst the mammalian heart *in situ* or during perfusion is at first slowed and strengthened but later passes into auricular fibrillation and heart block. The extracts lower blood pressure, and coronary and pulmonary vessels and bronchi are constricted. Tone and movement of the uterus are inhibited and the motor gradient of the intestine *in vitro* tends to be reversed; *in vivo* there is an opposite effect, with inhibition of the colon and stimulation of the stomach. J. N. A.

Fugu (*Spheroides*) poisoning. I. Nitrogen distribution in purified poison. J. NAGAI and T. ITO (J. Biochem. Japan, 1939, 30, 235—238).—The toxic principle in the ovaries of *S. rubripes* was purified by HgSO_4 , phosphotungstic acid, and AgNO_3 pptns. The N of the most active fractions (min. lethal dose in mice 11.3 μg . per g.) is present totally as amino-N, 30% of which is liberated as NH_3 by heating with alkali. Colour and pptn. tests are described. F. O. H.

Vitamin-C and sanocrysin for arthritis. K. SECHER (Lancet, 1940, 238, 735—736).—Vitamin-C prevents the development of thrombopenia or dermatitis after sanocrysin administration for arthritis. C. A. K.

Use of histamine in rheumatoid arthritis. R. O. MÜETHER (Ann. int. Med., 1940, 13, 2147—2153).—Histamine diphosphate (0.1—0.6 mg.) was subcutaneously injected in patients suffering from rheumatoid arthritis. Marked improvement of movement and decrease of pain were noted in a no. of cases. A. S.

Reduced tolerance to ergotamine tartrate in hyperthyroidism. J. Q. GRIFFITH, jun., and B. I. COMROE (J. Pharm. Exp. Ther., 1940, 69, 34—36; cf. A., 1939, III, 892).—Injection of ergotamine tartrate (2.5 mg. per 100 g.) caused 85% deaths in thyrotoxic rats but none in controls. E. M. S.

Further results with various agents in experimental hyperthyroidism. W. C. CUTTING and W. C. KUZELL (J. Pharm. Exp. Ther., 1940, 69, 37—39; cf. A., 1939, III, 933).—Sulphanilamide, phenobarbitone, and chloral reduced the degree of experimental hyperthyroidism in guinea-pigs. The mortality rate with chloral was high. Testosterone, with and without colchicine, and Ca gluconate had no effect. E. M. S.

Biological assay of intermedin. A. A. ABRAMOWITZ (J. Pharm. Exp. Ther., 1940, 69, 156—164).—A method, using the expansion of denervated caudal melanophores in *Fundulus heteroclitus*, is described, and the unit defined. E. M. S.

Treatment of asthma with "quotientin." W. BASSE and H. GOHRING (Klin. Woch., 1939, 18, 1568—1570).—Quotientin (parathormone + adrenaline + pituitrin + Ca glutamate) is beneficial in asthma; it raises the Ca content of cells and plasma, and causes migration of K into plasma. M. K.

Warm moist air therapy for burns. S. SMITH R. RISK, and C. BECK (Arch. Surg., Chicago, 1939, 39, 686—690).—Cutaneous burns of rats living in warm (90° F.) moist air healed faster than those of controls living in ordinary air, even when the controls were treated with butesin picrate and tannic acid. F. S.

Pharmacology of berberine. T. M. SEERY and R. N. BIETER (J. Pharm. Exp. Ther., 1940, 69, 64—67).—Parenteral administration prolonged the lives of rats infected with *Trypanosoma equiperdum*. The drug potentiated procaine anaesthesia in the rat and dog. Local anaesthesia in human skin was associated with toxic effects. E. M. S.

Relations between age and weight and dosage of drugs. W. T. DAWSON (Ann. int. Med., 1940, 13, 1594—1615).—The effective doses of various drugs are usually less per kg. in the larger animals of a species than in the smaller but a species may show either high resistance or high susceptibility at birth, with possible decrease for a few days or weeks, followed by increase. On the basis of clinical observation the therapeutic dosage of atropine, the arsphenamines, Bi, digitalis, mandelic acid, some mercurials, sulphanilamide, and some other drugs is higher in proportion to wt. for infants and children than for adults. On the other hand, dosage of morphine or strychnine in proportion to body-wt. is too great for safety and requires caution until susceptibility has been determined, especially in the case of an infant or aged person. The greater tolerance of the young for some drugs may be due to the proportionately larger average (1) surface area, (2) basal metabolic rate, (3) liver-wt., (4) daily urinary vol.

C. J. C. B.

(xxi) PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Housing and health relationships re-examined. B. MARQUETTE (U.S. Publ. Health Repts., 1940, 55, 547—554).—A review. G. G. W.

Industrial air analysis. S. MOSKOWITZ, J. SERGEL, and W. J. BURKE (Ind. Hyg. Bull., N.Y. State, 1940, 19, 9—11).—Various gas-washing bottles (all-glass types and those containing Aloxite stone gas dispersers) are described. Methods for the determination in air of H₂S, CS₂, formaldehyde, and some acid fumes and vapours are given. C. G. W.

Ventilation of a trichloroethylene degreaser. W. N. WITHERIDGE and H. T. WALWORTH (J. Ind. Hyg., 1940, 22, 175—187).—Four types of local exhaust systems were compared by determining the concn. of trichloroethylene in the operator's breathing zone, and by observing solvent losses at different ventilating rates. The system using a horizontal slot at the margin of the tank was found to be the most efficient in reducing solvent exposure.

E. M. K.

Serial chest röntgenograms of 3179 office employees, 1926—1938. H. H. FELLOWS (J. Ind. Hyg., 1940, 22, 157—168).—After the exclusion of persons whose first X-ray was suggestive of tuberculosis, the remainder were grouped into an "average healthy" group (80%), those whose lungs showed a healed primary complex (14%), and those with lesions requiring further study (6%). There was no significant difference in the development rate of pulmonary tuberculosis between the 1st and 2nd groups. In the 3rd group many important conditions were found which were unrecognised by clinical examination.

E. M. K.

Paraffinoma of lung with secondary tubercle-like lesions in the liver and spleen. H. PINKERTON and V. MORAGUES (Arch. Path., 1940, 29, 691—699).—A case of paraffinoma of the lung with terminal abscess formation, bronchopneumonia, and empyema is described. The abscess was secondary to constriction of a bronchiole involved in the cicatricial tissue of the paraffinoma. Organised masses of liquid petrolatum, resembling mural thrombi, were found within the pulmonary vessels. The liver and spleen were studded with tubercle-like lesions, 0.5—3.5 mm. in diameter, which proved to be encapsulated masses of liquid petrolatum, with the addition, in some instances, of Ca and cholesterol crystals. These peculiar lesions were secondary to the paraffinoma and probably embolic. (8 photomicrographs.) C. J. C. B.

Experimental tissue reactions following intravenous injections of silica and other dusts. F. W. SIMSON and A. S. STRACHAN (Publ. S. African Inst. Med. Res., 1940, 9, 95—122).—The finely ground dusts were suspended in water or saline solution and injected intravenously into rabbits in weekly 2-c.c. doses, to a total dose of 0.3 g. In early stages, all dusts were taken up by the reticulo-endothelial system and were deposited in the spleen, liver, bone-marrow, and lymph nodes. Dusts containing a high proportion of free SiO₂ caused a plasma and giant cell

reaction where they were deposited, followed by fibrosis of a whorled or nodular type; with large doses, or when the reticulo-endothelial system had been blocked by another dust, hyaline degeneration of capillaries occurred in the affected organs and in the kidneys. Silicate dusts did not produce these lesions. There was no evidence from these experiments of an individual susceptibility to SiO_2 . The similarity between the lesions found in these animals and those of Banti's disease is noted, and the proliferation and dedifferentiation of the bile duct epithelium is discussed in relation to primary carcinoma of the liver. Photographs and photomicrographs are presented.

E. M. K.

Mite dermatitis. D. E. H. CLEVELAND (Arch. Dermat. Syphilol., 1940, 41, 831—834).—Dermatitis in handlers of copra and cheese due to irritation by mites found in these materials (*Tyroglyphus longior*, Castellani, and *T. longior*, respectively) is not uncommon.

C. J. C. B.

Dermatitis from cashew nut-shell oil. J. G. DOWNING and S. W. GURNEY (J. Ind. Hyg., 1940, 22, 169—174).—The oil in the outer covering of the cashew nut is very irritating and if the nut is bruised it may seep through and contaminate the kernel. Cases of dermatitis venenata are described in men handling the shelled nuts in bulk; patch tests showed the oil, fragments of kernel, and shell to be irritating to a susceptible subject.

E. M. K.

Eruptions and photosensitivity due to dyed fabrics. E. EPSTEIN (Arch. Dermat. Syphilol., 1940, 41, 1044—1052).—A review of the literature and a discussion of 8 cases of eruptions due to dyed clothing are presented. Dyed fabrics may cause dermatitis venenata, photosensitivity, pyoderma, hidradenitis suppurativa, lichen simplex chronicus, and urticaria.

C. J. C. B.

Non-offset solutions in printing; allergy to gum arabic reported. A. R. SMITH and W. J. BURKE (Ind. Hyg. Bull., N.Y. State, 1940, 19, 12).—Inhalation of sprayed solution produced complaints of "tightness" in the throat and chest from several operatives. Compositions of 7 non-offset spray solutions are given and it is concluded that the above symptom is only a transient and harmless phenomenon.

C. G. W.

(xxii) RADIATIONS.

Passive transfer of light-sensitivity. J. L. CALLAWAY (Arch. Dermat. Syphilol., 1940, 41, 889—891).—A patient who was particularly sensitive to light was studied, and using a modified Prausnitz-Kuestner technique the sensitivity was transferred passively to 3 different normal persons. C. J. C. B.

Volume integration of dosage for X- and γ -radiation. F. HAPPEY (Nature, 1940, 145, 668—669).—Methods are given for integration of dosage in a vol. through which a beam passes; they can be applied to point sources of γ -radiation. E. R. S.

(xxiii) PHYSICAL AND COLLOIDAL CHEMISTRY.

Theoretical response of living cells to contact with solid bodies. R. H. LYDDANE and O. STUHL-

MAN, jun. (J. Gen. Physiol., 1940, 23, 521—530).—Fenn's analysis of the behaviour of a fluid cell in contact with an ingestible solid particle (*ibid.*, 1921—22, 4, 373) is generalised for cells and particles of any size. Assuming the cells and solid particles to be spherical and immersed in plasma, it is shown that the surface energy of the expanding cell, as it progressively ingests the particle, passes through a min. at some sp. depth of penetration depending on the val. of $R = (\gamma_{sp} - \gamma_{sc})/\gamma_{cp}$. Partial ingestion is possible when R is within the limits 1 and -1 , and becomes complete beyond -1 . For intermediate vals., complete ingestion can occur only if the cell draws on some other source of energy. A single large cell incapable of ingesting completely a particle of a certain size may still succeed in ingesting a no. of smaller particles of the same total vol. provided they are ingested successively. Depths of penetration for various vals. of R are tabulated for a linear size ratio cell/particle = 10, such as occurs, e.g., when a large mononuclear lymphocyte is about to make contact with a *Staphylococcus aureus*. F. L. U.

