

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

JANUARY, 1942.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Parietal coverings and related structures of direct (diverticular) inguinal hernia in the male. F. L. Ashley, B. J. Anson, and L. E. Beaton (*Quart. Bull. Northwest. Univ. Med. School*, 1941, 15, 192—204).—The site of the hernia in the specimens described is the triangle of Hesselbach. The mass of the hernia consisted chiefly of preperitoneal fatty connective tissue and a thin tubular prolongation of the inguinal peritoneum, which is invested by a thin combination from the transversalis fascia; this was wholly fascial and did not contain aponeurotic bands or muscle fibres. The internal oblique was chiefly fascial in its inferior part; aponeurotic fibres were sparse. The hernia pushed the internal oblique ahead of it. It lies to the medial side of the abdominal inguinal ring and posterior to the subcutaneous ring and rests on the pubic tubercle and the adjacent part of the superior pubic ramus. The epigastric vessels were lateral, obliterated hypogastric artery (laterally in one, mesially in the other specimen), external iliac vessels (inferolaterally). A. S.

Aberrant function of omental lymphatics in omental-jejunal adhesions. P. H. Simer and R. L. Webb (*Anat. Rec.*, 1941, 80, 259—268).—Omental lymphatics leading from omental-jejunal adhesions produced in dogs by surgical means became filled with chyle. The chyle follows its normal pathway from the central lacteal to the plexuses of the longitudinal muscle and serosa. From this site it passes through newly formed lymphatic channels in the adhesion into the omental lymph channels and thence through omental lymph nodes to duodenal nodes. The experiments prove that omental lymphatics can assume the function of lacteals in the transportation of chyle. W. F. H.

Movements of subtalar and transverse tarsal joints. J. T. Manter (*Anat. Rec.*, 1941, 80, 397—410).—At the subtalar joint there is a screw movement of the talus, right-handed in the right foot and left-handed in the left foot. The fore part of the foot rotates about a longitudinal axis on the transverse tarsal joint, the movement being screw-like and directed opposite to that of the subtalar joint. The two joints are compared with dual screws having members connected by the contact of the talus with the navicular and the screws involved have opposing pitches turning in opposite directions. The range of movement is restricted by ligaments and muscles. At the transverse tarsal joint a second type of movement is produced by combined dorsi-flexion and abduction of the fore part of the foot while the talus and calcaneum remain fixed. The axis of this movement slants obliquely across the foot and reversal of the movement produces plantar-flexion and adduction. The relationship of the movements to flatfoot is described. W. F. H.

Foetal pelvis. Introduction. I. Width, height, and depth. II. Cavity. III. Promontory. IV. Ileum. V. Hip-bone and sacrum. VI. Ossification of ileum. H. Yamamura (*Japan. J. Obstet. Gynec.*, 1939, 22, 268—285, 288—306, 306—320, 321—331, 332—341).—Detailed measurements of the dimensions of the foetal pelvis were made in 10 female and 10 male fetuses obtained at post-mortem every month from 4th to 10th of pregnancy. The ossification of the ileum was studied in 35 fetuses obtained at the 2nd—5th month of pregnancy. Ossification is first perichondral, then endochondral. Myeloid elements first appear in the primary bone marrow at the end of the 4th month. P. C. W.

Arterial network supplying dorsum of foot. J. F. Huber (*Anat. Rec.*, 1941, 80, 373—391).—The extreme degree of variability met with in the arteries supplying the dorsum of

the foot indicates that the standard text-book description fails to give a satisfactory concept of the arterial supply of this region. The anterior medial and lateral malleolar arteries arise more frequently from the dorsalis pedis artery than from the anterior tibial. The anterior perforating artery does not exist as a single vessel but in its place are five connexions between the dorsal and plantar vessels for which the name "anterior communicating arteries" is suggested. In about 50% a branch of the anterior tibial arising approx. 2 in. above the ankle joint contributed to, or was the principal source of, the peroneal artery. A high degree of bilateral similarity was noted. Data for negroes and whites indicate that the negro more closely approximates to the "text-book picture." W. F. H.

Surgical anatomy of carotid sinus nerve. D. Sheehan, J. H. Mulholland, and B. Shafiroff (*Anat. Rec.*, 1941, 80, 431—442).—Anatomical variations of the carotid sinus nerve and of the innervation of the carotid body are described. Fibres from the glossopharyngeal, vagus, and cervical sympathetic reach the carotid sinus along the carotid sinus nerve and through an intercarotid plexus and the carotid body. The glossopharyngeal branches transmit impulses from the sinus wall and possibly from the carotid body. Unmyelinated fibres compose most of the sympathetic contribution and are probably vasomotor in function. The vagal myelinated fibres are presumably afferent. The anatomy suggests the feasibility of dividing the carotid sinus nerve rather than stripping the carotid artery in the treatment of carotid sinus syncope. W. F. H.

Regeneration of end arteries in opossum brain. E. Scharrer (*J. exp. Zool.*, 1940, 85, 365—381).—The blood vessels in the brain of the opossum regenerate as terminal loops not only when they penetrate implanted opossum brain tissue but also when they penetrate implanted brain tissue of rat or guinea-pig. It is therefore concluded that these loops develop as a result of factors intrinsic in the cerebral vascular system and are independent of chemical or structural characters of the opossum nervous system. J. D. B.

Internal anatomy of two Phallostethid fishes. L. E. TeWinkel (*Biol. Bull.*, 1939, 76, 59—69).—*Phenocostethus smithi* and *Gulaphallus mirabilis* are described. Digestive, reproductive, and excretory systems open on a priapium in the male. One pair of pronephric glomeruli, possibly functional, is present in the kidney. Ovary and testis are single. D. M. SA.

Relative growth and vertebrate phylogeny. F. B. Phleger (*Amer. J. Sci.*, 1940, 238, 643—662). J. D. B.

Pattern of appositional growth in incisor of rat. F. Herzberg and I. Schour (*Anat. Rec.*, 1941, 80, 497—506).—The rates and gradients of appositional growth, the apical angle, the spiral angle, and the incremental growth pattern were studied by means of injections of alizarine-red S into rats of different ages. The incisor shows the form of a logarithmic spiral in marked degree and at different ages the entire tooth is a different segment of the same logarithmic spiral conforming in all respects to the laws of growth applicable to similar organs. W. F. H.

Evolution of mammalian molar teeth. P. M. Butler (*Amer. J. Sci.*, 1941, 239, 421—450).—A crit. review of current theories and a proposed modification of them. J. D. B.

Cleidocranial dysostosis. L. F. Cooper (*Med. Ann. Columbia*, 1941, 10, 334—337).—Report of a case in a 69-year-old woman. E. M. J.

Growth and development of adolescent children. W. W. Greulich (*J. Pediat.*, 1941, 19, 302—314).—A lecture.

C. J. C. B.

Unusual variant of os intermetatarsale. P. J. Delano (*Radiology*, 1941, 37, 102—103).—The abnormality was discovered accidentally in a woman aged 57; the fourth metatarsal was doubled. The true metatarsal was lying below and articulated with the tarsus only; the accessory articulated with the toe which had only two phalanges.

E. M. J.

Diaphragmatic hernia. S. W. Harrington (*Quart. Bull. Northwest. Univ. Med. School*, 1941, 15, 157—173).—A detailed discussion of embryological aspects, anatomy, and classification of diaphragmatic hernia is given. The symptoms of diaphragmatic hernia resemble those found in a variety of abdominal and chest diseases. The most common erroneous diagnoses in oesophageal herniae were, in order of frequency, cholecystitis, cholelithiasis, gastric and duodenal ulcer, hyperacidity, secondary anaemia, cardiac disease, carcinoma of the cardia, stricture of the oesophagus, and intestinal obstruction. 270 patients with diaphragmatic hernia were operated, with a mortality rate of 3.7%. 9 of 232 patients, operated for oesophageal hiatus, had a recurrence 3 months—5 years later. Recurrence did not result in traumatic or congenital types of hernia. 228 out of 232 patients were relieved of symptoms.

A. S.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Study of quadruplets. R. E. Miller (*Anat. Rec.*, 1941, 80, 411—420).—Fetal relationships as determined from a study of the foetal membranes of a set of quadruplets (3 female and 1 male) approx. 17 weeks old indicate that they were derived from 4 ova. The history of the case does not fully substantiate the emphasis which has been placed by other authors on the age and no. of pregnancies of mothers of quadruplets.

W. F. H.

Number of eggs and surviving embryos in *Elephantulus*. C. J. van der Horst and J. Gillman (*Anat. Rec.*, 1941, 80, 443—452).—The ovaries ovulate simultaneously and at each ovulation about 120 eggs are liberated. Young 4-cell stages are occasionally found in the dilated part of the uterine tube but most pass through the isthmus into the uterus before they reach this stage. The egg always reaches the implantation site in the 4-cell stage. Only one embryo develops in each horn of the uterus, the elimination of the excess of fertilised eggs being determined by the remarkable structure of the uterus; there is only a very small and well circumscribed area in each horn which will allow the successful implantation of a single embryo at one time. Other embryos may attempt to survive in egg chambers around diverticula of the uterus but they never develop beyond the 4-cell stage.

W. F. H.

Peripheral nervous system in embryos of *Amia calva*. W. Bonin (*Contr. Inst. Zool. Univ. Montréal*, 1940, 6, 1—62).—A description of the cranial nerves and special sense organs based chiefly on a 9-mm. embryo. The components of the cranial nerves are analysed and epiblastic contributions to the sensory ganglia are described.

J. D. B.

Developmental mechanics and potencies of undifferentiated mandibular mesenchyme. W. Jacobson and H. B. Fell (*Quart. J. Micr. Sci.*, 1941, 82, 563—586).—Small areas were explanted from the mandibular arches of 3- to 7-day chick embryos and grown *in vitro*, with sub-culture, for periods varying from 2 to 16 days. The precise site of origin of each explant was determined by serial sectioning of the rest of the embryonic jaw. From a histological study of the differentiation of the explanted mesenchyme of different ages and from different sources it is concluded that: (1) The mandibular muscles do not arise in the mandibular arch but migrate into it from an undetermined source as a distinct group of myogenic cells between the second and third day. The myogenic cells are determined to form cross-striated muscle as early as the third day. (2) The chondrogenic cells originate from a small proliferation centre immediately beneath the buccal epithelium of the mandibular arch. They grow rapidly between the third and sixth day and the elongation of the arch to form the jaw is mainly due to apical growth of the chondrogenic centres of the two sides. The cells of

the centres are already determined to form cartilage in the 3-day jaw. (3) The osteogenic cells destined to form the angular, surangular, and splenial arise from a single proliferation centre which appears about the fourth day. The osteogenic cells destined to form the dentary originate about the fifth day from a separate centre. The osteogenic centres are determined at the time of their first appearance. Both of the centres are closely related at their first appearance to an overlying layer of presumptive epidermis.

J. D. B.

Hypophysectomy in chick embryo. N. W. Fugo (*J. exp. Zool.*, 1940, 85, 271—297).—A method for removal of the pituitary primordium from embryos of 33—38 hr. incubation is described. 162 of 691 operated embryos lived beyond the 12th day of incubation. The hypophysectomised embryos were smaller than the controls of the same age. This smaller size is due to lack of pituitary growth-stimulating hormone and not to thyrotropic hormone deprivation as injections of the latter rectify the thyroid histology but do not increase embryonic size. The embryos developed normal body proportions and it is suggested therefore that achondroplasia is due to factors other than hormonal. Effects on thyroid, parathyroids, and gonads are recorded. It is concluded from the experiments that the embryonic pituitary has no effect on primary morphological differentiation but that it becomes active during the second half of the incubation period and is responsible for the normal development of body size, thyroid, plumage, and gonads.

J. D. B.

Organisation of unsegmented egg of *Triturus*. J. C. Streett (*J. exp. Zool.*, 1940, 85, 383—408).—Eggs of *T. pyrrhogaster* were subjected to constrictions by Spemann's hair-loop method. The results of constrictions in different planes are recorded and they indicate that (a) the organisation centre originated from an area localised on one side of the unsegmented egg shortly after fertilisation, and (b) regional differences exist in the presumptive organisation centre similar to those between head and trunk organisers in the gastrula stage.

J. D. B.

Initiation of reduplication in embryonic limb rudiment of *Amblystoma*. F. H. Swett (*J. exp. Zool.*, 1940, 85, 431—436).—The development of a supernumerary limb may be initiated within 3 days of transplantation of a limb rudiment to the flank but only if the transplanted rudiment has attained a degree of development corresponding to Harrison's stage 37. Limb buds of this stage underwent reduplication much more frequently if transplanted to the flank than if transplanted to the head.

J. D. B.

Organisers in annelid development. A. B. Novikoff (*J. exp. Zool.*, 1940, 85, 127—155).—Experiments are described on the eggs and early stages of *Sabellaria vulgaris* which are explained on the assumption that a cytoplasmic material, present in the first polar lobe, can direct the development of either cell of the trefoil stage so that it forms polar lobes and develops CD structures. This material is considered both a morphogenetic substance and an organiser.

J. D. B.

X-Ray analysis of embryonic processes. R. G. Harrison, W. T. Astbury, and K. M. Rudall (*J. exp. Zool.*, 1940, 85, 339—363).—A method was developed for taking X-ray diffraction photographs of small pieces of living embryonic tissue and tissue fixed by the Gersh freezing-drying technique in an attempt to demonstrate the orientation of the finer structural elements of the tissue before, during, and after the change from the undifferentiated isotropic stage to the later orientated and polarised stage. Apart from the diffraction pattern of the fluid contents of the tissues, the photographs obtained were generally a disoriented protein pattern and in no case was there any signs of mol. orientation even when the tissues had reached the stage of definite polarisation and asymmetry. It is argued that these experiments, while not supporting the mol. orientation theory of tissue polarisation, by no means disprove the theory.

J. D. B.

Effects of temperature on cod eggs. D. C. Bonnet (*Biol. Bull.*, 1939, 76, 428—442).—Eggs developed at temp. up to 12°, the process being quicker and the mortality greater at the higher temp. Mortality was least at the stage of closure of the blastopore.

D. M. SA.

Effects of colchicine on cleavage of eggs of *Rana pipiens*. D. M. Keppel and A. B. Dawson (*Biol. Bull.*, 1939, 76, 153—161).—Fertilised eggs were placed in colchicine solutions (0.0001—0.00001%). Cleavage tends to be of meroblastic

type. Gastrulation is abnormal and embryos do not develop beyond the neural plate stage. Large cells with large nuclei are suggested as the result of tetraploidy. D. M. SA.

Effects of 2:4-dinitrophenol on early development of *Oryzias latipes*. A. J. Waterman (*Biol. Bull.*, 1939, 76, 162—170).—Eggs and embryos of this teleost were placed in solutions of different concns. Retardation of development and abnormalities similar to those produced by various agents on eggs of amphibia were produced. D. M. SA.

Development of half-eggs of *Chaetopterus pergamentaceus*. E. B. Harvey (*Biol. Bull.*, 1939, 76, 384—404).—Fertilised and unfertilised nuclear and non-nuclear half-eggs were found to be capable of cleavage. Nuclear halves cleave according to the typical annelid pattern, but non-nuclear halves, before and after cleavage, have a tendency to become amoeboid. Parthenogenetic merogony was not established beyond the two-cell stage. D. M. SA.

Effects of centrifuging on polar spindles. T. H. Morgan (*Biol. Bull.*, 1939, 76, 339—358).—Eggs of *Chaetopterus* and *Cumingia* were centrifuged at various stages before and after fertilisation. Attempts to drive the polar spindle into the egg and get a division of the whole egg were unsuccessful. D. M. SA.

Sperm extracts and fertilisation reaction in *Arbacia*. J. A. Frank (*Biol. Bull.*, 1939, 76, 190—216).—Sperm suspensions, heated and filtered, cause agglutination of eggs of *A. punctulata*. The active agent is found in the protein residue of alcohol-ether sperm extracts. Extracts inactivate fertilisin and can block fertilisation by inactivating sperms and eggs. D. M. SA.

Sensoria and their relation to determination of wings in aphids. K. A. Stiles (*Biol. Bull.*, 1939, 76, 442—448).—It was found that in intermediate stages between wingless and winged aphids an intermediate no. of sensoria is present. It is suggested that the embryonic determination of sensoria takes place before that of wing muscle. D. M. SA.

Role of temperature in hydranth formation in *Tubularia*. J. A. Moore (*Biol. Bull.*, 1939, 76, 104—107).—*T. crocea* is found to drop its hydranths during the hot months when temp. is above 20°. Hydranths were produced in sea-water at 18.4°. D. M. SA.

Buds induced from implants of nerve cord in *Clymenella torquata*. L. P. Sayles (*Biol. Bull.*, 1939, 76, 330—338).—Pieces of various regions of nerve cord from adult individuals were implanted into the thirteenth segment of other worms. Of 23 grafts which took, 14 formed tails with up to ten segments (the normal no. caudal to the 12th segment). The host determines the type, and the implant the orientation, of the bud. D. M. SA.

Fate of ectoderm and endoderm of *Hydra* when cultured independently. E. J. Papenfuss and N. A. H. Bokenham (*Biol. Bull.*, 1939, 76, 1—6).—Both the isolated complete ectoderm of the decapitated polyp and pieces of endoderm failed to regenerate new individuals. D. M. SA.

X-Linked modifiers in man. K. Idelberger (*Allg. Z. Psychiat.*, 1939, 112, 160—176).—"Sex-controlled" inheritance should be distinguished from sex-different manifestation of genes due to X-linked modifiers (*i.e.*, characters influencing the manifestation of other genes). Congenital talipes clavus is held to be of the latter type. H. L.

Genetic classification of hereditary syndromes in man. F. Panse (*Allg. Z. Psychiat.*, 1939, 112, 106—125).—A discussion of methods. H. L.

Selection in the collection of twin-series. B. Schulz (*Allg. Z. Psychiat.*, 1939, 112, 138—147).—A discussion of methods for obtaining representative series, with special regard to the problem of avoiding inclusion of secondary cases. H. L.

Manifestation probability. E. Slater (*Allg. Z. Psychiat.*, 1939, 112, 148—152).—A discussion of the factors which may influence this val. (*i.e.*, the average frequency with which the sp. genes become manifest in a total population). H. L.

Methods of genetic selection used in the German Institute for Psychiatric Research. H. E. Grobig (*Allg. Z. Psychiat.*, 1939, 112, 153—159).—A short report on the main methods used for obtaining representative case-series. H. L.

B 2 (A., III.)

III.—PHYSICAL ANTHROPOLOGY.

Physical anthropology and anatomy. M. F. Ashley-Montagu (*Amer. J. phys. Anthropol.*, 1941, 28, 261—271).

W. F. H.

Circular type of cranial deformity. T. D. Stewart (*Amer. J. phys. Anthropol.*, 1941, 28, 343—351).—It is shown that the so-called circular type of deformity was produced by a combination of boards and not by a circular band. The deformity is best placed in the general class "parallelo-fronto-occipital" and referred to as "pseudo-circular." It is fairly common in Arkansas, Louisiana, and Texas. W. F. H.

Blood groups and inbreeding in Syria. W. C. Boyd and L. G. Boyd (*Amer. J. phys. Anthropol.*, 1941, 28, 319—330).—Data concerning blood groups, blood types, taste reaction to phenylthiocarbamide, mid-digital hair, and eye, hair, and skin pigmentation are recorded for the inhabitants of three Syrian towns and for Armenians living in and near Beyrouth. Observations of a similar type are also given for samples of two tribes of Syrian Bedouin. The effect of inbreeding on blood groups and types is discussed. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Arrangement of capillary tuft of human glomerulus. H. A. Wilmer (*Anat. Rec.*, 1941, 80, 507—518).—The afferent arteriole branches into 2—10 primary branches at the vascular pole. The arrangement of the primary branches is essentially peripheral but they exhibit no const. pattern. Secondary branches (capillaries) vary considerably in no. and position in their origin from the primary vessels and often run for long distances, exposing a relatively great surface area. No anastomoses were observed in the major course of the primary and secondary vessels and the peripheral capillaries of the glomerular tuft. W. F. H.

Pigment cell migration in mouse epidermis. S. C. Reed and J. M. Henderson (*J. exp. Zool.*, 1940, 85, 409—418).—Transplantation of embryonic skin to newly born mice or between newly born litter mates demonstrated the presence in the epidermis of melanoblasts which are capable of migration. The use of the "black and tan" gene with the consequent colour combinations of host and donor showed that not only the melanoblasts but also other cells of the epidermis enter a graft. These other cells may form complete hairs just within the graft boundaries. The survival of melanoblasts in explants under different conditions is described. J. D. B.

Autoplastic and homoplastic transplantation of skin in adult frog. H. H. Vogel (*J. exp. Zool.*, 1940, 85, 437—473).—A skin transplant composed of an anterior autograft and a posterior heterograft, both placed within the same wound area, was used to study the incompatibility of homotransplantation. After a period of approx. a week homografts were invariably invaded by host leucocytes and later the graft was completely replaced by host tissue. If skin was transplanted homoplastically for a period of more than 4 days and then returned to its original donor the graft behaved as a typical homograft and was destroyed. Several methods were used in the attempt to protect homografts from destruction but none was successful. J. D. B.

Structure of ovary of humpback whale (*Megaptera nodosa*). E. W. Dempsey and G. B. Wisloki (*Anat. Rec.*, 1941, 80, 242—257).—The wt. of the ovary varied from 0.5 to 1.5 kg. The convoluted cortical lamina measured 1—2 cm. in thickness. The diameter of the follicles was 1—5 cm. but the ova were relatively small (100—130 μ . in diameter). Corpora lutea (diameter 3—6 cm.) were present in all mature animals. A zone of lutein tissue surrounded the central cavity in which the fibrin clot had undergone complete fibrosis and hyalinisation. On account of this, involution of old corpora lutea is much retarded. There was no blood vessels in the granulosa layer of follicles but vessels of capillary size occur in the theca. After ovulation the thecal vessels form a vascular network within the luteal tissue. W. F. H.

Neck body in normal and X-irradiated insect spermatogenesis. J. B. Gatenby (*Proc. Roy. Irish Acad.*, 1941, 47, B, 149—159).—In the locust, hemipteron, and other insect spermatids 2 granules (the neck granule and centriole) are concerned in sperm formation. The centriole remains at the

head of the nucleus and from it the flagellum grows out. The neck body lies at the posterior end of the nucleus (position of mammalian head centriole). The macromitosome adheres to the neck body at an early stage. At a later stage the flagellum also adheres to the neck body. The mitochondrial part of the sperm tail is formed under the control of the neck body and not the centriole. X-Irradiated material exhibited numerous spermatids with as many as 4 neck bodies. Where 2 or more neck bodies are present the back of the nucleus is shaped to fit each neck body ring.

W. F. H.

Histophysiology. P. B. van Weel (*Natuurwetensch. Tijds. Ned. Indië*, 1941, 101, 257—264).—A review of recent work showing how chemical and physiological together with histological studies have clarified questions in cell metabolism.

S. C.

Acetic-orcein: new stain fixative for chromosomes. L. la Cour (*Stain Tech.*, 1941, 16, 169—174).—The method is superior to the usual acetocarmine stain for chromosomes. The standard solution is 1% orcein in 45% acetic acid. The staining method is similar to that for acetocarmine. Slight modifications are given for staining temporary slides of anther and testis cells, macerated root tips, and salivary glands; and also for permanent preps. The final mountant should not contain alcohol, which dissolves orcein.

E. E. H.

Myelin sheath staining method for frozen sections. K. Schroeder (*Z. ges. Neurol. Psychiat.*, 1939, 166, 588—593).—Colloidion treatment of the sections has been substituted by a mordant process (dipping liquid "Schnellbeize"); the method can be applied to formalin-frozen sections and to frozen sections which were fixed in formalin and imbedded in gelatin.

H. L.

Paraffin sections of bone. L. W. Thigpen (*Amer. J. clin. Path. Tech. Suppl.*, 1941, 5, 119—121).—Use of dioxan and initial infiltration in low-m.p. paraffin reduce the time of exposure of bone to water from 2—10 days to 2 hr. Overexposure to water is harmful and should be avoided. Cartilage, which takes up water rapidly, can be protected by covering with a layer of paraffin during part of the soaking period. Over-exposed bones must be dried slowly to prevent uneven shrinkage and tearing. Better sections are obtained by not trimming the block too closely and by cutting the paraffin in several places around each section at the time of mounting, before warming. Aq. waterglass fixative is now used, ranging in concn. from a 1% solution for objects difficult to adhere, to a 0.5% solution for less difficult objects; more dil. solutions partly avoid the difficulty caused by the staining of pools of excess fixative. The dilution of commercial waterglass with equal parts of water eliminates the trouble encountered from the tendency of waterglass to solidify or crystallise.

C. J. C. B.

Staining paraffin sections with protargol. VI. Impregnation and differentiation of nerve fibres in adrenal glands of mammals. W. E. MacFarland and H. A. Davenport (*Stain Tech.*, 1941, 16, 53—58).—The modification from earlier protargol methods consists of mordanting with $Pb(NO_3)_2$ or $TiNO_3$ solution, at 60° for 1—2 days, before protargol impregnation, and differentiating 7—15 sec. in 0.1% aq. oxalic acid before using Bodian's reducer.

E. E. H.

Improved trimmer for paraffin blocks. F. A. Waterman (*Stain Tech.*, 1941, 16, 59—61).—Full details with dimensions and diagrams of a trimmer for paraffin blocks designed for making opposite edges of the block parallel.

E. E. H.

Effect on tissue volume of various methods of fixation, dehydration, and embedding. R. E. Stowell (*Stain Tech.*, 1941, 16, 67—83).—The vol. of the tissue block is determined indirectly by observing the change in area of one surface of the block using a low-power compound microscope, and making camera lucida tracings of that surface. A large no. of fixatives was used. Susa and Bouin's gave the best general results; reagents producing much shrinkage render tissues less susceptible to further shrinkage later. Embedding in hot paraffin may cause great shrinking.

E. E. H.

Methacrylate plastics as mounting media for biological materials. W. O. Puckett (*Anat. Rec.*, 1941, 80, 453—463).—The uses and advantages of several methacrylate plastics as mounting and embedding media for biological specimens are detailed. The method is ideal for mounting older chick embryos and small mammalian embryos.

W. F. H.

Plasticised polystyrene mounting medium. S. H. Hutner (*Stain Tech.*, 1941, 16, 177).—60 g. of resin are suspended in 100 c.c. of toluene + 18 c.c. of tricresyl phosphate, and left overnight. A water-clear syrup forms and is decanted for use.

E. E. H.

Preparing permanent deep chamber mounts of variable dimensions. D. L. Bassett (*Stain Tech.*, 1941, 16, 164—168).—A ring or square of Al wire of desired thickness and slightly smaller than the coverslip is put on the slide, and the object to be mounted is transferred from toluol to this cell. A syrupy solution of clarite in toluol (70%+) is poured in to fill the chamber, and a coverslip carefully lowered, excluding any air. The prep. is dried at 38° for 2 months, or at 56° for 3 weeks. The prep. remains crystal-clear.

E. E. H.

Cooling method in paraffin sectioning. A. M. Schechtman (*Stain Tech.*, 1941, 16, 85—86).—Details with diagram are given of a simple method for using CO_2 from a cylinder for cooling the paraffin block when fixed on the microtome carrier, without any disturbance of orientation.

E. E. H.

Apparatus for washing tissue. H. Kersten and G. F. Smith (*Stain Tech.*, 1941, 16, 157—158).—Full details, with diagrams, of an easily made apparatus useful for washing large nos. of individual specimens before making histological sections.

E. E. H.

V.—BLOOD AND LYMPH.

Method of preparing smears and sections of aspirated sternal marrow. H. Gordon (*J. Lab. clin. Med.*, 1941, 26, 1784—1787).—After aspiration and making smears the remainder of the marrow is removed gently from the tube and placed on a small piece of dry filter-paper, to which it adheres firmly. The filter-paper with adherent marrow is placed in 10% aq. solution of formalin, dehydrated in ethyl alcohol, cleared in xylol, embedded in paraffin, and sectioned.

C. J. C. B.

Absorption of drugs through bone marrow. D. I. Macht (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 299—302).—Drugs were readily absorbed into the circulation and produced appropriate results. Time relations depended on solvents used, and injection of adrenaline dissolved in peanut oil caused hypertension for 20—30 min.

V. J. W.

Sternal marrow changes during first week of life. Correlation with peripheral blood findings. L. M. Shapiro and F. A. Bassem (*Amer. J. med. Sci.*, 1941, 202, 341—353).—Peripheral blood studies and sternal puncture examinations were made on 35 normal full-term infants in the 1st 24 hr. of life and after 1 week. The bone marrow showed a marked drop in the erythroid elements at the end of the 1st week corresponding with fewer reticulocytes in the blood. The fall in red cells and haemoglobin after birth may be primarily the result of physiological disintegration of the superabundant red cells carried over from foetal life, in the presence of diminished erythropoiesis.

C. J. C. B.

Rapid method for staining blood smears in determining opsonocytaphagic indices. A. Bondi (*J. Lab. clin. Med.*, 1941, 26, 1811).—Citratd blood is mixed with a saline suspension of bacteria in the usual manner and incubated at 37° for 30 min. Blood smears are made and dried quickly to prevent shrinkage of white blood cells. These are then put carefully through the flame of a Bunsen burner 4 times and allowed to cool. The fixed smears are covered with 10% Ziehl-Neelsen carbolfuchsin. At the end of 2 min. the slides are washed gently with tap water to prevent the dye from ptyg. on the slide and then allowed to dry.

C. J. C. B.

Buffer capacity of blood of sixth-instar Southern armyworm (*Prodenia eridania*). F. H. Babers (*J. Agric. Res.*, 1941, 63, 183—190).—The pH of the blood drawn under oil was 6.5—6.75 (average 6.65). The buffer capacity was 0.022 at pH 6.65. Total blood- CO_2 was 10.03 vols.-% corresponding with 4.51 m-mol. per l. Of this, 3.52 m-mol. was combined as HCO_3^- and 0.99 as H_2CO_3 . An atm. saturated with nicotine for 24 hr. did not alter the blood- pH .

C. J. C. B.

Simple modification of Weltmann's coagulation reaction. D. H. Kling (*J. Lab. clin. Med.*, 1941, 26, 1795—1796).—The modification outlined requires only one test-tube, one standard solution of $CaCl_2$, and 0.1 c.c. of serum.

C. J. C. B.

Action of nicotinic acid on coagulation of blood. P. M. Aggeler and S. P. Lucia (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 522—525).—Nicotinic acid has no coagulant action on

heparinised recalcified plasma. It aids coagulation in whole blood, due apparently to its hemolytic effect, and the release of thromboplastin from cells. V. J. W.

Delayed blood coagulation in methyl methacrylate (boilable "lucite") vessels. J. S. Hirschbock (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 311—312).—Coagulation times for human blood in tubes of 1 cm. diameter were 6.2 min. for glass, 13.9 min. for "lucite," and 18.3 min. for paraffin. V. J. W.

Vitamin-K storage and prothrombin levels in chicks obtained from injected eggs. R. T. Tidrick, F. W. Stamler, F. T. Joyce, and E. D. Warner (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 438—440).—Vitamin-K (0.2—1 mg.), injected into the white of eggs before incubation, is stored, and protects the chicks against the prothrombin fall normally produced by a K-free diet. V. J. W.

Vitamin-K requirement of new-born infant. R. L. Sells, S. A. Walker, and C. A. Owen (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 441—445).—Vitamin-K requirement is about 1 µg. per day, which is usually present in dietary milk. V. J. W.

Increased plasma-prothrombin activity after adrenaline injections; relation to hyperglycemia. L. M. Tocantins and J. F. O'Neill (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 477—479).—Intravenous injections of 0.0035 mg. per kg. in a dog and 0.0035 mg. per kg. in man increased prothrombin of blood plasma as determined by Quick's method. V. J. W.

Assay recovery of prothrombin added to plasma. J. H. Ferguson (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 538—541).—Quant. recovery of added prothrombin is given by determining clotting time and comparing with a standard curve. V. J. W.

Effect of topical application of 2-methyl-1:4-naphthoquinone (synthetic vitamin-K analogue) on prothrombin level of newborn infants. H. K. Russell and R. C. Page (*Amer. J. med. Sci.*, 1941, 202, 355—359).—Percutaneous application of 2-methyl-1:4-naphthoquinone in an ointment base prevents hypoprothrombinemia in the newborn. It is suggested as a routine prophylactic measure. 10 mg. of the compound in a special ointment can be rubbed thoroughly on the skin of the back during the 1st or 2nd day of life. C. J. C. B.