Composition of fluids and sera of some marine animals and of the sea-water in which they live. W. H. COLE (J. Gen. Physiol., 1940, 23, 575—584).—Fluids of the worms, echinoderms, and the clam *Venus* were isotonic with sea-water; fluids of the Arthropoda were hypertonic. The p_H of all fluids was below that of sea-water. Ratios of ionic concns. showed (a) uniform distribution of ions between the internal and external media for the echinoderms and *Venus*, (b) differential distribution of K and Mg in the worms, (c) differential distribution of SO_4^{--} , Mg, K, and Ca in the Arthropoda, and (d) differential distribution of Ca, Mg, and SO_4^{--} in *Myxine*. The sera of the Arthropoda from dil. sea-water showed higher concns. of Na^+ , K^+ , Ca^{++} , and Cl^- relative to the respective concns. in the external medium than in normal sea-water, and also showed different orders of ions. The increase in osmotic pressure of the sera of animals moving into brackish water is caused by unequal accumulation of Na^+ , K^+ , Ca^{++} , and Cl^- ; SO_4^{--} and Mg^{++} ionic ratios do not change. D. M. N.

Effect of lyotropic anions on cation permeability. H. DAVSON (Biochem. J., 1940, 34, 917—925).—Anions behave differently towards permeability of the cat erythrocyte to Na^+ and K^+ . Hydrating anions (e.g., CNS' , I') accelerate K^+ and retard Na^+ permeability, whilst dehydrating ions (e.g., SO_4^{--}) have the opposite effect in both cases. The effect of anions on permeability appears to be due in part, in the case of K^+ but not Na^+ , to diffusion potentials. Surface-active substances (e.g., Na oleate in concn. of 0.01%) exert a powerful inhibiting effect on Na^+ permeability, and CNS' and I' appear to exert their effects by virtue of their adsorption at protein- H_2O interfaces. The behaviour of the erythrocyte membrane bears no simple relation to hydration phenomena. P. G. M.

Effects of hexylresorcinol on *Nitella*. W. J. V. OSTERHOUT (J. Gen. Physiol., 1940, 23, 569—573).—Both hexylresorcinol and guaiacol reversibly depress the p.d. between the cell vacuole and the external solution, and both decrease the K^+ effect. Hexyl-

resorcinol decreases the apparent mobility of Na⁺ and K⁺; guaiacol increases that of Na⁺ but not of K⁺. 0.0003M-Hexylresorcinol is as effective as 0.03M-guaiacol in depressing the p.d. D. M. N.

Change of surface tension of aqueous solutions of serum containing methylene-blue as function of time. A. BOUTARIC and P. BERTHIER (Compt. rend., 1940, 210, 637—639).— γ of serum (horse) diluted with aq. 0.1% methylene-blue increases progressively on keeping. Benzopurpurin and fuchsin have no effect and neutral-red a slight effect.

J. L. D.

Binding of water by certain colloids. E. A. SCHEINKMAN and R. V. TSCHAGOVETZ (Ukrain. Biochem. J., 1939, 14, 565—581).—The d of bound water is greater than d of free water. For this reason the apparent wt. of a plate of gelatin or agar immersed in water increases to a max. (after 40 min. with gelatin and after 5 min. with agar) and then falls, owing to dissolution of the colloid. Binding of water is associated with contraction of the system, which proceeds asymptotically to a max. No rise in apparent wt. is observed when animal tissues are immersed in water, showing that these are saturated with respect to bound water.

R. T.

Denaturation of soya-bean proteins by organic solvents and by heat. E. VOLKOV and I. DVINIANOVA (J. Appl. Chem. Russ., 1940, 13, 267—274).—Denaturation of the proteins during treatment with org. solvents proceeds rapidly during the first 30 min., but only very slowly subsequently. The extent of denaturation rises with increase in temp. of extraction, in water content of the material, and in polarity of the solvent (denaturing effect of benzene or benzine is less than that of acetone, which is less than that of ethyl alcohol).

R. T.

(xxiv) ENZYMES.

Surface tension and enzyme action. T. U. MARRON and F. B. MORELAND (Enzymologia, 1939, 6, 225—228).—The activity of urease, phosphatase, and tyrosinase is not appreciably affected by adding substances (e.g., saponin, digitonin, lower aliphatic alcohols) which lower surface tension. W. McC.

Influence of monochromatic light on action of enzymes. Influence on yeast enzymes. R. MURAKAMI (Bull. Agric. Chem. Soc. Japan, 1940, 16, 55—68).—A summary of the previous papers (cf. A., 1940, III, 342). The methods used for extraction of invertase, proteinase, catalase, amylase, and lipase from yeast are described. J. N. A.

Mechanism of enzymic oxidation of monohydric phenols. L. CALIFANO and D. KERTESZ (Enzymologia, 1939, 6, 233—241).—The prep. from the ink gland of *Sepia officinalis* of extracts containing an enzyme which very rapidly oxidises *o*-dihydric phenols to *o*-quinones is described. Since the extracts oxidise monohydric phenols only after a long induction period and since tyrosine is oxidised to 3:4-dihydroxyphenylalanine by *o*-benzoquinone in the absence of the extracts it follows that the oxidation of monohydric phenol is a non-enzymic process

brought about by *o*-quinone enzymically produced from dihydric phenol and that sp. monophenolase (e.g., tyrosinase) probably does not exist.

W. McC.

Oxidation-reduction potential of co-enzyme. I.—See A., 1940, I, 324.

Lipase. VI. Effects of reduction and oxidation of serum-lipase and milk-esterase. R. ITOH, S. KAYASHIMA, and K. FUJIMI. VII. Determination of tissue-esterase activity by titration with alkali. R. ITOH and S. KAYASHIMA (J. Biochem. Japan, 1939, 30, 283—289, 291—295; cf. A., 1938, III, 758).—VI. The hydrolytic activity of esterase from human milk (the enzyme is absent from cow and goat milk) or of serum-lipase is increased by reduction (KCN, quinol) and decreased by oxidation (O₂, I, H₂O₂). Serum-lipase inactivated by atoxyl or quinine is slightly reactivated by reduction. Milk-esterase hydrolyses tributyrin and methyl butyrate but not olein.

VII. Hydrolysis by milk-esterase is followed by titration with 0.05N-KOH in alcohol. The lipolytic activities (tributyrin as substrate) of extracts of various tissues (man, ox, rabbit, pig, hen) are tabulated; the vals. obtained appear to depend on the content of natural reducing substances, e.g., ascorbic acid or glutathione. Blood-lipase is mainly in the erythrocytes in ox and mainly in the serum in rabbits; its activity in man appears to be reduced during cancer. Lipase activity is the same in various parts of the brain (ox).

F. O. H.

Effect of inactivated sera on lipolytic enzymes.

T. I. MEERSON (Ukrain. Biochem. J., 1939, 14, 325—340).—The action of pancreatic lipase (man, dog, rabbit, pig) is enhanced by addition of inactivated sera (man, dog, rabbit; sera heated at 70—80°), with respect to hydrolysis of olive and castor oil, but is inhibited with respect to tributyrin and methyl butyrate. Serum has no effect on liver- and blood-lipase.

R. T.

Esterase of yeast. C. H. KIM (Enzymologia, 1939, 6, 183—185; cf. A., 1937, III, 431).—The ethyl α -3-hydroxy-12-ketocholanate obtained when dehydrodeoxycholic acid is hydrogenated by bottom yeast in presence of NaHSO₃ and sugar is produced by enzymic esterification. Added stearic and α -3-hydroxy-12-ketocholanate are esterified in the same way. W. McC.

Cholase in organs, bacteria, and fungi. K. TAKAHASHI (Enzymologia, 1939, 6, 213—218; cf. A., 1940, III, 137).—Glyco- and tauro-cholase occur in the liver of the ox and rat, in yeast, and in *B. coli communis*, *Bact. proteus vulgaris*, and *Bact. enteritidis*, Ohara-Minoda, but not in the intestine or in glycerol extract of yeast. W. McC.

Fibrinogenase, an enzyme in milk. L. BURUIANA (Compt. rend., 1940, 210, 721—723; cf. Sole, A., 1936, 1287).—0.6% fibrinogen is coagulated at room temp. by milk from various mammals (except the sow) at p_H 7. Ewe's milk is most active. When the dried fatty material is extracted with ether, the residue has a greater coagulant activity than milk, is thermo-labile, and its action is markedly influenced

by [H⁺]. The non-saponifiable fraction of the residue (probably vitamin-K) flocculates aq. fibrinogen.

J. L. D.

Relationship between oxidation-reduction and tryptic and ereptic activities. J. NAGAI (J. Biochem. Japan, 1939, 30, 225—234).—Mild oxidation of caseinogen or lens protein (ox) by H₂O₂ diminishes, whilst reduction by Na₂S₂O₄ or biological reducing systems (e.g., succinic dehydrogenase) accelerates, the rate of proteolysis of these substrates by trypsin-kinase. A parallel phenomenon occurs with the hydrolysis of dipeptides by erepsin.

F. O. H.

Peptic degradation of caseinogen. Structure of peptones produced. S. KUK (Enzymologia, 1939, 6, 194—200).—Caseinogen, digested with pepsin and HCl for approx. 1 month, yields two fractions differing in solubility in methyl alcohol. A fraction very similar to one of these is obtained by Reh's method (A., 1908, i, 69). Analysis shows that the three fractions probably consists of equimol. mixtures of partly hydrolysed acropeptide D_A and a complex containing aspartic acid, histidine, arginine, and tyrosine present in the form of closed-chain tetrapeptides. Two of the fractions contain open-chain polypeptides and hence are attacked by polypeptidase at p_H 8. All the closed-chain complexes in these fractions are opened by the combined action of pepsin + HCl and papain at p_H 5 and all but two of the closed-chain tetrapeptides are opened by papayotin; these two are opened by pepsin + HCl alone. Pepsin has no effect if used after papayotin.

W. McC.

Structure of the acropeptide and peptone obtained from gelatin. Hydrolysis of the acropeptide and peptone with papayotin. A. FODOR (Enzymologia, 1939, 6, 201—206).—The acropeptide P₁, C₆₂H₉₆O₂₃N₁₈, 2H₂O, is probably an association of an open-chain tetrapeptide, an open-chain dipeptide, and three closed-chain tetrapeptides. The tetrapeptides also occur in gelatin. The corresponding peptone contains two closed tetrapeptide complexes which are readily attacked by papayotin. Probably pepsin attacks only the basic constituents. These resist attack by papayotin. Formulæ for the acropeptide, peptone, and the peptides are suggested.