Effectiveness of prenatal administration of 2-methyl-1:4-naphthoquinone in maintaining normal prothrombin levels in infants. E. H. Valentine, J. G. Rheingold, and E. Schneider (*Amer. J. med. Sci.*, 1941, 202, 359—364).—18 of 24 infants of untreated mothers showed a drop to an abnormally low prothrombin level 48—96 hr. after birth, with a rise to a normal level by the end of the first week. Infants whose mothers had received 2-methyl-1:4-naphthoquinone 5—28 days before delivery were protected in all but 2 of 23 cases. Occasional subnormal prothrombin levels were observed in a group of 50 pregnant women examined shortly before term. C. J. C. B.

Use of vitamin-K in obstructive jaundice. G. S. Reed (*N.Y. Sta. J. Med.*, 1941, 41, 1653—1655).—Report of 3 cases. E. M. J.

Destruction of prothrombin and storage of vitamin-K. J. G. Allen and C. Vermeulen (*Arch. Surg., Chicago*, 1941, 42, 969—972).—In each of 3 cases of external bile fistula 8 mg. of vitamin-K was given per day for discontinuous periods. The longer was the therapeutic period the greater was the interval before the onset of hypoprothrombinemia, indicating storage of vitamin-K. F. S.

Plasma-albumin, -globulin, and -fibrinogen in healthy individuals from birth to adult life. R. M. Hill and V. Trevor (*J. Lab. clin. Med.*, 1941, 26, 1833—1848).—A method is presented for the separation by salting-out and Kjeldahl analysis of plasma-fibrinogen, -albumin, and -globulin done in duplicate on 0.8 c.c. of plasma. C. J. C. B.

Comparative amino-acid content of serum-proteins in normal subjects and in patients with rheumatoid arthritis. W. D. Block and W. A. Murrill (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 374—376).—No differences were found in total S, N, or amino-acid content of serum-proteins between normal and arthritic subjects. V. J. W.

Serum-protein regeneration following use of amino-acids in nephritis (nephrotic stage). W. J. Messinger (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 281—284).—Of 2 such patients, one

showed an increase of serum-albumin after intravenous injections of amino-acids and another did not do so. V. J. W.

Human serum containing four distinct isoagglutinins. A. S. Wiener and S. Forer (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 215—218).—In serum of a group O, type N, patient there were found anti-Rh and anti-M isoagglutinins. The former failed to act at 0° and the latter at 37°. V. J. W.

Confirmation *in vitro* of Griffith-Campbell method of measuring blood volume. J. Q. Griffith, jun. (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 383—384).—The method (*Physiol. Abs.*, 1937, 22, 480) is confirmed by a test-tube experiment and reply is made to criticisms of Beckwith and Chanutin (cf. A., 1941, III, 553). V. J. W.

Effect of posture on circulating blood volume in case of orthostatic hypotension and tachycardia. P. Hallock and G. Evans (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 460—463).—On standing for 10 min. after lying down all night there was increase of 5% in hemoglobin, of 6.5% in hematocrit val., and of 14% in plasma-proteins. Plasma vol. decreased by 576 c.c. and blood vol. by 650 c.c. V. J. W.

Measurement of cell volume of blood by Evans' blue dye method. A. T. Shohl and T. H. Hunter (*J. Lab. clin. Med.*, 1941, 26, 1829—1837).—A colorimeter method is described for the determination of the relative vol. of the plasma and cells in blood by the use of the Evans blue dye. The error is less than 1%. By this method the total cell vol. averages 4.5% less than that obtained by the hematocrit method. This discrepancy is probably accounted for by the plasma which lies between the packed cells. C. J. C. B.

Hemoglobin estimation with undiluted reduced blood. G. Barkan (*J. Lab. clin. Med.*, 1941, 26, 1823—1828).—The advantages of the Sica hemometer are stressed. C. J. C. B.

Practical and inexpensive plasma bank. L. J. Rosellini, M. Porter, and C. R. Jensen (*Northw. Med.*, 1941, 40, 272—277). E. M. J.

Formation of protein complexes in heated solutions of rabbit serum-proteins. A. Kleczkowski (*Brit. J. exp. Path.*, 1941, 22, 188—192).—When a mixture of normal rabbit serum-albumin and euglobulin fractions is heated at 70—80° a product is formed with properties different from those of either fraction heated separately. The new product differs in precipitability by (NH₄)₂SO₄ and the larger size of the aggregates produced during heating, and is a complex formed by the two fractions uniting as they undergo denaturation. F. S.

Use of pooled human serum for treatment of hemorrhage and shock. M. Bick and E. B. Drevermann (*Med. J. Austral.*, 1941, 1, 750—754).—The collection, prep., and drying of serum by low-pressure evaporation are described. F. S.

Preparation and use of human blood serum. R. B. Tudor and U. Janeczich (*Minnesota Med.*, 1941, 24, 749—753).—A review. E. M. J.

Practical operation of preserved blood and pooled plasma programme in suburban hospital. J. W. Ehrlich (*N.Y. Sta. J. Med.*, 1941, 41, 1737—1748). E. M. J.

Operation of blood bank. B. C. Russum (*Nebraska Sta. Med. J.*, 1941, 26, 318—322). E. M. J.

Transmission of malaria [due to blood transfusion]. S. H. Gurian (*Arch. Pediat.*, 1941, 58, 525—530).—Case report. C. J. C. B.

Sickle cell disease. B. M. Vance and R. C. Fisher (*Arch. Path.*, 1941, 32, 378—386).—2 cases are described, one presenting fat embolism as a fatal complication. (5 photomicrographs.) C. J. C. B.

Effects of uncomplicated hemoconcentration (erythrocytosis), with particular reference to shock. G. O. Wood and A. Blalock (*Arch. Surg., Chicago*, 1941, 42, 1019—1025).—Hemoconcn. was produced in dogs by withdrawing 2% of body-wt., or approx. $\frac{1}{3}$ of the total blood vol., and replacing an equal vol. or more of red blood cells daily. Red blood cell counts were thus increased from 4.8—6.8 to over 10 millions per cu. mm. in 9—10 days. There were no tissue alterations except for vascular engorgement. In shock, therefore, it is the decrease in blood vol. with the resulting anoxia that causes most of the tissue damage. F. S.

Comparison of effects of heat and those of cold in prevention and treatment of shock. A. Blalock and M. F. Mason (*Arch. Surg.*, Chicago, 1941, 42, 1054—1059).—Shock was produced in dogs by withdrawing $\frac{1}{3}$ of the blood vol. Maintenance of an average temp. of 3.7° above normal decreased the chance and period of survival. An average temp. of 12.3° below normal did not increase the chance of survival but lengthened the survival time of dogs with low blood pressure. F. S.

Monocytic leukaemia. H. C. Sweany and W. Cannemeyer (*Arch. Path.*, 1941, 32, 429—440).—Case report. (7 photomicrographs.) C. J. C. B.

Röntgen therapy for chronic macrolymphocytic and mesolymphocytic leukaemia. W. C. Popp and C. H. Watkins (*Radiology*, 1941, 37, 160—162).—The lymphocytes of patients with chronic lymphatic leukaemia who showed great sensitivity to X-ray therapy were mostly of the macro- and meso-lymphocytic type. Treatment by 300—500 r. in these cases was often followed by a 50% fall in lymphocytes within 24 hr. accompanied by an undue rise in blood-urea. Blood-urea remained normal when doses of 100—125 r. per field and day (produced by 130 kv.) were given, and the total white count should not be lowered beyond one third of its original val. E. M. J.

Familial eosinophilia. J. E. Bowman (*Penn. Med. J.*, 1941, 44, 1445—1446).—A 4-year-old girl when first seen had a total white cell count of 42,000 with 69% of eosinophils of adult type, enlarged spleen and lymph nodes, and urticaria. 3 years later there were 13,700 white cells with 40% of eosinophils. 2 of her 3 sibs had 18 and 16% of eosinophils in 12,000 and 10,000 white cells and urticarial symptoms. All 6 siblings of another family had an eosinophilia of 9—23% in an average of 11,000 white cells, the mother 8% in 10,000, and the father no eosinophils. E. M. J.

Alukaemic leukaemia. H. R. Fisher (*Penn. Med. J.*, 1941, 44, 1432—1438).—Report of 9 cases. E. M. J.

Effects of sodium hexametaphosphate (Calgon) on complement action of serum. J. Gordon and W. R. Atkin (*Brit. J. exp. Path.*, 1941, 22, 226—233).—Na hexametaphosphate removes complement activity from serum. This effect is reversed by CaCl_2 , which removes the phosphate from combination with the serum-proteins. The inactivation by Calgon is not a lyotropic salt effect, because dilution does not restore complement activity. F. S.

Thrombocytopenic purpura treated by deep X-rays and splenectomy. T. C. Kelly (*Penn. Med. J.*, 1941, 44, 1442—1443).—Case report. E. M. J.

Standardisation of certain factors in cutaneous "venostasis" bleeding time technique. A. C. Ivy, D. Nelson, and G. Butcher (*J. Lab. clin. Med.*, 1941, 26, 1812—1822).—The pressure in the cuff is elevated to 40 mm. Hg, and the puncture is made with a sharp lancet fixed for a cut 3 mm. deep. If bleeding occurs, the bleeding time is recorded; if it does not, nothing is recorded. The cuff is deflated. 5 min. later the cuff is reinflated and the puncture made. If bleeding occurs, the bleeding time is recorded; if it does not, nothing is recorded. This procedure is repeated until 3 bleeding times have been recorded. The mean bleeding time is the average of the 3 bleeding times. In 88 subjects the mean bleeding time of 3 punctures was 61 ± 2 sec. The normal max. bleeding time is taken as 280 sec. C. J. C. B.

Concentrated liver extract in the maintenance treatment of pernicious anaemia. T. S. Evans and R. H. Jordan (*Amer. J. med. Sci.*, 1941, 202, 408—416).—The extract used ("reticulogen") was completely satisfactory compared with less conc. extracts in the treatment and follow-up over 2—4 years of 40 cases. C. J. C. B.

Erythrocyte-phosphatase activity in haemolysed sera and determination of serum "acid" phosphatases. E. B. Gutman and A. B. Gutman (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 513—515).—Determination of "acid" phosphatase in serum may be interfered with by phosphatase from haemolysed red cells, but this can be inhibited by incubation with 0.005M-NaF. V. J. W.

Acute hypoglycaemia in newly born pigs. R. Graham, J. Sampson, and H. R. Hester (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 338—339).—In a fatal disease of pigs, with onset 1—2 days after birth, no infective organism or pathological lesion could be found. Blood-sugar was 3—61 mg.-% in

place of the normal 99—131. Glucose injections caused some recoveries if given early. V. J. W.

Significance of glucose and non-glucose reducing substances in post-mortem blood. E. V. Hill (*Arch. Path.*, 1941, 32, 452—473).—Post-mortem samples of blood for determinations of glucose should be removed from the left side of the heart to avoid errors due to post-mortem diffusion of glucose from the liver to the right side of the heart. Glycolysis occurring after death causes a progressive lowering of the glucose content of heart blood. Intravascular and *in vitro* glycolysis occur at the same rate and are not influenced by blood clotting. The glucose and non-glucose reducing substances were determined in 73 cases. Significant quantities of residual glucose were present in most cases of asphyxia, shock, acute coronary closure, rapidly developing anoxaemia, increasing intracranial pressure, and F⁺ poisoning, indicating that agonal hyperglycaemia was present. For significant results in cases in which hypoglycaemia is suspected, specimens of blood for analysis should be taken within 2 hr. after death. C. J. C. B.

Determination of ascorbic acid in whole blood. C. A. Kuether and J. H. Roe (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 487—489).—Oxyhaemoglobin is reduced by alternate evacuation and CO_2 under pressure before proteins are removed by HPO_3 . Oxidation of ascorbic acid is thus prevented. Recoveries of added ascorbic acid from human and guinea-pig blood were 90—110%. V. J. W.

Transitory diminution of blood-pyruvate *in vitro*. J. S. Harris and S. E. Elgart (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 321—324).—Decrease of pyruvate in shed blood is caused by cells and not serum. It is greater after haemolysis, but is not affected by vitamin-B deficiency or addition of cocarboxylase. Respiratory exchange is unaltered. The pyruvate which disappears is not decarboxylated or changed to other ketonic acids or to lactic acid. KCN destroys pyruvate independently of the presence of blood. V. J. W.

Blood-pyruvic acid in heart disease. Z. A. Yanof (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 516—518).—Normally blood-pyruvic acid does not exceed 1 mg.-%. In 20 cases of congestive heart failure it was 1.2—3.4 mg.-%. V. J. W.

Effect of nerve stimulation on choline-esterase activity of blood. C. Trowbridge (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 519—522).—Stimulation of sciatic nerves caused no increase in choline-esterase of perfusion fluid from anterior abdominal vein of frogs or of blood from saphenous vein of cats. V. J. W.

Effect of trypsin on blood-histamine of rabbits. C. A. Dragstedt and M. Rocha e Silva (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 420—422).—Intravenous injection of 3—7 mg. of trypsin per kg. into rabbits reduces blood-histamine (Code's method, *Physiol. Abs.*, 1937, 22, 361) and causes leucopenia. Trypsin added to heparinised rabbit's blood *in vitro* causes a shift of histamine from cells to plasma. The same effects are caused by antigens in sensitised animals. V. J. W.

Oestrogen content of blood at 4-hour intervals. A. S. Albrieux (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 380—381).—Out of 4 women examined, an increased oestrogen content was found in 1 subject at noon and 8 p.m. V. J. W.

Concentration of oestrogenic hormones in blood serum and blood cells. A. S. Albrieux (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 381—382).—Pellets of dried serum or cells from non-pregnant women were placed in vaginae of spayed rats. Vaginal smears, made 48—60 hr. later, showed that the cells contained 2 or more times as much hormone as the serum. V. J. W.

Blood-lipin partition in hypothyroidism of childhood. L. S. Radwin, J. P. Michelson, J. Melnick, and S. Gottfried (*Amer. J. Dis. Child.*, 1940, 60, 1120—1136).—Total serum-lipin concn. (in mg.-%) in 54 normal children was 363—848 (rarely over 800); in untreated patients it was greatly increased (usually over 1000). There was no consistent relationship between the rise of total lipins and the severity of the disease. The free serum-cholesterol and lipin-P were similar in normals and patients. C. J. C. B.

Reaction of rat omentum to injections of particulate matter. R. N. Baillif (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 409—414).—Indian ink, Li carmine, or trypan-blue was injected intraperitoneally into rats which were killed after various intervals. The omentum was found to be hypertrophied,

due to accumulation of histiocytes which ingest the foreign particles which have entered through and between the mesothelial cells. The Golgi net separates into fragments which aid the coalescence of the particles into larger masses which are stored by the phagocytes. V. J. W.

Mechanism of increased capillary permeability in inflammation. V. Menkin (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 456—460).—Inflammatory exudate, when dialysed, no longer causes in cutaneous areas treated with it accumulation of trypan-blue. This property is restored by addition of leucotaxine (A., 1938, III, 164), but not by addition of histamine in the quantity originally present. V. J. W.

VI.—VASCULAR SYSTEM.

Electro-magnetic measurement of blood flow and sphygmomanometry in intact animal. A. Kolin, J. L. Weissberg, and L. Gerber (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 324—329).—The apparatus previously described (A., 1939, III, 21) is modified by placing around the artery a rubber sleeve in which the electrodes are imbedded and which is left *in situ*. Blood pressure is determined by placing similar but hollow cuffs around the artery on each side of the electrodes and noting the air pressure in them at which pulsations cease. V. J. W.

Effect of irradiation on lymphatic flow in rats. P. J. Hodes and J. Q. Griffith (*Radiology*, 1941, **37**, 203—204).—No significant influence on the lymphatic flow in the legs of rats was seen 3—6 weeks after irradiation with 2200 r. produced at 135 or 200 kv. E. M. J.

Contrast visualisation of heart and great vessels in case of Fallot's tetralogy. A. Grishman, M. F. Steinberg, and M. L. Sussman (*Radiology*, 1941, **37**, 178—180).—Pulmonary artery stenosis, intraventricular septal defect with a right to left shunt, hypertrophy of the right ventricle, and dextroposition of the aorta were demonstrated by the cineröntgenographic and fluorographic multiple exposure technique. E. M. J.

Total cardiac vibrations in aged hearts and in coronary disease. J. R. Smith and W. B. Kountz (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 353—354).—In poorly nourished hearts the vibrations recorded by the vibrocardiograph (*Amer. Heart J.*, 1940, **20**, 667) show a greater proportion of large low-frequency waves than are seen in normal records. V. J. W.

Electrocardiographic studies during shock and convulsion treatment of schizophrenia. D. Schmitt (*Z. ges. Neurol. Psychiat.*, 1939, **166**, 108—127).—32 cases were studied during various phases of induced hypoglycæmia. The main e.g. changes were usually noted 1 hr. after insulin administration and included sinus arrhythmia, extra-systoles, nodal rhythm, enlarged QRS, left-sided preponderance, lowering of S-T segment, flat or negative T, and presence of a U-wave. In 30 cases studied during cardiazol convulsions, either arrhythmia or tachycardia was the main finding. In 10 cases out of both series, e.g. signs of heart-muscle lesions which had been absent before were found after the treatment. In cases showing slight e.g. changes it is recommended to administer insulin for the first 8—10 days in non-shock-producing doses. H. L.

Soldier's heart. L. F. Bishop, jun. (*N.Y. Sta. J. Med.*, 1941, **41**, 1915—1920).—A review. E. M. J.

Congenital heart disease during pregnancy. C. L. Mendelson and H. R. B. Pardee (*Amer. J. med. Sci.*, 1941, **202**, 392—402).—20 cases with different types of congenital heart disease are described who successfully and safely bore children. The literature is reviewed. C. J. C. B.

Sudden heart death. P. W. Morgan (*J. Kansas Med. Soc.*, 1941, **42**, 285—289). E. M. J.

Insufficiency of aortic valve due to syphilis. R. S. Jason (*Arch. Path.*, 1941, **32**, 409—419).—All the valve distortions found in 27 syphilitic hearts were due to 2 processes: inflammation of the aortic wall with destruction and dislodgment of the cusp attachments at the commissures, and a reparative fibrosis. C. J. C. B.

Production of cardiac hypertrophy in rats. G. Herrmann, G. Decherd, and P. Erhard (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 464—465).—Cardiac hypertrophy was regularly produced

by enclosing one kidney in a gauze-collodion capsule and removing the other. V. J. W.

Peripheral circulatory failure in diabetic acidosis and its relation to treatment. A. E. Schecter, B. H. Wiesel, and C. Cohn (*Amer. J. med. Sci.*, 1941, **202**, 364—377).—Dehydration and hæmoconcn. were shown in 8 patients with diabetic acidosis by elevated hæmoglobin, hæmatocrit, and serum-protein, with a decrease following administration of fluids. Peripheral blood flow in the hand, as measured by the plethysmograph, was reduced. Venous O₂ saturation was high in the presence of marked reductions in peripheral blood flow. The importance of the prompt restoration of blood vol. and the maintenance of adequate circulation in the treatment of diabetic acidosis is stressed. C. J. C. B.

Blood pressure in aged people. I. Miller (*N.Y. Sta. J. Med.*, 1941, **41**, 1631—1635).—Average systolic pressure in 853 males rose from 132 mm. in the group aged 50—54 years to 157 mm. in the group 85—89 years; the pulse pressure rose from 46 to 71 mm.; the diastolic pressure remained stable. In 128 women the average systolic pressure rose from 155 mm. at 50—54 years to 176 mm. at 80—84 years; pulse pressure rose from 61 to 82. Blood groups were found in normal proportion in these groups. Diabetes mellitus was associated with an increase in systolic pressure. E. M. J.

Thrombosis of abdominal aorta with obstruction of renal arteries. M. L. Siegel and C. F. Garvin (*Ohio Sta. J. Med.*, 1941, **37**, 750—751).—Case report. E. M. J.

Renal aspects of experimental and clinical hypertension. A. C. Corcoran and I. H. Page (*J. Lab. clin. Med.*, 1941, **26**, 1713—1726).—A review. C. J. C. B.

Neutralisation of angiotonin by normal and by ischaemic kidney blood plasma. M. Friedman (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 348—350).—Angiotonin (0.2—0.8 c.c.) is inactivated by 5 c.c. of normal blood in 1 hr. at 38°, but not by venous blood from an ischaemic kidney. V. J. W.

Bioassay of renin. O. Schales and F. W. Haynes (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 315—318).—1 unit is the dose per kg. needed to cause a rise in blood pressure of 30 mm. Hg in a rabbit. Injection is made in the left ear, where the blood pressure is then determined by the membrane manometer (Grant and Rothschild, *Physiol. Abs.*, 1934, **19**, 308). Average of 4 animals is taken, and the rise of pressure must be between 20 and 40 mm. V. J. W.

Results of thiocyanate therapy in hypertension. C. M. Kurtz, H. H. Shapiro, and C. S. Mills (*Amer. J. med. Sci.*, 1941, **202**, 378—392).—Subjective improvement (disappearance of headaches, dizziness, and tinnitus) was definite in 63% of 50 patients, fair in 20%, and disappointing in 17%. 6 patients exhibited poor tolerance for CNS' as evidenced by precordial pain (1), skin rash (3), or skin rash combined with falling hair (2). 2 patients felt worse while under treatment. One of these was very sensitive to CNS' and treatment had to be abandoned because of mental confusion and physical collapse even with blood-CNS' in the therapeutic range. Some degree of reduction of the blood pressure was obtained in every case; objective results were satisfactory in 78%, fair in 16%, and poor in 6%. Average pressures for the entire group dropped from 197/115 before treatment to 156/94 with treatment. In 4 instances the blood pressure remained normal for months or years after discontinuing CNS'. The optimum blood-CNS' level is 4—16 mg.-%. The maintenance dose of KCNS is 3—21 5-grain doses per week (average 9 doses). No deaths could be attributed to CNS' administration. C. J. C. B.

Results of surgical treatment of hypertension. G. J. Heuer and F. Glenn (*N.Y. Sta. J. Med.*, 1941, **41**, 1922—1926).—7 of the 23 patients submitted to anterior root section were alive 5½—6½ years later with marked subjective improvement. The blood pressure, after the post-operative fall, returned to its pre-operative level over a period of 2—3 years. 12 patients were treated by supradiaphragmatic resection of splanchnic nerves; of these 6 were alive 3—5½ years later. Subjective improvement was marked in half the operated cases although the blood pressure reached pre-operative levels within 6 months. 22 patients had a subdiaphragmatic splanchnicotomy and resection of first and second lumbar ganglia; of these 13 were alive from 2 months to 3½ years later. Subjective improvement was less marked than in the other groups. E. M. J.

VII.—RESPIRATION AND BLOOD GASES.

Efficient oxygenator for blood. J. H. Gibbon and C. W. Kraul (*J. Lab. clin. Med.*, 1941, 26, 1803—1808).—An oxygenator capable of introducing 30 c.c. of O_2 per min. into the blood of cats or dogs is described. The apparatus deals with rates of blood flow of 100—500 c.c. per min. Up to 300 c.c. per min. the blood is saturated with O_2 even with marked degrees of venous unsaturation, at rates of flow up to 450 c.c. per min. only if the venous unsaturation is within the normal range. Foaming of the blood does not occur, and hæmolytic is slight in periods up to 45 min.

C. J. C. B.

Survival of respiratory (gaspings) mechanism in young animals subjected to anoxia. W. A. Selle and T. A. Witten (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 495—497).—Isolated heads of rats under 6 weeks of age show 2 periods of gasping mandibular movements, one lasting 20—80 sec., and a second, after an interval of 30—50 sec., lasting at first 20—40 min., and decreasing to zero by the 6th week. These movements are not altered by sensory stimuli but are abolished by cooling or anesthetics.

V. J. W.

Hyperventilation syndrome. G. H. Anderson (*Northw. Med.*, 1941, 40, 243—245).—A review and case report.

E. M. J.

Modification of resistance to anoxia, with especial reference to high-altitude flying. A. L. Barach, M. Eckman, and N. Molomut (*Amer. J. med. Sci.*, 1941, 202, 336—341).—In 18 inhaling smokers, average arterial blood- CO concn. was 5.7% after smoking 20 cigarettes from 9 a.m. to 4 p.m.; in 9 subjects the CO concn. was 5—10%. This may impair resistance to anoxia when the pilot is travelling without O_2 at altitudes of 10,000—12,000 ft. or breathing 100% O_2 at 34,000—40,000 ft. Thyroidectomised rats show increased resistance to very high altitudes. Normal rats die at 34,000 ft. in 2 hr., whereas thyroidectomised animals survive at 42,000 ft. Most thyroidectomised rats survived for 3 weeks in a chamber kept containing 6% of O_2 , whereas a similar % of normal rats die in 12—36 hr.

C. J. C. B.

Capillary micro-respirometer. J. Tobias and R. W. Gerard (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 531—533).—The apparatus previously described (*Physiol. Abs.* 1934, 19, 239) is improved by the addition of a 0.2-mm. capillary tube containing an indicator drop of isodecane. Gas vol. changes of 0.001 cu. mm. can be determined.

V. J. W.

Occupational asthma and vasomotor rhinitis. L. Sternberg and A. H. Sorrell (*N.Y. Sta. J. Med.*, 1941, 41, 1649—1652).—A review of the industries affected.

E. M. J.

Method for instilling iodised oil in trachea. J. R. Jarvis (*Ohio Sta. J. Med.*, 1941, 37, 746).—A catheter with an additional small hole 4—6 cm. from the tip is used, through which is threaded a silk thread to be sutured at the tip of the catheter. This allows the tip to be bent at any desired angle.

E. M. J.

Röntgen treatment of pneumonia [in guinea-pig]. C. Fried (*Radiology*, 1941, 37, 197—202).—The lungs of guinea-pigs irradiated 6—24 hr. after the intratracheal injection of a suspension of *Staph. aureus hemolyticus* producing normally a non-fatal pneumonia within 6 hr. showed 33—48 hr. later marked macro- and micro-scopical differences from the non-irradiated lungs. The leucocytic infiltration was less pronounced and had resolved at a time when the non-irradiated lung still showed swelling, redness, and areas of black infiltration. (No doses are given.)

E. M. J.

Amniotic fluid in lungs of still-born and new-born infants. H. Yamamura (*Japan. J. Obstet. Gynec.*, 1939, 22, 350—360).—In autopsy of 24 still-born or new-born infants amniotic fluid was found in the lungs of 12. The fluid was evenly distributed through the lung and was sterile.

P. C. W.

VIII.—MUSCLE.

Birefringence and contractile power of muscles during atrophy due to upper neurone lesions or tenotomy. E. Fischer (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 277—279).—In such atrophy, contractile power and birefringence are unimpaired after 3—5 weeks, but in atrophy due to lower neurone lesions both are diminished at that time though they are unimpaired for 9—10 days.

V. J. W.

IX.—NERVOUS SYSTEM.

Device for fixing brain and spinal cord in one piece. T. S. Rosen and G. W. Lubinsky (*J. Lab. clin. Med.*, 1941, 26, 1809—1810).—A tank with a bent wire arrangement inside, so that the brain and spinal cord are supported, is described.

C. J. C. B.

Neurological analysis of constitution. Y. T. Loo (*Contr. Biol. Lab. Sci. Soc. China, Zool. Ser.*, 1941, 15, 121—136).—A review of constitutional human types with special reference to neurological behaviour.

J. D. B.

Cause of side ache ("stitch"). R. B. Capps (*Arch. intern. Med.*, 1941, 68, 94—101).—114 attacks of "stitch" in 55 normal subjects were observed. The main characteristics were a const. relation to exertion, a tendency to occur after eating, localisation usually in the right or left upper quadrant of the abdomen, relief from bending over or from local pressure, and a tendency to aggravation in cold weather. Previous theories of its causation are shown to be untenable and it is suggested that the pain is due to anoxia of the diaphragmatic muscle.

C. A. K.

Effects of some drugs on crossed phrenic phenomenon. A. M. Seligman and W. A. Davis (*Amer. J. Physiol.*, 1941, 134, 102—106).—In cats and rabbits (dial anaesthesia) with spinal hemisections at C_2 and consequent ipsilateral respiratory hemiplegia, crossed respiratory contractions of the paralysed diaphragm were produced by prostigmine and after acetylcholine when protected by prostigmine. Permanent crossing occurred in 1 cat on section of the vagi after a reversible crossing with asphyxia. In 1 cat and 4 rabbits in which reversible crossed contractions had been produced by prostigmine and by acetylcholine protected by prostigmine, permanent crossing occurred on section of the vagi. Strychnine produced crossing; section of the active phrenic is the most effective means of producing crossed contractions. Species differences with regard to crossed phrenic phenomenon are only quant.

M. W. G.

Subcortical (passive) optokinetic nystagmus in lesions of midbrain and vestibular nuclei. N. P. Scala and E. A. Spiegel (*Confinia Neurol.*, 1940, 3, 53—73).—Optokinetic nystagmus, as usually tested, depends on the attention of the individual and can be abolished by lesions of the occipital cortex, but the subcortical type, appearing when all or the majority of the objects within the visual field move in the same direction, is independent of attention and may be elicited in rabbits, dogs, and monkeys after extirpation of the cerebral hemispheres. It was impaired or abolished in cats and dogs by lesions of the contralateral superior colliculi. After injuries to the vestibular nuclei, the frequency of the resulting "spontaneous" nystagmus was increased by optokinetic impulses synergic in direction with the central vestibular impulses, but the frequency was diminished, or the nystagmus was reversed in direction, by optokinetic impulses of opposite direction. Larger lesions of the vestibular nuclei, even when sparing the reticulate substance, abolished subcortical optokinetic nystagmus completely. It is inferred that the vestibular nuclei receive impulses not only from the labyrinth and frontal and occipital cortex but also from subcortical ganglia, such as the superior colliculi.

H. L.

Retrograde cell changes in inferior olives following cerebellar injury. A. Brodal (*Z. ges. Neurol. Psychiat.*, 1939, 166, 640—704).—Cerebellar lesions were produced in mice and rabbits. Thionin-stained sections of the contralateral inferior olive showed chromatolysis, limited to the central part in adult animals killed 4 days after the injury, but more widespread, and accompanied by disappearance of many cells, in young animals. In adult animals killed 16 days after the injury half the cells had disappeared and most of the remaining cells had become atrophic. Glial proliferation was present in all, but more marked in young animals. The difference between the findings in young and adult animals may be related to difference in myelination.

H. L.

Functional localisation within anterior cerebellum. G. J. Connor (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 205—207).—Removal of half the culmen in dogs, cats, or monkeys causes increased tone and reflexes in the hind limb of the same side. Removal of half the posterior centralis lobe does the same for the fore limb, and of the anterior centralis for the extensors of

the neck. Removal of the lingula causes disequilibrium and exaggerated labyrinthine tonic effects. V. J. W.

Unusual symptomatology with tumours of cerebellum, based on 158 verified cases. F. C. Grant, J. E. Webster, and L. M. Weinberger (*Amer. J. med. Sci.*, 1941, 202, 313—329).—A general review. The commonness of motor convulsions or attacks of loss of consciousness and the occasional presence of visual field defects are stressed. C. J. C. B.

Mammalian end brain. I. Septum. Y. T. Loo (*Contr. Biol. Lab. Sci. Soc. China, Zool. Ser.*, 1941, 15, 29—67).—An account of the mammalian septal region based on the study of sections stained by the methods of Weigert, Nissl, and Ranson of the brain of *Vesperugo*, *Erinacus*, *Manis*, *Males*, cat, dog, pig, and monkey. The septal region is divided into the precommissural and the paracommissural body. In the precommissural body are found the medial and lateral septal nuclei and a part of the nucleus of the diagonal band. The paracommissural body consists of the nucleus septalis dorsalis, the bed nucleus of the anterior commissure, the nucleus septalis triangularis, and the nucleus septo-fimbrialis. The fibre connexions of these nuclei are analysed and it is concluded that the precommissural body is a centre concerned with the correlation of olfactory, visceral, and cortical areas, while the paracommissural nuclei constitute relay stations for the hippocampal fibres descending to the hypothalamus and epithalamus. Functionally the area is the highest subcortical vegetative centre of the brain. J. D. B.

Production of artificial tumours in the brains of cats. J. W. Ward and S. L. Clark (*J. Lab. clin. Med.*, 1941, 26, 1778—1783).—Foreign bodies of wax or lipiodol were placed on various parts of the brains of animals. The masses gave rise to localising symptoms, and chronic increased intracranial pressure. An acute rise of intracranial pressure may develop with rapid injection of the wax mixture; hydrocephalus may develop and become a factor in the production of the symptoms. Some symptoms of decerebration characterise this state. C. J. C. B.

Status marmoratus [Vogt's disease] as example of system-like cerebral lesions of vascular origin. W. Scholz, J. Wake, and G. Peters (*Z. ges. Neurol. Psychiat.*, 1938, 163, 193—232).—8 cases are reported. The hypothesis that status marmoratus is a heredo-degenerative anomaly of the striatal area is adversely criticised. It is attributed to circulatory disturbances, in postnatal life, of varying aetiology and is frequently accompanied by lesions in other functionally unrelated areas. H. L.

Vogt's disease [status marmoratus]. I. Husemann (*Allg. Z. Psychiat.*, 1939, 111, 246—277).—In the paternal line of 2 sisters suffering from bilateral atretosis, 1 individual was affected by the same condition and 9 members showed a forme fruste. No member of the maternal line was affected. Intellectual and character defects were frequent in the father's family. It is held that status marmoratus is dominantly transmitted by a gene of varying penetrability. H. L.

Histopathology of presenile and senile central nervous lesions. I. Types of senile plaques and of degenerative process in grey matter. H. Jacob (*Z. ges. Neurol. Psychiat.*, 1939, 166, 313—341).—68 cases were studied and classified. H. L.

Bulbar, pontal, and mesencephalic astrocytoma. O. Foerster and O. Gagli (*Z. ges. Neurol. Psychiat.*, 1939, 166, 497—528).—12 cases are reported in detail. H. L.

Developmental anomaly of cerebral cortex. V. Nicolajev (*Z. ges. Neurol. Psychiat.*, 1938, 163, 566—574).—In a woman, aged 71, with moderate degree of mental debility and occasional epileptic attacks, the frontal, orbital, central, and parietal gyri of both hemispheres showed a verrucous surface and some pachygyria and neuroglial and mesodermal hyperplasia. Agyria was present at the posterior basal cortex; there was no heterotopia in the white matter. H. L.

Creutzfeldt-Jakob disease [spastic pseudo-sclerosis]. J. Jansen and G. H. Monrad-Krohn (*Z. ges. Neurol. Psychiat.*, 1938, 163, 670—704).—A case is reported and the literature critically discussed. H. L.

Temporo-occipital Jacksonian epilepsy. K. von Sántha (*Z. ges. Neurol. Psychiat.*, 1938, 163, 432—440).—A case is described with attacks of transient blindness, preceded by a

hallucinatory (both visual and auditory) aura, accompanied by conjugate deviation of the eyes and head rotation to the left; left-sided miosis, and tonic-clonic convulsions beginning in left face and arm. The lesion (atrophy resulting from a focus of hæmorrhagic encephalomalacia) involved Brodman's areas 37, 19, and 22. H. L.

Partial continuous epilepsy in fronto-thalamic lesions. R. Kautzky and E. Stengel (*Z. ges. Neurol. Psychiat.*, 1938, 163, 362—366).—In a case showing typical grand mal seizures followed during the last days of life by continuous localised clonic spasms, hæmorrhagic foci were found in contralateral frontal lobe and contralateral thalamus. H. L.

Studies of metabolism in endogenous psychoses, especially with regard to liver function. G. Lundquist (*Z. ges. Neurol. Psychiat.*, 1939, 166, 546—556).—In cases of advanced schizophrenia body temp., diuresis, excretion of urea, and urine colour (Heilmeyer's F_0 val.) followed the normal 24-hr. rhythm (Forsgren). Rona's test for quinine-resistant lipase and Heilmeyer's test for serum colour gave normal results in schizophrenic and depressive cases. H. L.

Metabolism of phosphatides in cerebrospinal fluid. I. Micro-method for extracting phosphatides. F. Roeder (*Z. ges. Neurol. Psychiat.*, 1939, 166, 557—567).—A method is described for quant. extraction of phosphatides in 0.5—1 c.c. of c.s.f. H. L.

Normal electroretinogram. J. R. Cavanagh and H. B. Gwynn (*Med. Ann. Columbia*, 1941, 10, 326—330).—A review. E. M. J.

Cortical extinction in convulsions. R. Meyers (*J. Neurophysiol.*, 1941, 4, 250—265).—A major convulsion in men under operation for paroxysmal convulsive disorders is followed by a period of cortical extinction which is demonstrable (a) by the unresponsiveness of the exposed cortex to liminal and supraliminal stimuli and (b) by the essentially isoelectric character of the cortical electrogram. Restoration of cortical excitability is indicated by a slow and irregular subsidence of the isoelectric character of the electrographic tracings and by the return of cortical potentials which resemble those of the control period. The evidence suggests a physiological account for certain phenomena observable in the clinical syndrome known as status epilepticus as well as in the more sporadic single convulsions. S. Cr.

Mental diseases due to chronic rheumatic heart disease [leading to secondary brain changes]. W. L. Bruetsch (*Z. ges. Neurol. Psychiat.*, 1939, 166, 4—23). H. L.

Mechanism and treatment of headache. J. W. Lynch (*Neur. Med.*, 1941, 40, 246—250).—A review. E. M. J.

Vascular pattern in Ammon's horn. R. Altschul (*Z. ges. Neurol. Psychiat.*, 1938, 163, 634—642).—Sommer's "sector" of the hippocampus major receives blood from 12—15 arteries varying in arrangement from case to case, and not from one single "sector-vessel." The hypothesis that sclerosis of this area results from an anatomical peculiarity of the "sector-vessel" seems unfounded. H. L.

Nervous lesions in carbon disulphide poisoning. C. Baumann (*Z. ges. Neurol. Psychiat.*, 1939, 166, 568—580).—A case is reported showing a cerebellar syndrome. In cats poisoned with CS_2 central nervous lesions were found in Nissl preps.; after chronic poisoning they were more advanced than in acute poisoning, including in the former widespread cytoplasmic, and to a smaller degree nuclear, changes in cerebral cortex, basal ganglia, brain-stem, medulla oblongata, and cerebellar Purkinje layer. H. L.

Late development of epilepsy after carbon monoxide poisoning. O. Schiersmann (*Z. ges. Neurol. Psychiat.*, 1938, 163, 656—669).—A case is reported in which some months after CO poisoning attacks of torsion movements of the trunk occurred; 14 years later epileptic seizures associated with torsion and athetoid movements developed. Encephalography showed atrophy of frontal, parietal, and occipital areas, enlargement of 3rd and lateral ventricles, and possibly hypertrophy of the choroid plexus. H. L.

Bühler's and Hetzer's tests for young children. P. Feitscher (*Arch. Psychiat. Neurol.*, 1939, 109, 699—720).—The method devised by Bühler and Hetzer for estimating intelligence and basic trends of behaviour in children up to 8 years comprises a series of 190 tests of mostly play- (as opposed to exercise-)

character. Originally developed from study of Viennese children, it proved adequate and superior to other methods for testing Dutch urban children; any quant. evaluation of the tests is, however, adversely criticised. H. L.

Inheritance of manic-depressive insanity. Parental and filial generations. E. Slater (*Z. ges. Neurol. Psychiat.*, 1938, 163, 1—47).—138 cases were studied. Morbidity rate for manic-depressive insanity in parents and children was 11.5% and 22.2% respectively, and when questionable and suicide-cases in parental and filial generations were included it was 17.5% and 26.4%, the former figures exceeding by 30 or 60 times respectively the morbidity rate in an average population. Morbidity rate for schizophrenia in these generations (0.8% and 3.1% respectively) equalled the average. While no definite conclusions seemed justified regarding the type of hereditary transmission of manic-depressive insanity, the present material disproved the hypothesis that the factor involved is coupled with a sex-linked factor. H. L.

Clinical and genetic studies on "congenital mental deficiency." F. Laubenthal (*Z. ges. Neurol. Psychiat.*, 1938, 163, 233—288).—Cases are reported of congenital word-blindness, congenital word-deafness, mental deficiency associated with auditory lesions, and idiocy with ichthyosis in uniovular twins. Data are given on apparently related symptoms observed in the patients and in members of their families. It is stressed that each of the mentioned conditions represents frequently only the outstanding sign of a syndrome and that each of them may occur in a variety of genetically different syndromes. H. L.

Psychiatric-genealogical studies on twins in mental deficiency schools and on their families. A. Juda (*Z. ges. Neurol. Psychiat.*, 1939, 166, 365—452).—392 cases were studied out of 488 twins found among 20,212 pupils of mental deficiency schools in Southern Germany. Amongst the 79 uniovular twins, all the partners were also mentally deficient, 90% of them to the same or a closely related degree as their partner, whilst a concordance of 45% was found in the biovular series and one of 58% among those biovular twins in whom exogenous aetiology could be excluded. Marked physical abnormalities and congenital defects of the sense organs were frequent and in the uniovular cases usually affected both partners. H. L.

Blood-pantothenic acid values in multiple sclerosis. L. Siegel, T. J. Putnam, and J. G. Lynn (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 362—364).—Blood-pantothenic acid was normal in 6 patients. V. J. W.

Action of thiophen on central nervous system. T. Upners (*Z. ges. Neurol. Psychiat.*, 1939, 166, 623—645).—Thiophen was given subcutaneously to dogs (avoiding induction of epileptic fits) until ataxia developed; the animals were killed 1—35 days later. In dogs with marked clinical symptoms focal cerebellar lesions of vascular origin were found, involving the granular layer, especially of the lingular and nodular regions of the vermis and accompanied by glial proliferation. In young animals, the clinical syndrome was milder and the lesions were more diffuse but affected the same areas. Lesions of the fascia dentata were found in one case; the bulbar, pontine, and mesencephalic focal lesions resembled those of acute superior poliomyelitis. Liver, kidneys, and spleen were affected as in chronic Hg- or P-poisoning; adrenals, pancreas, thyroid, and heart muscle were not damaged. H. L.

Treatment of neurologic changes complicating pernicious anaemia. H. W. Woltman and F. J. Heck (*Minnesota Med.*, 1941, 24, 653—658).—A review. E. M. J.

Combined alkaloidal treatment of Parkinsonism. A. Simon and J. L. Morrow (*Med. Ann. Columbia*, 1941, 10, 253—258).—25 cases of postencephalitic Parkinsonism and 7 of extrapyramidal disease with hyperkinetic signs were treated with rabellon tablets containing 0.45 mg. of hyoscyamine, 0.037 mg. of atropine, and 0.012 mg. of scopolamine; the daily maintenance dose averaged 3 times 5 tablets. Some improvement was seen in 11 in the first and 1 case in the second group. E. M. J.

Action of vitamin-B₁ on postdiphtheritic paralysis. Y. Dieckhoff (*Mtschr. Kinderheilk.*, 1940, 82, 53—62).—Vitamin-B₁ was useless in postdiphtheritic paralysis of guinea-pigs (17 guinea-pigs were given daily 200 µg. of -B₁ subcutaneously after injection of 0.004 c.c. of diphtheria-formol toxoid).

-B₁ had no effect in 138 children with early or late paralysis. Plasma-aneurin content in healthy children aged 7—13 is 5.5—128 µg. (average 81). In the 2nd or 3rd week of toxic diphtheria plasma-aneurin was decreased (average 6 µg.). There is no relation between postdiphtheritic neuritis and the temporary decrease of plasma-B₁. M. K.

Use of β-erythroidine hydrochloride in metrazol therapy. J. M. Williams (*Ohio Sta. Med. J.*, 1941, 37, 849—854).—β-Erythroidine in 3.3% solution was injected intravenously at a rate of 100 mg. per sec., the initial dose being 400 mg. The first symptom was dizziness, then there was oculomotor paralysis with drooping of eyelids, the face became expressionless, the tongue unwieldy and phonation difficult, limpness starting in the neck muscles, and finally patellar clonus. The pulse rate at first rose by 6—8 beats, and then dropped 10—20 beats below the initial reading with similar variations in blood pressure. All the changes occurred within 30 sec. of the onset of ptosis. Metrazol was then injected immediately after withdrawal of the erythroidine needle, and the resulting convulsions were much diminished in intensity. The full course was given in 15 patients, 4 of whom showed minute compression fractures of vertebrae, with results equal to metrazol therapy alone. 6 cases were stopped after an average of 2 injections, mostly because of cardiovascular complications amounting to cardiac arrest in 2 cases, one of which died (after 800 mg. of erythroidine and 4 c.c. of metrazol); the other (after 1000 mg. of erythroidine) responded to intra-cardiac adrenaline and intravenous prostigmine. E. M. J.

Curare and scopolamine in convulsive therapy. R. J. Bennett (*Northw. Med.*, 1941, 40, 280—283).—Intocostin, a standardised curare prep., was used as a premedication in 295 metrazol convulsions in 36 patients. 0.5 mg. per lb. body-wt. was given as the initial dose injected over 60—90 sec.; the dose was then increased to 0.625 mg. and the injection given in 45—60 sec. Metrazol was given at a stage when the patient was barely able to lift head or legs, which was reached in 2—5 min. The intensity of the convulsion as well as magnitude of post-convulsive hyperventilation were markedly reduced. The therapeutic effect of metrazol was not affected. One case showed severe respiratory depression but responded to artificial respiration, and the injection of 1 c.c. of adrenaline intravenously and 1 c.c. of prostigmine intramuscularly. Premedication with $\frac{1}{100}$ — $\frac{1}{50}$ grain of scopolamine alone reduced anxiety in most cases, and if used with curare eliminated post-convulsive excitement. E. M. J.

Cerebral lesions due to insulin-shock therapy. J. Cammermeyer (*Z. ges. Neurol. Psychiat.*, 1938, 163, 617—633).—A case is reported showing widespread "ischemic nerve cell lesions" (Spielmeyer) of the cerebral cortex (mainly upper layers) and striatum. H. L.

Epilepsy induced by cardiazol [in rabbits]. P. O. Andrell and S. Hanson (*Z. ges. Neurol. Psychiat.*, 1939, 166, 537—545).—Nothing abnormal was detected histologically in brain and heart of animals which had survived 11—17 seizures. H. L.

Role of spinal roots in human tetanus. L. Benedek and A. Juba (*Confinia Neurol.*, 1939, 2, 345—355).—Cases are reported confirming earlier findings of lymphocytic and/or granulocytic infiltrations of the connective tissue of the spinal roots and of the pia mater during the early stage of the disease. H. L.

Spontaneous and reflex emotional responses differentiated by lesions in diencephalon. M. M. Kessler (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 225—227).—Destruction of hypothalamus in cats and monkeys abolishes spontaneous but not reflex emotional demonstrations. If the ventro-median part of the thalamus is also destroyed there are no emotional demonstrations at all. One-sided destruction of hypothalamus or ventro-median thalamus causes increased emotional response and instability. V. J. W.

Calcium therapy in control of intracranial pressure with special reference to newborn infant. W. R. Shannon (*Arch. Pediat.*, 1941, 58, 495—503).—Parathyroid extract was employed successfully in 2 cases in a dose of 0.5—1.5 c.c., depending on the size of the infant and the severity of the case. Injections may be repeated at intervals of 4—6 hr. until improvement begins. C. J. C. B.

Cerebrospinal fluid-protein values determined by tyrosine equivalent method. T. U. Marron (*Amer. J. med. Sci.*, 1941,

202, 330—333).—The normal range of total c.s.f.-proteins in 100 persons was 15.4—46 mg.-% (average 31.6). The average val. for females was 5 mg.-% less. Dehydration did not affect the protein val. C. J. C. B.

Choline level in cerebrospinal fluid in organic nervous and in mental diseases. K. Yuhki (*Arch. Psychiat. Nervenkr.*, 1939, 109, 235—246).—A modification of Takayama and Wada's micro-test for choline is described and comparative findings are given of this method and of biological assay. Increase in c.s.f.-choline was found in 21 out of 31 cases of general paralysis of the insane, in epilepsy (6 out of 9 cases), manic-depressive insanity (11 out of 23), schizophrenia (9 out of 20), but in only 1 of 8 cases of neuro-syphilis or tabes dorsalis. H. L.

Bilateral abducens palsy following lumbar puncture. B. Dattner and E. W. Thomas (*N.Y. Sta. J. Med.*, 1941, 41, 1660—1662).—A man, aged 36, who during 11 years had been treated irregularly for syphilis and who showed a Wassermann-positive c.s.f. developed bilateral abducens palsy one week after a lumbar puncture, which had been followed by immediate severe headaches, nausea, and vomiting. Complete recovery occurred within 3 months. E. M. J.

Ambrus' colloidal reaction in cerebrospinal fluid. S. Strnad (*Z. Kinderheilk.*, 1938—39, 60, 428—435).—The diagnostic val. of Ambrus' reaction (*Jahrb. Kinderheilk.*, 1933, 140, and 1934, 142), was examined in 300 cases of serous and tuberculous meningitis. The reaction consists of addition of 0.2 c.c. of K oleate and 0.2 c.c. of 20% sulphosalicylic acid to 2 c.c. of fresh c.s.f. which form a white ppt. in both normal and pathological fluids. Ambrus I—II (the ppt. rises to the fluid level or remains in suspension for hr. or days) is characteristic of non-sp. meningitis; III—IV (ppt. drops partly or completely to the bottom in 15—45 min.) is sp. for tuberculous meningitis. M. K.

Vitamin-C level in cerebrospinal fluid. M. Kasahara and I. Gammo (*Z. ges. Neurol. Psychiat.*, 1938, 163, 551—553).—When 30 or 70 mg. of ascorbic acid per kg. body-wt. were injected subcutaneously in human infants or monkeys respectively, c.s.f. obtained 4 and 24 hr. after the injection showed an increase in vitamin-C content. H. L.

X.—SENSE ORGANS.

Testing eyes of school children. T. H. Eames (*Amer. J. Ophthalm.*, 1941, 24, 1170—1173).—A series of tests of visual function which can be applied by school teachers is described. The tests are: (1) visual acuity test (Snellen); (2) repetition of above with +1.5 D lens; (3) and (4) co-ordination test and fusion test using an ordinary hand stereoscope with appropriate diagrams. Of all children failing in any test, 62% fail in test (1) and an additional 19% in test (2). W. T. A.

What can be expected of orthoptic training? E. Knauber (*Amer. J. Ophthalm.*, 1941, 24, 1022—1024).—The indications for orthoptic training are discussed. W. T. A.

Management of strabismus at Milwaukee Childrens' Hospital. J. B. Hitz (*Amer. J. Ophthalm.*, 1941, 24, 1019—1022).—The routine of treatment adopted and its results are recorded. W. T. A.

Stereoscope as orthoptic instrument. A. Links (*Arch. Ophthalm.*, N.Y., 1941, 26, 389—407).—The ordinary stereoscope with Wells charts can be used for measuring heterophoria and for orthoptic exercises in patients with normal retinal correspondence. W. T. A.

Convergence insufficiency. B. Cushman and C. Burri (*Amer. J. Ophthalm.*, 1941, 24, 1044—1052).—A review of 80 patients. Convergence exercises relieved symptoms without necessarily eliminating exophoria. W. T. A.

Fusional movements in permanent strabismus. Study of rôle of central and peripheral retinal regions in the act of binocular vision in squint. H. M. Burrian (*Arch. Ophthalm.*, N.Y., 1941, 26, 626—650).—The patient looked through polaroids at a screen on which were projected two superimposed test figures each of which he saw monocularly. 75 patients with horizontal deviation and good vision in each eye were examined. None had normal binocular vision but a large no. followed peripheral fusional stimuli. The patients in whom such stimuli were effective showed as a rule sensorial disturbance (suppression or change in mode of localisation B 3 (A., III.)

or in angle of squint) when the two foveas were stimulated simultaneously. Patients who did not follow peripheral fusional stimuli usually did not show sensorial disturbances of the central parts of the retinas but suppressed the images of one retinal periphery. W. T. A.

Experimental transposition on extraocular muscles in monkeys. P. J. Leinfelder and N. M. Black (*Amer. J. Ophthalm.*, 1941, 24, 1115—1119).—Transposition of insertions of med. and inf. recti in *Macacus rhesus* was followed by return of co-ordinated rotations in 3 days and of convergence in 6 days. When the sup. and lat. recti were transposed in addition there was slower return of co-ordinated rotations and some residual disturbance of ocular movements. When the sup. oblique was also divided there was no recovery. Keeping the animal in the dark did not lengthen the time of return of co-ordination. W. T. A.

Curvature of bulbus oculi. G. Mihályhegyi (*Ophthalmologica*, 1941, 101, 290—299).—On fitting contact glasses the curvature of the sclera was found to deviate from a spherical contour whenever corneal scars were present. A modification of Csapody's method of casting moulds for living eyes is described. A. GL.

Metabolism of carbohydrates in preserved cornea. E. I. Gelelovitsch and T. P. Schesterikova (*J. Méd. Ukraine*, 1940, 10, 291—302).—The eyes were placed in a refrigerator at 3° or 5°. Most glycogen was utilised by the cornea during the first 24 hr. but no simultaneous increase of sugar was observed; the abs. amount of reducing substances changes little during the first few days and diminishes considerably only after 12—14 days. Glycogen breakdown is followed by accumulation of lactic acid, which increases markedly on the 6th day. Amylolytic activity remains unchanged throughout; glycolytic activity is insignificant during the last days (12th—14th day). M. K.

Band-shaped opacity of cornea associated with juvenile atrophic arthritis. R. T. Wong (*Arch. Ophthalm.*, 1941, 26, 21—24).—Case report. A. GL.

Riboflavin therapy in non-vascular keratitis. E. McKay (*Med. Ann. Columbia*, 1941, 10, 290—292).—5—10 mg. of riboflavin daily by mouth caused improvement in 4 cases of phlyctenular keratitis, 3 of superficial punctate keratitis, 1 of sclerosing keratitis, and 4 of corneal ulceration, some of which had previously had prolonged local treatment. E. M. J.

Protein content of aqueous humour in man. P. C. Kronfeld (*Amer. J. Ophthalm.*, 1941, 24, 1121—1131).—The protein content of aqueous withdrawn by puncture of the ant. chamber was estimated from the turbidity produced by sulphosalicylic acid. Repeated determinations on the same eye showed variations of less than $\pm 15\%$ of the mean. The protein content varied between the same limits, 5—16 mg.-%, in normal controls as well as in retro-bulbar neuritis from dietary deficiency, primary optic atrophy, and primary compensated glaucoma. W. T. A.

Rôle of adrenaline in formation of intraocular fluid. J. S. Friedenwald and W. Buschke (*Amer. J. Ophthalm.*, 1941, 24, 1105—1114).—Acid and basic dyes were injected intravenously in control and adrenalectomised rabbits and their distribution in the ciliary body of the excised eye was examined. In controls the acid dye was confined to the stroma, the basic dye to the epithelium. In adrenalectomised animals both dyes were evenly distributed; a drop of Ringer's solution containing adrenaline, 1 in 10⁷, added to the specimen restored the normal distribution in either case. In adrenalectomised rabbits the redox potential of the ciliary epithelium rose, that of the stroma fell; administration of adrenaline restored the normal state. Re-formation of aqueous, as shown by rise in intraocular pressure after paracentesis, was delayed in adrenalectomised rabbits; injection of adrenaline restored the normal rate. These results show that adrenaline is a link in the oxidative chain between ciliary epithelium and stroma and thus influences transport of water across the epithelium. W. T. A.

Distribution of sulphanilamide and its derivatives between blood and aqueous. S. D. Liebman and E. H. Newman (*Arch. Ophthalm.*, N.Y., 1941, 26, 472—477).—In the rabbit the ratio of aqueous concn. to blood concn. of sulphanilamide and sulphapyridine was 0.7, of sulphathiazole 0.2, and of sulphadiazine 0.5. Re-formed aqueous after paracentesis con-

tained a higher concn. In 4 patients examined post-mortem similar distributions were found.

W. T. A.

History of the crystalline lens. H. Chinn and J. G. Bellows (*Quart. Bull. Northwest. Univ. Med. School*, 1941, 15, 174—188).—A review.

A. S.

Röntgen measurement of visual acuity in cataractous eyes. R. R. Newell and W. E. Borley (*Radiology*, 1941, 37, 54—60).—Gold-leaf stencils with double holes of which the smallest patterns had a total diameter of 0.36 mm., corresponding with a visual angle of 1.25°, were used for Röntgen vision; the intensity was 100 r. per min. for 6 times 2 sec. (10 r. per min. were sufficient for the larger patterns). The dark adaptation curve for X-rays was similar to that for light; the energy threshold for retinal appreciation was 5000 times larger. Clinical application included the discovery of small scotomata and successful prediction in 80% of 43 cases of cataract who after operation had final vision of $\frac{3}{8}$ or better and in 9 out of 18 cases left with final vision of $\frac{3}{8}$ or worse.

E. M. J.

Congenital anomaly of fundus oculi. J. G. van Manen (*Arch. Ophthalm.*, N.Y., 1941, 26, 1—5).—Description of a case interpreted as ablatio retinae falciformis congenita and attributed to foetal adhesion of the wall of the peripheral hyaloid vessel with the inner layer of the retina.

A. GL.

Retinal hæmorrhages in the newborn. H. S. McKeown (*Arch. Ophthalm.*, N.Y., 1941, 26, 25—37).—In a study of the fundi of 498 newborn infants, retinal hæmorrhages were found in 42.1% during the first 48 hr. after birth. There was positive correlation between the incidence of retinal hæmorrhages and of abnormalities of birth (such as forceps delivery, breech presentation, protracted labour, cord strangulation, and unfavourable position of the head on entering the birth canal). All babies born by Cæsarean section, however, were free from hæmorrhages.

A. GL.

Fundi in vascular affections of brain. M. E. Kaschuk and S. A. Rovinski (*J. Méd. Ukraine*, 1940, 10, 319—326).

M. K.

Ophthalmoscopically visible retinal lesions in chronic glomerulonephritis. R. W. Graham (*Arch. Ophthalm.*, N.Y., 1941, 26, 435—465).—A study was made of the fundus oculi in 56 patients with chronic glomerulonephritis verified at autopsy. In 10 cases the fundi were normal throughout. The onset of a pure acute angiospastic retinitis without chronic retinal arteriosclerosis was seen in 31 cases; the mean subsequent duration of life was 4 months, the max. 22 months. 7 cases showed the anæmic type of retinitis with hæmorrhages. Chronic retinal arteriosclerosis combined with acute angiospastic retinitis was present in 8 cases; in these cases there was more marked renal sclerosis and higher blood pressure than in the others.

W. T. A.

Undulant fever with visual disturbances. L. W. Jones and J. L. Norris (*N.Y. Sta. J. Med.*, 1941, 41, 1625—1630).—81.4% of 111 cases examined for atypical ocular symptoms showed widening of the normal angioscotomata. 81.5% of these showed positive skin reactions indicative of undulant fever. Only 15.7% of the 19 cases with normal angioscotomata showed a positive skin reaction.

E. M. J.

Thiamin hydrochloride in treatment of trypanosomide amblyopia. P. J. Leinfelder and R. B. Stump (*Arch. Ophthalm.*, N.Y., 1941, 26, 613—616).—No effect was seen in 2 cases.

W. T. A.

Behaviour of visual purple at low temperature. E. E. Broda and C. F. Goodeve (*Proc. Roy. Soc.*, 1941, B, 130, 217—225).—The absorption spectrum of a solution of visual purple in a mixture of glycerol and water (3:1) is shown to be identical at room temp. with that of an aq. solution of equal concn., and to be unaffected by cooling to -73° in darkness and subsequently re-warming. At -73° the peak of the absorption curve is higher and sharper than at room temp., and at 515 $m\mu$. instead of at 505 $m\mu$. Irradiation at this temp. causes a smooth change of the spectrum, with a lower peak at about 511 $m\mu$. This reaction is independent of pH between 6.0 and 9.0, and is not further affected by irradiation for periods up to 2 hr. This reaction is considered to be identical with the primary photochemical change from visual purple to transient orange at room temp. When brought to room temp., either in darkness or in light, the secondary thermal reaction, converting transient orange into indicator-yellow, takes place. The velocity of the primary

reaction is about the same in water and glycerol-water at room temp. and in glycerol-water at -73° . Since the quantum yield is not far from unity over the range 20—60°, it must also be of the same order over the wider range from -73° . The secondary reaction, however, has a considerable temp. coeff. at room temp., and at -73° is immeasurably slow.

D. M. S.

Development of eye colours in *Drosophila*. Food level in relation to rate of development and eye pigmentation in *Drosophila melanogaster*.—See A., 1941, III, 955.

Dark adaptation characteristics of private school children measured with adaptometer. C. E. Palmer (*Amer. J. Publ. Health*, 1941, 31, 1063—1067).—Dark adaptation data from a single investigation of 175 children are analysed, and the val. of the stable visual threshold, attained after 30 min. in darkness, is discussed as an index of vitamin-A nutrition. The variability of the visual threshold is shown to decrease from the 20th min. onward, and reaches a min. by the 30—35-min. period. It is pointed out that a single demonstration of abnormally high visual threshold in an individual is not diagnostic of -A deficiency, but may be of val. in sorting out suspected cases.

D. M. S.

Light threshold. Its clinical evaluation. J. B. Feldman (*Arch. Ophthalm.*, N.Y., 1941, 26, 466—471).—Three types of night-blindness are distinguished: a nutritional form, due to vitamin-A deficiency, forms due to various diseases of the retina, such as choroiditis and retinitis pigmentosa, and true idiopathic night-blindness without accurately determined cause. The last form is said to be fairly common, and may be due in part to fatigue, neurosis, or intoxication. Data are discussed showing that a high proportion of cases of retinal arteriosclerosis, glaucoma, renal calculi, thyrotoxicosis, and certain hepatic diseases are associated with impaired dark adaptation. A large supplement of -A daily for several months failed to improve the dark adaptation in cases of retinitis pigmentosa.

D. M. S.

Vitamin-A deficiency in Newfoundland.—See A., 1941, III, 1034.

Bitôt's spots in Trinidad. V. M. Metivier (*Amer. J. Ophthalm.*, 1941, 24, 1029—1034).—Bitôt's spots (præ-xerosis conjunctivæ) are common, but clinical night-blindness relatively rare. The majority of cases occur in children. They are resistant to vitamin-A therapy, but improve slowly on a high-vitamin diet. The association of Bitôt's spots with angular stomatitis and phrynodema is considered a useful index of the state of nutrition in tropical countries. The conjunctival changes are considered a more reliable index of mild -A deficiency than night-blindness.

D. M. S.

Comparative value of blood plasma-vitamin-A concentration and dark adaptation as criterion of vitamin-A deficiency. O. Bodansky, J. M. Lewis, and C. Haig (*Science*, 1941, 94, 370—371).—The plasma-vitamin-A levels in the blood of infants from 3 weeks to 4 months of age were proportional to the -A intake. Impaired dark adaptation was not evident until the plasma vals. had fallen below 45 i.u. per 100 c.c., after several weeks on -A-free diet. It returned to normal within 1 month when a daily supplement of 150 i.u. of -A was added, although the plasma vals. remained abnormally low. The plasma val. is considered a more sensitive index of -A nutrition than dark adaptation.

D. M. S.

Retinitis pigmentosa with macular dystrophy. Report of a familial group. A. Sorsby (*Brit. J. Ophthalm.*, 1941, 25, 524—526).—Three sibs were affected; the two who were examined showed signs of the two conditions simultaneously.

W. T. A.

Anatomical basis for unitarian view-point regarding the three forms of familial amaurotic idiocy. K. Schaffer (*Arch. Psychiat. Nervenkr.*, 1939, 110, 459—464).—Strict limitation of the process to the nerve cells with sparing of the mesodermal elements is the sp. and uniform finding in infantile as well as in juvenile and adult forms. Only in the former, the only true amaurotic form, are the retinal ganglionic cells affected, while in most cases of the juvenile type the affection is linked with another genetic factor involving the retinal neuro-epithelium (retinitis pigmentosa). The systemic character of the disease (cerebellar in the infantile, extrapyramidal in the juvenile, type) may exclude a metabolic disturbance (storage disease) as primary factor.

H. L.

Central retinitis in girl aged eighteen years: recovery. R. Ford (*Brit. J. Ophthalm.*, 1941, 25, 521—523).—Prompt recovery followed medical measures to promote drainage of the nasal sinuses, though these were apparently healthy.

W. T. A.

Colour stereoscopic phenomenon. A. Loewenstein and G. Donald (*Arch. Ophthalm.*, N.Y., 1941, 26, 553—564).—When white figures on a red background are observed for a short time the background seems to change from a surface colour to coloured space in front of which the figures float. A more marked stereoscopic effect is seen when there are black figures adjacent to the white; the white seems to float well in front of the black. A less well marked effect is given by other combinations of colours including greys. The effect is clearly seen monocularly, though to a smaller degree.

W. T. A.

Theory and measurement of visual mechanisms. VI. Wave-length and flash duration in flicker. W. J. Crozier and E. Wolf (*J. Gen. Physiol.*, 1941, 25, 89—110; cf. A., 1941, III, 749).—The crit. flicker frequency contours for violet, blue, green, and red light were determined for the human eye, using a foveally fixated square 6.13° in width. The brightness of the colours was adjusted to be equal when below the colour threshold. The max. was sometimes higher for green, blue, and violet than for white. The results are considered in terms of distribution of cone thresholds and light. It is suggested that red excites most cones and violet least and that the smaller no. of cone units provides the largest no. of elements of effect.