W. McC.

Peptic synthesis of plastein. T. T. CHEN (Chinese J. Physiol., 1940, 15, 159—164).—The dissolved pepsin was calc. from the heat-coagulable N. None was included in the plastein synthesised at p_H 2.9 and 4.2 from digested ovalbumin.

N. H.

Protein synthesis in fibrin-papain-glutathione digests. M. E. MAVER and C. VOEGTLIN (Enzymologia, 1939, 6, 219—224; cf. A., 1933, 864; Strain *et al.*, A., 1938, III, 953).—Synthesis occurs only when protein, enzyme, and activator are present in appropriate proportions so that a suitable degree of hydrolysis (optimum 30—60%) is attained. The original concn. of the substrate is a controlling factor in the degree of proteolysis reached at equilibrium. When the concns. of papain and glutathione are 1.5 mg. per c.c. little or no synthesis occurs when the original substrate concn. is less than 6 mg. per c.c. When the original substrate concn. exceeds 6 mg. per

c.c. synthesis occurs on treatment with O₂ after somewhat more than 50% of the fibrin has been digested. Synthesis is prevented or greatly diminished by making a very fine emulsion of the fibrin.

W. McC.

Reputed synthesis of protein by aëration of protein-proteinase digests. II. K. LINDERSTRÖM-LANG and G. JOHANSEN (Enzymologia, 1939, 7, 239—240; cf. A., 1938, III, 953).—No protein synthesis occurs when the procedure of Maver and Voegtlin (preceding abstract) is repeated.

W. McC.

Effect of reduction and oxidation on yeast-invertase activity. R. ITOH and F. OBO (J. Biochem. Japan, 1939, 30, 277—282).—The activity of the invertase is slightly increased by reduction (Na₂S₂O₄, H₂S) and decreased by oxidation (H₂O₂, I); the changes, however, are not proportional to those in redox potential. The enzyme inactivated by amines is not, or only slightly, reactivated by H₂S (cf. Myrbäck, A., 1926, 1174).

F. O. H.

Mechanism of hexokinase action. S. IRI (J. Biochem. Japan, 1939, 30, 217—224).—Glucose in presence of hexokinase and muscle extracts yields glycogen; the reaction is inhibited by iodoacetic acid. The probable mechanism of the synthesis, an early stage of which is phosphorylation, is discussed.

F. O. H.

Glycolysis in retina extracts. H. SÜLLMANN and T. A. VOS (Enzymologia, 1939, 6, 246—257).—Cell-free extracts of retina produce lactic acid from glucose, glucose-1-phosphoric acid, mannose, and fructose. Glycogen, galactose, and hexose diphosphate also yield lactic acid in smaller amounts. Extracts inactivated by dialysis or otherwise are reactivated by adenylic acid but not by cozymase although cozymase increases lactic acid production in active extracts and reinforces the action of adenylic acid. Adenylic acid also increases the activity of active extracts. Pyruvic acid, Mg⁺⁺, and less effectively Mn⁺⁺ also increase glycolysis by the extracts. Lactic acid production is accompanied by phosphorylation and no glycolysis occurs in absence of inorg. PO₄^{'''}. Adenylic acid, cozymase, and Mg⁺⁺ affect phosphorylation in the same way as they affect lactic acid production. Inosic acid does not replace adenylic acid as activator of glycolysis and phosphorylation. These processes are inhibited by *dl*-glyceraldehyde and by maleic acid. The production of lactic acid from glucose by the extracts is only slightly or not at all increased by nicotinic acid, nicotinamide, or nicotine.

W. McC.

Phosphorylated oxidation product of pyruvic acid.—See A., 1940, II, 266.

(xxv) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Relationship of inositol, thiamin, biotin, pantothenic acid, and vitamin-B₆ to the growth of yeasts. R. J. WILLIAMS, R. E. EAKIN, and E. E. SNELL (J. Amer. Chem. Soc., 1940, 62, 1204—1207).—These substances are more or less complementary, the necessity for most of them varying with the strain

of yeast (three strains used). During long incubation yeasts acquire ability to dispense with many of these nutrients. Liver extracts contain other unknown stimulants. R. S. C.

Factors influencing growth and sex in *Phycomyces*. W. H. SCHOFFER (Arch. Sci. phys. nat., 1940, [v], 22, Suppl., 45—48; cf. A., 1939, III, 425, 732).—The nitrogenous substance (or substances), present in conc. yeast extract, rice polishings, and plant and animal tissues, that is essential for the gametic reproduction of *Phycomyces* is not identical with aneurin. Its presence as impurity in maltose suggests that it is a vitamin and, since the ash from maltose is inactive, it is probably not a mineral. As regards its growth-promoting power, it is not replaced by lactoflavin, inositol, biotin, pantothenic acid, nicotinamide, or adermin. Possibly there is synergism between the substance and aneurin so that max. effects are obtained only when both occur together. W. McC.

Mating reactions of enucleate fragments of *Paramecium bursaria*. V. TARTAR and T. T. CHEN (Science, 1940, 91, 246).—Enucleate fragments of one mating type gave normal mating reaction, i.e., agglutination and formation of pairs, with individuals and enucleate fragments of another mating type, but not with those of the same type. E. R. S.

Growth metabolism of *Rhizobium* and inter-relationships between respiration and synthesis. S. R. HOOVER and F. E. ALLISON (J. Biol. Chem., 1940, 134, 181—192).—Growth of *R. meliloti* supplied with NH_3 - and NO_3 -N produces CO_2 , water, and cells of const. composition. The rate of growth is proportional to $(Q_{\text{CO}_2} - 8)$ and to $(Q_{\text{O}_2} - 8)$ if the source of N does not supply available O_2 . The economic coeff. (mg. of dry wt. of organisms produced per 100 mg. of sugar consumed) is 40—50 for young cultures. H. G. R.

Effect of *Rhizobium* on growth of cress roots. G. BIELER (Arch. Sci. phys. nat., 1940, [v], 22, Suppl., 30—32).—The length of the roots produced by cress seed in 24 hr. in soil extract containing maltose is increased by 38% and their elasticity and powers of resistance to damage are also improved by adding cultures of *Rhizobium*. The increases are less when the extract is sterilised. W. McC.

Fermentation of cellobiose. K. MYRBÄCK (Svensk Kem. Tidskr., 1940, 52, 101—103).—The lactose-fermenting yeasts *T. cremoris*, *T. lactosa*, *T. sphaerica*, and *S. fragilis* can ferment cellobiose, though more slowly than lactose. L. J. J.

Effect of riboflavin and synthetic flavins on growth of lactic acid bacteria. E. E. SNELL and F. M. STRONG (Enzymologia, 1939, 6, 186—193; cf. A., 1937, III, 487).—*Lactobacillus arabinosus*, *L. pentosus*, *L. pentoaceticus*, *L. mannitopoerus*, *L. mesenteroides*, *Bacillus brassicae*, and *Streptococcus lactis* do not require riboflavin for growth. *L. pentosus*, *B. brassicae*, *S. lactis*, and *L. mesenteroides*, and possibly the other three species also, synthesise the vitamin. *L. Delbrückii*, *L. gayoni*, *L. casei*, and *B. lactis acidii* do not grow in the absence of added riboflavin. 6:7-Dimethyl-9-(1'-sorbityl)-, and 9-(1'-arabityl)-isoall-

oxazine and lumiflavin, lumichrome, and riboflavin tetra-acetate have no effect on the growth of *L. casei* and *B. lactis acidii* and 6:7-dimethyl-9-(*d*- and -9-(1'-arabityl)-, 7-methyl-6-ethyl-9-(1'-arabityl)-, and 5:6-benzo-9-(*d*-1'-ribityl)-isoalloxazine promote the growth only in presence of sub-optimal amounts of riboflavin but 6-methyl-, 7-methyl-, and 7-methyl-6-ethyl-9-(*d*-1'-ribityl)-isoalloxazine as sole source of flavin promote the growth. W. McC.

Bacteriology of infected wounds. R. CRUICKSHANK (Lancet, 1940, 238, 704—706, 750—752).—A review. C. A. K.

Effect of carbon dioxide atmosphere on blood cultures [of bacteria]. O. KHARAT (J. Path. Bact., 1940, 5, 491—496).—The germination and growth rate of 21 freshly isolated strains of pathogenic bacteria and of 2 stock strains of *Br. suis* were tested under aerobic conditions and in the presence of CO_2 with a view of substituting incubation in air plus 5% CO_2 for incubation in air in routine blood culture work. Germination of the bacteria was not depressed by CO_2 ; in some cases it was enhanced. The growth rate but not the germination of *Bact. typhosum* and *H. influenzae* was depressed by CO_2 ; that of the remainder was unaffected or enhanced. C. J. C. B.

Regional and general temperature response following experimentally induced acute inflammation and infection. G. J. HEUER and H. CONWAY (Arch. Surg., Chicago, 1940, 40, 917—928).—Sterile inflammation and infection were produced in dogs by injecting turpentine and bacterial cultures respectively in the muscles of the leg. Temp. were observed at short intervals by means of thermocouples inserted locally and in the other leg, the brain, the liver, and the rectum. There was an immediate rise locally, greater with infection, followed within a few hr. by a rise in the deep organs. In some cases there was a fall locally within 24 hr. while temp. in the deep organs continued to rise or remained high. F. S.

Simplified inoculation procedure. T. L. BLACK and A. ARNOLD (Ind. Eng. Chem. [Anal.], 1940, 12, 344).—The construction, arrangement, and method of use of a syringe for use in inoculation with an inoculum varying from 1 drop to 1.0 c.c. are described. The method is particularly useful where a large no. of inoculations are to be made with suspensions of the same organism. J. D. R.

Bactericidal action of normal sera. J. GORDON and K. I. JOHNSTONE (J. Path. Bact., 1940, 50, 483—490).—Absorption of a normal serum with a series of strains of one organism causes a general diminution in bactericidal power for all the strains, and a striking diminution for the strain with which the serum was absorbed. The effect is not due to addition to the serum of a sp. growth-promoting factor. C. J. C. B.