K. J. W. C.

Clinical manifestations of oxygen lack.—See A., 1941, III, 981.

Deep cupping of nerve head in atrophy of optic nerve due to methyl alcohol. B. Friedman (*Arch. Ophthalm.*, N.Y., 1941, 26, 6—11).—Case report.

A. G. L.

Aplasia of optic nerve. H. G. Scheie and F. H. Adler (*Arch. Ophthalm.*, N.Y., 1941, 26, 61—70).—Review of literature and report of a case.

A. G. L.

Experimental research in ophthalmology. E. A. Spiegel (*Confinia Neurol.*, 1940, 3, 171—192).—A review of more recent publications.

H. L.

Oculogyric crises. R. M. Klemme (*Amer. J. Ophthalm.*, 1941, 24, 1000—1004).—A case is described, and others are reported, in which post-encephalitic oculogyric crises were abolished by surgical excision of the pre-motor cortex at the junction of the first and second frontal convolutions. This was the area immediately anterior to that part of the motor cortex of which faradic stimulation provoked the typical spasmodic eye movements.

W. T. A.

Vertical nystagmus following lesions of cerebellar vermis. E. A. Spiegel and N. P. Scala (*Arch. Ophthalm.*, N.Y., 1941, 26, 661—669).—The lobus posterior medianus of the cerebellum was removed from 10 cats. All showed vertical nystagmus for a few days after operation. The direction and intensity of the nystagmus varied; it was influenced to some extent by the position of the lesion and the posture of the head.

W. T. A.

Vestibular nystagmus. A. de Kleyn (*Confinia Neurol.*, 1939, 2, 257—292).—A review of experimental and clinical work (origin of the quick phase of vestibular nystagmus; influence of the cerebral hemispheres and of sensory stimuli on the reflex arc; phenomena of successive induction; combination of different forms of nystagmus; influence of nicotine on ocular muscles, their nuclei, and vestibular nuclei; nystagmus due to sensory stimulation of the external meatus in labyrinthectomised individuals; position-nystagmus).

H. L.

X-Ray therapy for benign otorhinological conditions. M. S. Ersner (*Penn. Med. J.*, 1941, 44, 1418—1422).

E. M. J.

Embryological development of middle ear of field mouse, *Microtus pennsylvanicus*. B. L. Truscott and P. H. Struthers (*J. Morph.*, 1941, 69, 329—346).—A detailed account of the development and ossification of the auditory ossicles and of Meckel's cartilage.

A. G. L.

"Suffocatory position" of epiglottis. G. Ackermann (*Virchow's Arch.*, 1939, 303, 412—422).—From clinical and pathological findings this shape of the epiglottis, whereby the softer lateral edges are approximated to each other to form a groove (omega shape), is not related to asphyxia; it

resembles the foetal shape and is a "maturation variante" without clinical significance. Its presence does not interfere with deglutition but possibly slightly with phonation.

J. A.

XI.—DUCTLESS GLANDS, EXCLUDING GONADS.

Cretin's response to typhoid inoculation. N. Hirschberg and I. P. Bronstein (*Amer. J. med. Sci.*, 1941, 202, 333—336).—The patient showed no agglutinins for the typhoid bacillus in his blood 6 weeks after 0.5 and 1.0 c.c. of ordinary typhoid vaccine. The administration of thyroid extract $\frac{1}{2}$ —1 grain a day induced agglutinin formation in 8 days.

C. J. C. B.

Capillaries in myxœdema. H. Zondek, M. Michael, and A. Kaatz (*Amer. J. med. Sci.*, 1941, 202, 435—439).—In 7 of 8 cases of myxœdema, the capillaries (ungual limbus) showed pronounced narrowness of the limbs. In some instances only the loops were recognisable. The no. of visible capillaries was reduced. On thyroïdin administration, the capillary picture as well as the clinical symptoms and the circulation time gradually returned to normal. No parallelism, however, could be established between the behaviour of the capillaries, the general condition, and the circulation time.

C. J. C. B.

Proteolytic enzyme activity of colloid extracted from single follicles of rat thyroid. E. De Robertis (*Anat. Rec.*, 1941, 80, 219—231).—A proteolytic enzyme which digested a gelatin substrate was present in colloid obtained from single follicles by micro-dissection. Within the physiological pH range the activity of the enzyme increased after the injection of pituitary extract containing thyrotropic factor. The addition of 1% KI to a normal diet increased its activity for a period of 5—12 days but later it fell below the normal level. The results indicate that an enzymic mechanism is involved in the hydrolysis of the colloid protein and in the reabsorption of the products of hydrolysis.

W. F. H.

Adrenal atrophy in status thymico-lymphaticus. T. C. Wyatt (*N.Y. Sta. J. Med.*, 1939, 39, 132—138).—Report of 7 cases of which 6 ended fatally and in which small adrenals together with (in 3 cases) atrophied adrenal cortices were found.

E. M. J.

Adrenal cortex. E. C. Kendall (*Arch. Path.*, 1941, 32, 474—501).—A general review.

C. J. C. B.

Changes in lipin content of adrenal gland of rat under conditions of activity and rest. C. Dosne and A. J. Dalton (*Anat. Rec.*, 1941, 80, 211—217).—Stimulation of the adrenal cortex by means of exposure to cold (-3° to -5°) or by subcutaneous injection of formaldehyde (0.2 c.c. of a 4% solution) and exhaustion produced cortical hypertrophy and decreased lipin content. Hypertrophy with decrease in lipin content is thus related to increased activity and increased production of adrenal cortical hormones.

W. F. H.

Prevention of postoperative adrenal insufficiency after unilateral adrenalectomy. M. E. Greenberger and J. H. Winer (*N.Y. Sta. J. Med.*, 1941, 41, 1665—1667).—A woman, aged 25, who complained of amenorrhœa, change of voice, and hirsutism coming on for a year was given intravenous infusions of 1 l. of physiological saline once and an injection of 3 c.c. of adrenal cortex extract twice daily for 4 days preoperatively. At operation an adrenal cortex carcinoma was removed and the previous treatment continued postoperatively, the dose of cortical extract being increased to 5 c.c. for a week. Convalescence was uneventful and complete in 2 weeks. Menstruation reappeared one month after the operation, the voice became more feminine again, and the hirsutism disappeared. Urinary excretion of androsterone was 2—3 mg. per day immediately after the operation and 30 mg. 9 months later when symptoms recurred and an abdominal mass became palpable.

E. M. J.

Variations in organ size caused by chronic treatment with adrenal cortical compounds. H. Selye (*J. Anat.*, 1941, 76, 94—99).—Experiments were carried out on rats which were chronically treated with deoxycorticosterone acetate. Short-term experiments produced thymus and splenic atrophy; no such atrophy was seen with prolonged treatment; in many cases there was hypertrophy. The organs possibly become resistant to atrophy-producing effects of the hormone. The adrenal cortical cells undergo atrophy; it may be that the

lymphatic organs enlarge as a consequence of the functional inactivation of the adrenal cortical cells. W. J. H.

Cellular response to insulin in adrenal of pigeons. R. A. Miller and O. Riddle (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 449—453).—Injection of 1–60 units of insulin is known to cause cellular proliferation, chiefly in the centre, of the adrenals, identical with that caused by adrenotropic hormone. These results are confirmed in hypophysectomised birds. V. J. W.

Treatment of infantile diabetes with depot insulin. S. Liebe (*Msehr. Kinderheilk.*, 1939, 80, 273–298).—Depot insulins protamine Zn insulin "Novo" and Surfen insulin Bayer were used; in the latter protamine is replaced by the anæsthetic Surfen (quinoline-urea compound) and Zn by Mg, the blood-sugar was restored to normal in 3 of 7 children and the fasting vals. decreased in nearly all cases. Two injections of depot insulin were necessary in every case, as a single larger injection often produces hypoglycæmic reactions after 3–4 hr. Combined administration of depot with ordinary insulin is contraindicated in prolonged treatment. The effect of depot insulin lasts for 24 hr. in mild cases, but in some patients the effect diminishes after 8 hr. In 3 of 7 cases infiltration occurred at the site of injection; in 1 case coma occurred 8 weeks after treatment. M. K.

Insulin poisoning. G. W. Kastein (*Z. ges. Neurol. Psychiat.*, 1938, 163, 322–361).—A case is reported which died 20 days after a prolonged artificially induced hypoglycæmic coma. It is argued that the widespread nerve cell lesions were due to both metabolic and vascular factors. H. L.

Pituitary dwarfism with atrophic rhinitis. I. P. Bronstein and N. D. Fabricant (*Amer. J. Dis. Child.*, 1940, 60, 1140–1146).—A case report. C. J. C. B.

Effect of deoxycorticosterone on pituitary and lactogen content. C. W. Turner and J. Meites (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 232–234).—Injection of 7–20 mg. of deoxycorticosterone acetate into guinea-pigs caused an increase of pituitary wt. but no increase in lactogen content. V. J. W.

Separation of thyrotrophic and luteinising hormones of pituitary. H. Jensen and S. Tolksdorf (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 223–225).—Thyrotrophic hormone was assayed by histology of thyroid in 4-day-old chicks and hypophysectomised rats. Luteinising hormone was assayed on hypophysectomised immature female rats (A., 1939, III, 905). On addition of $(\text{NH}_4)_2\text{SO}_4$ to a mixed extract from sheep pituitary, luteinising hormone is pptd. at 0.25–0.35 saturation, and thyrotrophic hormone at 0.35–0.5. p_H was 5–6. V. J. W.

Effect of an anterior hypophyseal extract on serum-calcium and -phosphorus. F. H. Snyder and W. R. Tweedy (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 234–236).—Daily injections of an alkaline extract into rats for 6 days caused no change in Ca and a doubtful increase in inorg. P of the serum. V. J. W.

Androgen and spermatogenesis in hypophysectomised guinea-pig. E. Cutuly (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 290–292).—3 mg. daily of testosterone propionate maintained tubules and spermatogenesis in 4 guinea-pigs for 60–155 days after operation. Interstitial cells atrophied and there was loss of wt. by adrenals. V. J. W.

First appearance of functional activity in pars intermedia in frog *Xenopus*. W. Etkin (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 425–428).—Embryos from which the pituitary primordium has been removed can be distinguished from controls by their contracted melanophores within 48 hr. of fertilisation. V. J. W.

Assay of chromatophorotropic hormone by means of excised lizard skin. C. Keaty and A. J. Stanley (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 403–404).—A small piece of skin from the leg of *Anolis carolinensis* is placed in cold Ringer's solution until the melanophores are fully contracted. It can then be transferred on a slide to a drop of refrigerated filtered pituitary extract, and time for melanophore expansion determined. V. J. W.

XII.—REPRODUCTION.

Intrinsic nerves of immature human uterus. W. H. Brown and E. F. Hirsch (*Amer. J. Path.*, 1941, 17, 731–739).—Nerves pass from the ganglia on the lateral walls of the cervix into

the uterus accompanied by large blood vessels. The larger nerve trunks extend parallel to the long axis of the uterus and lie deep within the myometrium. Small branches extend from these trunks to the endometrium, without entering the epithelial cells, and form an intricate plexus in the lamina propria of the cervical canal. The nerve trunks to the upper portion of the body of the uterus ascend in the connective tissue of the broad ligaments or in the superficial layers of the myometrium at the periphery of the uterine wall. No nerve endings were found in the vascular walls or sensory corpuscles in the uterine wall or nearby connective tissues. C. J. C. B.

Functional activity of smooth muscle tumours of uterus. C. S. Bryan and S. Warren (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 356–358).—Strips of myomatous tissue removed at operation responded to pituitrin as frequently as strips of normal uterus. They reacted rather better to histamine, but no contractions in either tissue were obtained to ergot. V. J. W.

Effect of calcium and potassium ions on isolated rat uterus. K. Okai (*Japan. J. Obstet. Gynec.*, 1939, 22, 395–412).—The effect of varying the concns. and ratios of K and Ca in the Locke's fluid are described on the spontaneous movements of the isolated rat's uterus and on its reactions to pilocarpine, cocaine, adrenaline, Ba, etc. P. C. W.

Inactivation of oestrone in normal adult male rats. G. R. Biskind (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 266–268).—If oestrone pellets were implanted subcutaneously in male rats atrophy of testis and other sexual organs took place in 42 days. If the pellets were implanted in the spleen no such atrophy occurred provided that the spleen remained connected with the portal circulation. V. J. W.

Augmentative effects of oestrogens and chorionic gonadotrophin. C. F. Fluhmann (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 378–379).—Preliminary administration to 21–23-day-old rats of stilboestrol (3 mg.) or α -oestradiol dipropionate (0.12 mg.) increases the subsequent effect of pituitary gonadotrophin or human pregnancy serum on ovarian wt. V. J. W.

Influence of oestradiol on secretion of gonadotropic hormone in adult parabiotic rats. R. K. Meyer and C. Biddulph (*Amer. J. Physiol.*, 1941, 134, 141–146).—Continuous vaginal oestrus was obtained in the normal partner of female parabiotic rats following ovariectomy in the other partner. As a result of oestradiol injections in the ovariectomised rat, the vaginal oestrus of the normal partner was replaced by a diœstrus which persisted for 10 days; normal oœstrous cycle then appeared and persisted as long as the oestradiol injections were continued. After cessation of injections, oœstrous cycles became irregular and finally continuous oestrus reappeared. The results following hypophysectomy in the ovariectomised partner were similar to those after injections of oestradiol. Oestrogen apparently prevents hypersecretion of gonadotropic hormone by the pituitary gland of adult ovariectomised rats. M. W. G.

Effect of oestrogenic substances on kidney of *Trichosurus vulpecula*. A. Bolliger and A. J. Canny (*Med. J. Austral.*, 1941, I, 697–699).—Renal damage was produced in the common Australian phalanger or opossum within 2–17 days after a single injection of 0.78–1.41 mg. of stilboestrol dipropionate per kg. body-wt. and also after weekly injections of 5 mg. of oestradiol dipropionate or 40,000–100,000 units of oestradiol benzoate, with a survival period of 10–65 days in the latter group. The blood-urea rose to 150–186 mg.-% within 4–6 days, later to 300–500 mg.-%, and in one opossum dying at 65 days to 800 mg.-%. The kidneys showed cloudy swelling, necrosis of the tubular epithelium, and calcification of the necrotic epithelium, similar to that seen in HgCl_2 poisoning. F. S.

Aspects of intermediary metabolism of steroid hormones. G. F. Marrian (*Harvey Lectures*, 1938–39, Series 34, 37–56). E. M. J.

Menarche and sterility. T. Mukuda and K. Horie (*Japan. J. Obstet. Gynec.*, 1939, 22, 190–194).—In 375 sterile patients and 4650 multiparous controls the % showing sterility was low in those cases with onset of menstruation before 13 years, and high in those having delayed onset (over 17 years). P. C. W.

Stilboestrol in management of menopausal syndrome. L. K. Zimmer (*J. Kansas Med. Soc.*, 1941, 42, 339–344).—

Good results were seen in 84% of 66 menopausal cases treated with daily oral doses of 0.25–0.5 mg. of stilboestrol or by intramuscular injection of 0.5–1 mg. of its dipropionate every 5–7 days. 2 or 3 injections of 1 mg. suppressed lactation in 2 postpartum cases and 3 injections of 1 and 1.5 mg. respectively produced a period in 2 cases of primary amenorrhoea. E. M. J.

Action of cigarette smoke in pregnancy [in rabbits]. F. J. Schoenck (*N.Y. Sta. J. Med.*, 1941, 41, 1945–1948).—The smoke from one cigarette was blown into the nostril of rabbit does by means of a catheter every day during pregnancy and lactation. The stillbirth rate was ten times normal, the average birth-wt. was 17% below normal, and there was an increased death rate amongst the offspring. Non-smoked litters of rabbits previously subjected to smoke showed a lower average no. in litter, and high stillbirth and death rate amongst the offspring. E. M. J.

Excretion of pregnadiol in women with virilism. U. J. Salmon, S. H. Geist, and A. A. Salmon (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 279–280).—Out of 7 cases, 2 with adrenocortical carcinoma excreted 9–20 mg. of pregnadiol daily, and 5 without adrenal tumours excreted none. V. J. W.

Chorionic gonadotrophic effects on growth in sexually underdeveloped older boys. G. B. Dorff (*Amer. J. Dis. Child.*, 1940, 60, 1043–1057).—Increase in height took place particularly if treatment (usually 1500 r.u. per month over 6–24 months) commenced before the age of 13. Bony development was accelerated in most boys, again most marked before 13; the younger the boy the better the results. C. J. C. B.

Control of gonadal development [and treatment of abnormalities with sex hormones]. L. G. Rowntree and N. H. Einhorn (*Penn. Med. J.*, 1941, 44, 1423–1430).—A review and report of cases. E. M. J.

Treatment of undescended testes with gonadotrophic hormone. G. W. Ainlay (*Nebraska Sta. Med. J.*, 1940, 25, 292–294).—Testicular descent and normal development were seen in 5 boys aged 4–11, given injections of 250–500 r.u. of anterior pituitary extract (antuitrin-S, follutein, and antophysin) once or twice a week for 6–8 weeks. 16 doses of 500 r.u. in a boy aged 16 resulted in descent into the scrotum but the testis remained excessively mobile and had remained at $\frac{2}{3}$ the size of the other. E. M. J.

Growth of lobule-alveolar system of mammary gland with pregnenolone. J. P. Mixner and C. W. Turner (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 453–456).—Injection of 10 mg. over 10 days caused mammary growth in 50% of castrate female mice. With simultaneous injections totalling 133 i.u. of oestrone 50% response was produced by 2 mg., or by 1 mg. of progesterone. V. J. W.

Mechanism of milk secretion. I. Physiological growth of mammary gland. II. Relation between anterior pituitary and mammary gland. K. Menju (*Japan. J. Obstet. Gynec.*, 1939, 22, 257–264, 376–386).—I. Histology of the rabbit mammary is described in infant, virgin, and pregnant adults.

II. Immature female rabbits, intact and castrated, were injected intravenously with pituitary ("Praehormon") or chorionic gonadotrophin (20–400 r.u. daily; total dose of 280–840 r.u.). In both cases max. effects on mammary growth and secretion were obtained with doses of 200 r.u. The effects were diminished but not abolished by ovariectomy. P. C. W.

XIII.—DIGESTIVE SYSTEM.

Relation between osmotic activity and sodium content of gastric juice. N. Lifson, R. L. Varco, and M. B. Visscher (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 422–425).—Samples of juice were obtained from gastric pouches in normal dogs. Samples with a high or low Na content had an osmotic pressure comparable with that of blood. Intermediate samples had a lower osmotic pressure. The results are thought to confirm the views of Hollander (*Amer. J. digest. Dis. Nutr.*, 1936, 3, 651). V. J. W.

Gastric tension in epigastric flatulence. M. Demole (*Gastroenterologia*, 1940, 65, 236–243).—The sensation of epigastric flatulence was accompanied by a hypertonic stomach in 6 of 18 women and 13 of 19 men. The mechanism underlying the symptom and the appropriate treatment are discussed. E. M. J.

Influence of fats on motor activity of pyloric sphincter region and gastric evacuation. J. P. Quigler, J. Werle, E. W. Ligon, jun., M. R. Read, K. H. Radgow, and I. Meschan (*Amer. J. Physiol.*, 1941, 134, 132–140).—Using the tandem balloon method the introduction of fats into the duodenum of fasting dogs was found to inhibit the motility of the pyloric antrum, sphincter, and duodenal bulb. In the quant. study of the pressure relations in the pyloric sphincter region combined with visualisation of motility and propulsion (optical manometer fluoroscopic method) cream in the duodenum was found to inhibit the pyloric region, and decreased or reversed the antral-bulbar basal and phasic pressure gradients. The action of cream was most pronounced in fasting dogs, then, in order of decreasing effectiveness, in fasting animals with stomach distended by a large balloon, fed animals, and fed animals with duodenal drainage. Fats retarded gastric evacuation chiefly by decreasing antral propulsive peristalsis, in spite of sphincter relaxation. M. W. G.

Autopsy survey of gastro-duodenal ulcers in the Philadelphia General Hospital, 1920–37. J. S. Gordon, jun., and J. J. Manning (*Amer. J. med. Sci.*, 1941, 202, 423–431).—Peptic ulcers were found in 2.7% of 22,956 autopsies. There was no racial difference in incidence between white and coloured patients. Males showed ulceration twice as frequently as females. There has been an increase in the incidence of ulcer since 1933. The age groups most involved were the 5th–7th decades. C. J. C. B.

Gastro-intestinal motility in rat after administration of amphetamine sulphate. E. Smith and K. E. Penrod (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 418–419).—The drug was injected immediately after rats had swallowed a meal containing Fe_2O_3 . Some were killed after 30 min. and others watched for appearance of Fe in feces. Stomach and small intestine were relaxed, and pylorus constricted. Small doses stimulated and larger doses inhibited the colon. Passage of gut contents was delayed. V. J. W.

Significance of Mikulicz drainage, especially in preventing post-operative infection. I. Effect on blood picture. II. Effect on leucocytes in abdomen. III. Exclusion of fluids and bacteria and period of action. IV. Effect in discharging fluid. V. Effect on spread of bacteria. VI. Significance of peritoneal adhesions. T. Mukuda (*Japan. J. Obstet. Gynec.*, 1939, 22, 195–208, 208–216, 218–225, 225–231, 232–239, 239–256).—I. Injection of 30% turpentine oil, laparotomy, and manipulation of the intestines or application of Mikulicz drainage with xeroform gauze to an abdominal incision in rabbits caused increases in no. of leucocytes and leucocyte index and marked increase in the no. of segment-form nuclear leucocytes. The increases was most marked in the case of the Mikulicz drainage.

II. When drainage is applied to the rabbit abdominal cavity, polynuclear leucocytes and giant mononuclears appear in the abdomen. These cells are phagocytic.

III. Dil. fuchsin solution and emulsion of Murao's streptococci injected into the rabbit abdominal cavity were passed out through a Mikulicz drain. The rate of fluid passing out is related to the amount in the abdomen.

IV. Intraperitoneal injection of diphtheria toxin in rabbits with Mikulicz drainage showed that the greater part of the toxin was absorbed into the body. The excretion through the drain was insignificant unless there was a large vol. of liquid in the abdomen.

V. Emulsions of hæmolytic streptococci and Murao's streptococci when intraperitoneally injected in rabbits with Mikulicz drainage were absorbed in smaller amounts into the blood and are detectable in the blood for a longer time than normal.

VI. Complete peritoneal adhesion may surround a Mikulicz drain in the rabbit abdomen and prevent the passage of bacteria. Since the adhesion may take 6 days to become established it has little significance in limiting the focus of inflammation. P. C. W.

Effect of bran on composition of stools. B. Fantus and W. Frankl (*J. Lab. clin. Med.*, 1941, 26, 1774–1777).—Bran stools show an increase in bulk greater than the increase in wt. There is little variation in water %. The increase in volatile fatty acids (chiefly acetic and butyric) is not proportional to the increase in wt. The proportion of acetic to butyric acid showed no consistent correlation with laxative action as measured by an increase in stool wt. C. J. C. B.

XIV.—LIVER AND BILE.

Glycogen content of human liver. D. S. MacIntyre, S. Pedersen, and W. G. Maddock (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 354—355).—Glycogen was determined in 33 liver samples removed during operation. Glucose feeding increased glycogen in cases in which the liver was healthy, but not in cases of severe hepatic disease. V. J. W.

Influence of adrenal cortical and sex hormones on liver-glycogen. A. B. Corkill and J. F. Nelson (*Austral. J. Exp. Biol.*, 1941, **19**, 241—242).—Subcutaneous injection of adrenal cortical extract and progesterone into young rabbits causes deposition of liver-glycogen, whilst testosterone, oestradiol, and deoxycorticosterone are inactive. Anterior pituitary extract, when administered to adrenalectomised rabbits, causes deposition of liver-fat but not glycogen formation. J. N. A.

Vitamin-A and carotene contents of human liver in normal and diseased subjects. E. P. Ralli, E. Papper, K. Paley, and E. Bauman (*Arch. intern. Med.*, 1941, **68**, 102—111).—Vitamin-A and carotene contents of the liver were determined at autopsy in 116 subjects (25 normal, i.e., killed in accidents). The normal figures were $-A = 121,000$ i.u. per 100 g. and carotene = 1.4 mg. per 100 g. of liver. In cirrhosis of the liver the figures were 13,700 i.u. of $-A$ and 0.57 mg. of carotene per 100 g. Infections, metabolic diseases, and malignant disease produced smaller falls in these levels, but in all cases there was a reduction of the $-A$ /carotene ratio. C. A. K.

Non-saponifiable lipid fraction of livers from cancerous and non-cancerous persons. P. E. Steiner (*Amer. J. Path.*, 1941, **17**, 667—671).—The total non-saponifiable lipids recovered from the livers of 33 persons with cancer, 11 with various non-neoplastic diseases, and 8 with cirrhosis of the liver showed no average quantitative differences. The individual differences were great and not correlated with the type of tumour, with the location of the primary tumour, or with the amount of fatty change (fatty degeneration and fatty infiltration) visible in microscopical sections. C. J. C. B.

Effect of anaesthetics on liver. G. Guernsey and P. H. Lorhan (*J. Kansas Med. Soc.*, 1941, **42**, 293—297).—A review. E. M. J.

Differential diagnosis of certain diseases of the liver by means of punch biopsy. C. J. Tripoli and D. E. Fader (*Amer. J. clin. Path.*, 1941, **11**, 516—527).—The technique described was used successfully in 19 cases and diagnostic material obtained. (4 photomicrographs.) C. J. C. B.

Relation of bacterial infection to liver injury. Cinchophen intoxication. L. S. Radwin and M. Lederer (*J. Lab. clin. Med.*, 1936, **21**, 1047—1055).—Large doses of cinchophen in combination with colon bacilli or various strains of streptococcus caused no anatomical lesion in rabbit's liver other than that produced by bacteria alone. Cinchophen alone in large dose caused no anatomical changes. The (rabbit) lethal dose of cinchophen is 0.7 mg. per kg. CH. ABS. (el)

Liver hæmorrhage in new-born. H. Fujimori, K. Mizuno, and K. Menju (*Japan. J. Obstet. Gynec.*, 1939, **22**, 390—394).—11 of 30 new-born children that came to autopsy for other reasons had some degree of liver hæmorrhage. P. C. W.

Differentiation of intrahepatic and extrahepatic jaundice. J. W. Lord and W. de W. Andrus (*Arch. intern. Med.*, 1941, **68**, 199—210).—In a series of 40 cases of jaundice intramuscular injection of menadione (2-methyl-1:4-naphthoquinone) was successfully used to differentiate intrahepatic from extrahepatic jaundice. The latter cases showed a rise of plasma-prothrombin level, whereas the former did not. C. A. K.

Hepatic function in amyloidosis. A. M. Tiber, A. W. Pearlman, and S. E. Cohen (*Arch. intern. Med.*, 1941, **68**, 309—324).—Amyloidosis was diagnosed in 30 patients who showed 100% absorption of Congo-red dye from the blood in $\frac{1}{4}$ hr. The icterus index, galactose tolerance, and urinary urobilinogen excretion were consistently normal; 2 patients showed slightly abnormal bromsulphalein absorption. The serum-albumin level was usually lowered; the Takata-Ara reaction was of no diagnostic value; there was diminished glucose tolerance; macrocytosis was seen in 12 of 18 patients. C. A. K.

Carcinoma of papilla of Vater. W. S. Sharpe and M. W. Comfort (*Amer. J. med. Sci.*, 1941, **202**, 238—245).—The clinical features in 40 cases are described. C. J. C. B.

Effect of biliary tract of section of splanchnic nerves. F. E. Johnson (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 399—400).—Cutting the splanchnic nerves accelerated the emptying of the gall bladder in cats, as compared with the standard times of Du Bois and Hunt (*Anat. Rec.*, 1932, **54**, 289), while section of the gastroduodenal nerve and plexus delayed it, and did not abolish the inhibitory reflex from cæcum to gall bladder. V. J. W.

Absorption of undigested protein from gall bladder. M. Harten, I. Gray, S. Livingston, and M. Walzer (*J. Allergy*, 1941, **12**, 438—440).—A portion of skin was sensitised in a rhesus monkey by the intracutaneous injection of human serum containing skin-sensitising antibodies for the antigen to be studied. After an interval of 48 hr. to permit fixation of the antibodies, the specifically related antigen was injected directly into the lumen of the gall bladder. An urticarial reaction occurred at the sensitised cutaneous site, showing that the unaltered antigen is absorbed into the circulation. C. J. C. B.

Frog method for assaying gall-bladder-contracting substances. L. D. Seager (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 257—260).—Previous observations (cf. A., 1940, III, 41) have been extended to frogs under various seasonal or other conditions. No important changes were observed. Ivy's method of preparing cholecystokinin has been modified by using 8—10% in place of 5% trichloroacetic acid, giving a potency of 60 in place of 8.9 units per mg. V. J. W.

Variation in the composition of gallstones simultaneously formed in gall bladder. D. B. Phemister and H. G. Aronson (*Amer. J. Path.*, 1941, **17**, 673—680; cf. A., 1939, III, 759).—Cholesterol stones in gall bladder caused partitioning of the lumen and stagnation. As stagnation increased from ampulla to fundus, there was an increased tendency for the deposition on the stone in each compartment of Ca and P salts, bile pigment and a dark degradation product of bile pigment. This differential deposit cast increasingly radio-opaque shadows in roentgenograms from ampulla to fundus. C. J. C. B.

Cholelithiasis in newborn infants. G. R. Spence (*Arch. Pediat.*, 1941, **58**, 479—481).—Case report. C. J. C. B.

Excretion of bromsulphalein in bile. A. Cantarow and C. W. Wirts (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 252—254).—2 mg. per kg. was injected intravenously in dogs and human subjects. In all cases the dye disappeared from the blood within 30 min. and, in normal cases, reached a max. in bile in 45—75 min. In patients with hepatic or bile duct disease excretion was greatly delayed. V. J. W.

Bile pigment production in vitro.—See A., 1942, II, 34.

XV.—KIDNEY AND URINE.

Fatty changes in glomeruli of kidneys. J. P. Simonds and J. D. Lange (*Amer. J. Path.*, 1941, **17**, 755—763).—In man and dog fatty changes occur in the glomeruli in acute infections, in acute and chronic glomerulonephritis, and in nephrosclerosis. In acute infections and in glomerulonephritis the fat is most abundant near the glomerular hilus and may be limited to this region. When present in greater abundance it extends radially along the capillary loops. It consists first of fine dust-like particles which later increase in size. The afferent artery is free from fat. In nephrosclerosis the walls of the afferent arteries contain much fat which stops at the hilus of the glomerulus. The fat in the glomeruli appears first in the periphery, the central portion being involved only in those glomeruli in which the fat is very abundant. Fatty changes in the glomeruli in acute infections and in glomerulonephritis are the result of injury to the cells by toxic substance in the circulating blood which are conc. in the glomeruli by loss of water by filtration. In nephrosclerosis the anoxia resulting from the ischaemia caused by narrowing of the lumen of the afferent artery induces similar effects. (2 photomicrographs.) C. J. C. B.

Efforts to detect secretion of inulin by the tubule of the mammalian kidney. P. A. Bott, B. B. Westfall, and A. N. Richards (*Amer. J. med. Sci.*, 1936, **191**, 872—873).—Inulin

was added to blood flowing through the renal vessels of dogs and rabbits at pressures which prevented glomerular filtration. The urine contained only traces of inulin, but relatively large amounts of phenol-red, neutral-red, or diodrast which had been added to the inulin blood.

CH. ABS. (el)

Effects of injection of acacia, with special reference to renal function. A. Goudsmit, jun., M. H. Power, and J. L. Bollman (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 254–257).—5% glucose was injected intravenously into dogs throughout the experiment. When diuresis was steady 10% acacia was added to this const. glucose injection until 1.1–2.5 g. per kg. had been injected. This caused no change in creatinine clearance, fall in water excretion with a return to original level, and a marked increase in Cl^- excretion. V. J. W.

Subcutaneous urography [for children]. E. A. Mullen (*Penn. Med. J.*, 1941, **44**, 1447–1448).—20 c.c. of 35% diodrast in 80 c.c. of normal saline are introduced by hypodermoclysis through two small incisions in the region of both scapular angles. E. M. J.

Death following use of sodium iodide and diodrast [for urography]. T. H. Shamahan (*N.Y. Sta. J. Med.*, 1941, **41**, 1662).—A man, aged 49, with pyuria, hæmaturia, and frequency of micturition while undergoing cystographic examination (12% NaI being used), complained of severe pain in the bladder region. A large diverticulum was demonstrated and the bladder washed out with distilled water. An intravenous urogram for which 30 c.c. of a 30% solution of diodrast were used showed a hydronephrosis and hydronephrosis. The pain continued and the patient appeared to be in shock, but laparotomy showed no leak from the bladder. Death supervened 24 hr. after injection of the dye and allergy to I as cause of the shock is discussed. E. M. J.

Conversion of creatinine into creatine in normal urine. S. M. Horvath and D. B. Dill (*J. Lab. clin. Med.*, 1941, **26**, 1673–1675).—There is at first a slow and later a rapid conversion of creatinine into creatine in urine preserved with thymol at room temp. At 4° conversion began on the 37th day and was pronounced by the 104th. Urine can be stored for a few days in the cold without change in creatine or creatinine, but it is better practice to make these determinations within 24 hr. In any case, preservation with thymol and storage in the cold are recommended.

C. J. C. B.

Variation of organised sediment following pyridium administration in urinary infections. L. D. Braitberg (*J. Lab. clin. Med.*, 1941, **26**, 1768–1773).—A technique is described for the determination of the organised urinary sediment. Normal persons have a very low organised sediment before and after pyridium administration, between 0 and 0.02 c.c. per 100 c.c. Pyridium is very effective in reducing the organised sediment in cases of urinary infection, especially cystitis and pyelonephritis.

C. J. C. B.

Rapid extractor for urinary steroids. II. Modifications for simultaneous hydrolysis and extraction of urine with solvents heavier than water. E. B. Hershberg and J. K. Wolfe (*J. Biol. Chem.*, 1941, **141**, 215–218).—Extraction is accelerated and yield of extract increased by employing an electrically heated modification of the apparatus previously described [A., 1940, III, 618]. A variable overflow device is used.

W. McC.

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

Growth and development. III. Relation between organ weight and body weight in growing and mature animals. S. Brody and H. H. Kibler (*Missouri Agric. Exp. Sta. Res. Bull.*, 1941, No. 328, 41 pp.).—Charts are given relating wts. of visceral organs to body wt. in mature animals of different species and in mature and growing animals of the same species. Close statistical correlation exists between the slopes relating the wts. of the neuroendocrine systems to that of the body, and the slopes relating metabolic levels to body wt. In both cases vals. of b in $Y = aX^b$ are less than 1. Wts. of the circulatory system, especially of the heart and blood, tend to vary more directly with body wt. Vals. of b are more reliable for mature animals of different species than for the same species, mature or growing.

Variations in vals. of b during the growth of the animal are discussed.

A. W. M.

Clinical and physiological characteristics of a chill. G. A. Perera (*Arch. intern. Med.*, 1941, **68**, 241–260).—Clinical and experimental studies of chills are reported. The shivering is probably due to the activity of a hypothalamic centre and is mediated by a somatic efferent pathway in the spinal cord, probably separate from the pyramidal tract. The muscular tremors were inhibited by asphyxia, and by amidopyrine (salicylates had little effect), pentobarbital, phenobarbital, and by intravenous CaCl_2 .

C. A. K.

Relation of specific gravity to hatching power in eggs of domestic fowl. S. S. Munro (*Sci. Agric.*, 1940, **21**, 53–62).—Low sp. gr. in eggs is associated with diminished fertility and hatching power. Vals. vary with breed and in eggs from the same individual. Chicks hatched from low-gravity eggs tended to show a higher death rate.

A. G. P.

Sweat secretion in new-born. S. Uchino (*Japan. J. Obstet. Gynec.*, 1939, **22**, 9–10).—New-born infants placed in a temp. of 33–42° do not sweat in spite of a rise in rectal temp. Sweat first appears under these conditions 2–18 days after birth, and later in children born prematurely. The lack is not due to the condition of the sweat glands since pilocarpine injection will produce sweating. Sweating from the hands and soles of the feet develops later (45–97 days after birth) than does sweating from the chest.

P. C. W.

Citric acid content of animal tissues with reference to its occurrence in bone and tumour. F. Dickens (*Biochem. J.*, 1941, **35**, 1011–1023).—Animal tumour tissue usually contains elevated quantities of citric acid. In normal animal tissue a high content is found in the testes, fur, hair, and skin, but particularly in the skeleton where it is a major constituent of normal bone. The cartilage and marrow contain much less. From bone meal pentabromoacetone is prepared in 80% of the yield based on the colorimetric determination of the citric acid content, the acid being present as Ca salt. In support of the view that bone-citrate participates in calcification, it is shown that parathyroid administration in young dogs and cats increases the mol. ratio of Ca citrate to $\text{Ca}_3(\text{PO}_4)_2$ and that in rickets the ratio is diminished. In the chick embryo the citrate present is sufficient to combine with $\frac{1}{4}$ of the total Ca . Afterwards the latter increases more rapidly than the citrate.

A. L.

Improved method for experimental grafting of skin. D. E. Barker (*Arch. Path.*, 1941, **32**, 425–428).—The graft is placed beneath a full thickness flap of skin during the period of vascularisation and later the flap is removed. This method prevents early drying out of the graft and eliminates the necessity of dressings. The best area for skin grafting by this technique is the dorsal caudal area of the guinea-pig. In most cases the hair follicles are preserved.

C. J. C. B.

Influence of sex on the composition of the fat of pig. A. T. Johns (*New Zealand J. Sci. Tech.*, 1941, **22**, A, 248–258).—The I val. of pig fat is inversely related to the rate of its deposition, regardless of sex or rate of growth. In the inner back fat the I val. depends on the thickness of fatty tissue. The susceptibility of subcutaneous fat to oxidation is directly proportional to the rate of deposition and inversely to the I val. An influence of environmental temp. on the I val. of fat deposited is indicated.

A. G. P.

Significance of lipins in the animal organism. I. Cholesterol content of organs of wild birds. II. Cholesterol content of organs of house rat and wild rat. III. Cholesterol content of flexor and extensor muscles. Y. Tati (*Japan. J. Med. Sci.*, 1941, **II**, 4, 233–249, 251–259, 261–271).—I. Data for water and cholesterol contents of brain, lungs, heart, stomach, intestine, liver, kidney, and muscle of various species of pheasant, snipe, and wild duck are tabulated and compared with the vals. for domestic fowls.

II. Data for water and cholesterol contents of brain, liver, adrenal glands, testes, and flexor and extensor muscles are tabulated and discussed. As with birds, the wild species have a higher content of cholesterol than have the domestic species.

III. Data for water and cholesterol contents of flexor and extensor muscles of toad, rabbit, weasel, hare, pheasant, wild pigeon, and domestic pigeon and fowl are tabulated and discussed. The muscles of the wild animals have a higher

cholesterol content than have the muscles of the corresponding domestic animals, whilst the content of the flexor muscle is 10–50% higher than that of the corresponding extensor muscle. F. O. H.

Growth and composition of fat bodies in American giant frogs. K. Sato (*Japan. J. Med. Sci.*, 1941, II, 4, 273–275).—Fat from the fat bodies of male and female frogs at various stages of growth shows no marked difference in d , m.p., I val., sap. val., acid val., or content of free or combined cholesterol or phosphatide. F. O. H.

Arsenic in fresh-water fish. M. M. Ellis, B. A. Westfall, and M. D. Ellis (*Ind. Eng. Chem.*, 1941, 33, 1331–1332).—The average As content as As_2O_3 of 15 species of fresh-water fish from inland waters of Florida, Georgia, Alabama, and Texas is about 0.75 p.p.m. wet wt. or 3.54 p.p.m. dry wt. Marine fish may contain several times this amount of As. The eviscerated fresh-water fish contained 0.48 p.p.m. wet wt. and was much richer in As than common foodstuffs of vegetable origin. About $\frac{1}{4}$ of the total As was present in the ether-sol. fraction. The liver oil from bass contained 40.5 p.p.m. of As as As_2O_3 . Fresh-water fish and particularly their livers and liver oils must be regarded as potential sources of As in food. R. G. W.

"Particles" and their relationship to structure of animal fibres. J. I. Hardy and T. M. Plitt (*J. Agric. Res.*, 1941, 63, 295–303).—Wool fibres disintegrated by chemical methods (digestion with 50% H_2SO_4 or 5% NaOH), by digestion by carpet beetles (*Anthrenus vorax*, *Aitagenus piceus*), or by grinding in a mill show the presence of minute structural units. These "particles" are spherical, approx. 0.6 μ , in diameter, composed apparently of keratin, and doubly refractive to polarised light, and sometimes contain pigment. They are aligned in chains, which constitute the fibrils and lie parallel to the main axis of the fibre in the cortex but appear to twist and interlock in the medulla. F. O. H.

Diapause and related phenomena in *Gilpinia polytoma* (Hartig). I. Factors influencing inception of diapause. II. Factors influencing the breaking of diapause. M. L. Prebble (*Canad. J. Res.*, 1941, 19, D, 295–322, 323–346).—I. Genetic differences in ability to develop without diapause occur in the European spruce sawfly in Canada. Environmental factors can initiate diapause.

II. A period of cold-rest at temp. below the threshold of development is an essential factor in overcoming diapause. After such a period max. development occurs at temp. not below 22.8–23.3° after contact with water. Temp. of 7.2–18.3° have little effect on the degree of emergence from diapause but influence the rate of development. Favourable effects of contact with water are lost if the soil temp. is below the threshold of development or if the water absorbed by the cocoon wall evaporates before the larva can utilise it. A. G. P.

Survival and development at low temperatures of eggs and preinfective larvae of horse strongyles. J. T. Lucker (*J. Agric. Res.*, 1941, 63, 193–218).—Exposure of unembryonated horse strongyle ova in faeces at -5° to -10° causes 94–100% mortality in 47–56 days. Embryonated are killed much more readily than unembryonated ova. More than 90% of preinfective larvae mainly in the first and early second stages of development in faeces are killed in 1.2–4 days at -5° to -10° ; in every stage of development they are far less resistant to low temp. than are unembryonated ova. J. N. A.

Interaction of aldoses with α -amino-acids or peptides.—See A., 1942, I, 22.

Separation of methionine from crude leucine.—See A., 1942, II, 5.

XVII.—TUMOURS.

Inhibition of phospholipin oxidation by carcinogenic and related compounds. H. P. Rusch and B. E. Kline (*Cancer Res.*, 1941, 1, 465–472).—The oxidation of phospholipin preps. from egg or rat liver is catalysed by glutathione, cysteine, ascorbic acid, thiamin, riboflavin, pyridoxine, and methylene-blue. At pH 3.5 catalytic activities are in the order ascorbic acid, glutathione, cysteine. These 3 catalysts are inactive at pH 7.4. Thiamin, riboflavin, pyridoxine, and methylene-blue catalyse the oxidation at pH 7.4 but not at pH 3.5. Oxidation of phospholipin in presence of ascorbic acid or glutathione is

inhibited by carcinogenic hydrocarbons, oestrone, oestradiol, and some other compounds. F. L. W.

Induced tumours in fowls. J. B. Murphy and E. Sturm (*Cancer Res.*, 1941, 1, 477–483).—Intramuscular injection of 1:2:5:6-dibenzanthracene in benzene induced tumours in a higher % of chickens in a shorter period than when the carcinogen was given in lard or chicken fat. The average time was $5\frac{1}{2}$ weeks and 90.6% of 53 fowls developed tumours. When dibenzanthracene was given in lard or chicken fat and dissemination occurred, systemic and distal effects were found such as liver damage, primary ovarian tumours, and leukaemia. These conditions were not found when benzene was used as the solvent. F. L. W.

Changes in lymphoid tissue of mice treated with carcinogenic and non-carcinogenic hydrocarbons. C. Hoch-Ligeti (*Cancer Res.*, 1941, 1, 484–488).—Biopsied lymph glands from mice injected with 1:2:5:6-dibenzanthracene, 1:2-benzanthracene, and anthracene (0.05% colloidal solutions in 1% aq. gelatin) showed increase of reticulum cells, decrease of lymphoid cells, dilatation of sinuses, and deposition of Fe-reacting material. The greatest decrease of lymphoid cells occurred with 1:2:5:6-dibenzanthracene. There was no qual. difference in Fe-reacting deposits between carcinogenic and non-carcinogenic hydrocarbons. Spleen wts. of mice treated with the carcinogenic hydrocarbon were significantly smaller than those of control mice or mice treated with non-carcinogenic hydrocarbons. F. L. W.

Experimental tumours in lymph nodes and in endocrine and salivary glands (in rats and mice). C. C. Franseen, J. C. Aub, and C. L. Simpson (*Cancer Res.*, 1941, 1, 489–493).—Attempts were made to induce tumours of the pancreas, lymph nodes, thymus, thyroid, adrenal, pituitary, and salivary glands of rats and mice by 1:2:5:6-dibenzanthracene, methylcholanthrene, Rn seeds, thorotrast crystals, oestrone, and As_2O_3 . 5 fibrosarcomas developed in the adrenal region and 18 fibrosarcomas appeared at the site of implantation of methylcholanthrene in lymph nodes, but all probably originated from pericapsular connective tissue. 2 hæmangio-endotheliomas developed from methylcholanthrene implanted in lymph nodes. 17 tumours of parenchymatous origin were induced in submaxillary salivary glands, of which 12 were epidermoid carcinomas and 1 a fibrosarcoma. F. L. W.

Effects of oestrogen on mammary gland of mice injected during pregnancy, lactation, and retrogression. L. Loeb and V. Sontzeff (*Cancer Res.*, 1941, 1, 439–445).—Subcutaneous injection of 100 r.u. of oestradiol benzoate twice weekly in mice of the A and CBA strains during the late stages of pregnancy or at the beginning of lactation and continued for periods up to 3 months did not prevent retrogression of the mammary glands. Retrogression was normal, except that the no. and size of the active areas in the mammary gland were increased after oestrogen administration. There was no significant difference in the effects of oestrogen in the two strains of mice. F. L. W.

Incidence of mammary gland carcinoma and cancer age in mice injected with oestrogen and in non-injected mice of different strains. V. Sontzeff, M. M. Kirtz, H. T. Blumenthal, and L. Loeb (*Cancer Res.*, 1941, 1, 446–456).—The incidence of mammary cancer in control mice and in oestrinised mice of the D, C₃H, A, New Buffalo, Old Buffalo, CBA, and C57 strains is recorded. Incidence in breeding control mice of these strains is correlated with the readiness with which the cancer rate can be increased in non-breeding females, or the occurrence of mammary cancer induced in the males by oestrogen injection. The ratio of incidence in untreated breeding and non-breeding females varies greatly in different strains. In breeding mice of high-cancer strains the cancer incidence is the same at 5–12 months of age as at 18 months and over. In low-cancer strains the incidence increases with increasing age. A similar relationship is observed in mice treated with exogenous oestrogen. In mice of high-cancer strains treated with large amounts of oestrogen there is no difference in mammary tumour incidence between male and non-breeding female mice. F. L. W.

Tumour inhibition associated with secretory changes produced by oestrogen in a transplanted mammary adenocarcinoma of rat. M. J. Eisen (*Cancer Res.*, 1941, 1, 457–464).—Bi-weekly subcutaneous injections of oestradiol benzoate (0.166 mg.) inhibited the growth of transplants of rat adenocarcinoma

R2426. Reduction of body-wt. by restriction of caloric intake inhibited transplanted tumours. Transplanted sarcomas were not inhibited by oestrogen despite loss of body-wt. 8 doses of oestrogen induced lactational changes in the transplants. The growth rate of transplanted tumours arising from implants of inhibited tumours was unaltered. The latent period of tumours from transplants of grossly lactating tumour tissue was prolonged. Ensuing tumours repeated the structure of untreated growths. Pregnancy and lactation, testosterone propionate, and castration had no influence on the growth or structure of the mammary adenocarcinoma.

F. L. W.

Effect of heptaldehyde-sodium bisulphite on spontaneous tumours of mammary gland in mice. L. C. Strong (*Cancer Res.*, 1941, 1, 473—476).—Spontaneous carcinoma of the mammary gland in mice is influenced by injection of an aq. solution of heptaldehyde- NaHSO_3 at sites remote from the tumour. In the range 2—6 mg. per day the degree of inhibition increases with increasing dosage, while in the range 6—11 mg. per day the degree of inhibition decreases with increasing dosage. 12 mg. per day is slightly stimulating to tumour growth. The max. degree of inhibition occurs with 6 mg. per day. The max. no. of complete regressions was 10.6%. The min. no. of pulmonary metastases (4%) occurred with doses of 2, 3, and 4 mg. per day; the max. no. (33.4%) with doses of 11, 12, and 13 mg. per day. The max. degree of liquefaction of the tumours (56.6%) occurred with 5, 6, and 7 mg. per day. With doses of 10 mg. per day and more, liquefaction was infrequent.

F. L. W.

Transplantable embryoma of mouse. E. B. Jackson and A. M. Brues (*Cancer Res.*, 1941, 1, 494—498).—An embryoma arising in the ovary of a C_3H mouse was transplanted through 11 serial transplants and maintained its pleomorphic nature *in vivo* and in tissue culture.

F. L. W.

Persistence of growth inhibition in young rats induced by 1:2:5:6-dibenzanthracene. H. Alapy (*Cancer Res.*, 1941, 1, 499—502).—A watery paste of crystals of 1:2:5:6-dibenzanthracene was placed in a skin cuff formed by amputation of a portion of a rat's tail. Inhibition of growth of the rat occurred. 24—30 days later the hydrocarbon deposit was removed by amputation and a rate of growth equal to that of control rats was resumed. It is concluded that the progressive inhibition of growth produced by hydrocarbons is due to continued absorption of the compound from the local deposit.

F. L. W.

Growth rates of nine inbred strains of mice. A. Howard (*Cancer Res.*, 1941, 1, 503—504).—3 strains of mice (*A. Dba.*, *C₃H*) having a high incidence of spontaneous mammary cancer first showed a significant difference in body-wt. between the sexes at 8, 8, and 7 weeks respectively. In 6 low mammary cancer strains (*I. JK*, *C57* black, *C57* leaden, *CBA*, *Bagg* albino) significant sex differences in wt. appeared at 5—6 weeks of age. It is concluded that there is a correlation between susceptibility to mammary cancer and the normal growth rate of young animals in inbred lines of mice.

F. L. W.

Adsorption of surface-active substances of urine with special reference to malignant neoplasia. K. Stern (*Amer. J. med. Sci.*, 1941, 202, 229—234).—Though the surface tension of the urine of patients with malignant neoplasms is usually lower than in controls (average 64.8 dynes per cm. compared with 66.6) the surface tension val. found in any individual case is not diagnostic. The findings on adsorbability of the urinary surface-active substances was more characteristic. 87% of 47 normal cases showed that more than 50% of the substances used were adsorbed, whilst in 79% of 53 malignant cases adsorption was less than 50%. In 18 cases of acute infections and tuberculosis the results followed the malignant type.

C. J. C. B.

Thiocyanation of carcinogenic hydrocarbons.—See A., 1942, II, 10.

XVIII.—NUTRITION AND VITAMINS.

Diet, health, and defence. C. A. Elvehjem (*Ohio Sta. J. Med.*, 1941, 37, 741—746).—A review.

E. M. J.

Nutrition of surgical patients. J. D. Bisgard (*Nebraska Sta. Med. J.*, 1941, 26, 323—327).

E. M. J.

Indian diets and their improvement. W. R. Aykroyd (*Nutr. Abs. Rev.*, 1941—1942, 11, 171—176).—The diets con-

tain large amounts of rice together with varying amounts of pulses. Vegetable oils, which are the main source of fat, include sesame, arachis, coconut, mustard, and linseed, all devoid of vitamin-A. Milk and dairy products, meat, fish, and eggs are consumed in only small amount. Fruits and vegetables are used in some diets. The problem of the improvement of the diet is closely connected with methods of preparing and cooking rice, economic considerations, and increase in population. It is suggested that education can play an important part in the improvement of diets.

J. N. A.

Desiccated beef as food for premature and full-term infants. H. N. Sanford and L. K. Campbell (*Arch. Pediat.*, 1941, 58, 504—508).—Desiccated beef may be fed to full-term infants over 6 weeks of age and to most premature infants. It has no influence on wt. or on haemoglobin and red cell content of the blood of the normal full-term infants during the first year of life. Desiccated beef fed to premature infants will give a blood-haemoglobin and red cell content similar to those of a premature infant given Fe NH_4 citrate.

C. J. C. B.

Effect of a high-sulphur, low-carbohydrate diet in chronic arthritis. J. C. Forbes, R. C. Neale, D. B. Armistead, and S. L. Rucker (*J. Lab. clin. Med.*, 1936, 21, 1036—1039).—Improvement was observed, especially in rheumatoid arthritis, and indoluria disappeared.

Ch. Abs. (el)

Protein intake of Swiss sportsmen. A. Jezler (*Gastroenterologia*, 1940, 65, 244—257).—Of 253 of the leading sportsmen 159 consumed 700—1400 g. of cooked meat weekly; 12 took less and 82 more up to 6300 g.

E. M. F.

Importance of choline in synthetic rations for dogs. A. E. Schaefer, J. M. McKibbin, and C. A. Elvehjem (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 365—368).—100 mg. of choline per kg. given to puppies caused survival and growth on a diet (A., 1940, III, 429) which was fatal without it.

V. J. W.

Nutritional anaemia [in rats]. O. Sheets and M. V. Ward (*Mississippi Agric. Exp. Sta. Tech. Bull.*, 1940, No. 26, 35 pp.).—Legumes were more effective than leafy vegetables for haemoglobin regeneration when fed at the same Fe level to anemic rats. Regeneration was not correlated with the Cu content of the food. Blackstrap molasses, sorghum and sugar-cane syrups had high Fe and Cu contents and were very effective in curing nutritional anaemia. Chemical and biological tests showed that approx. 90% of Fe was available in legumes, 60% in leafy vegetables, and 90% in molasses or syrups.

A. W. M.

Site of vitamin-A storage in liver. A. J. Cox (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 333—335).—In livers of 3 patients who had undergone massive hepatic necrosis, there was more vitamin-A in areas where hepatic cells had been destroyed than in those where they were left. Kupffer cells are believed not to be involved in such necrosis, and presumably store the vitamin.

V. J. W.

Topical application of vitamin-A. W. H. Eddy and J. L. Howell (*N.Y. Sta. J. Med.*, 1939, 39, 406—410).—Rats after being kept on a vitamin-A-free diet were given 0.24 mg. of β -carotene emulsion in cacao butter daily for 28 days either by mouth or by inunction into 1 sq. cm. of depilated skin for 4 min. Wt. gains averaged 46.5 g. in the oral and 26.1 g. in the "rubbed" group, equalling those of 2 groups given daily by mouth 2 mg. and 0.6 mg. of U.S.P. reference oil corresponding to 6 and 1.8 U.S.P. units, respectively. Similar results were obtained when wax was used as the emulsifying agent. β -Carotene in wax was absorbed better than fish oil-A ester when applied by inunction.

E. M. J.

Concentration of vitamin-A by adsorption. L. A. Swain (*J. Fish. Res. Bd. Canada, Progr. Repts.*, 1941, No. 49, 13—16).—A preliminary study of the properties for adsorbing vitamin-A indicated that, of 71 materials (mainly inorg.) investigated, 10 showed good adsorbent properties, 19 caused partial destruction of the -A, whilst the remaining samples were apparently without effect.

R. G. W.

Blood-pyruvate curves following glucose ingestion in normal and thiamin-deficient subjects. E. Bueding, M. H. Stein, and H. Wortis (*J. Biol. Chem.*, 1941, 140, 697—703).—In normal individuals, ingestion of glucose increases the blood-pyruvate temporarily. In conditions of thiamin deficiency (peripheral neuropathy in the alcohol addict, and Wernicke's disease), the fasting blood-pyruvate is usually elevated, and after

glucose ingestion the increase in blood-pyruvate is abnormally high and prolonged although the fasting blood-sugar level may be normal. Pyruvic acid is probably therefore a normal product of carbohydrate metabolism. A. L.

Hypersensitivity to thiamin chloride; sensitivity to pyridoxine hydrochloride. M. H. Stiles (*J. Allergy*, 1941, 12, 507–509).—2 cases are reported in which the prolonged administration of thiamin chloride produced severe symptoms, owing to development of hypersensitivity. Intracutaneous injection of 0.15 mg. of thiamin resulted in definite wheal formation (not in controls). The repeated injection of pyridoxine hydrochloride in the second patient was followed after 2 months by symptoms similar to those which followed thiamin injection. Intracutaneous injection of pyridoxine resulted in definite wheal formation in this patient, although it produced no reaction in the first patient, and only doubtful wheal formation in 3 control subjects. C. J. C. B.

Excretion of thiamin and its degradation products in man. H. Pollack, M. Ellenberg, and H. Dolger (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 414–417).—In chronic deficiency of vitamin-B₁, urinary pyrimidine is low. In temporary -B₁ deprivation in normal individuals it is unaltered, as is the -B₁ excretion when 1 mg. per day is administered. Increased -B₁ administration causes increased excretion of both -B₁ and pyrimidine. V. J. W.

Vitamin-B₁ content of urine. S. J. E. Pannekoek-Westenburg and A. G. van Veen (*Geneesk. Tijds. Ned.-Ind.*, 1941, 81, 459–466).—Results are recorded for Europeans and natives in Java, including patients suffering from tuberculosis, tabes dorsalis, and polyneuritis. In the tropics, special precautions must be taken to prevent the urine fermenting and becoming alkaline (the addition of toluene and acetic acid is suggested). With the Westenbrink-Goudsmit method (A., 1937, III, 819), a correction must be made for fluorescent substances other than thiochrome. S. C.

Determination of vitamin-B₁ by means of its influence on the vaginal contents of the rat. K. H. Coward and B. G. E. Morgan (*Biochem. J.*, 1941, 35, 974–978).—Vitamin-B₁ deficiency causes an interruption of the oestrous cycle, on which the method is based. The time needed for three complete cycles in rats previously rendered deficient is inversely related to the daily dose of -B₁ given. Rats can be used repeatedly, but must only be compared with others of the same series, as they become more sensitive under treatment. The method is less accurate than the rat growth method. Riboflavin deficiency produces similar effects. R. L. E.

Vitamin methods. I. Determination of vitamin-B₁ in foodstuffs and biological material by the thiochrome test. II. Vitamin-B₁ in urine determined chemically and biologically. L. J. Harris and Y. L. Wang (*Biochem. J.*, 1941, 35, 1050–1067, 1068–1070).—I. The authors' method (A., 1939, III, 920) for determining vitamin-B₁ in urine has been developed to provide an accurate method applicable to foodstuffs. The preliminary aq. extract at pH 4 is digested simultaneously with takadiastase and papain and washed with isobutanol. One half of the aq. layer is used as a blank and treated as the other, except that no K₃Fe(CN)₆ is added. To the other half, methyl alcohol, K₃Fe(CN)₆, NaOH, and (after keeping) isobutanol are added. To the washed isobutanol layer ethyl alcohol is added, and a standard thiochrome solution is made up with the blank to match it. Systematic comparisons of the method with biological assays are made using a wide variety of foodstuffs, and good agreement is obtained except in cases of low vitamin content and desiccated products difficult to extract. With 0.1 µg. of -B₁ per ml. the error was ±5%.

II. The reliability of the above method for determining -B₁ in urine is confirmed by comparison of the method with biological assay (bradycardia test). A. L.

Xanthine oxidase content of rat liver in riboflavin deficiency. A. E. Axelrod and C. A. Elvehjem (*J. Biol. Chem.*, 1941, 140, 725–738).—The xanthine oxidase activity of the livers of rats fed on a diet producing an uncomplicated riboflavin deficiency was reduced to a fifth of normal, and in some cases even no activity was observed. Limited riboflavin therapy (3 µg. or 6 µg. daily over a period of 63 days) resulted in a 3-fold and 4-fold increase respectively, though larger amounts over a shorter period were relatively less effective except where the food intake was restricted. Addition of

the prosthetic group of the oxidase (prep. from cream) to the tissue from riboflavin-deficient rats in sufficient amount to increase the activity to normal, provided the protein component was present in normal amount, had no effect. A. L.

Nicotinic acid and co-enzyme content of animal tissues. P. Handler and W. J. Dann (*J. Biol. Chem.*, 1941, 140, 739–745).—Discrepancies among the various reported vals. for the pyridine nucleotide content of rat tissue are due to improper evaluation of the purity of standard preps. of the co-enzyme which have been employed. All the nicotinic acid of rat muscle and kidney exists as part of the pyridine nucleotide mol.; 58% of the nicotinic acid of the liver is, however, not combined in this way. In the tissues of two strains of rats, the nicotinic acid and co-enzyme I and II contents were the same. Liver-nicotinic acid concn. in new-born rats is 60% of that in adults, the val. for which is almost reached at the end of the first week; thereafter the total amount increases with the wt. of the liver. A. L.

Pellagra in India. L. B. Carruthers (*Trans. R. Soc. trop. Med. Hyg.*, 1941, 35, 21–33).—A review of 10 cases. C. J. C. B.

Infantile pellagra. H. C. Trowell (*Trans. R. Soc. trop. Med. Hyg.*, 1941, 35, 13–20).—This condition occurs in tropical Africa and tropical America as an acute and fatal disease which attacks infants in the first few years of life, but particularly shortly after weaning. It is characterised by oedema, crazy-pavement skin, diarrhoea, cheilosis and stomatitis, generalised pallor of the skin, and pale, straight, scanty hair. Neurological changes may occur but are slight and terminal. Microcytic or macrocytic anaemia and steatorrhoea are variable features. It is due to multiple deficiency defects, especially nicotinic acid, riboflavin, and protein, the last producing the nutritional oedema. C. J. C. B.

Sodium chloride levels and effect of sodium chloride administration on abnormal manifestations associated with deficiency of filtrate factors of vitamin-B in rats. E. P. Ralli, D. E. Clarke, and E. Kennedy (*J. Biol. Chem.*, 1941, 141, 105–113).—The greying of the fur of rats on a diet deficient in the filtrate factor is more pronounced and occurs earlier when the NaCl intake is very low. In addition, a more profound lipin depletion in the adrenal cortex occurs although the atrophy of cells in the juxtamedullary zone is present to a greater extent in animals on a high-NaCl diet, but in no cases are haemorrhages of the cortex observed. The NaCl levels and serum-protein vals. remain normal. H. G. R.

Absence of supplementary relationships in requirements for pyridoxine and essential fatty acids. G. A. Emerson (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 445–448).—Fatty acid-deficiency symptoms in rats were not relieved by daily administration of 15 µg. of pyridoxine, and pyridoxine-deficiency symptoms were not relieved by daily administration of 80 mg. of ethyl linoleate. V. J. W.

3-Hydroxy-2-ethyl-4:5-di(hydroxymethyl)pyridine, a homologue of vitamin-B₆.—See A., 1942, II, 30.

Relation of cystine to achromotrichia. P. L. Pavcek and H. M. Baum (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 271–272).—Rats on a diet producing greyness of fur recovered partially, with stippled colouring, in 12–14 weeks if 0.2 mg. of Ca pantothenate was given daily. If 75 mg. of cystine were given daily in addition, they recovered in 5–7 weeks. The diet contained 18% of casein. V. J. W.

Failure to cure or prevent greying of rats with p-aminobenzoic acid. G. A. Emerson (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 448–449).—Curative effects described by Ansbacher (*Science*, 1941, 93, 164) were not confirmed, and rats maintained on his diet did not become grey. V. J. W.

Forms of ascorbic acid in tissues. B. J. Goldstein, D. V. Volkenzon, and S. A. Katscherova (*Ukrain. Biochem. J.*, 1941, 17, 201–217).—Liver, spleen, kidneys, and malignant tumours contain little or no dehydroascorbic acid. If tissues are extracted with 3% HPO₃ and simultaneously reduced, or if the deproteinised filtrate is treated with nascent H, a new form of ascorbic acid is produced. The content of this form varies in parallel with the content of "masked" Fe and is nil in tumours since they contain no "masked" Fe. Reduction of tissues with nascent H in presence of high concns. of HPO₃ increases the content of the new form, spleen and liver thus treated containing approx. as much of

the new form as of free, reduced ascorbic acid. In the new form, ascorbic acid is bound to albumins by "masked" Fe associated with the albumins. Possibly the new form consists of two fractions, one of which is extracted by HPO_3 and pyrophosphate and may be reduced in the filtrate or identified during simultaneous reduction of the tissues and extraction with 3% HPO_3 ; the other and larger fraction is identified during simultaneous reduction of the tissues and extraction with 20% HPO_3 . W. McC.