Effect of specific agents extracted from soil micro-organisms on experimental bacterial infections. R. J. DUBOS (Ann. int. Med., 1940, 13, 2025—2037; cf. A., 1939, III, 942; 1940, III, 265).—Micro-organisms were isolated from soil which multiplied in presence of the polysaccharides which are

found in the capsules of the different types of pneumococci. Sol. enzymes were extracted from these bacilli which hydrolyse one of the sp. polysaccharides and destroy the capsule of virulent pneumococci; they also protect animals against pneumococcal infections. These reactions are highly sp. Gramicidin, from a sporulating soil bacillus, inhibits the growth of pneumococci in minute concn.; higher concns. kill the organisms. Gramicidin protects mice against infection with pneumococci, streptococci, and staphylococci but not against *Klebsiella pneumoniae*. It is ineffective against gram-negative bacilli. A. S.

Anaerobic decomposition of l-cysteine by *Bacterium coli*. II. Rôle of the bacterium in the degradation of l-cystine. P. DESNUELLE (Enzymologia, 1939, 6, 242—245; cf. A., 1939, III, 721; Tarr, A., 1933, 866; 1934, 221).—Since the liberation of H_2S from l-cystine by *B. coli*, previously adapted to attack l-cysteine, is accelerated by H-donators (glucose, fructose, galactose, lactic acid, succinic acid, H_2) it is probable that l-cystine is degraded only after reduction to l-cysteine, which is then degraded by cysteinase. In presence of the donators, H_2S is liberated at const. rate. When non-adapted bacteria are used there is an induction period of 5—6 hr. Formic acid inhibits the action of cysteinase. W. McC.

Adaptation of *Escherichia coli* to sodium chloride. M. DOUDOROFF (J. Gen. Physiol., 1940, 23, 585—611).—A fairly const. fraction of the total no. of bacteria in fresh-water culture of *E. coli* can reproduce on direct transfer to a saline medium. The abs. val. of this fraction depends on the NaCl content of the medium, the p_H , aëration, concn. of yeast autolysate in the medium, and the physiological condition of the bacteria. Max. adaptability to saline environments occurred during the early stationary phase of NaCl-free cultures. Low adaptability accompanied the logarithmic phase and the senescence of the cultures. Treatment of non-dividing cells with gradually increasing NaCl concn., or subjection to a single intermediate NaCl concn., led to acclimatisation. The rate of acclimatisation was greater at higher than at lower temp. Acclimatised bacteria lost their increased ability to reproduce in saline medium on return to NaCl-free medium, although no reproduction of cells could be detected. The division rate and the max. crop of cultures in saline broth were lower than in fresh-water medium. The morphology of the organisms was altered by the presence of NaCl. The division rate, max. crop, morphology, and adaptive power returned immediately to normal on re-transfer of bacteria grown in NaCl-containing medium to NaCl-free medium. D. M. N.

Chemotherapy of experimental infection of mice with Flexner's dysentery bacillus. N. RIST and P. THIBAUT (Compt. rend. Soc. Biol., 1940, 133, 608—611).—Mice are protected by sulphanilamide against peritoneal injection of Flexner's bacillus. H. G. R.

Preparation of antiperfringens serum. N. NESTORESICO and B. THEODORESICO (Compt. rend. Soc. Biol., 1940, 133, 743—745).—Basal immunisation is

carried out with an emulsion of the liquid anatoxin in lanoline and is completed with crude liquid toxin.

H. G. R.

Skin test for susceptibility to pertussis. L. P. STREAN (Canad. Med. Assoc. J., 1940, 42, 525—528).—An endotoxin derived from *H. pertussis* phase I is described which can be used as an effective skin test, sp. to pertussis, and bearing the same relationship to pertussis as the Schick test does to diphtheria.

C. J. C. B.

Correlation of reaction to Schick test and diphtheria antitoxin content of serum in children with scarlet fever. C. E. DUFFY and A. G. MITCHELL (Amer. J. Dis. Child., 1940, 59, 479—482).

C. J. C. B.

Staphylococci of mammary infections of the goat and sheep. F. BOI (Biochim. Terap. sperim., 1940, 27, 103—114).—Staphylococci of mammary infections clot citrated blood; saprophytic staphylococci of milk do not. No differences were found by other methods. S. O.

Passive protection of mice with immune horse serum against living staphylococci. L. N. FARREK and J. S. KITCHING (J. Path. Bact., 1940, 5, 439—453).—Sera prepared by injection of 2 horses with washed formalinised vaccines made from 2 toxigenic strains of staphylococci protected mice against experimental infection with 5 lethal doses of the homologous culture. Protection was not obtained with either serum against this dose of the heterologous strain. The α antitoxin titre is a poor index of the protective capacity of these sera. The protection obtained with these sera was independent of the antileucocidin titre as measured by the method of Valentine. Absorption of agglutinins from one serum showed that the protection was not dependent on these antibodies. C. J. C. B.

Viability of hæmolytic streptococci in stock cultures. R. FRASER (Canad. Publ. Health J., 1940, 31, 77—78).—Strains which showed poor viability by ordinary methods of culture were easily maintained by the method described. C. G. W.

Properties of streptolysin. R. ITÔ (Folia pharm. japon., 1940, 28, 71).—Streptolysin passes the Seitz filter, but is almost non-dialysable. It is sensitive to heat, adsorbed on animal C, pptd. by alcohol, acetone, and $(NH_4)_2SO_4$. It is destroyed by 0.1N-NaOH but not by NH_3 . It is resistant to ultra-violet light and to O_2 treatment. Cholesterol does not increase the hæmolytic activity. Nucleic acid increases the production of streptolysin. H. H. K.

Quantitative study of syphilitic serum. R. A. GREENE, E. L. BREAZEALE, and C. C. CROFT (J. Lab. clin. Med., 1940, 25, 972—974).—The quant. application of the Hinton and Kline tests is described and discussed. A quant. examination eliminates zone reactions and is a better index of the effect of treatment than the results expressed in the conventional manner. C. J. C. B.

Rapid heating of serum for Kline tests for syphilis. C. R. REIN and C. E. HAZAY (Amer. J. clin. Path., 1940, 10, 288—292).—Sera heated for 10 min. at 56° , for 3 min. at 63° , for 1 min. at 69.5° ,

and for 7 sec. at 100° give results in the Kline test that are practically identical with those obtained with sera heated for the routine 30 min. at 56°. The unnecessary prolongation of the heating period tends to destroy some of the reagin in the serum.

C. J. C. B.

Ide test for syphilis. B. R. POWERS (J. Lab. clin. Med., 1940, 25, 883—886).—The results of 210 Ide tests as compared with 210 standard serological tests are given. Total agreement was 92.4%. The no. of false positive Ide tests was 4.6%. The no. of false negative Ide tests was 25%.

C. J. C. B.

Serologic verification test in diagnosis of latent syphilis. R. L. KAHN (Arch. Dermat. Syphilol., 1940, 41, 817—830).—The procedure is a pptn. technique carried out at 37° and 1°. Sera that give positive reactions with a diagnostic tests are examined with this procedure, and the pptn. results noted. The result is reported "positive" (syphilitic type of reaction) when pptn. occurs at 37°, with practically negative results at 1°. The result is reported "negative" (general biological type of reaction) when pptn. occurs at 1°, with practically negative results at 37°.

C. J. C. B.

Sensitivity and specificity of simplified complement fixation test for syphilis. F. BOERNER and M. LUKENS (Amer. J. clin. Path., 1940, 10, 282—287).—The simplified technique for the complement fixation test for syphilis previously described by the authors (A., 1939, III, 430) is more sensitive than the Kolmer technique or the Kahn test, but less sensitive than the Eagle test. It is as sp. as the Kolmer, Kahn, or Eagle tests. A smaller no. of incomplete reactions was obtained as compared with the Kolmer technique or the Kahn test.

C. J. C. B.

Growth of human tubercle bacilli on non-protein synthetic medium. H. J. CORPER, M. L. COHN, and C. BOWER (J. Lab. clin. Med., 1940, 25, 981—989).—Analysis of cultures of human tubercle bacilli in bottles of various sizes and surface areas with various vols. of nutrient medium (Wong-Weinzirl) showed that the glycerol consumption was const. (5 g. utilised per 100 c.c. of medium) after max. growth is obtained. Comparatively smaller amounts of glucose were utilised, and the tuberculo-protein content, though variable, increased with the age of the culture. Growth requirements for the human tubercle bacillus (heavily planted) are not great in a buffered neutral salt mixture (essentially Wong-Weinzirl medium without glycerol, glucose, or NH₄ malate). As little as 1% of Wong-Weinzirl medium or 1% of glycerol added to the salt mixture will support the growth of human tubercle bacilli. The tuberculo-protein present in the liquid medium is not appreciable in 500 c.c. of Wong-Weinzirl medium in 1-l. bottles until after max. growth of human tubercle bacilli has been approached at 2—3 months after planting. The liberation of tuberculo-protein into the liquid medium increases to a max. with the ageing of the bacillary mass up to 6—10 months, and probably is a result of autolysis of the bacilli.

C. J. C. B.

Degeneration of *B. tuberculosis* by the addition of arachis oil to cultures on potato in glycerinated broth. J. SOLOMIDÈS (Compt. rend. Soc. Biol., 1940, 133, 590—593).—The addition of arachis oil to the culture causes degeneration of the organism and of its power of multiplication and development.

H. G. R.

Demonstration of tubercle bacilli in urine by means of phosphate flocculation. J. H. HANKS and H. A. FELDMAN (J. Lab. clin. Med., 1940, 25, 974—980).—Among the 5 methods studied, the most effective means of collecting tubercle bacilli from urine was by partial neutralisation to obtain a min. PO₄''' flocculation. The factors influencing the degree of concn. and the % of the bacilli collected were investigated. Second-stage PO₄''' pptns. increase the concn. of the bacilli for microscopic examination and provide a means of collecting the bacilli after treatment with acids prior to cultivation.

C. J. C. B.

Millon's reaction with tuberculin prepared by precipitation. E. FERNBACH and G. RULLIER (Compt. rend., 1940, 210, 586—588).—Tuberculin prepared by Charpentier's method does not give Millon's reaction but is as active as that prepared by Jousset's method. The latter sample and one prepared by Koch's method give Millon's reaction.

J. L. D.

Chemotactic properties of tuberculophosphatide and tuberculopolysaccharide. W. B. WARTMAN and E. S. INGRAHAM, jun. (Arch. Path., 1940, 29, 773—776).—The chemotactic properties of a phosphatide and a polysaccharide fraction of the tubercle bacillus were studied *in vitro*. The tuberculophosphatide in conc. form is toxic for both human and rabbit neutrophils, but in suitable dilution feebly attracts these cells. The tuberculopolysaccharide has a weak negative chemotropic action on leucocytes.

C. J. C. B.

Vi antibody content of sera of typhoid patients and carriers. L. ALMON and W. D. STOVALLI (J. Lab. clin. Med., 1940, 25, 844—848).—By a direct titration method 15 of 40 typhoid patients and 20 out of 26 typhoid carriers had Vi agglutinin in their blood. The correlation between the presence of this antibody and the existence of the carrier state is thus significantly high.

C. J. C. B.

Adsorption of bacteriophage under various physiological conditions of host. M. DELBRÜCK (J. Gen. Physiol., 1940, 23, 631—642).—The adsorption rate const. of phage to bacterium changes within wide limits, depending on the physiological state of the bacterium. The bearing of this fact on the validity of the assay methods currently used is discussed.

D. M. N.

Growth of bacteriophage and lysis of host. M. DELBRÜCK (J. Gen. Physiol., 1940, 23, 643—660).—A new strain of *B. coli* and of phage active against it are described. The phage can lyse *B. coli* in two ways. Lysis from within is caused by infection of a bacterium by a single phage particle, and multiplication of this particle up to a threshold val.; the cell contents are then liberated into the external solution without deformation of the cell wall. Lysis from without is

caused by adsorption of phage above a threshold val., the cell contents being liberated by distension and destruction of the cell wall; no new phage is formed and the adsorbed phage is not retrieved on lysis. Liberation of phage from a culture in which the bacteria have been singly infected goes on at a constant rate, after a latent period, until all the infected bacteria are lysed. Adsorption of the liberated phage on to infected bacteria may lead to a reduction of the final yield.

D. M. N.

Antagonistic effect of calcium on toxicity of potassium on bacteriophage of *B. magtherium*.

A. GRATIA (Compt. rend. Soc. Biol., 1940, 133, 702—703; cf. A., 1940, 542).—The toxic effect of Na⁺ or K⁺ is nullified by minute traces of Ca⁺⁺.

H. G. R.

Effect of radiations on bacteriophages. F. HOLWECK, S. LURIA, and E. WOLLMAN (Compt. rend., 1940, 210, 639—642).—The bacteriophage C₁₆ against the dysentery bacillus Y_{6a} was irradiated with monochromatic X-rays, X-rays of different λ , or α -particles, survival being gauged by the production of plaques. The no. of active corpuscles decreased exponentially as the dose increased; α -particles were $\frac{1}{2}$ as active as either source of X-rays, which indicates that ionisation of the bacteriophage leads to inactivation.

J. L. D.

Statistical study of action of viruses. S. LURIA (Ann. Inst. Pasteur, 1940, 64, 415—438).—The application of statistical methods to the experimental results obtained by several workers on bacteriophage and viruses shows that infection of animal or bacterial cells could be due to the action of a single particle of virus or bacteriophage. On analysing the application of this result to the titration of virus, it is concluded that the relation between infection titre and the no. of particles depends on a factor corresponding with the mean "activity" of the particles.

G. P. G.

Vaccinia virus and fluorescence. I. C. LEVADITI, L. REINIÉ, L. STAMATIN, L. LE-VAN-SEN, and R. BEQUIGNON (Ann. Inst. Pasteur, 1940, 64, 359—414; cf. A., 1939, III, 946, 1014).—Vaccinia elementary bodies were studied by staining with fluorescent dyes (e.g., thioflavin) and examining under a fluorescence microscope. A method of counting was established. A direct relation was found between the no. of elementary bodies per unit vol. and the min. pathogenic dose (virulence). This depended on the nature of the vaccinia (dermo- or neuro-), the method of testing (intradermal or intracranial), and the species of animal used.

G. P. G.

Preservation of infectious agents of rickettsioses. N. H. TOPPING (U.S. Publ. Health Repts., 1940, 55, 545—547).—The "lyophile" or "cryochem" technique offers an economical and convenient method for the preservation of rickettsial material.

C. G. W.

Effect of moisture on the activity of material containing rabies virus. P. REMLINGER and J. BAILLY (Compt. rend., 1940, 210, 683—684).—The virulence of a prep. of powdered brain of a rabbit dead from rabies is completely lost in a few weeks when kept in contact with traces of moisture. In

absence of moisture the virulence remains unchanged for months.

J. L. D.

Influence of hydrogen-ion concentration on survival of hog cholera virus in defibrinated blood. R. M. CHAPIN, W. C. POWICK, C. N. MCBRYDE, and C. G. COLE (J. Amer. Vet. Med. Assoc., 1939, 95, 494—496).—The optimal p_H for hog cholera virus in defibrinated pig blood was approx. 5.2. In presence of 40% urea, infected blood at p_H 6 retained its infectivity for at least 22 days at room temp. and at least 31 days in the refrigerator. The importance of storing virus at low temp. is stressed.

E. G. W.

Possible rôle of endoparasites in the transmission of infectious anæmia. C. D. STEIN, J. T. LUCKER, O. L. OSTEN, and W. S. GOCHENOUR (J. Amer. Vet. Med. Assoc., 1939, 95, 536—539).—Worms of the genus *Strongylus* collected from a horse with infectious anæmia contained the virus. The disease was transmitted to a healthy horse by injection of a saline extract of the washed, macerated worms. No evidence was found of the presence of virus in extracts of other intestinal parasites (bots, cylicostomes). No virus was found in third-stage larvæ of strongyles developing from eggs obtained from horses with infectious anæmia but the possibility of transmission of the disease by such larvæ cannot be excluded.

E. G. W.

Active and passive immunity resulting from inoculation of formalinised inactivated and of active virus of equine encephalomyelitis. P. K. OLITSKY and I. M. MORGAN (J. Amer. Vet. Med. Assoc., 1939, 95, 530—532).—Previous work is reviewed. Experiments on mice and guinea-pigs show that formalinised vaccine produces a reliable immunity. The antigenic power of the vaccine was as great as that of active virus.

E. G. W.

Immunology of toxic substances produced by streptococci isolated from equine encephalomyelitis. G. T. KENSLER (J. Amer. Vet. Med. Assoc., 1939, 95, 730—732).—Strains of streptococci isolated from the brain of horses in fatal cases of encephalomyelitis produced filterable toxic substances which could be titrated on chick embryos and white mice. There was no relationship between toxigenicity and pathogenicity, using chick embryos. Filtrates were rendered innocuous by treatment with sp. immune serum or formaldehyde. Mice were effectively protected against the virus by previous injection of formalinised filtrates or chick-embryo vaccine, comparable degrees of immunity resulting.

E. G. W.

Size of the tobacco mosaic particle from X-ray determinations. J. W. GOWEN (Proc. Nat. Acad. Sci., 1940, 26, 8—10).—The size of the tobacco mosaic particle derived from survival curves obtained by treatment with X-rays is 7.5×10^{-18} cm.³ The virus is a large mol. of mol. wt. $16-20 \times 10^6$.

E. M. W.

Precipitation reaction of crystalline globulin of watermelon seed. S. C. LIU and H. WU (Chinese J. Physiol., 1940, 15, 237—242).—Rabbits and a horse were immunised. The protein and immune serum were pptd. in 3% NaCl at p_H 7 and 8°. The antibody-antigen ratio was 0.57 for the horse and

0.61 for the rabbit. Pptn. was decreased by increased p_H or salt concn. N. H.

Contact reactions in atopy. II. Incidence of contact reactions with various allergens. M. ALBERT and M. WALZER (J. invest. Dermat., 1940, 3, 119—131).—A sp. type of contact reaction occurred with many allergens. The oils extracted from the allergens are not the excitants of these reactions. The hypersensitiveness which mediates this type of reaction occurs most frequently in atopic children between the ages of 5 and 12 and only occasionally in atopic adults. It is relatively infrequent in non-atopic subjects. The highest no. of positive contact reactions was obtained with silk and feathers. Reactions to goat epithelium, pollens, orris root, cow epithelium, and other inhalants and contactants occurred quite frequently. Foods such as wheat, milk, and egg did not commonly produce reactions. Multiple positive contact reactions occurred in many cases. Hypersensitiveness of this type to pollen, cottonseed, and tobacco was induced as a result of previous contact tests with these substances.

C. J. C. B.

Serologic changes in hay fever cases treated over period of years. W. B. SHERMAN, A. STULL, and R. A. COOKE (J. Allergy, 1940, 11, 225—244).—Sera of 55 cases of hay fever, after successful injection treatment over periods of 2—23 years, were studied by the methods of dilution and neutralisation. The amount of skin-sensitising antibody increased during the first few months of treatment and subsequently decreased. After 10—23 years of treatment, 7 of 29 sera no longer passively sensitised human skin; 18 others showed a striking decrease in skin-sensitising antibody content. The amount of pollen extract needed to neutralise the skin-sensitising antibody of serum increased during the first 2—5 years of treatment and decreased later. Sera of long-treated cases which did not sensitise normal skin showed little inhibiting effect on the neutralisation of sera of untreated hay-fever patients. In most cases, the reactions to intracutaneous tests were decreased after treatment, but the reactions became negative in only 2 of 55 cases.

C. J. C. B.

Fallibility of autopassive transfer test (Cowie). S. MARTON (J. Allergy, 1940, 11, 266—270).—The skin of an allergic person which fails to react to sp. allergen cannot be passively sensitised with his own serum (autopassive transfer). The skin of an allergic person which reacts to sp. allergen by direct test shows a 22% drop in positive reactions with autopassive transfer, indicating some inhibitory rather than enhanced influence.

C. J. C. B.

Karaya gum hypersensitivity. K. D. FIGLEY (J. Amer. Med. Assoc., 1940, 114, 747—748).—16 cases of hypersensitivity to karaya gum are reported. The chief symptoms were hay fever, asthma, atopic dermatitis, and gastro-intestinal distress. C. A. K.

Relationships between foods as shown by skin test in 1000 children. G. PINESS, H. MILLER, H. D. CARNAHAN, A. R. ALTOSE, and R. C. HAWES (J. Allergy, 1940, 11, 251—265).—Statistical analysis of the val. of a botanical classification of foods in

predicting skin reactivity or clinical sensitivity to a food, when reactivity to a botanically related food is known, shows it to be unreliable. Foods which are known to contain identical proteins, or proteins which can be shown by immunological experiments in the laboratory to be related, give a high degree of cross-reacting by skin test. Under some circumstances at least 41% of reactions to a food are sp.

C. J. C. B.

(xxvi) PLANT PHYSIOLOGY.

Lysigenous air spaces in the leaf of Labrador tea, *Ledum groenlandicum*, Oeder. H. B. SIFTON (New Phytol., 1940, 39, 75—79).—Certain cells in the leaf vacuolate abnormally, and later break down to form the lacuna. Vacuolation is due to an increased permeability of the protoplasm leading to a rapid absorption of water. The cell walls fail to give characteristic cellulose reactions with I and H_2SO_4 or with $ZnCl_2$ -I until vacuolation commences, suggesting that previous to this the cell walls are impregnated with protoplasm. Actual disintegration of the cells is probably due to insufficient transport of food to them.