Determination of dehydroascorbic acid and iron-ascorbic acid in tissues. B. J. Goldstein and D. V. Volkenzon (*Ukrain. Biochem. J.*, 1941, 17, 219–223; cf. preceding abstract).—Dehydroascorbic acid in tissues is reduced by treatment with sulphosalicylic acid-Zn and determined by titration with 2:6-dichlorophenol-indophenol. If much "masked" Fe is present, HPO_3 is added after treatment with Zn in order to remove colour and stabilise the ascorbic acid. The procedure is inapplicable to determination of isolated dehydroascorbic acid since irreversible decomp. occurs. The two fractions of the new form of ascorbic acid (Fe-ascorbic acid) are determined similarly, the first after grinding the tissues with 3% HPO_3 + 20% sulphosalicylic acid. In the determination of the second fraction, 20% HPO_3 is used instead of 3%. W. McC.

Ascorbic acid content of cow's milk at various stages of lactation. A. D. Holmes, F. Tripp, E. A. Woelfler, and G. H. Satterfield (*Amer. J. Dis. Child.*, 1940, 60, 1025–1030).—The ascorbic acid content of both Guernsey and Holstein milk rose from an average of 1 mg.-% in the first month of lactation to 2.7 mg.-% in the 5th month. C. J. C. B.

Interlitter and intralitter variation in rats with respect to healing of rachitic bones by vitamin-D. K. H. Coward and E. W. Kassner (*Biochem. J.*, 1941, 35, 979–982).—Variation in response to vitamin-D is much greater between litters than between litter-mates. The importance of using litter-mate comparisons is emphasised. R. L. E.

Blood and tissue changes in puppies receiving a diet very low in phosphorus, with and without vitamin-D. S. Freeman and F. C. McLean (*Arch. Path.*, 1941, 32, 387–408).—When a P-deficient diet was fed to puppies, florid rickets (observed roentgenologically and confirmed histologically) resulted, even when vitamin-D was given in amounts sufficient to protect puppies with an adequate mineral intake. Marked hypercalcaemia, possibly of alimentary origin, developed in all the animals, reaching its max. on the 32nd day. Ca intake was then reduced; serum-Ca decreased and was normal on the 100th day. The hypercalcaemia was more marked in the puppies receiving -D. There was a striking decrease in the inorg. P concns. in the serum and whole blood of the animals receiving the diet; this diminution was unaffected by -D. Acid-sol. org. P was not altered. Puppies on the control diet, identical except for adequate amounts of P and -D, grew normally with normal calcification of bone. Puppies on the control diet but without -D grew normally but showed increased amounts of uncalcified osteoid tissue in the spongy bone and shafts of the ribs (borderline rickets). Serum-phosphatase was increased in the rachitic animals, and there was a moderate increase in the phosphatase content of the costochondral junctions of these animals and of the control animals deprived of -D. Bone-phosphatase was associated with hypertrophic cartilage cells and osteoblasts. It was not found in uncalcified osteoid tissue of either normal or rachitic animals. (10 photomicrographs.) C. J. C. B.

Death of embryos in guinea-pigs on diets low in vitamin-E. A. M. Pappenheimer and M. Goettsch (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 268–270).—Addition to diet of 10 mg. weekly of α -tocopherol is sufficient to protect guinea-pigs from muscular dystrophy, but not to prevent foetal deaths. V. J. W.

Activity of α -tocopherol in preventing antagonism between linoleic and linolenic esters and carotene. W. C. Sherman (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 199–200).—Interference with carotene and vitamin-A utilisation by rats caused by methyl linoleate and linolenate is prevented by daily administration of 1 mg. of α -tocopherol, or of unsaponifiable matter from soya-bean oil, but not by choline, ethanolamine, or soya-bean lecithin or kephalin. V. J. W.

Effect of milk on gizzard erosion and cholic acid in chick. H. J. Almquist, E. Mecchi, and F. H. Kratzer (*Proc. Soc.*

Exp. Biol. Med., 1941, 47, 525–526).—Liquid milk has a protective action against gizzard erosion caused by a deficient diet in chicks. Dried milk has no such effect. V. J. W.

Inositol in chick nutrition. D. M. Hegsted, G. M. Briggs, R. C. Mills, C. A. Elvehjem, and E. B. Hart (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 376–377).—Chicks fed for 4 weeks on a diet containing 0.1% of added inositol weighed 18–52 g. more than controls. V. J. W.

Sulphaguanidine in nutrition experiments. S. Black, J. M. McKibbin, and C. A. Elvehjem (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 308–310).—Addition of 0.5% of sulphaguanidine to diet prevented growth of young rats. Addition of liver extract abolished this toxic action. Addition of *p*-aminobenzoic acid (3 mg. daily) reduces it if given from the beginning but, if the rats have already received the sulphaguanidine for 3 weeks, *p*-aminobenzoic acid gives no growth response for another week. V. J. W.

Action of cod-liver oil in tuberculosis. L. L. Silva and R. Cárcamo (*Semana méd.*, 1936, II, 373–381).—The val. of cod-liver oil in tuberculosis is based on an increase of the lipolytic power of the digestive organs leading to digestion of the bacilli and on the stimulation of the oxidation-reduction processes. Ch. Abs. (21)

Identification of *Drosophila* v^+ hormone of bacterial origin. E. L. Tatum and A. J. Haagen-Smit (*J. Biol. Chem.*, 1941, 140, 575–580; cf. A., 1940, III, 114).—*l*-Kynurenine and sucrose have been isolated from the v^+ hormone, for which the formula $\text{C}_{23}\text{H}_{32}\text{O}_4\text{N}_2\cdot 2\text{H}_2\text{O}$ is now preferred. Equimol. *l*-kynurenine and its sulphate have the same activity as the hormone. R. L. E.

XIX.—METABOLISM, GENERAL AND SPECIAL.

New physical aid in biochemistry especially for the chemical investigation of metabolism. A. G. van Veen (*Natuurwetensch. Tijds. Ned. Indië*, 1941, 101, 217–226).—The use of isotopic and radioactive elements, particularly D, ^{14}C , ^{15}N , and ^{32}P , for studying the degradation and synthesis of fats, cholesterol, and proteins *in vivo* is discussed. S. C.

Respiration and glycolysis of articular cartilage in relation to age. O. Rosenthal, M. A. Bowie, and G. Wagoner (*J. Cell. Comp. Physiol.*, 1941, 17, 221–233).—Slices of bovine articular cartilage from animals 6 weeks to 11 years of age were immersed in buffered Ringer's solution, and O_2 uptake was determined. In this age interval cells decrease by 75%, and CO_2 output decreases by the same amount. Rate of O_2 uptake decreases more rapidly: young, adult, and old cells have relative O_2 consumptions of 10, 7, and 4, respectively. V. J. W.

Metabolism of methionine and its derivatives with tissue slices. E. Borek and H. Waelisch (*J. Biol. Chem.*, 1941, 141, 99–103).—Metabolism of *dl*-methionine with liver or kidney slices produces mainly the corresponding keto-acid, SO_4 , equiv. to 2% of the methionine, and undeaminised methionine, but no increase in the nitroprusside reaction. Homocystine and homocysteine are not deaminised by tissue slices, the latter forming H_2S . H. G. R.

Biological rôle of amino-compounds. D. L. Ferdman (*Ukrain. Biochem. J.*, 1941, 17, 95–104).—Cardiac muscle, brain, liver, skeletal muscle, and kidney contain a water-sol., non-albuminous substance, "aminogen," which is isolated in cryst. form from horse brain and readily yields NH_3 . The aminogen content of muscle depends on physiological condition, being decreased by fasting (cats) and by hibernation (marmots). W. McC.

Relative stability of *l*(+)-lysine in rats studied with deuterium and heavy nitrogen. N. Weissman and R. Schoenheimer (*J. Biol. Chem.*, 1941, 140, 779–795; cf. A., 1942, II, 4).—The synthesis of lysine labelled with D in the chain and ^{15}N in the α -amino-group is described. When this is fed to growing rats most of the ^{15}N is found in their bodies. The proportions of D and ^{15}N in lysine remain the same, showing that the α -amino-N is not exchangeable in the body. The ^{15}N from lysine residues is found in other amino-acids, body non-protein-N, and urine. The C chain is stable; D from ingested lysine does not appear in other amino-acids. R. L. E.

Acetylation of optical isomerides of *S*-benzylcysteine in rat and man. J. A. Stekol (*Proc. Soc. Exp. Biol. Med.*, 1941,

47, 292—294).—When rats or men were fed with *d*-benzylcysteine, 20—28% was found unchanged in the urine. When they were fed with the *l*-compound only the *l*-acetyl derivative was found. (Cf. A., 1938, III, 681; 1939, III, 609).

V. J. W.

Rate of transamination in normal tissues. P. P. Cohen and G. L. Hekhuis (*J. Biol. Chem.*, 1941, 140, 711—724).—The rates of the reactions: (i) *l*(+)-glutamic + oxalacetic acid \rightleftharpoons α -ketoglutaric + *l*(-)-aspartic acid, (ii) *l*(+)-glutamic + pyruvic acid \rightleftharpoons α -ketoglutaric acid + *l*(+)-alanine, and (iii) *l*(-)-aspartic + pyruvic acid \rightleftharpoons oxalacetic acid + *l*(+)-alanine are determined for various rat tissues. Of these reactions (i) from left to right is 2—3 times as fast as that from right to left, having a *Q* val. as high as 425 in heart muscle. Reactions (ii) and (iii) are so much slower that it is doubtful if they play any major rôle in intermediary metabolism.

A. L.

Experimental lesions produced by cerebroside. O. O. Christianson (*Arch. Path.*, 1941, 32, 369—377).—Following the administration of 0.5—1 g. of pure cerebroside over weeks intraperitoneally to rabbits, the total plasma-lipin and sphingomyelin rose but the lecithin-kephalin and cholesterol fractions did not vary. When the cerebroside was given orally, the lecithin-kephalin fraction was increased, as well as the total lipin and sphingomyelin. The lipin fraction containing the cerebroside was increased in the liver, spleen, and lymph nodes. The morphological changes in the tissues of rabbits receiving the lipin intraperitoneally were like those found in Gaucher's disease in man but less extensive. (3 photomicrographs.)

C. J. C. B.

Energy expenditure of obese children. H. Bruch (*Amer. J. Dis. Child.*, 1940, 60, 1082—1109).—76% of the 74 boys and 68% of the 86 girls were physically inactive. No relation was found between severity of obesity and degree of activity.

C. J. C. B.

Fat-deficiency disease of rats. (A) Relation of the essential unsaturated acids to tumour formation in the albino rat on normal diet. I. Smedley-Maclean and L. C. A. Nunn. (B) Storage of fat in the fat-starved rat. (C) Influence of tumour growth on the storage of fat and of polyunsaturated acids in the fat-starved rat. I. Smedley-Maclean and E. M. Hume (*Biochem. J.*, 1941, 35, 983—989, 990—995, 996—1002).—(A) The skin fat of rats implanted with Walker tumours is low in arachidonic and clupanodonic acid. There is no change in fat content of the skin, carcass, and liver, but the proportion of polyunsaturated acids falls. In one experiment in which tumours failed to develop the tissue was low in these acids.

(B) Fat is increased in the subcutaneous tissue of fat-starved rats. The increase is prevented by feeding arachidonic acid. Arachidonic acid is low in subcutaneous tissue but unchanged in skin, liver, and carcass. Small doses of arachidonic acid after a long period of depletion cause only a slow rise in the subcutaneous tissue, but a rapid one in the liver. The polyunsaturated acids are probably necessary for formation of new tissue but not for maintenance of normal metabolism.

(C) Implanted Walker tumours develop in rats on a fat-free diet with or without linseed oil. Lipin in skin and carcass is lower in linseed oil-dosed rats with large tumours than in those with only small nodules or in fat-starved rats without tumours. Polyunsaturated acids are low in subcutaneous tissue but not in carcass fat of rats with tumours. Rats probably synthesise clupanodonic from linoleic or linolenic acid.

R. L. E.

Epidermis of the rat on a fat-free diet. R. Williamson (*Biochem. J.*, 1941, 35, 1003—1005; cf. preceding abstract).—The epidermis of rats on fat-free diets is thicker and more differentiated, particularly the stratum granulosum, than that of normal rats. Supplements of polyunsaturated acids maintain the skin almost normal.

R. L. E.

Schüller-Christian disease. S. R. Beatty, G. C. Owen, and F. W. Nackoy (*Radiology*, 1941, 37, 229—231).—Report on a 47-year old woman whose illness had started at the age of 26 and in whom X-ray plates of the skeleton over a period of 15 years show spontaneous healing and results of X-ray therapy in certain localised areas.

E. M. J.

Isolation of uroporphyrin from faeces in idiopathic porphyria. S. Schwartz and C. J. Watson (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 390—393).—Extraction is made with methyl alcohol-

HCl and the extract treated with CHCl_3 . Porphyrin is adsorbed on Al_2O_3 and washed out with increasing concns. of CHCl_3 in light petroleum. The uroporphyrin fraction is sol. in a 1:1 mixture and was identified by m.p. and spectrum, and by decarboxylation to coproporphyrin.

V. J. W.

Simple test for urinary porphobilinogen. C. J. Watson and S. Schwartz (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 393—349).—2 vols. of saturated Na acetate are added to a mixture of 1 vol. of urine and 1 vol. of Ehrlich's reagent. CHCl_3 is added, and the aldehyde compound of urobilinogen is extracted by the CHCl_3 , while that of porphobilinogen remains in aq. solution. Max. absorption is at 562 m μ .

V. J. W.

Development, localisation, and reabsorption of experimental amyloidosis in rabbit. G. F. Dick and L. Leiter (*Amer. J. Path.*, 1941, 17, 741—751).—Amyloidosis was produced in rabbits by injection of various bacteria from human sources. Splenic and hepatic amyloid appeared early, but later disappeared; renal amyloid develops later but increases with time to the point of extreme disorganisation and fibrosis of the parenchyma, and functional insufficiency. Hyperglobulinaemia, relative or abs., was const. during the longer periods of bacterial infection. (6 photomicrographs.)

C. J. C. B.

Metabolism and diabetes. E. H. Rynearson and A. G. Hildebrand (*Arch. intern. Med.*, 1941, 68, 134—175).—A review of recent literature.

C. A. K.

Analysis of diabetic morbidity and mortality in a general hospital. H. Pollack, H. Dolger, and M. Ellenberg (*Amer. J. med. Sci.*, 1941, 202, 246—251).—Despite the use of insulin the diabetic still shows the same complications as in the past. Acute infections are the most common complication.

C. J. C. B.

Prevention of diabetes. J. D. Paul (*Penn. Med. J.*, 1941, 44, 1451—1452).—40% of the 30 parents of 15 juvenile diabetics and 27% of 37 of their siblings showed a positive 1 hr., two-dose sugar tolerance test. Of 200 women past the age of 45 and one or more lb. overweight, submitted to this test, 73 were negative, 26 were plus 1, 9 plus 2, 65 plus 3, and 27 plus 4. The 35 potential and 92 actual diabetics were put on high-carbohydrate, low-fat, low-calorie reducing diet. 10 refused to co-operate and after 2 years two potential diabetics had developed diabetes and 3 diabetics required insulin. 94% of the remaining 117 were much improved.

E. M. J.

Intracellular carbohydrate metabolism in muscle and liver. A. M. Utevski (*Ukrain. Biochem. J.*, 1941, 17, 79—93).—Pyruvic acid, added to minced muscle or liver, is largely converted during autolysis into lactic acid, a small amount of ketone being also produced, especially in muscle. When the acid is subcutaneously injected into rats, accumulation in the blood occurs but the portion which passes into muscle and liver rapidly disappears, the lactic acid content increasing and the ketone content decreasing at the same time. Adrenaline, added to muscle or liver *in vitro*, does not appreciably affect the conversion of pyruvic into lactic acid and ketones. Ground skeletal muscle (frog, rabbit, dog) and cardiac muscle (dog) after repeated washing with 1% aq. NaHCO_3 and 0.7% aq. KCl contain an enzyme that decomposes glycogen and starch with production of reducing substances, no lactic acid or hexose phosphates being produced. Adrenaline in very low concn. sometimes stimulates and sometimes inhibits the action of the enzyme.

W. McC.

Glyconeogenesis in kidney tissue of the adrenalectomised rat. J. A. Russell and A. E. Wilhelmi (*J. Biol. Chem.*, 1941, 140, 747—754).—There was no significant difference in the rate of disappearance of added glucose and the effect of glucose on the O_2 uptake between kidney slices from normal and adrenalectomised rats. Again no difference was observed in the vals. for total carbohydrate after 2 hr. incubation in the absence of substrate or after incubation in the presence of succinic and pyruvic acid in the two classes of tissue. With α -ketoglutaric acid, *dl*-alanine, and *l*(+)-glutamic acid, however, significantly less carbohydrate was formed by the kidney from adrenalectomised rats.

A. L.

Sugar alcohols. XXII. Metabolism and toxicity of mannitol and sorbitol. F. W. Ellis and J. C. Krantz, jun. (*J. Biol. Chem.*, 1941, 141, 147—154).—The growth of rats on a balanced diet containing 35% of glucose and 5% of mannitol or sorbitol is only slightly inferior to that of rats on a diet containing 40% of glucose but otherwise identical with the

first diet. In fasting monkeys, sorbitol administered by stomach tube gives rise to production of liver-glycogen but mannitol probably does not. Monkeys suffer no detrimental effects as a result of consuming 3 g. daily for 3 months of mannitol or sorbitol and, in man, no detrimental effects result from consumption of daily doses of 10 g. of the alcohols during a period of 3 months. Laxative effects are produced in man by 10–20 g. of mannitol or 50 g. of sorbitol. Sorbitol in doses of 25 or 50 g. increases R.Q. in man but does not affect blood-sugar level. Blood-sugar level and R.Q. remain unaffected by 25 g. doses of mannitol. W. McC.

Behaviour of gluconic acid and ammonium gluconate in animals and man. M. B. Chenoweth, H. Civin, C. Salzman, M. Cohn, and H. Gold (*J. Lab. clin. Med.*, 1941, 26, 1574–1582).—After large oral doses of gluconic acid, the urine, treated with NH_4 molybdate, develops optical rotation. A polarimetric quant. method is described. After 10–30 g. of gluconic acid orally, human subjects excreted 8–15% of the dose in the succeeding 24 hr.; most of the excretion took place in the first few hr. The gluconic acid concn. in urine is 0.03–2.2% and accounts for the fall in urinary p_{H} observed. NH_4 gluconate lowers the p_{H} of urine to the same extent as gluconic acid. In cases with urinary infections, however, urinary p_{H} rarely fell and usually rose. The acute toxicity of gluconic acid and NH_4 gluconate is low. Intravenous injection of a 10% solution of gluconic acid or of NH_4 gluconate in a dose of 0.5 g. per kg. produces slight blood pressure changes; daily oral administration of large doses (1 g. per kg.) of gluconic acid to dogs and cats for 2 weeks produced no tissue changes. The continued administration of large oral doses of gluconic acid to normal human subjects produced no renal changes. C. J. C. B.

Synthesis of phosphopyruvic acid in muscle during oxidation of citric acid. S. F. Epstein (*Ukrain. Biochem. J.*, 1941, 17, 139–143; cf. A., 1940, III, 822).—Phosphopyruvic acid is produced when muscle is incubated with 0.05M-citrate in presence and, to a greater extent, in absence of NaF . Addition of adenosinetriphosphoric acid further increases the amount produced. W. McC.

Dehydration and ketosis. E. M. MacKay, A. N. Wick, and F. E. Visscher (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 351–352).—Ketonic compounds in blood of fasting rats are decreased by water deprivation, presumably because protein breakdown is increased and more carbohydrate is thus provided. V. J. W.

Effect of insulin on [biological] production of ketones. M. Somogyi (*J. Biol. Chem.*, 1941, 141, 219–227; cf. Weichselbaum et al., A., 1941, III, 947).—When insulin is administered, in doses sufficient to cause protracted hypoglycemia, to healthy human beings and dogs, blood-ketone first decreases and then increases, the final level being often very much above the initial level. Diabetic human beings and dogs are affected in the same way, the scale of the changes being greater. Close parallelism exists between the changes and those produced by insulin in liver-glycogen. W. McC.

Effect on blood-oxalic acid of factors influencing urinary acidity. K. Sato (*Japan. J. Med. Sci.*, 1941, II, 4, 277–280).—Muscular exercise decreases blood-, and increases urinary, oxalic acid in rabbits. Administration of NaHCO_3 has no effect on the blood level whilst the urinary oxalic acid is slightly and temporarily increased; Na citrate reduces the both vals., i.e., depresses production of oxalic acid. The metabolism of oxalic acid is unaffected by administration of adipic acid. F. O. H.

Relation of calcium, phosphorus, and nitrogen retention to growth and osseous development. A. L. Daniels (*Amer. J. Dis. Child.*, 1941, 62, 279–294).—The physical development of 3 skeletally retarded boys of pre-school age was studied during a 9-month period. Comparisons were made of Ca, P, and N retention, gain in height and wt., and changes in the bone development from one balance period to the other as shown by roentgenograms of the hands and wrist bones. Ca and P ingestion were kept const. throughout the study, through the inclusion of a const. amount of milk in the diet. As the children increased in wt. the vals. for Ca and P per kg. decreased slightly. Two levels of N ingestion were used, 3.4 g. and 2.6 g. of protein per kg. During the period of study, the children gained 44, 62.5, and 73% more in height and 48, 167, and 78% more in wt. than the average for their ages. The average Ca, P, and N retentions remained high

throughout the study, the retentions at the end periods being as high as or higher than in the early periods. Decrease in N ingestion did not influence N retention; high retentions were obtained with lower ingestions. The skeletal ages of the children, which were 6 months–1 year 11 months below the chronologic ages (Todd standard), approached normal by all standards. A comparison of the N retentions at the 2 levels of protein ingestion in relation to the gains in height and in wt. suggests that 2.6 g. of protein per kg. is sufficient for the average child of the pre-school age. The potentially large child may need more. C. J. C. B.

Retention of radio-phosphorus in whole and aliquot portions of tissues of patient dead of leukaemia. L. A. Erl (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 287–289).—19 days before death the patient received one dose of ^{32}P as PO_4^{3-} . Radioactivity of various organs is compared with their wt. and P content. V. J. W.

Water and electrolyte reactions in body and use and abuse of sodium chloride [in paediatric practice]. T. S. Wilder (*Penn. Med. J.*, 1941, 44, 1414–1417). E. M. J.

Metabolism of *l*- and *dl*- α -hydroxy- β -benzylthiolpropionic and *dl*- α -hydroxy- γ -benzylthiolbutyric acid in rats. J. A. Stekol (*J. Biol. Chem.*, 1941, 140, 827–831).— α -Hydroxy- β -benzylthiolpropionic and α -hydroxy- γ -benzylthiolbutyric acids when fed to rats were excreted unchanged in the urine. For new compounds see A., 1942, II, 3. R. L. E.

Reduction of *p*-nitrobenzenesulphonamide and of azobenzene-4 : 4'-disulphonamide by animal tissues. L. M. Flynn and M. F. F. Kohl (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 466–469).—*p*-Nitrobenzenesulphonamide is rapidly reduced by rat liver *in vitro*, and after oral administration to rats a high % is excreted in the reduced form, largely conjugated. Azobenzene-4 : 4'-disulphonamide given subcutaneously is excreted slowly, and very little is reduced or conjugated. V. J. W.

Reduction of isomeric nitrobenzoic acids by rats. M. F. F. Kohl and L. M. Flynn (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 470–473).—The *p*- and *m*-acids are readily reduced to amino-compounds by liver or kidney suspensions, the *o*-acid only slightly. When the *p*- or *m*-acid is administered only a small fraction is present in the reduced form which is largely conjugated. When the *o*-acid is given a large amount is excreted as free amine. V. J. W.

Post-mortem study of transformation of barbituric acid derivatives into hydrocyanic compounds. P. R. Orella (*Rev. fac. cienc. quim.*, 1935, 10, 51–60).—HCN derivatives were not found in the fresh or putrefied organs of dogs killed with barbituric acid derivatives. CH. ABS. (el)

XX.—PHARMACOLOGY AND TOXICOLOGY.

Rate of diffusion of sulphonamide compounds.—See A., 1942, I, 16.

Determination of sulphanilamide and sulphapyridine in biological fluids. L. D. Scott (*Brit. J. exp. Path.*, 1941, 22, 220–225).—Dimethyl- α -naphthylamine is directly diazotised and coupled with the sulphonamide in the presence of the proteins of blood or c.s.f. so that no loss of sulphonamide occurs by adsorption on pptd. proteins. F. S.

Bacteriostatic effect of *p*-nitrobenzoic acid on pneumococci *in vitro*. J. T. King and A. F. Henschel (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 400–402).—Bacteriostatic effects of *p*-nitrobenzoic acid, its Na salt, and sulphathiazole on pneumococcus type II are approx. equal. V. J. W.

Chemotherapeutic evaluation of some N^1 and N^4 heterocyclic derivatives of sulphanilamide. F. H. Cooper, P. Gross, and M. Lewis (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 508–513).—2-Sulphanilamido-5-ethyl-4-thiazolone has in mice less antistreptococcal activity than and the same antipneumococcal activity as sulphapyridine. Against staphylococci it resembles sulphathiazole and sulphadiazine. It does not cause renal calculi but may produce anaemia. V. J. W.

Treatment of pneumonia [with sulphapyridine]. G. M. zur Hörste (*Mtschr. Kinderheilk.*, 1939, 80, 330–336).—3 of 26 cases treated with sulphapyridine and 1 of 25 children treated daily with 3–6 c.c. of 10% oily solution of "amonal" (a similar compound) died. Six of 45 untreated children died. M. K.

Treatment of pneumococcus III pneumonia with rabbit serum and sulphanilamide. R. T. Garrett and J. R. Twiss (*N.Y. Sta. J. Med.*, 1939, 39, 345—350).—80,000—104,000 units of rabbit immune serum were given intramuscularly to 4 toxic patients with good result and also in a fifth case which had not responded to 48 hr. medication with sulphanilamide. Two of three other cases responded to sulphanilamide alone; the third ended fatally. E. M. J.

Use of 2-sulphanilamidopyrazine in pneumococcal pneumonia. J. M. Ruegger, M. Hamburger, jun., A. S. Turk, T. D. Spies, and M. A. Blankenhorn (*Amer. J. med. Sci.*, 1941, 202, 432—435).—A new derivative of sulphanilamide, 2-sulphanilamidopyrazine, was given in 22 cases of pneumococcal pneumonia. All showed prompt improvement and ultimate recovery, with no significant signs of toxicity. The dosage used was 2—4 g. at once by mouth and 1 g. every 4 hr. until the patient was afebrile. C. J. C. B.

Treatment of pneumonia in children with single dose of sulphapyridine. L. Platt (*Amer. J. Dis. Child.*, 1940, 60, 1019—1024).—After 0.3 g. of sulphapyridine per kg. body-wt. by mouth, free blood-sulphapyridine reaches 4 mg.-% within 3 hr. and is frequently maintained at this level for 18 hr. or even longer. The therapeutic results were good. C. J. C. B.

Sulphapyridine in subacute bacterial endocarditis. J. G. Macleod (*Brit. Med. J.*, 1941, I, 927—929).—A patient with subacute bacterial endocarditis (haemolytic streptococcus) was much improved after a course of 241.5 g. of sulphapyridine. C. A. K.

Sulphapyridine in gonorrhoea. R. M. B. McKenna (*Brit. Med. J.*, 1941, I, 958—961).—A lecture. C. A. K.

Sulphapyridine and lavage in acute gonorrhoea. J. Sommerville (*Brit. Med. J.*, 1941, I, 961—962).—298 of 300 cases of acute gonorrhoea showed early clinical cure after sulphapyridine 0.5 g. 4 times daily for 1 week, followed by 2 weeks' lavage. The relapse rate was 6.6%. Mild toxic symptoms occurred in 13%. C. A. K.

Sulphanilamide in treatment of chancroid. B. A. Kornblith, A. Jacoby, and M. Wishengrad (*N.Y. Sta. J. Med.*, 1939, 39, 364—368).—Healing was obtained after an average of 15 days in 10 cases of chancroid treated with 800 grains of sulphanilamide in divided doses. E. M. J.

[Treatment of] *Staphylococcus aureus* meningitis and septicaemia [with sulphonamides]. B. Street (*Minnesota Med.*, 1941, 24, 658—661).—Administration of sulphathiazole sterilised the blood within 48 hr. but did not alter the course of the associated meningitis in a 28-year-old man until sulphanilamide was given by the intrathecal route. E. M. J.

Effect of sulphapyridine and sulphanilamide on staphylococci and *B. coli* and their respective bacteriophages. H. Zaytzeff-Jern and F. L. Meleney (*J. Lab. clin. Med.*, 1941, 26, 1756—1767).—Sulphanilamide and sulphapyridine do not interfere with the lytic action of sp. bacteriophage on *Staph. aureus* or *B. coli* *in vitro* when these organisms are completely susceptible to the corresponding phage. With strains which are partially phage-resistant the associated use of sulphapyridine, and to a smaller extent sulphanilamide, frequently completes the destruction of the bacteria *in vitro* (synergistic effect). Bacteriophage is more bactericidal on the corresponding staphylococci and *B. coli* than either sulphanilamide or sulphapyridine. In the treatment of staphylococcus and *B. coli* septicaemia the use of potent bacteriophage, when available, should not be delayed because of the use of sulphanilamide or sulphapyridine. C. J. C. B.

Quantitative comparisons of the activity of sulphanilamide, sulphapyridine, sulphathiazole, and sulphadiazine against *Escherichia coli* *in vivo* and *in vitro*. H. J. White, J. T. Litchfield, jun., and E. K. Marshall, jun. (*J. Pharm. Exp. Ther.*, 1941, 73, 104—118).—Mice were infected by intraperitoneal inoculation of 0.5 c.c. of a bacterial suspension of *E. coli* in mucin. The optimal duration of therapy for this infection was found to be 12—14 hr. The drug-diet method of therapy is unsatisfactory because mucin injections cause anorexia; repeated doses are more effective than a single dose; a const. blood concn. for 12—14 hr. is sufficient for max. therapeutic response; the therapeutic response is directly dependent on both the height and duration of the blood concn. of the drug; more or less const. blood concns. can be maintained by administration of drugs *per os* at appropriate times and in sufficient dosage. The therapeutic

activity of 4 drugs was determined on the basis of blood concns. maintained for 10—12 hr. or longer. On the basis of blood concns. in mg.-%, sulphapyridine was 6 times, sulphathiazole 10 times, and sulphadiazine 11 times as active as sulphanilamide *in vivo*. On the basis of min. inhibitory concn. in mg.-%, sulphapyridine was 16 times, and sulphathiazole and sulphadiazine 64 times, as active as sulphanilamide *in vitro*. H. H. K.

Effect of sulphonamide compounds on growth of staphylococci in presence and absence of *p*-aminobenzoic acid. W. W. Spink and J. Jermsta (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 395—398).—Sulphathiazole is more bacteriostatic than sulphadiazine; both are superior to sulphapyridine and sulphanilamide, and their effect is less inhibited by *p*-aminobenzoic acid. V. J. W.

Anti-sulphapyridine and anti-sulphathiazole effect of local anaesthetics derived from *p*-aminobenzoic acid. A. K. Keltch, L. A. Baker, M. E. Krahil, and G. H. A. Clowes (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 533—538).—7 local anaesthetics derived from *p*-aminobenzoic acid all neutralised, more or less completely, the bacteriostatic effect of sulphapyridine on *B. coli* in culture. 9 others not so derived had no such effect. Similar results were obtained for sulphathiazole on *B. coli* and *Staph. aureus*. V. J. W.

Selective inhibition of sulphonamides by various media. E. Strauss and M. Finland (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 428—431).—Relative inhibition of sulphathiazole and sulphadiazine by various media differs with the medium and with the concn. of the drug. V. J. W.

Bacteriostatic and bactericidal action of sulphadiazine *in vitro* on Gram-negative bacteria. E. Strauss and M. Finland (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 432—434).—Many such bacteria inoculated on the semi-synthetic medium used by MacLeod (A., 1941, III, 472) are killed by 1—2 mg.-% of sulphadiazine or sulphathiazole, and others by 5 mg.-%, in contrast with the much greater concns. required for broth cultures. V. J. W.

Combined bacteriostatic activity of sulphanilamide and azochloroamide on haemolytic streptococcus *A* and enterococcus. E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 303—305).—A mixture of sulphanilamide with *NN'*-dichloroazodicarboxylamide is more effective than 4 times the concn. of the former or twice the concn. of the latter against haemolytic streptococcus. Similar results obtain for haemolytic enterococcus. V. J. W.