L. G. G. W.

Movement of air pores of *Preissia quadrata* (Scop.). R. WALKER and A. PENNINGTON (New Phytol., 1939, 38, 62—68).—Closure of the air pore of *P. quadrata* is brought about by drying of the tissues, leading to loss of water from the motor cells, and takes place in living and dead material. Closure of pores probably limits transpiration from the thallus but whether this represents a biological advantage is doubtful.

L. G. G. W.

Atmospheric moisture in relation to ecological problems. C. W. THORNWAITE (Ecology, 1940, 21, 17—28).—A discussion of methods of measuring R.H. and the interpretation of results.

L. G. G. W.

Effect of relative air humidity and anaërobiosis on freshly harvested grain of wheat. V. L. KRETOVITSCH, A. I. SOKOLOVA, and E. N. USCHAKOVA (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 487—490).—Germinating power and energy of stored grain fall, but catalase and tyrosinase activity, free fatty acid, and non-protein-N contents rise, with increasing R.H. Optimum R.H. is 0—30%. After-ripening is not affected by absence of O_2 , but is retarded by storage in CO_2 .

R. L. E.

Ionic exchange between dahlia tissue and mineral solution. M. V. HOMÈS (Bull. Acad. roy. Belg., 1939, [v], 25, 455—472).—By polarographic methods it is found that tissue from dahlia roots in solutions of NaCl, KCl, $CaCl_2$, or $ZnCl_2$ loses Cl^- in each case (in conditions where turnip tissue gains Cl^-) and also Na^+ , Ca^{++} , and K^+ but gains Zn^{++} . In each case exosmosis is greater in light than in darkness.

E. M. W.

Cell sap of *Hydrodictyon*. L. R. BLINKS and J. P. NIELSEN (J. Gen. Physiol., 1940, 23, 551—559).—The cell sap of *H. patenæforme*, Pocock (a large multinucleate cell), contains a great accumulation of K, which is 4000 times as conc. as in the surrounding pond-water. Small amounts of Na and Ca were

found. Cl⁻ makes up about 75% of the anions, SO₄²⁻ and a much smaller amount of HCO₃⁻ accounting for the rest. Electrical conductivity and osmotic studies indicate that these elements are ionised and account for most of the osmotic pressure. The p_H is 5.5–6.0.

D. M. N.

Absorption of radioactive isotopes by living tissues as illustrated by experiments with barley plants. R. OVERSTREET and T. C. BROYER (Proc. Nat. Acad. Sci., 1940, 26, 16–24).—Barley plants low in K absorb radioactive and non-radioactive K from culture solutions in approx. the same quantities. When the plants are rich in K, however, the radioactive isotope is absorbed selectively even when the total K in the plant is decreasing. Plants low in K do not accumulate K from the culture medium at 0° but it is calc. that 10% of the K in the roots is replaceable by radioactive K.

E. M. W.

Nitrogenous nutrition of leguminous plants. A. DEMOLON and A. DUNEZ (Compt. rend., 1940, 210, 676–678).—Lucerne cultivated in a nutrient medium containing N, and then transferred to one with *B. radiculicola* but no N, develops nodules on rootlets formed after withdrawal of N; roots formed earlier are thickened but develop no nodules. If plants which are forming nodules are transplanted to a medium containing 0.1% of NaNO₃ or traces of 3-indolylacetic acid, the rootlets lengthen owing to increased activity of the meristem and pericycle, and the development of nodules ceases.

J. L. D.

Biochemistry of wood-rotting fungi. II. Acids produced by *Coniophora cerebella*, Pers. J. H. BIRKINSHAW, W. P. K. FINDLAY, and R. A. WEBB (Biochem. J., 1940, 34, 906–916; cf. A., 1940, III, 262).—*C. cerebella* produces much more acid from wood and from malt extract than do other wood-destroying fungi. Scots pine sapwood, incubated with *C. cerebella* for several months, yields extracts containing formic and acetic acid, traces of oxalic acid, amounts of citric acid equiv. to approx. 33% of the total titratable acidity after 4 and 6 months, and other acids of higher mol. wt. including hexuronic acids. Sound wood also yields comparable amounts of volatile acids, including formic, but not citric acid, and hence citric acid but not volatile acid is a true metabolic product of the growth of *C. cerebella* on wood.

W. McC.

Cyto-physiology of thiochrome. W. H. SCHOPFER (Arch. Sci. phys. nat., 1940, [v], 22, Suppl., 49–51).—When the outer layers of onion are immersed in dil. solution of thiochrome, this penetrates the cells so that the contents acquire blue-violet fluorescence in the ultra-violet perceptible when the thiochrome concn. is $0.2 \times 10^{-6}M$. but scarcely perceptible when it is $10^{-7}M$. Sometimes, before the fluorescence of the cytoplasm is observed, a yellow-green fluorescence appears in the cell membranes. Reduced thiochrome is oxidised by the cells. Plasmolysis with KNO₃ shows that the thiochrome accumulates in the vacuoles. This accumulation is better demonstrated by use of thiochrome in conjunction with erythrosin. Fluorescence identical with that of thiochrome and suppressed by Na₂S₂O₄ is exhibited by cells of *Rhodea*.

W. McC.

Catalase in vine cuttings lying in store or making their union with the stock. E. A. MAKAREVSKAJA and K. M. ILURIDZE-MOLTSCHAN (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 464–467).—Catalase activity is an index of metabolism and viability in vine cuttings. For successful rooting and grafting the activity in the stored shoots should be low. The best storage temp. is 3° to –3°.

R. L. E.

Enzymes in fruits and vegetables. II. Relation between ascorbic acid oxidase and copper ion in fruit and vegetable juices. H. NAITO and K. ISHIMARU (Bull. Inst. Phys. Chem. Res. Japan, 1939, 18, 55; cf. A., 1939, III, 97).—The ratio of oxidation of the ascorbic acid in certain fruits and vegetables bears no relation to their Cu content and is not increased when the plants absorb added Cu from the soil.

E. M. W.

Dependence of enzyme formation, especially of amylase and protease, on the kind of barley and its germination. H. NAKAMURA (J. Agric. Chem. Soc. Japan, 1940, 16, 277–280).—The rate of formation of amylase and protease, and also the activity of the enzymes, depends on the kind of barley. If the radicle after attaining a definite length is then prevented from further growth while the plumule is allowed to grow normally, then the amount of amylase increases whilst that of protease decreases.

J. N. A.

Mechanical stimulation and respiration in the green leaf. III. Effect of stimulation on rate of fermentation. L. J. AUDUS (New Phytol., 1940, 39, 65–75).—Mechanical stimulation does not affect the CO₂ output of cherry laurel leaves in N₂ or probably in low [O₂]. The effect of mechanical stimulation on leaves in air is therefore due to its effect on oxidation and not on the hydrolytic processes which provide the respiratory substrates.

L. G. G. W.

Mechanism of photosynthesis in green plants. K. WOHL (New Phytol., 1940, 39, 33–64).—A crit. review of recent work.

L. G. G. W.

Initial changes in chlorophyll fluorescence in *Chlorella*. E. C. WASSINK and E. KATZ (Enzymologia, 1939, 6, 145–172; cf. A., 1938, III, 967).—The curve showing the changes with time (usually 3 min.) in the fluorescence of illuminated buffered suspensions of *Chlorella* consists of three parts which represent quant. differences dependent on experimental conditions. The first part corresponds with a stage of especial sensitivity to the O₂ tension of the medium, the second with a stage in which the fluorescence intensity varies with light intensity, presence of O₂ in the gaseous phase, and temp. but is not affected by KCN, and the third with a stage in which the fluorescence is largely dependent on the photosynthetic production of O₂ which quenches the fluorescence. Factors such as KCN which interfere with O₂ production change the form of the third part. The fluorescence gradually reaches a stationary state after the initial changes are complete. This state is attained asymptotically in cells in which photosynthesis is not inhibited. The initial changes in fluorescence are chiefly due to alterations in the

oxidation-reduction equilibrium in the immediate neighbourhood of the chlorophyll. When illumination is interrupted for a short period, the conditions which exist in the dark are restored. Low concns. of NaHS act like KCN; high concns. render the intensity of fluorescence practically const. from the beginning. The effect of increase in the age of the *Chlorella* cultures resembles that of slight inhibition by KCN.

W. McC.

Anomalies in plant karyokinesis of the colchicine and *p*-dichlorobenzene type produced by 5-nitro-*m*-xylene. M. SIMONET (Compt. rend. Soc. Biol., 1940, 133, 561—563).—5-Nitro-*m*-xylene is the first nitro-derivative of a substituted benzene hydrocarbon to exhibit effects on karyokinesis similar to those of colchicine (A., 1939, III, 883).

H. G. R.

Similarity of the action of anethole and the colchicine group on plant mitosis. J. LEFÈVRE (Compt. rend. Soc. Biol., 1940, 133, 616—618).—The effects of anethole are similar to those of apiole (Gavaudan, A., 1940, 272) but the toxicity is more marked on direct contact.

H. G. R.

Effect of colchicine on mitosis of fibroblasts *in vitro*. (A) High concentration. (B) Low concentrations. J. VERNE and V. VILTER (Compt. rend. Soc. Biol., 1940, 133, 618—621, 621—624).—(A) Mitosis and cell division are inhibited by colchicine at a concn. of 1 in 4×10^6 .

(B) At a concn. of 1 in 12×10^6 mitosis is inhibited and cell division is possible although an arrest at the metaphase occurs and cells with characteristic "colchicine mitosis" accumulate.

H. G. R.

Effect of two purine alkaloids on plant cell mitosis. A. GOSSELIN (Compt. rend., 1940, 210, 544—546).—When the roots of young oat plants (*Avena sativa*, var. *Anthonia*, H. and G.) or *Pisum sativum*, L., are immersed in 1:1000 caffeine or theophylline their growth rate is diminished and subterminal swellings appear. Nuclear division is complete but the new cell walls are incompletely or not laid down, giving rise to multinucleate giant cells. If two or more nuclei in a cell divide simultaneously, a common equatorial plane is established in a giant spindle and polyploidy results. A cell may contain nuclei, some of which are pyknotic, in different stages of mitosis. Cells of the rootlet primordia are more affected than those of the apical meristem (cf. Simonet *et al.*, A., 1939, III, 883).

J. L. D.

Effect of isomerides of parsley apiole on plant mitosis and cytodieresis. P. GAVAUDAN and N. GAVAUDAN (Compt. rend., 1940, 210, 576—578).—Dill apiole (2:3-dimethoxy-4:5-methylenedioxyallylbenzene) more effectively retards (the *isopirole* is less toxic) the germination and growth of *Triticum vulgare* than does parsley apiole (2:5-dimethoxy-3:4-methylenedioxyallylbenzene). Both produce slight tumefaction of the roots, disordered mitosis, cytodieresis leading to irregular giant nuclei, and imperfectly laid down new cell walls (cf. A., 1940, III, 272). $\alpha\beta$ -Dibromo- γ -(6-bromo-2:3-dimethoxy-4:5-methylenedioxyphenyl)propane is inactive.

J. L. D.

Changes in physico-chemical reactions of the plant cell due to substances which inhibit

mitosis. M. GUINOCHET (Compt. rend., 1940, 210, 579—580).—The sap of meristematic cells of the rootlets of *Triticum vulgare* grown in 0.2% colchicine has p_H 4.4—4.6 as compared with 4.8—5.0 in controls (methyl-red). Phenylcarbamate, acenaphthene, 1-chloro- and -bromo-naphthalene give similar results. The p_H of the cellular cytoplasm is affected similarly; the osmotic pressure of the cells is increased.

J. L. D.

Polyploidogenic action on plants of naphthol ethers and naphthoic acid esters. A. SCHMUK and A. GUSEVA (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 460—463).— α -Naphthol ethers and α -naphthoic acid esters are active, but α -naphthol, its esters, α -naphthoic acid, and all the corresponding β -compounds are inactive in inducing polyploidy. The activity decreases with increasing size of the alkyl group. Tests on wheat, flax, vetch, and *Nicotiana rustica* are recorded.

R. L. E.

Mechanism of mutual stimulation of pollen grains germinating in groups. R. SAVELLI (Compt. rend., 1940, 210, 546—548).—Mutual stimulation amongst germinating pollen grains in pure culture (e.g., *Nicotiana tabacum*) is not observed when a small quantity of *Gladiolus tristis* pollen is intimately mixed with it. When *N. tabacum* is the "adulterant" a similar effect is observed. *G. tristis* and *Leonotis leonurus* behave similarly. Hence germination does not give rise to a universal growth-stimulating substance.

J. L. D.

Bending and cell enlargement in the hypocotyl of *Helianthus annuus*. W. A. BECK and M. W. DONELLY (Stud. Inst. Divi Thomae, 1939, 2, 259—281).—Experimental variations in the conditions under which growth takes place (including removal of portions of the hypocotyl) indicate that the degree of reaction of growing cells to alterations of external and internal stress is roughly in proportion to their rate of growth.

D. BU.

Auxin content of plantules and dormant hypocotyls of *Impatiens balsamina*, L., in relation to root production. R. BOUILLENNE and M. BOUILLENNE-WALRAND (Bull. Acad. roy. Belg., 1939, [v], 25, 473—489).—The auxin content of hypocotyls of *I. balsamina* decreases during germination and inanition until none is detected. In 1.5% sucrose these hypocotyls form roots so that auxin is not a necessary factor of root formation but acts catalytically. In high concns. it assists root formation by accelerating metabolism.

E. M. W.

Rooting response of geranium cuttings to treatment with heteroauxin. A. I. CHRIMLIAN (Compt. rend. Acad. Sci. U.R.S.S., 1940, 26, 471—473).— β -Indolylacetic acid accelerates root formation in geranium cuttings.

R. L. E.

Evidence of adaptation of cells of *Elodea canadensis* to toxins ("potential toxic action") under the effects of hypnotics (chloral, urethane, veronal). J. RÉGNIER and S. BAZIN (Compt. rend. Soc. Biol., 1940, 133, 648—650).—The mol. concn. at which the activity commences is approx. the same for

chloral, urethane, and veronal and the margin at which the adaptation occurs increases in this order.

H. G. R.

Adaptation to toxins ("potential toxic action") and cell permeability. Plasmolysis of leaf cells of *Elodea canadensis* in toxins. J. RÉGNIER and S. BAZIN (Compt. rend. Soc. Biol., 1940, 133, 651—654).—The toxicity of various compounds is of the same order as the rate of penetration into the cell. The zone of "potential toxic action" is greatest for those substances with the slowest penetration.

H. G. R.

Formation and division of binucleate giant cells in *Microsterias americana* (Ehrenb.), Ralfs. M. ROSENBERG (New Phytol., 1940, 39, 80—85).—*M. americana* in Benecke solution in the dark produces about 10% of giant cells. Giant cells when isolated and cultured under good conditions produce normal cells only, the original giant cell remaining. Giant cells form when conditions are unfavourable for cell division in general. L. G. G. W.

(xxvii) PLANT CONSTITUENTS.

Determination of boron in plant material. Ignition-electrometric titration method. L. V. WILCOX (Ind. Eng. Chem. [Anal.], 1940, 12, 341—343).—The dried material is ignited with CaO and the H_3BO_3 in the neutralised solution, freed from CO_2 , is determined by electrometric titration in presence of mannitol. Apparatus and procedure are detailed. The method is particularly suited to low concns. of B, e.g., 5 mg.-% and less. J. D. R.

[Determination of] phosphorus in seeds. I. F. DE A. BOSCH (Anal. Fis. Quím., 1939, 35, 88—99).—Colorimetric methods show a lack of proportionality between intensity of Mo-blue colour and P content. The gravimetric method is therefore preferred.

F. R. G.

Disputed presence of magnesium in pollen. G. BERTRAND (Compt. rend., 1940, 210, 685—689).—Dry pollen (4—5 g.) from different monocotyledons, gymnosperms, and angiosperms was ashed (dull red heat) and treated with 0.1N-HCl. The filtrate was freed from Fe, and Mg determined gravimetrically as $Mg_2P_2O_7$. The Mg content was 0.098—0.308 of the wt. of dry pollen. J. L. D.

Selenium content of Saskatchewan wheat. T. THORVALDSON and L. R. JOHNSON (Canad. J. Res., 1940, 18, A, 138—150).—Composite wheat samples from shipping points throughout Saskatchewan, made on the basis of wheat variety and of soil type, contain max. concn. of Se of 1.5 and average concn. 0.44 p.p.m. Max. concn. for individual samples from composites of high Se concn. was 4.0 p.p.m. Wheat grown on soil of glacial lacustrine origin predominated among samples of high Se concn. O. D. S.

Metals in cork. J. BARCELÓ (Anal. Fis. Quím., 1939, 35, 107—111).—Metals present in cork from the region of Salamanca are, in (descending) order of abundance, Ca, Mg, Fe, Al, K, Na, Mn, Ba, and Sr, the quantities varying considerably with the sample. Traces of Li, Cu, Cr, and Ti are also present. The vals.

for Ca and Mn are not in agreement with those of Kuegler (Arch. Pharm., 1884, 222, 217). F. R. G.

Triterpene acids of *Polyporus betulinus*, Fr.—See A., 1940, II, 256.

Lipochromes and sterols of the algal classes. P. W. CARTER, I. M. HEILBRON, and B. LYTHGÖE (Proc. Roy. Soc., 1939, B, 128, 82—109).—The Chlorophyceæ, with certain exceptions, resemble the higher plants in synthesising carotene and lutein. All Phæophyceæ synthesise carotene and fucoxanthin. One member of the class probably contains xanthophyll. The Bacillariophyceæ and the Chrysophyceæ also produce carotene and fucoxanthin. The Myxophyceæ all contain myxoxanthin. This does not support the suggestion of relationship with the Rhodophyceæ, all of which contain carotene and lutein. Sitosterol (especially in the Chlorophyceæ), fucosterol, (especially in the Phæophyceæ), and various unidentified sterols were detected. It is probable that simultaneous occurrence of fucosterol and sitosterol is confined to the Chlorophyceæ. None of the Myxophyceæ contain any sterols. Sterol could not be detected in one member (*Trentepohlia aurea*, Mart.) of the Chlorophyceæ. F. B. P.

Composition of Hungarian varieties of plums. E. BECKER (Z. Unters. Lebensm., 1939, 78, 403—407).—The dry wt., total sugars, and total acids are recorded. E. C. B. S.

Composition of tuber of *Raphionacme divaricata*, Harv. F. V. STEPHEN-LEWIS (S. Afr. J. med. Sci., 1940, 5, 1—3).—The tuber contains 3.24% of a water-sol. non-toxic saponin with feeble hæmolytic properties, 0.005% of a yellow, ether-sol. non-toxic oil with an odour of sage, 14.7% of starch, citric and acetic acids, and phytosterols. The tubers have food val. owing to the high starch content and are suitable for the prep. of a fermented liquor. No evidence of narcotic properties was found. P. C. W.

Reaction of fresh mucilage of *Tradescantia virginica*, L., in presence of tartaric acid solutions. T. POBEGUIN (Compt. rend. Soc. Biol., 1940, 133, 573—574).—Tartaric acid absorbed by the plant is segregated in cells apart from those containing mucilage. Pptn. of the Ca in the latter occurs when it comes in contact with the tartaric acid on cutting the tissues. H. G. R.

Structure of dextran. H. COLIN and H. BELVAL (Compt. rend., 1940, 210, 517—520).—Dextran, $[\alpha] +200—220^\circ$, obtained by the action of micro-organisms on sucrose readily forms supersaturated solutions but once pptd. is difficult to redissolve. With boiling 1.7% H_2SO_4 , glucose is formed and the remaining material becomes more sol. Superheated steam (2 hr.) renders dextran sol. and partly (50%) hydrolyses it to glucose. Alcohol ppts. amorphous hexosans having high $[\alpha]$ and giving no colour with I. Acetic anhydride-conc. H_2SO_4 at 70—80° with dextran gives glucose and sol. hexosans which are recovered by hydrolysis (KOH-alcohol) of the amorphous acetyl derivatives. Dextran is with difficulty hydrolysed by enzymes; takadiastase is the most active. J. L. D.

Chemical and physical properties of water caltrop starch. J. L. SARIN and R. L. SEHGAL (Current Sci., 1940, 9, 185—186; cf. B., 1938, 211; Thurber *et al.*, B., 1933, 1030).—Water caltrop starch contains 4.27% of α - and nearly as much β -amylose as white potato starch. Its coating and penetrating power is greater than that of maize or potato starch.

A. L.

Enzymic degradation of polymeric carbohydrates. IV. Comparative degradation of some isolated constituents of wood by snail enzyme. V. Enzymic degradation of some natural materials containing lignin. VI. State of combination of lignin in wood. T. PLOETZ (Ber., 1940, 73, [B], 57—60, 61—73, 74—78).—IV. Skeletal cellulose isolated by Bray's method (B., 1929, 279) from various sources is treated with *Helix pomatia* enzyme (cf. A., 1940, II, 100), and degradation followed by the reducing sugar formed. Spruce cellulose is degraded most rapidly, and cuprophan almost as rapidly. Beech cellulose is degraded about half as rapidly as the last; degradation of *Araucaria excelsa* cellulose is intermediate. A cellulose-free lichenase prep. does not attack beech cellulose, owing to its content of hemicelluloses. The resistance of wood to *Helix* enzyme is due either to mechanical protection of cellulose by lignin, or to chemical combination of the last with polysaccharides to a product not decomposed by the enzyme.