Local application of sulphanilamide and wound healing. M. Taffel and S. C. Harvey (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 202—205).—Injection of 3% suspension of sulphanilamide into stomach wall of rats caused no differences in healing of an incision then made, as compared with controls. After healing, a few crystals could be seen enclosed in giant cells. V. J. W.

Chills and fever as manifestation of sulphathiazole toxicity. W. E. Molle and W. Buck (*Ohio Sta. J. Med.*, 1941, 37, 752—753).—Case report. E. M. J.

Erythrocyte fragility changes produced by sulphanilamide. W. Antopol, L. Goldman, and W. L. Simpson (*Amer. J. med. Sci.*, 1941, 202, 163—166).—Administration of sulphanilamide to rats results in increased resistance of the red blood cells to haemolysis by hypotonic saline solution, and in splenomegaly with active hyperaemia (such as is seen in haemolytic anaemia). C. J. C. B.

Effect of sulphosin on temperature, white blood cell count, and red cell sedimentation rate. I. Blomqvist (*Z. ges. Neurol. Psychiat.*, 1938, 163, 507—541).—Data are given, obtained from treatment of psychotic cases with increasing intramuscular doses of sulphosin (oily solution of S). H. L.

Treatment of poliomyelitis with glycine. H. Federau (*Mtschr. Kinderheilk.*, 1939, 80, 337—358).—The treatment was valueless. M. K.

Dermatitis linearis migrans (Hautmaulwurfkrankheit) [treatment]. O. Seidl (*Z. Kinderheilk.*, 1939, 61, 257—264).—Case report of a 3-year-old child with this disease in the sacral region. Single application of oil of chenopodium and olive oil in equal parts produced complete cure. M. K.

Trypanocidal action of *m*-nitrobenzoic acid and some derivatives. S. M. Rosenthal and H. Bauer (*Proc. Soc. Exp.*

Biol. Med., 1941, 47, 335—337).—Action in mice against *Trypanosoma equiperdum* of a no. of benzoic acid derivatives is tabulated. Na *m*-nitrobenzoate was the most efficient but relapses were common. Replacement of the carboxyl group by OH, Cl, or SO₂·NH₂ abolished activity. V. J. W.

Synthesis of lipophilic chemotherapeutics. Lipophilic substitutions in azo-dyes.—See A., 1941, II, 358.

Synthesis of vinyl-free cinchona alkaloids and antimalarial activity.—See A., 1942, II, 38.

Effect of 2 : 3 : 5-tri-iodobenzoate and other compounds on growth of the tubercle bacillus in vitro. A. K. Saz and F. Bernheim (*J. Pharm. Exp. Ther.*, 1941, 73, 78—84).—The effects of substituted benzoic and nicotinic acids on the growth of H37 and B₁ strains of tubercle bacilli were studied. The most effective compounds were 2 : 3 : 5-tri-iodobenzoate which was bacteriostatic and 3 : 5-di-iodo-2-hydroxybenzoate which was bacteriostatic and bactericidal. Substituted benzoic acids are more effective than substituted nicotinic or sulphonic acids in inhibiting growth. The *ortho*-isomeride of sulphanilamide has little effect. Monoiodobenzoic acids are ineffective compared with the tri-iodo- or di-iodo-2-hydroxy-benzoic acids. The relative ineffectiveness of di-iodo-4-hydroxybenzoic acid indicates that the presence of 2 I in the ring is not sufficient and that substitution in the *o*-position is important. This is supported by the fact that salicylic acid inhibits growth whereas benzoic acid in equiv. concns. is without effect. The substitution of salicylic acid with groups other than I as in dinitro-salicylic or *o*-methoxybenzoic acid, thiosalicylic acid, etc. usually decreases the inhibitory action of the compound. The substitution of 3 groups into benzoic acid is without effect as shown by the inactivity of trimethoxy- and triamino-benzoic acids. [Cation not stated.] H. H. K.

Degeneration of adrenal cortex produced by germanin. E. M. Humphreys and L. Donaldson (*Amer. J. Path.*, 1941, 17, 767—775).—Germanin in repeated subcutaneous toxic doses (0.03—0.1 g. per kg.) produces zonal degeneration of the adrenal cortex of small laboratory animals. Small serial doses of germanin, comparable with those in therapeutic use in man, may produce similar but less intense adrenal cortical lesions. (4 photomicrographs.) C. J. C. B.

Relative germicidal actions of some halogenated phenols and their phenolates. E. J. Ordal (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 387—389).—On *Staph. aureus* at 25° *o*-chloro-, 2 : 4-dichloro-, and 2 : 4 : 6-trichloro-phenol increase in effect in that order. Acid (about *p*_H 6) solutions are much more effective than the sol. Na compounds (*p*_H 9.8). V. J. W.

Effect of gramicidin on metabolism of bovine spermatozoa. G. Henle and C. A. Zettl (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 193—198).—Addition of gramicidin (Hotchkiss, A., 1940, III, 352) to suspension, 10 µg. or more per ml., caused stimulation followed by decrease of O₂ uptake and mobility when *p*_H was below 7. At *p*_H 7.9 no decrease was observed up to 4 hr. in a PO₄ buffer, but occurred in NaHCO₃. Glycolysis was decreased along with O₂ consumption. V. J. W.

Mode of action of gramicidin. D. Heilmann and W. E. Herrell (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 480—484).—Gramicidin and tyrocidin in aq. solution both lower surface tension, especially the latter. This property of gramicidin is aided by addition of org. substances, e.g., glycerol, in which it is sol. and is more diminished by serum than is the effect of tyrocidin. Heating at 90° for 10 min. does not alter this property of gramicidin, but destroys its bactericidal and hæmolytic effect. V. J. W.

Toxicity of actinomycin. S. A. Waksman, H. Robinson, H. J. Metzger, and H. B. Woodruff (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 261—263).—This substance (*J. Bact.*, 1940, 40, 581) is bactericidal to most species examined, but is also fatal to mice, rats, guinea-pigs, and rabbits in doses of 1 mg. per kg. V. J. W.

Effect of adrenal demedullation on acceleration of denervated heart by acetylcholine hypotension. W. B. Youmans, H. F. Haney, A. J. Lindgren, and A. I. Karstens (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 249—251).—Adrenal demedullation reduces, but does not entirely prevent, acceleration of the denervated heart caused by acetylcholine. V. J. W.

Sweat response to drugs with nicotine-like action. J. M. Coon and S. Rothman (*J. Pharm. Exp. Ther.*, 1941, 73, 1—11).—Intradermal injection of 0.2 c.c. of high dilutions of acetylcholine, nicotine, and α -lobeline caused an outbreak of sweat on the human skin in an area with 2—5 cm. diameter around the wheal. Concns. of 1 : 10,000—1 : 80,000 of acetylcholine produced sweating in two ways : directly by its muscarine-like action, and reflexly by its nicotine-like action. Sweating caused by the direct muscarine-like action appeared within 5—10 sec. after the injection and slowly increased in intensity and in extent corresponding with the slow diffusion of the drug. The max. spread was only a few mm. away from the wheal and was not reached until 5—10 min. after the injection. The nicotine-like response consisted in a sudden widespread outbreak of sweat droplets around the injection wheal in an area about 5 cm. in diameter, with occasional isolated groups of secreting pores outside the main responding area. The response appeared immediately and was fully developed within 1—2 min. after injection. Drugs with nicotine-like action also caused an outbreak of sweat on the foot pad of the cat when injected into the pad. This sweat response was abolished by infiltration of the skin with local anesthetics, remained active in areas anesthetised by nerve block, and could be elicited in extirpated cat's toe pads. It is concluded that the sweating is produced through an axon reflex involving the terminal ramifications of the postganglionic sympathetic fibres supplying the sweat glands. The nerve pathway over which this axon reflex occurs is 10—20 times as sensitive to local anesthetics as are sensory nerves. H. H. K.

Parasiticidal properties of proteolytic enzyme ficin. E. C. Faust and L. F. Thomen (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 485—487).—Crude latex and purified preps. from *Ficus* were given to dogs infected with a no. of intestinal worms. Crude latex was most efficient; a semi-refined crystalline product was also satisfactory but lost its potency rapidly on exposure to air. Most sp. action was on *Trichocephalus* and there was some effect on *Entamoeba histolytica*. V. J. W.

Method for studying expectorant action in animals by direct measurement of output of respiratory tract fluids. W. F. Perry and E. M. Boyd (*J. Pharm. Exp. Ther.*, 1941, 73, 65—77).—The animal was placed on a board, head downward on its back, at an angle of 60° with the table top. Respiratory tract fluids were collected in a graduated tube attached to the distal and lower end of a tracheal cannula. Rabbits and cats yielded about 2 c.c. per kg. body-wt. per 24 hr. The respiratory tract fluid consisted of a yellowish, opaque fluid containing mucus, Cl, Ca, Na, K, I compounds, leucocytes, and epithelial cells. Decreasing the temp. and humidity of the inspired air decreased the fluid output. Smaller animals produced relatively more respiratory tract fluid than larger animals and the output was decreased in the winter months. NH₄Cl, (NH₄)₂CO₃, powdered ipecacuanha, glycerol guaiacolate (resyl), and pilocarpine increased the rate of fluid output. Oral administration of NH₄Cl produced no effect in animals with the gastric nerves severed. Electrical stimulation of the vagus on one side of the neck increased the output. H. H. K.

Effect of digoxin on cold-blooded heart and its bearing on mechanism of digitalis action. A. M. Wedd, H. A. Blair, and G. K. Dwyer (*J. Pharm. Exp. Ther.*, 1941, 72, 394—408).—E.g. of small strips of frog heart and turtle ventricle were recorded. Results obtained from electrically driven strips of turtle heart indicate that systole and refractory period are both shortened by digoxin, and the slowing action on spontaneous rhythm is ascribed to slowing of development of excitation in the pacemaker. Diastole is always lengthened. V. J. W.

Relation of liver-histamine to anaphylactic shock in dogs. G. Ojers, C. A. Holmes, and C. A. Dragstedt (*J. Pharm. Exp. Ther.*, 1941, 73, 33—37).—Small pieces of liver were removed before and after production of anaphylactic shock. The liver samples were extracted by Best's method (1929) and assayed for their histamine content on the blood pressure of the etherised, atropinised cat. Anaphylactic shock produced a reduction in liver-histamine which is parallel to the severity of the reaction. The amounts of histamine liberated from the liver are adequate to account for the degree of anaphylactic shock. H. H. K.

Trichloroethylene as inhalation anæsthetic. C. L. Hewer (*Brit. Med. J.*, 1941, I, 924—927).—Trichloroethylene was used as an inhalation anæsthetic in 127 cases. It generally resembles CHCl_3 but is less potent and less toxic; the e.c.g. was normal in 14 of 15 cases, and in 1 case there were auricular extra-systoles. There were no significant metabolic changes. C. A. K.

Pain threshold measurement in the dog. H. L. Andrews and W. Workman (*J. Pharm. Exp. Ther.*, 1941, 73, 99—103).—The method described by Hardy and Wolff for man (A., 1940, III, 716, 800) is modified for use on the dog, stimuli reaching the threshold causing a reflex twitch of the back muscles. Results are similar to those in man. V. J. W.

Adrenolytic action of cyclopropane. J. W. Stutzman and C. R. Allen (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 218—222). Although cyclopropane at first sensitises the dog's heart to adrenaline, it protects the heart after 1—5 hr. administration against adrenaline effects in most dogs and, less frequently, prevents pressor effects. V. J. W.

Hypnotic properties of propazone (5:5-di-n-propyloxazolidine-2:4-dione). F. H. Luton, J. Blalock, J. H. Baxter, jun., and R. W. Stoughton (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 245—248).—This compound, of which the effects on dogs have been described (cf. following abstract, also A., 1941, III, 1051), was given intravenously to 11 patients. Anæsthesia was produced by 50—100 mg. per kg., and sleep with small doses. No ill effects were observed. V. J. W.

Hypnotic action of 5:5-dialkyloxazolidine-2:4-diones with special reference to 5:5-di-n-propyloxazolidine-2:4-dione. R. W. Stoughton and J. H. Baxter, jun. (*J. Pharm. Exp. Ther.*, 1941, 73, 45—50).—5:5-Dialkyloxazolidine-2:4-diones produced anæsthesia of brief duration with rapid recovery in white mice. The median anæsthetic dose of the Na 5:5-di-n-propyl compound was 172 ± 5 mg. per kg., and the median lethal dose 315 ± 9 mg. per kg. injected intravenously into white mice. 125—175 mg. per kg. of Na salt of the 5:5-di-n-propyl compound intravenously into dogs produced light anæsthesia for 30 min.; 200 mg. per kg. produced deep anæsthesia for 30—60 min. which was followed by a period of lighter anæsthesia lasting about 40 hr. Doses of 250 mg. per kg. into dogs produced very deep anæsthesia during which the wink reflex and all responses to stimuli were commonly lost. These dogs were unable to stand for an average of 42 hr. after the injection and would sleep even longer if undisturbed. The response of dogs to oral doses of various sizes was similar to that obtained on intravenous administration after a delay of 15—30 min. There was little change in the respiration. The heart rate increased but the blood pressure remained normal. The e.c.g. showed no abnormal changes. H. H. K.

Cobra venom analgesia in surgery. P. E. Craig (*J. Kansas Med. Soc.*, 1941, 42, 289—292).—Intramuscular injections of 5—10 mouse units of cobra venom totalling 45—50 units within 4—5 days were given in 38 cases of major and minor operations. 8 of the 16 patients where treatment was started on the third pre-operative day needed additional opiates up to a total of $\frac{1}{2}$ grain of morphia; 10 of the 14 started a day before operation needed up to $\frac{1}{2}$ grain of pantopon, and all 8 emergency cases started just before operation needed opiates for the control of postoperative pain; in 3 of these the dosage was half that usually given. E. M. J.

Local anæsthetic reactions. H. B. Shumacker, jun. (*Med. Ann. Columbia*, 1941, 10, 264—267).—A review. E. M. J.

Adsorbents for procaine-adrenaline solutions. F. S. Wozniak, J. R. Russell, and A. B. Luckhardt (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 493—495).—Pressor effects, produced by injection of procaine-adrenaline solutions into the mental and anterior and posterior palatine foramina, were decreased by addition of a colloidal solution of $\text{Ca}_3(\text{PO}_4)_2$. V. J. W.

Technique for studying anti-convulsant drugs [in cats]. O. P. Kimball (*Ohio Sta. Med. J.*, 1941, 37, 846—848).—A no. 24 Cu wire was introduced into the skull of a cat so as to touch the dura over the motor area and the indifferent electrode was placed over the thoracic spine. The basal threshold stimulus for producing a typical seizure was then determined (usually 4—5 ma. for 3 sec.). Anti-convulsant drugs were given intravenously, and the new threshold was determined after 30 min. 6 mg. of dilantin per kg. increased the basal threshold by 114%, and similar doses of cyclopal,

luminal Na, and benzylhydantoin by 97%, 92%, and 60.5%, respectively. 1 mg. of benzedrine per kg. increased the threshold by 25—60%. E. M. J.

Effects of phenobarbitone on blood- and urine-ascorbic acid in man. S. T. Wright, T. J. Callaghan, and V. Minnich (*Proc. Soc. Exp. Biol. Med.*, 1941, 43, 490—492).—Daily administration of 180 mg. of phenobarbitone to each of 3 adults caused no changes in ascorbic acid of whole blood, plasma, or urine. V. J. W.

Studies of cold pressor tests on addicts and normal subjects. C. K. Himmelsbach (*J. Pharm. Exp. Ther.*, 1941, 73, 91—98).—The rise of systolic blood pressure caused by placing one hand in ice water for one min. and the time required until the basal blood pressure was regained were measured. The blood pressure response of morphine addicts to the cold stimulus was greater and the recovery slower than in control subjects. The withdrawal of morphine slowly brought this reaction to normal. Administration of morphine to normal persons and post-addicts reduced the blood pressure response to cold and accelerated the recovery. Oral and subcutaneous administration of benzedrine increased the rise of blood pressure of both normal and addicts but brought the blood pressure quicker to normal. Adrenaline (1 experiment) and physiological saline did not influence the reaction. Mecholyl and nembul decreased the response. H. H. K.

Picrotoxin in barbiturate poisoning. L. Cohen, T. D. Cohn, and I. Gray (*N.Y. Sta. J. Med.*, 1941, 41, 1955—1958).—A 42-year-old man fell into coma with generalised clonic convulsions 6 hr. after taking 1 g. of nembul (Na pentobarbital). 3 hr. later gastric lavage and instillation of dil. tannic acid were instituted. During the next 24 hr. he received 36 ampoules (? dose) of coramine without effect. 25 c.c. of a 0.3% solution of picrotoxin were given in divided doses intravenously during the second 24 hr. with immediate, increasing, and later on sustained stimulation. The patient died on the fourth day of pneumonia and a lung abscess, pulmonary oedema having been present since the first day. E. M. J.

Lead and arsenic ingestion and excretion in man. S. H. Webster (*U.S. Publ. Health Repts.*, 1941, 56, 1359—1368).—9 healthy adults ate Pb arsenate-sprayed apples for 10—12 days. Analyses of the fruit eaten showed a potential intake of 1—26 mg. of Pb and 0.34—6.8 mg. of As per person per day. Analyses of daily urine and faecal specimens from these subjects during the experimental period showed the total 24-hr. output of Pb and As per man to be 22.3 mg. and 2.43 mg., respectively. C. G. W.

Deposition and removal of lead in soft tissues. L. T. Fairhall and J. W. Miller (*U.S. Publ. Health Repts.*, 1941, 56, 1641—1650).—Pb deposited in the softer tissues in rats fed 15 mg. of PbCO_3 a day for 6 weeks is transitory in nature and may be diminished by 50% within 2 weeks by restoration to a normal diet. Coincidentally there is a rise in the Pb content of bone and a depression in blood-Ca. The cells of the renal convoluted tubules (particularly the proximal group) are severely injured; this damage is reduced following return to a normal diet for 2 weeks. Changes in the spleen are more lasting. C. G. W.

Toxicity of molecular components of lead arsenate. L. T. Fairhall and J. W. Miller (*U.S. Publ. Health Repts.*, 1941, 56, 1610—1625).—An investigation of the effect of ingestion of Pb arsenate, extending over 2 years, was made on rats to determine whether the Pb or the As component, or the combination, was chiefly responsible for the toxicity of the substance. Pb arsenate was compared with Ca arsenate and Pb carbonate. Based on mortality rates, the descending order of toxicity at equiv. levels of intake was: Ca arsenate, Pb arsenate, Pb carbonate. There were changes in the kidney and spleen. C. G. W.

Effect of therapeutic agents in treatment of lead poisoning. F. L. Smith (*Safe Practice Bull.* No. 52, Pt. III, Penna. Dept. Labor and Ind., 1941, 13 pp.).—Pb determinations were made on the whole blood, serum, and cells and fibrin of healthy persons, patients with disorders other than plumbism, and patients with latent plumbism. In non-leaded persons, there was no Pb in the serum, a max. of 0.013 mg. per 10 g. in the cells and fibrin, and of 0.006 mg. per 10 g. in whole blood. The 92 cases of latent plumbism showed 0.001—0.004 mg. of Pb per 10 g. of serum, but in 43 of the 92 cases

the whole blood and cell and fibrin contents were normal, and symptoms of Pb poisoning were absent but could be produced by acid therapy. These results contrast with recent reports that abnormal quantities of Pb could be present in the blood without indicating Pb poisoning. C. G. W.

Intracerebral gold deposits following [intravenous] injection of gold preparations. W. J. Roberts (*Arch. Psychiat. Nervenkr.*, 1939, 109, 744—754).—A method is described for detecting submicroscopic particles of Au in animal tissues. In rabbits receiving sanocrysin (2—3 injections weekly for 2—3 months; total amount 0.55 g. per kg.), Au deposits were found in ganglionic and glial cells; storage was greatest in the III and XII nuclei, in the dorsal vagal nucleus, Purkinje cells, part of the anterior horn cells, basal ganglia, infundibular region, and choroid plexus. H. L.

Excretion of gold following administration of gold sodium thiomalate in rheumatoid arthritis. E. F. Hartung, J. Cotter, and C. Gannon (*J. Lab. clin. Med.*, 1941, 26, 1750—1755).—Following subcutaneous administration of Au Na thiomalate in patients with rheumatoid arthritis, Au can be consistently recovered from the urine. In 2 instances the urinary excretion of Au was 9 and 17.2% of the intake. Au was found in the urine 60—300 days after administration of the drug had been stopped. Faecal Au in 3 instances was 0.22—0.65 mg. in 24 hr. No Au was found in saliva in 2 hr. Administration of NaHCO_3 by mouth had no quant. effect on Au excretion in the urine. C. J. C. B.

Does bismuth pass into brain after [intramuscular] administration of spirobismol soluble? T. Strobel (*Allg. Z. Psychiat.*, 1939, 113, 328—338).—Bi was not detected in the cerebral tissue of rabbits which had received up to a total of 12 c.c. of spirobismol soluble (= 360 mg. of Bi) with or without simultaneous administration of pyrifur (producing artificial fever). H. L.

Physico-chemical properties of arspenamines in relation to toxicity and therapeutic efficiency. H. N. Wright, A. Biedermann, E. Hanssen, and C. I. Cooper (*J. Pharm. Exp. Ther.*, 1941, 73, 12—26).—Arsphenamine and neoarsphenamine possess colloidal characteristics. Solutions of neoarsphenamine, asphenamine hydrochloride, and alkalinised arspenamine were separated into relatively crystalloid and colloid fractions by dialysis in an inert atm. The crystalloid fractions of neoarsphenamine and arspenamine are more curative than either the whole drug or the colloidal fraction. Crystalloid fractions of neoarsphenamine were up to 8 times as curative as the colloidal fraction and 3.3 times as curative as the whole drug; of acid arspenamine 7.5 times and 5.5 times as curative, and of alkalinised arspenamine 3.5 and 1.2 times, respectively. The crystalloid fractions of neoarsphenamine and arspenamine produced death following the typical symptoms of As poisoning, the average duration of life after injection being 62 hr. The colloid fractions of neoarsphenamine and arspenamine produced immediate toxic reactions resulting in death from respiratory failure within $\frac{1}{2}$ —3 hr. in more than 85% of all deaths. The desirable properties of high curative index and low toxic index are in the least aggregated portions of the arspenamines. H. H. K.

Ichthyometric studies on some mercurials. D. I. Macht and E. C. Spencer (*J. Amer. Pharm. Assoc.*, 1941, 30, 203—207).—An apparatus (ichthyometer), in which the movements of a goldfish in a shallow tank are transmitted by means of a silk thread tied through the dorsal muscle and a lever to a kymograph, is described. By its use, it is shown that certain org. mercurials are much less toxic than are inorg. Hg salts, and also that some mercurochrome preps. contain inorg. Hg contaminants. F. O. H.

Atriplicism [due to ingestion of *Atriplex serrata*]. R. T. Yang (*Japan. J. Med. Sci.*, 1940, XIII, 2, 53—58).—9 cases of atriplicism (a skin disease occurring only in North China, Manchuria, and Korea) are reported. The disease is attributed to ingestion of the shoots of *Atriplex serrata* (a wild herb) together with the effect of sunlight. M. K.

Outline of drug eruptions. H. Rattner and E. R. Pace (*Quart. Bull. Northwest. Univ. Med. School*, 1941, 15, 211—213).—A definition of drug eruptions, their diagnosis, clinical manifestations, varieties, drugs giving typical eruptions, and treatment are given in tabulated form. A. S.

Case of foetal death by small dose of quinine. T. Kubota (*Japan. J. Obstet. Gynec.*, 1939, 22, 128—130).—Death of a live foetus is attributed to oral administration of quinine hydrochloride to the mother (100 mg. and 190 mg. at 24-hr. interval). P. C. W.

Bromide poisoning. M. Moore, T. Sohler, and L. Alexander (*Confinia Neurol.*, 1940, 3, 1—52).—A review. H. L.

Differential excretion of bromide and chloride ions and its rôle in bromide retention. O. Bodansky and W. Modell (*J. Pharm. Exp. Ther.*, 1941, 73, 51—64).—A single intravenous injection of NaBr into fasting dogs excreting basal, minimal amounts of Cl⁻ produced a considerable excretion of Br within the first hr. After this period the amount of Br excreted per hr. decreased, although it was still considerable for the next 20 hr. The excretion of Br was associated with an excretion of Cl⁻. A study of the relation between the amounts of Br and Cl excreted during various periods after Br injection showed that the Br : Cl ratio was highest during the first hr. after injection, and decreased thereafter. When the urinary Br and halide ratios were compared with the plasma-Br : -halide ratios for corresponding periods, K or $(\text{Br}_p/\text{Hal}_p)/(\text{Br}_u/\text{Hal}_u)$ (suffixes relate to urine and plasma) was highest during the first hr. after Br injection. In one experiment K was 0.46 for the first hr. after injection, 0.34 for the next 2 hr., and 0.29 for the subsequent hr. 24—48 hr. after NaBr injection the excretion of Cl and Br became negligible. In spite of the presence of high concns. of Br in the plasma, very little or no Br was being excreted. A single intravenous injection of NaCl at such a stage led to a marked excretion of Br. The amount of Br excreted depended on the amount of halide injected, the plasma-Br : -halide ratio, the state of halide saturation of the tissues, and on the val. of K. The injection of salyrgan (5 mg. per kg.) increased the excretion of total halide consisting of increases in both Cl and Br and led to a rise in the Br : halide ratio of the urine. These increases were accompanied by decreases in the plasma-halide. K ranged from 0.7 to 1.0 during diuresis following large injections of NaCl or NaBr and subcutaneous injections of salyrgan or theophylline. In subsequent periods, K fell to 0.4. H. H. K.

Synergic action in vitro of metabolic accelerators, 2:4-dinitrophenol and methylene-blue. I. Ungar (*Anal. Assoc. Quim. Argentina*, 1941, 29, 75—82).—The val. of Q_{O_2} for isolated toad muscle stimulated by 2:4-dinitrophenol and methylene-blue together is equal to the product of the two vals. for the separate drugs. It is concluded that, assuming that the two drugs act independently in activating substrate and O_2 , respectively, the combination between active substrate and active O_2 takes place according to the law of mass action. F. R. G.

Effects of nitrobenzene and benzene on *Valonia*. W. J. V. Osterhout (*J. Gen. Physiol.*, 1941, 24, 699—702; cf. A., 1941, III, 386).—The effects of nitrobenzene on *Valonia* are similar to those of guaiacol and hexylresorcinol, the p.d. changing first in a positive and then in a negative direction, but differ in that recovery is slower and often incomplete. The electrical resistance is raised and this effect and the p.d. change are antagonised by NH_3 . Benzene and nitrobenzene increase the apparent mobility of Na^+ and decrease that of K^+ . H. G. R.

Reduction of arterial blood pressure of hypertensive rats by administration of renal extracts. H. Jensen, W. C. Corwin, S. Toksodorf, J. J. Casey, and F. Bamman (*J. Pharm. Exp. Ther.*, 1941, 73, 38—44).—An extract of fresh hog kidney, injected intramuscularly twice daily for a period of 4 days, produced a pronounced and prolonged fall of blood pressure of hypertensive rats. Oral administration of the renal extract was ineffective. The anti-hypertensive factor in the extract was destroyed in 20—40 min. at 75°. H. H. K.

Treatment of surra in horses in the Philippines. L. M. Yutuc (*Philippine J. Sci.*, 1941, 75, 105—129).—Naganol combined with atoxyl was without val. in the treatment of surra in horses. Naganol combined with Na Sb tartrate and given in slightly toxic doses was followed by recovery in 2 of 5 artificially infected horses and in 1 of 3 naturally infected animals. In field trials in British North Borneo in 1938 this latter treatment cured 63 of 100 naturally infected horses. The dosage varied from 1.5 to 3 g. of naganol and from 0.5

to 1.5 g. of Na Sb tartrate, given intravenously. The animals were native horses, weighing about 150 kg. E. G. W.

Therapeutics of some new drugs. H. C. Wood (*Amer. J. Pharm.*, 1941, 113, 273—280).—The therapeutic uses of vitamins of the B group, naphthaquinones, tocopherols, gastric antacids, and sulphanilamide derivatives are discussed. F. O. H.

Mexican drugs. I. Zapote borracho (*Lucuma salicifolia*, Kunth, Sapotace). M. Bachstet and A. Aragon (*J. Amer. Pharm. Assoc.*, 1941, 30, 218—219).—The fruit contains tannin, starch, protein 14.5, and sucrose-invert sugar 14.85%, but no glucosides or alkaloids; it is apparently harmless and possesses no intoxicating properties. F. O. H.

Non-toxic character of ursolic acid. J. A. Lubitz and C. R. Fellers (*J. Amer. Pharm. Assoc.*, 1941, 30, 207—208).—Ursolic acid (a monohydroxytriterpene acid) from cranberry skins is non-toxic to rats, guinea-pigs, chickens, and rabbits when ingested in doses of 0.1—0.5 g. per kg. and, in doses of 0.5 g. daily for 3 days, to men. F. O. H.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Literature on conditioning air for advancement of health and safety in mines. II. Need for air conditioning indicated by physical quality of underground air. D. Harrington and S. J. Davenport (*U.S. Bur. Mines, Inf. Circ.* 7182, 1941, 104 pp.).

Oil and oil-like constituents of the air. H. Cauer (*Angew. Chem.*, 1940, 53, 171—172).—The oil content (determined by filtering and extracting the filter with ether) of 29 samples of air is recorded, and its effect on the lungs discussed. A. L.

Occupational and related dermatoses. Abstracts from literature for 1935—1939. L. Schwartz and L. H. Warren (*U.S. Publ. Health Bull.*, 1941, No. 266, 160 pp.).—The abstracts are classified according to the hazardous materials and the occupations in which exposure occurs. C. G. W.

Skin hazards in airplane manufacture. L. Schwartz and J. P. Russell (*U.S. Publ. Health Repts.*, 1941, 56, 1581—1593).—Inspection of plants employing over 100,000 men showed many skin hazards. The principal ones were those from cutting oils, thinners, and solvents used in paints and dopes, plating and rustproofing of metals, fluxes used in welding, and solvents used for cleaning and degreasing. Preventive measures consisting of wearing of impervious clothing, the use of protective ointments, and the use of non-irritating cleansers, in addition to proper general and local ventilation, are described. C. G. W.

New industrial skin cleanser. L. Schwartz (*U.S. Publ. Health Repts.*, 1941, 56, 1788—1790).—A cleanser based on a mixture of sulphonated castor oil and one of the fatty alcohol sulphates is described. This mixture does not defat the skin. C. G. W.

Control of lead hazard in storage battery industry. W. C. Dreesen (*U.S. Publ. Health Bull.*, 1941, No. 262, 138 pp.).—Chronic plumbism was studied among 766 men employed in 6 Pb storage-battery factories. $\frac{3}{4}$ of the workers had been employed for 5 years or more and $\frac{1}{4}$ for 20 years or more. No cases of plumbism severe enough to cause disability were seen. 177 men had a combination of clinical and laboratory findings directly referable to Pb absorption. 9 of these were designated incipient plumbism and all were employed in rooms where the average atm. Pb concn. exceeded 1.5 mg. per 10 cu.m. of air. 10 cases of early plumbism were found in 181 men exposed to concns. below 1.5 mg. Pb per 10 cu.m. of air. Prevalence of early plumbism increased with increasing atm. Pb concn., 54% of the 125 workers exposed to more than 3 mg. per 10 cu.m. of air being affected. C. G. W.

Silicosis in manufacture of water-soluble paints. A. R. Smith (*Ind. Hyg. Bull.*, N.Y. State, 1941, 20, 165—166).—89 men employed in the manufacture of water-sol. paints from calcimine and related substances were examined by X-ray and 9 showed silicosis. The basis for most of the silicosis was probably laid down years ago, before the industry realised the need for dust control. The % of silicosis cases

developing in the next 25 years will probably be much less because of improved methods of dealing with air-borne dust. C. G. W.

XXII.—RADIATIONS.

X-Rays in medicine. B. Cassen (*J. Appl. Physics*, 1941, 12, 405—413).—The equipment and technique of radiography, fluoroscopy, and X-ray therapy are described. A. J. M.

Radiotherapy in lymphoblastoma group of diseases. I. Arons (*Radiology*, 1941, 37, 164—173).—A review and report of 8 cases. E. M. J.

Treatment of inflammatory conditions by X-rays. L. J. Williams (*New Orleans Med. J.*, 1941, 94, 117—119).—A review. E. M. J.