V. Elder pith (both from green shoots and from older plants), and the pith and bast of *A. excelsa*, are more easily attacked by *Helix* enzyme than are the resistant woods. Pentoses go into solution, with (in the case of young tissues) a large amount of the total methoxyl, but the proportion of C and of methoxyl, and of lignin, is greater in the residue than in the starting material. The presence of substances with a higher C content than the carbohydrates is observed. Lignin content and resistance to attack increase with the age of the tissues; the only change in the lignin during treatment is a reduction in its methoxyl content. Material treated with a weak enzyme prep. gives a product less completely attacked by subsequent treatment with a stronger prep. than is the original material. As well as lignin, the breakdown products contain lignin-polysaccharide complexes.

VI. Results of enzymic attack on linden wood (cf. A., 1940, II, 100) and on elder and *Araucaria* pith are summarised. With elder pith, a weak enzyme yields a 3 : 1 carbohydrate-lignin complex, a strong enzyme a 1 : 1 complex. The 3 : 1 complex is broken down by ethylenediamine-Cu(OH)₂; lignin lost by treatment of linden wood with this reagent may be either true lignin or a complex with carbohydrate. Although with elder pith the total lignin is found in the residue (and must therefore be in combined form), this is not the case with linden wood. The association of definite amounts of carbohydrate with lignin cannot be explained by the older theories of carbohydrate distribution in wood.

E. W. W.

Pectin substances of chicory. L. I. AIZENBERG (J. Appl. Chem. Russ., 1940, 13, 275—280).—The root contains 10% of pectins (dry wt.). The hydrate-pectins consist of 73.7% of Ca Mg pectates, the re-

mainder being sol. in 70% alcohol. The latter fraction contains 50% of pentoses and 42.3% of galactose. The former yields galacturonic acid 67, methyl alcohol 5.6, acetic acid 0.85, and pentoses 15.2%. R. T.

Mucilages: defensive and nutritive products of algæ. É. DE WILDEMAN (Bull. Acad. roy. Belg., 1939, [v], 25, 508—572).—The mucilaginous sheath which surrounds algæ acts as a protection against cold and parasites and as a store for nutritive secretions of associated bacteria and fungi.

E. M. W.

Polypeptide from *Eisenia bicyclis*. III. Structure of eisenin. T. OOHIRA (J. Agric. Chem. Soc. Japan, 1940, 16, 293—298; cf. A., 1940, III, 367).—Eisenin with NH₄CNS and acetic anhydride yields a thiohydantoin derivative which when treated with 25% aq. NH₃ gives 5-methyl-2-thiohydantoin and a *l*-pyroglutamyl-*d*-glutamic acid diamide, C₁₀H₁₆O₄N₄, m.p. 240—241° (decomp.), synthesised by condensing *l*-pyroglutamic acid chloride with diethyl *d*-glutamate followed by treatment with 25% aq. NH₃. The formation of 5-methyl-2-thiohydantoin shows that alanine is in the end position in the mol. of eisenin, and hence eisenin is *l*-pyroglutamyl-*d*-glutamyl-*d*-alanine.

J. N. A.

Preparation of crystalline proteins from the seeds of watermelon, gourd, pumpkin, etc. C. F. WANG (Chinese J. Physiol., 1940, 15, 231—236). The proteins were extracted with NaCl, pptd. by dilution, purified by redissolution and re-pptn., and crystallised in the cold. They were least sol. at pH 5.8.

N. H.

Occurrence of α -amyrin and ursolic acid in leaves of *Ilex paraguariensis*. J. R. MENDIVE (J. Org. Chem., 1940, 5, 235—237).—Treatment of the leaves with CHCl₃ gives 10% of extractives from which α -amyrin, m.p. 183—185°, [α]_D²⁰ +90.9° in benzene, is obtained. Ether extraction of the leaves affords ursolic acid, m.p. 283.5—285°, [α]_D²⁰ +65.9° in pyridine, apparently identical with matésterol (Hauschild, B., 1936, 393).

H. W.

***Schwœnkia americana*, L.** J. RABATÉ (J. Pharm. Chim., 1940, [ix], 1, 234—240).—The dried plant is rapidly extracted with alcohol containing 0.5% of tartaric acid at 80° from which, after removing chlorophyll, *schwœnkioside*, C₃₄H₃₆O₁₆·3H₂O (0.34%), m.p. 163—165° (block), [α]_D²⁰ -56° in EtOH, containing 2 OMe, is isolated. When hydrolysed (boiling dil. HCl for 3 hr., or emulsin at 30°) it gives glucose (2 mols.) and *schwœnkiole*, C₂₂H₂₀O₈, m.p. 246° (block), containing 2 OMe (*monoacetyl* derivative, m.p. 160—161°) and when fused with KOH gives a phenol and an acid, C₁₂H₁₄O₇, which sublimes at 300° and contains no OMe. The heteroside suffers some hydrolysis with boiling *n*-NaOH.

J. L. D.

Physiologically active substance in *Passiflora incarnata*. G. H. RUGGY and C. S. SMITH (J. Amer. Pharm. Assoc., 1940, 29, 207—208).—The active principle was separated as a Hg derivative [C₁₀H₂₂O₈N₂HgCl₂ (?); [α]_D²⁰ -18.16° in water]; its non-alkaloid character has been confirmed (cf. A., 1938, III, 858).

F. O. H.

Hormonal action of embryonic tissue of *Vicia faba*. R. SARELLI (Compt. rend., 1940, 210, 705—

707).—A fragment of *V. faba* embryo causes rapid germination in 20% lactose of the pollen grains of *Orobancha crenata* which do not germinate in its absence. The more easily does the pollen germinate the less is the effect of *V. faba* embryo. Young embryos are more active than old; dried material is inactive, but that heated briefly at 120° under pressure is partly inactivated. J. L. D.

Step-photometric determination of paprika pigments. L. VON CHOLNOKY (Z. Unters. Lebensm., 1939, 78, 401—407).—The component pigments are separated chromatographically (cf. B., 1940, 485) and determined photometrically by comparison with benzene solutions of the palmityl esters of the pure pigments. The determination is accurate to within 1—2% for each component. E. C. B. S.

Alkaloids of cinchona leaves. II. R. I. TAMARSKAJA (J. Appl. Chem. Russ., 1940, 13, 285—291).—The leaves contain 1% of alkaloids, of which 10—30% are identical with those of the bark. The remaining alkaloids appear to be related to those of the quinine group, but differ from these in having a higher mol. wt., in being amorphous, and in being difficultly sol. in conc. acids. R. T.

Colouring matter of the Chinese drug ta-chi, Euphorbia pikinensis, Rupr.—See A., 1940, II, 256.

Alkaloids of *Corydalis claviculata* (L.), D.C. Cheilanthisfoline.—See A., 1940, II, 262.

(xxviii) APPARATUS AND ANALYTICAL METHODS.

Use of infra-red photography in medicine. J. EGGERT (Strahlenther., 1939, 66, 663—671). E. M. J.

Apparatus for making sectional radiographs. P. W. HARDIE (Canad. Med. Assoc. J., 1940, 42, 375—376). C. J. C. B.

Natural colour photography of skin. A. E. SCHILLER (Arch. Dermat. Syphilol., 1940, 41, 527—529).—A new apparatus for proper illumination is described. C. J. C. B.

Physical principles of slit kymography. M. M. SCHWARZSCHILD (Radiology, 1939, 33, 90—107).—A mathematico-physical study of the conditions of slit kymography. W. F. F.

Application of ultra-violet absorption spectroscopy to biology and medicine. G. I. LAVIN (Proc. 7th Conf. Spectros., 1939, 107—110).—Results of investigations on proteins (A., 1935, 805; 1937, III, 183; 1938, III, 960; 1939, III, 1105), urine, and blood are summarised. O. D. S.

Determination of sodium in biological fluids. M. C. DARNELL, jun., and B. S. WALKER (Ind. Eng. Chem. [Anal.], 1940, 12, 242—244).—Weinbach's method (A., 1935, 1044) has been modified by using ethyl acetate in acetic acid as the wash liquid, removing PO₄''' after pptn. of the Na, and photo-electric measurement of the colour developed by Na UO₂ Zn acetate with sulphosalicylic acid and Na acetate. This colour does not follow Beer's law exactly, but is reproducible and stable. Details of procedure, and

determinations of Na in serum, c.s.f., and urine, are recorded. The max. error is less than 1%. L. S. T.

(xxix) NEW BOOKS.

Origin of reproductive cells and the problem of germinal lineage. L. BOUNOURE (Actualités Biologiques, Gauthier-Villars, Paris, 1939, 271 pp.).—An important contribution to the question of the early segregation of the germ cells. The literature is considered in detail and many personal observations are recorded, particularly on amphibian material. The author concludes that early segregation is the general rule in metazoa and is the embryological basis for the explanation of the totipotency retained by the reproductive cells in the highly differentiated organism, the non-inheritance of acquired characters, and the hereditary constancy of animal form. It is shown that the independence and autonomy of the germ cell lineage reveals itself very early in development, in many types before the end of segmentation and long before gastrulation. This is demonstrated with particular clarity for *Rana* on which the author has largely made his personal observations. There is a useful 32-pp. bibliography. J. D. B.

Embryos and ancestors. G. R. DE BFER (Oxford University Press, 1940, 108 pp.).—This is a new and enlarged edition of the author's "Embryology and Evolution" which was published in 1930 and has been out of print for some time. It is an effective refutation of the principle of recapitulation as enunciated by Haeckel but goes further in that an attempt is made to explain the interaction between ontogeny and phylogeny in terms of gene action and causal embryology. The book is still too brief always to do justice to its subject, and condensation, at times, makes the argument tenuous. In general, however, the author's attempt is justified and his approach to a difficult set of problems is refreshing in its balance between theoretical argument and actual example. J. D. B.

Arterio-venous anastomoses. M. CLARA (Barth, Leipzig, 1939, 176 pp.).—A study of the anatomy, biology, and pathology of arterio-venous anastomoses. The author surveys the distribution and varieties of these anastomoses in birds and mammals and there is a detailed histological account of the problem of the origin, nature, and function of the "epithelioid" cells (the so-called "Quellzellen") which constitute such a striking feature of many of these vascular shunts. This histological section is based largely on personal observations. The section on the biology of arterio-venous anastomoses considers the various functions which have been attributed to them—their action as shunts, as blood-pressure-regulating mechanisms, and as an apparatus for temperature regulation. A large amount of the text is based on the work of Masson and the Clarks and the pathological section is largely derivative but contains a full survey of the literature on glomic tumours. The morphological and histological portions of the book contain much information that is not to be found in the English literature. J. D. B.