Reaction of kidney tubules in culture to Roentgen rays. R. Chambers and G. Cameron (*Radiology*, 1941, 37, 186—193).—Kidney tubules from the mesonephros of the chick embryo were irradiated after 48 hr. incubation and addition of phenol-red at the rate of 2700 r. per min. produced at 200 kv. and 30 ma. with a target-object distance of 14.8 cm. The first changes were seen with doses of 20,000—25,000 r., when the cysts filled with phenol-red became paler than the controls; epithelial damage was first seen with 40,000—50,000 r. 24 hr. after irradiation. With 60,000—75,000 r. epithelial degeneration began after 12 hr. and the cysts were almost entirely cytolysed at 24—36 hr. Leucocytes and macrophages of the cellular outgrowths had disappeared 24 hr. after irradiation with 25,000 r. and further outgrowth of fibroblasts was inhibited, whereas the epithelial sheets remained normal and grew for over 10 days. After 50,000—60,000 r. only epithelial sheets survived up to 5 days; with 75,000 r. the epithelial cells of the outgrowth began to degenerate after 3 days and became cytolysed on the 4th or 5th day. Cultures without phenol-red were more resistant. If phenol-red was added after exposure to 50,000 r. the amount of degeneration of tubules at 48 hr. was inversely proportional to the time interval after which the stimulation was started. Cultures irradiated 24 hr. after addition of 0.5% of $MgSO_4$ with 50,000 r. began to deteriorate after 15 hr.; degeneration started at 36 hr. without $MgSO_4$. Cultures prepared from kidneys irradiated with 25,000 r. showed little repair and most tubules remained open. There was a progressive development of unorganised sheets of epithelium from the unhealed ends of the tubule fragments. The lack of healing was more pronounced if phenol-red was added at the time of explantation; if added after 24 hr. there was more repair. E. M. J.

Biochemical effects of ultra-short waves. I. Urinary excretion of total nitrogen, urea, and total sulphate. J. Koyanagi and T. Hukusako. **II. Effect of irradiation of spleen of dogs on lipin-phosphorus of blood.** (*Japan. J. Med. Sci.*, 1941, II, 4, 281—289, 291—296).—I. Irradiation (λ 6 m.) of rabbits for some days increases urinary excretion of total N and SO_4 and urea, the effect persisting for at least 2 weeks after the irradiation.

II. Direct irradiation (λ 6 m.) of the intact spleen of dogs for 10 min. tends to increase blood-phosphatides; the max. increase observed was 29%. F. O. H.

Radiosensitivity of skin of new-born rats. III. Sensitivity at different temperatures. T. C. Evans, J. P. Goodrich, and J. C. Slaughter (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 434—437; cf. A., 1941, III, 1059).—Skin temp. was varied between 0° and 40° by immersion in water. Extent of irradiation injury varied approx. with temp. V. J. W.

New X-ray laboratory of National Bureau of Standards. L. S. Taylor (*Radiology*, 1941, 37, 79—84).—Description of the new building which will house *inter alia* a 1400-kv. d.c. and a 2000-kv. surge generator. (Illustr.) E. M. J.

Effect of shockproof cables and condensers on two-valve half-wave rectification. M. M. D. Williams (*Radiology*, 1941, 37, 94—100).—Comparison of the wave forms of the X-ray tube potential and the transformer potential showed a capacity in the circuit the val. of which corresponded to the 0.0012 μF . of each of two shockproof cables. The r. per min. per ma. output varied with the type of rectification, type of tube, and type of connexion used. Introduction of two 0.01- μF . condensers into the rectified circuit evened out the voltage wave form in such a way that the % difference between max.

and min. voltage was for the same ma. greater with smaller peak voltage. The min. intensity of X-radiation was 4% of the max. at 130 peak kv. and 6 ma. when no condensers were in the circuit and rose to 78% of the max. with condensers. The r. per min. per ma. output increased by up to 100% on the introduction of similar condensers and was not proportional to the no. of ma. but depended on the voltage wave form. E. M. J.

Accuracy of focal spot size determination. L. G. Jacobs (*Radiology*, 1941, 37, 214—219).—A simple formula is derived for calculating the target size x of an X-ray tube when the images m obtained through 2 pinholes with the diameter n as well as the distances y and z of corresponding points of the images and holes respectively are known and when the long axis of the tube is perpendicular to the line connecting the pinholes: $x = (my - nz)/(y - z)$. Target tilts have no appreciable effect on this calculation. The distance between pinholes and tube should be fairly large and that between pinholes and film at least twice and preferably several times that distance. E. M. J.

Evolution of dosimeters in X-ray therapy. O. Glasser (*Radiology*, 1941, 37, 221—227).—A review. E. M. J.

Simple calculator for roentgenographic mensuration. T. P. Ting (*Radiology*, 1941, 37, 208—213).—A graph of the image sizes is drawn using the various quotients of object-film distance over target-film distance as radius vectors and object size as arcs of concentric circles. Image sizes can then be read off by a simple method. E. M. J.

Bactericidal action of ultra-violet light. D. E. Lea and R. B. Haines (*J. Hygiene*, 1940, 40, 162—171).—Bacterial suspensions of three different organisms exposed to the light (95% monochromatic, λ 2537 Å.) for various times gave exponential survival curves. Deviations from the curves could be caused by aggregation of the organisms. The death rate was directly proportional to light intensity over a range 500:1. The quantum yield was between 0.01 and 0.001, much less than that obtained with X-rays. D. D.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Electron energy-levels in biochemistry. S. Baxter and A. B. D. Cassie (*Nature*, 1941, 148, 408—409).—Dry wool shows strong polarisation under an applied potential. As regain increases, conductivity increases exponentially. When regain exceeds 6—8%, wool appears to behave as an electronic semi-conductor; polarisation has disappeared, Ohm's law is obeyed, and at const. regain conductivity has a large positive temp. coeff. The activation energy corresponds with 1.3 e.v. When methyl alcohol replaces water, the conductivity phenomena remain unchanged, but the activation energy is lowered to 1 e.v. The electric conductivity of glass surfaces appears to be the same as that of wool. Either the wool-water-methyl alcohol systems are electronic semi-conductors, or there are electronic energy bands in the system which are separated from the ground-levels by forbidden zones. The conducting system seems to be water or methyl alcohol absorbed appropriately on a surface. L. S. T.

Physico-chemical laws, living matter, and fluctuations. J. S. Ford (*J. Inst. Brew.*, 1941, 47, 298—300).—A dissertation. I. A. P.

Electrophoretic properties of thromboplastic protein from lungs. S. S. Cohen and E. Chargaff (*J. Biol. Chem.*, 1941, 140, 689—695; cf. A., 1941, III, 75).—Electrophoresis of the thromboplastic protein from ox lungs prepared by a simplified procedure gave 90—95% of a slow-moving phospholipid-protein component of N content 12.5% in which all the P was present as phosphate, and a minor fast-moving component (probably nucleic acid). A. L.

High-frequency conductivity and dielectric effect of fresh fertile and infertile hens' eggs. A. L. Romanoff and K. Frank (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 527—530).—Results already described (*ibid.*, 1939, 42, 298) for 14 megacycles are extended to other frequencies. Conductivity of albumin of fertile eggs is 7.4% lower than of infertile eggs, and is max. at 15 megacycles. V. J. W.

Change of colloids by X-rays: relation between colloid stability and radiosensitivity. IV. Effect of X-irradiation and temperature on turbidity and physical properties of ovalbumin sol. G. Matuo (*Japan. J. Obstet. Gynec.*, 1939, 22, 94—99).—Ovalbumin solution was heated at different temp. and subsequently irradiated with hard X-rays (90 r. per min.). Turbidity was produced which was proportional to the duration of irradiation, temp. and length of heating. The X-rays changed the coagulation properties of the ovalbumin. If the solution was heated above 67—68° no effect was seen on irradiation. Irradiation at low temp. (2—4°) produced increased viscosity and decreased surface tension; the same effects were found at room temp. The X-ray effect is attributed to heating effects. P. C. W.

Changes of colloids by visible light. G. Matuo (*Japan. J. Obstet. Gynec.*, 1939, 22, 342—348).—A dialysed ovalbumin solution irradiated with visible light decreased in surface tension and stability. If methylene-blue or eosin was added and irradiated with red or blue light respectively the turbidity was increased, as it was if either was irradiated with white light. When blue light was applied to the methylene-blue solution or red light to the eosin solution no effect was produced. P. C. W.

XXIV.—ENZYMES.

Isolation of bacterial dehydrogenases. W. Franke and B. Bannerjee (*Angew. Chem.*, 1940, 53, 162—163).—Solutions containing lactic, glutamic, malic, succinic, formic, and glucose dehydrogenases are obtained from bacteria by repeated freezing and thawing, then centrifugation. The yield of glutamic and succinic dehydrogenases is decreased, that of the others increased, by autolysis at 37° pH 7.5, of the frozen cells. Lactic, succinic, and formic dehydrogenases from *B. coli* require no co-enzymes. Filtration through a 1- μ pore filter does not affect lactic dehydrogenase, but removes formic dehydrogenase completely and the others partly from the solution. A. Li.

Preparation of cell-free solutions of hydrogenase. M. Bovernick (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 191—193).—Cell-free solutions and dry powders were prepared from *B. coli* suspensions either by pouring into 20 vols. of acetone and filtering, or by filtering a 16-day autolysate through Mandler filters. These preps. decolorised methylene-blue in H_2 at a rate comparable with that shown by the *B. coli* from which they were made. V. J. W.

β -Glucosaminase activity of testicular extracts and its bearing on problem of diffusing factors. M. E. East, J. Madinaveitia, and A. R. Todd (*Biochem. J.*, 1941, 35, 872—876; cf. A., 1941, III, 470).—Diffusing factor concentrates from testicular extracts contain a sp. β -glucosaminase, differing from the agent present in these concentrates which causes a rapid decrease of viscosity of mucopolysaccharides of the hyaluronic acid type. J. N. A.

Ultra-violet absorption spectrum of crystalline ribonuclease. F. M. Uber and V. R. Ellis (*J. Biol. Chem.*, 1941, 141, 229—230; cf. Kunitz, A., 1941, III, 47).—The spectrum resembles that of other protein enzymes, the curve having max. and min. at 2800 Å. and 2520 Å., respectively. These vals. are obtained with solutions in PO_4^{3-} (pH 4.5) and borate (pH 2.5) buffer. The spectrum indicates that each mol. of ribonuclease contains 9—10 tyrosine residues. W. McC.

Patho-physiological significance of cathepsin; influence of inorganic and organic substances on cathepsin action and relationship of cathepsin action inhibiting ability of rabbits' serum to vitamins, hormones, vegetative nervous poisons, and functions of organs. T. Kosaki and K. Ishikawa (*Japan. J. Gastroenterol.*, 1939, 11, 101—146).—Cathepsin action was measured by the increase in acidity after 24 hr. at 37° in a citrate buffer mixture (pH 4.8) of an aq. solution of a dried alcoholic residue of rabbit's liver and gelatin. Cu, Hg, Ag, Pb, Zn, Fe, and Mn are inhibitory in that order. Serum, albumin, lecithin, cholesterol, and uric acid are inhibitory. Atropine and adrenaline increase cathepsin, pilocarpine, estring, insulin, anterior and posterior pituitary hormone, and thyroid hormone have no effect. Human and rabbit blood sera are inhibitory. Parenteral administration of vitamins A and C produces an increase and of B₁ and D no effect on the inhibitory action of rabbit serum. Administration of insulin and atropine increases and of pilocarpine decreases the

inhibitory effect of rabbit sera. Ligature of the common bile duct, bilateral ligature of ureters, splenectomy, and thyroidectomy all cause an increase in the inhibitory action of rabbit sera followed by a decrease. F. S.

Synthetic effect of proteinases. A. S. Ziperovitch (*Ukrain. Biochem. J.*, 1941, 17, 173–200).—A review. W. McC.

[Determination of] proteolytic enzymes. Q. Landis (*J. Assoc. Off. Agric. Chem.*, 1941, 24, 615–617).—Collaborative results obtained by using a simplified gelation-rate method (A., 1938, III, 341) show mean deviations of 11–31%. A. A. E.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Mechanism of Pasteur effect in alcoholic fermentation by yeast cells. A. Gottschalk (*Austral. J. Exp. Biol.*, 1941, 19, 211–229).—With fresh, compressed yeast under strictly anaerobic conditions, only 77.4% of added glucose is converted into alcohol and CO_2 ; 65.7% of the glucose consumed, but not fermented, is converted into reducing substance(s) by acid hydrolysis, whilst 60.4% of the non-fermented glucose is converted into polysaccharides, mainly glycogen and gum, together with small amounts of membrane polyose. Compressed yeast does not synthesise more higher carbohydrates under aerobic than under anaerobic conditions, although in presence of O_2 the amount of glucose consumed but not accounted for by fermentation and respiration is greater than in absence of O_2 . When fructose is fermented aerobically, the residual sugar is fructose, and no glucose is formed. These results are not in agreement with the existence of a Meyerhof cycle. The Pasteur effect is independent of O_2 tensions between 80 and 725 mm. (exclusive of water vapour). When acetaldehyde is used as substrate, yeast consumes 360% more acetaldehyde under aerobic than under anaerobic conditions and therefore a dismutation is not the first step in the oxidative metabolism of the aldehyde. Also for each mol. of acetaldehyde which is oxidised to CO_2 and water, another mol. is reduced to ethyl alcohol. It is concluded that the first stage of the enzymic oxidation of acetaldehyde is an α -oxidation, catalysed by an α -dehydrogenase, with formation of glycollaldehyde, which is further oxidised via glyoxal, glyoxylic acid, and formaldehyde to CO_2 and water; the oxidation of glyoxal to glyoxylic acid is coupled with reduction of acetaldehyde to alcohol. The rates of oxidation of glucose and acetaldehyde by compressed yeast are the same. Under anaerobic conditions, the dihydrocozymase is re-oxidised by acetaldehyde as H acceptor, whilst under aerobic conditions part of the dihydrocozymase is oxidised by O_2 by means of the diaphorase-cytochrome-oxidase system. In yeast cells, this latter oxidation is slower than the former, and this slower re-oxidation causes a decrease in the total amount of carbohydrate which is broken down. Thus the Pasteur effect is due to the fact that, under aerobic conditions, part of the reduced cozymase persists in the reduced condition and the amount of active cozymase is therefore decreased. J. N. A.

Yeast growth from pentoses. R. Lechner (*Angew. Chem.*, 1940, 53, 163–167).—Many moulds grow readily, but yeasts scarcely at all, in solutions containing lactose as the only carbohydrate. With *Torula utilis* or *Monilia candida*, xylose and inorg. N in aerated solutions give 45–50% yields of cell-substance, containing 40–50% of protein. On this basis methods are described for converting the carbohydrates of wood hydrolysis products or sulphite liquors into cell-substance. With beech sulphite liquor 90–95% of the pentose is used, giving 55–68% yields. A. Li.

Effect of certain reagents on activity of biotin. G. B. Brown and V. du Vigneaud (*J. Biol. Chem.*, 1941, 141, 85–89).—Biotin may be inactivated by treatment with 20% HCl for 48 hr. and 40–60% inactivation occurs with N-KOH at 120° for 17 hr. or by refluxing with 5% K methoxide for 1½ hr. It is not affected by aeration of acid or alkaline solutions with air or O_2 (although it may be destroyed by 5% H_2O_2 or ether containing peroxide) or by acylating, alkylating, or carbonyl reagents. Although inactivated by many reagents which react with α -amino-acids, it is not affected by ninhydrin and is not an α -amino-acid but contains an easily oxidisable group or groups. H. G. R.

Biochemistry of micro-organisms. Synthesis of catenarin (1:4:5:7-tetrahydroxy-2-methylantraquinone), a metabolic product of species of *Helminthosporium*.—See A., 1942, II, 24.

Pyridine analogue of aneurin and growth of fungi. W. J. Robbins (*Proc. Nat. Acad. Sci.*, 1941, 27, 419–422).—The pyridine analogue of aneurin, 1,4'-amino-2-methyl-5'-pyrimidylmethyl-2-methyl-3- β -hydroxyethylpyridinium bromide hydrobromide, was tested on three fungi. *Phycomyces Blakesleeanus*, which can combine, but cannot synthesise, the pyrimidine and thiazole fractions of aneurin, can use the pyridine analogue only if the thiazole fraction is supplied. *Pythiomorpha gonapodioides*, which can synthesise the thiazole but not the pyrimidine fraction, grows well when the analogue is supplied. *Phytophthora cinnamomi* which needs preformed aneurin cannot use the analogue at all. The analogue is toxic in high concn. R. L. E.

Thiazole effect on *Phycomyces*. W. J. Robbins and F. Kavanagh (*Proc. Nat. Acad. Sci.*, 1941, 27, 423–427; cf. A., 1939, III, 791).—The thiazole fraction of aneurin, added in excess to a medium containing aneurin or the pyrimidine fraction, increases the growth of *P. Blakesleeanus*. The thiazole effect persists in several strains under various conditions of time, temp., basal medium, and culture conditions. R. L. E.

New antibacterial agent produced by a mould. G. A. Glister (*Nature*, 1941, 148, 470).—A mould, probably an *Aspergillus*, produces a powerful anti-bacterial agent with chemical properties different from and an anti-bacterial range greater than those of penicillin. In addition to the Gram-positive organisms inhibited by penicillin, the growth of Gram-negative organisms, such as *B. coli*, *B. dysenteriae* (Shiga), *Vibrio cholerae*, and the typhoid and paratyphoid bacilli, is inhibited by the culture filtrate of this mould. L. S. T.

Digestion of fat in *Amoeba proteus*. S. O. Mast (*Biol. Bull.*, 1938, 75, 389–394).—Amoebæ were fed on colpidia containing much neutral fat. Food vacuoles appeared, divided, and disappeared while small droplets of neutral fat appeared in the cytoplasm. Since fatty acids are found in the food vacuoles it is suggested that splitting of neutral fat occurs in the vacuoles, and resynthesis in the cytoplasm. D. M. Sa.

Effects of dyes on *Endamoeba histolytica* in vitro. H. Tsuchiya (*J. Lab. clin. Med.*, 1936, 21, 1028–1035).—High concns. of dyes are amoebicidal to cysts of *E. histolytica*. Dilutions of gentian-violet, acriflavine, malachite-green, and basic and acid fuchsin are amoebastatic. The action of the dyes on the trophozoites was amoebicidal rather than amoebastatic. CH. ABS. (cf.)

Relations between virulence of *Trypanosoma rhodesiense* towards rats and normal body temperature of its previous mammalian host. F. L. Vanderplank (*Trans. R. Soc. trop. Med. Hyg.*, 1941, 35, 43–46).—The transmissibility to the fly and the virulence of the strain of *T. rhodesiense* in rats may be enhanced by passing through animals such as Thomson's gazelle or the impalla with a low mean body temp. C. J. C. B.

Vitamin deficiency as one explanation for inhibition of protozoan growth by conditioned medium. R. P. Hall (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 306–308).—*Glaucoma piriformis* grew satisfactorily in a medium containing 80% of old culture filtrate when thiamin, riboflavin, and nicotinic acid were added. Without these additions growth was inhibited. V. J. W.

Life and death of bacteria. I. Senescent phase in ageing cultures and probable mechanisms involved. E. A. Steinhaus and J. M. Birkeland (*J. Bact.*, 1939, 38, 249–261).—After 2 years' incubation cultures of *Sarcina lutea* and *Serratia marcescens* contained large nos. of viable bacteria. Proteolytic bacteria grew luxuriantly on media consisting of washed and autoclaved bacterial cells. This growth is termed "cannibalism." A. W. M.

Growth factors for bacteria. VIII. Pantothenic and nicotinic acids as essential growth factors for lactic and propionic acid bacteria. E. E. Snell, F. M. Strong, and W. H. Peterson (*J. Bact.*, 1939, 38, 293–308; cf. A., 1939, III, 100).—The necessary growth factor for lactic acid bacteria is pantothenic acid. Suitable methods for preparing active concentrates of pantothenic acid, the Na and Ba salts, the acetyl

derivative, and the methyl esters of this and of the acid are described. A partial synthesis of pantothenic acid from liver extract is given. Nicotinic acid stimulates growth and acid production, and is considered essential for certain lactic acid bacteria. Other factors are also needed for growth on very pure media. A. W. M.

Comparative activity of nicotinic acid and nicotinamide as growth factors for micro-organisms. S. A. Koser, S. Berkman, and A. Dorfman (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 504–507).—Activity ratio varies widely for different organisms, and the known results are tabulated. For certain *Pasteurella* organisms nicotinic acid is ineffective. V. J. W.

Relation of growth factor required by *Lactobacillus casei* to nutrition of the chick. B. L. Hutchings, N. Bohonos, D. M. Hegsted, C. A. Elvehjem, and W. H. Peterson (*J. Biol. Chem.*, 1941, **140**, 681–682).—The norit eluate factor (cf. A., 1941, III, 1066) required by *L. casei* is probably identical with a chick factor. E. M. W.

Growth inhibition by *N*-(α -dihydroxy- β -dimethylbutyryl)-taurine and its reversal by pantothenic acid. E. E. Snell (*J. Biol. Chem.*, 1941, **141**, 121–128; cf. A., 1941, III, 685).—Molten *dl*- α -hydroxy- β -dimethyl- γ -butyrolactone, mixed with powdered Na salt of taurine and heated at 120° for 5 hr., yields the Na salt of *N*-(α -dihydroxy- β -dimethylbutyryl)-taurine. Similarly, the Ba salt is obtained from the lactone and the Ba salt of taurine. Experiments with *Lactobacillus arabinosus* and other micro-organisms, including yeast, which require preformed pantothenic acid for growth, show that the Na salt inhibits growth, the concns. required for inhibition increasing with increase in the concn. of added pantothenic acid so that no inhibition occurs if sufficient pantothenic acid is added. Mixtures of taurine and the lactone have a slight growth-promoting effect due to the lactone alone. Na salt prepared from (–)-lactone is approx. 10 times as active as Na salt from (+)-lactone. The Na salt does not inhibit growth-promotion of yeast by β -alanine. The sensitivity of micro-organisms to growth inhibition by the Na salt varies greatly, *L. arabinosus* being the most sensitive of those tested. W. McC.

Bactericidal substances from cultures of *Bacillus brevis*. R. D. Hotchkiss and R. J. Dubos (*J. Biol. Chem.*, 1941, **141**, 155–162; cf. A., 1940, III, 352; 1942, II, 41, 42).—Details are given of the prep. of tyrocidin (gramicidin content 10–20, tyrocidine content 40–60%) from peptone cultures of *B. brevis* and of the isolation from it of cryst. gramicidin, m.p. 230–231° (corr.), $[\alpha]_D^{25} +5^\circ$ in 95% alcohol, $+2.5^\circ$ in abs. alcohol, and cryst. tyrocidine hydrochloride (formerly called gramicin acid), decomp. approx. 240°, $[\alpha]_D^{25} -101^\circ$ in 95% alcohol. Gramicidin, which is identical with Hoogerheide's fraction II, contains C 62.7, H 7.59, and N 14.8%. Tyrocidine hydrochloride contains C 59.6, H 6.66, N 14.31. Tyrocidine contains C 62.7, H 7.59, and N 14.8%. The biological properties of gramicidin and tyrocidine hydrochloride are summarised. W. McC.

Agar cup-plate method. I. Standardised agar cup-plate technique. S. B. Rose and R. E. Miller. **II. Influence of agar on mercury antisepsis.** R. E. Miller and S. B. Rose (*J. Bact.*, 1939, **38**, 525–537, 539–547).—I. A standardised technique is given yielding consistent results with phenol, $HgCl_2$, and crystal-violet.

II. Agar has little effect on the antiseptic properties of Hg compounds. Effectiveness of Hg compounds varies with their dilution and with the blood content of the medium according to the formula $y = Kx^n$. Antiseptic potency is not directly related to Hg content of the compound. A. W. M.

Sterilising action of aromatic acids. S. Tetsumoto (*Japan. J. exp. Med.*, 1941, **19**, 11–16; cf. B., 1940, 707).—Using *Staphylococcus aureus*, *Proteus vulgaris*, *Bact. typhosum*, and *Vibrio cholerae* as test organisms the (decreasing) order of strength of the sterilising action of aromatic acids was: salicylic, sulphanic and mellitic, mandelic and cinnamic, protocatechuic and gallic acid. Weakest of all were phthalic and quinic acid. Aromatic acids of low pH were more active than acids of high pH . Salts of cinnamic, mandelic, and quinic acid had a strong growth-promoting action for the bacteria used except *V. cholerae*. Anions of gallic, tannic, and salicylic

acid showed sterilising action but anions of other acids had none. C. J. C. B.

Evaluation of germicides by the manometric method. J. O. Ely (*J. Bact.*, 1939, **38**, 391–400).—Unless respiration of *Escherichia coli* was completely inhibited, the organisms were capable of growth when sub-cultured. Germicides increased the inhibition of respiration to a max. from which there was no recession. Sulphanilamide decreased respiration more than merthiolate but did not kill the bacteria so easily. Presence of rabbit serum inhibited the germicidal effect of merthiolate, tincture of I, and sulphated castor oil containing Na *o*-phenylphenate, but had little effect on sulphanilamide, phenol, or formaldehyde. A. W. M.

Relation between concentration of disinfectants and time required for disinfection. F. W. Tilley (*J. Bact.*, 1939, **38**, 499–510).—Bactericidal efficiencies of 9 org. chemicals against *Staphylococcus aureus* and *Eberthella typhosa* were determined. From the data, vals. of n (concn. exponent) were calc. by the formula $n = (\log t_2 - \log t_1) / (\log C_1 - \log C_2)$. From $n \log C + \log t = \log A$ (const.) vals. of n and $\log A$ thus derived are used in this same equation to calculate t or C when only one of these factors is known. The results suggest that vals. of n are characteristic for each disinfectant with each test organism. A. W. M.

Modified fermentation tube. P. B. Cowles (*J. Bact.*, 1939, **38**, 677–678).—A small double U-tube for the collection of gases is described. A. W. M.

Occurrence of hydrogenase in nitrogen-fixing organisms. A. S. Phelps and P. W. Wilson (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 473–476).—Cultures of *Azotobacter* reduce methylene-blue in presence of H_2 and cause uptake of H_2 in a Warburg apparatus. Laboratory cultures of *Rhizobium leguminosarum* do not have these properties, but organisms taken directly from pea-root nodules show them. V. J. W.

Endogenous respiration of *Bacillus cereus*. I. Changes in rate of respiration with passage of time. II. Effect of salts on rate of absorption of oxygen. M. Ingram (*J. Bact.*, 1939, **38**, 599–612, 613–629).—I. When cells of *B. cereus* less than 24 hr. old are starved, cell division continues with a high rate of respiration. With cells more than 24 hr. old, no division occurs and endogenous respiration passes through 3 phases (increasing, const., and decreasing) successively. During endogenous respiration cell size diminishes and the low R.Q. (0.7) indicates respiratory destruction of fat, and hence loss of the outer Gram-positive sheath of the cells. The exponential decline of respiration suggests that respiratory enzymes are destroyed during this last phase. Addition of NaCl to the starved cells does not destroy these 3 phases.

II. The chief factor in the rate of O_2 uptake by *B. cereus* suspended in salt solutions is the concn. and valency of the cations. Salts of uni-, bi-, and trivalent cations are equally effective in increasing respiration in dil., unbuffered saline suspensions at concns. roughly in the ratio 1000:100:1. Dil. solutions increase and conc. solutions decrease the rate of respiration, but this effect is apparently unconnected with osmosis near the cells. Effect of salt concn. in buffered and unbuffered solutions on the respiration of the cells is discussed. A. W. M.

Bacteriology, growth-factor requirements, and fermentation reactions of *Clostridium acetobutylicum* (Weizmann). S. D. Rubbo, M. Maxwell, R. A. Fairbridge, and J. M. Gillespie (*Austral. J. Exp. Biol.*, 1941, **19**, 185–198).—The morphology, cultural characteristics, and biochemical reactions of *C. acetobutylicum* are described. The characteristic features of the organism are a palisade arrangement of cells in young liquid cultures, vigorous growth in wheat mash with formation of butyl alcohol and acetone, growth on a selective wheat extract-agar medium with development of circular, creamy, viscid colonies, the inability to grow in broth or on blood-agar plates, and the sp. nature of the *O*-antigen. The organism requires a growth factor which has the structure of a 1:4-disubstituted benzene derivative, and optimum activity is shown by *p*-amino-benzoic and -phenylacetic acid, which stimulate growth in concn. of $1.46 \times 10^{-10}M$ and $1.32 \times 10^{-10}M$, respectively. The isolation of *p*-aminobenzoic acid from brewer's yeast is described. Substances which yield *p*-aminobenzoic acid on hydrolysis, oxidation, or reduction, or any combination of these processes, act as growth-factors for the organism. Spores possess the same requirements as

vegetative forms in this respect. Butyl alcohol, but not acetone, is formed during fermentation of glucose in a synthetic medium containing *p*-aminobenzoic acid, and normal yields of acetone are obtained only after addition of another factor, which is called the "acetone factor." The latter does not support growth, is thermostable, is pptd. by phosphotungstic acid, and is present in yeast, cereals, and potatoes. It is probably a co-enzyme and related to the nitrogenous bases. It is connected with formation of acetic acid from acetaldehyde and conversion of the acid into acetone, with acetoacetic acid as an intermediate in the process. Data are given for the fermentation of wheat mash by the organism in which it is shown that 21% of butyl alcohol, 2.5% of ethyl alcohol, and 10.5% of acetone are formed (based on total available starch). Various modifications of the mash fermentation do not increase yields or rate of formation of solvents. Traces of Cu and prolonged sterilisation of the mash are unfavourable to fermentation. J. N. A.

Nutrient requirements of butyric acid-butyl alcohol bacteria. R. W. Brown, H. G. Wood, and C. H. Werkman (*J. Bact.*, 1939, 38, 631—640).—An ether-sol. extract of yeast extract with Speakman's salts is essential for growth of 5 varieties of *Clostridium* in media with N as $(\text{NH}_4)_2\text{SO}_4$. The ether-sol. yeast extract was not altered by prolonged heating in $\text{N-H}_2\text{SO}_4$. Phosphates alone without the rest of Speakman's salts were sufficient for normal growth when vitamin-free hydrolysed casein was used as the source of N and glucose of C. Other inorg. salts were probably in the casein. The growth-promoting property of hydrolysed casein is apparently a function of the amino-acids. A mixture of 19 amino-acids present in casein, together with $(\text{NH}_4)_2\text{SO}_4$ and Speakman's salts, was a suitable medium for the growth of the *Clostridium*. A. W. M.

Bacteriology of fresh water. I. Distribution of bacteria in English lakes. C. B. Taylor (*J. Hygiene*, 1940, 40, 616—640).—Studies of the vertical distribution of bacteria in three English lakes showed seasonal variation. During the period of summer stratification the nos. were greatest at depths of 1 and 10 m. The depletion of dissolved O_2 at the greater depths was not reflected by any increase in the no. of anaerobes, and there was no correlation between dissolved O_2 and total no. of bacteria. Strict anaerobes were comparatively rare. Fluctuations in total no. were correlated with the rainfall, and there was also some relation to max. algal growth. No bacteriostatic action of sunlight could be detected, nor did temp. or concn. of inorg. salts appear to affect the no. of bacteria. The horizontal distribution of bacteria was determined in relation to the point of entry of a river. D. D.

Infectious diseases. H. A. Reimann (*Arch. intern. Med.*, 1941, 68, 325—368).—A review of the literature for 1940—1941. C. A. K.

New media for growth of *Bartonella bacilliformis*. Q. M. Geiman (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 329—332).—Good growth was obtained on media containing tryptone, rabbit serum, ascorbic acid, and glutathione. V. J. W.

Oxygen consumption and growth in cultures of an obligate anaerobe, *Bacteroides vulgatus*. Y. J. Katz and M. E. Hanke (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 263—265).—In presence of 3—8% of O_2 and at an oxidation-reduction potential of below 0.15 mv. this organism grows and consumes small quantities of O_2 . V. J. W.

Isolation of *L* type growth from strain of *Bacteroides funduliformis*. L. Dienes (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 385—387).—The small-colony strain previously observed (*ibid.*, 1939, 42, 636) can be maintained in culture, and resembles in many respects the *L* strain isolated by Klieneberger from cultures of *Streptobacillus moniliformis* (*J. Path. Bact.*, 1936, 42, 587). V. J. W.

Optimum temperature for differentiation of *Escherichia coli* from other coliform bacteria. A. A. Hajna and C. A. Perry (*J. Bact.*, 1939, 38, 275—283).—A temp. of 45.5—46° and the authors' modified Eijkman medium are suitable conditions for the culture and separation of *E. coli* from *Citrobacter*, *Aerobacter cloacae*, and *Aerobacter aerogenes*. A. W. M.

Factors limiting bacterial growth. VII. Respiration and growth properties of *Escherichia coli* surviving sublethal temperatures. A. D. Hershey (*J. Bact.*, 1939, 38, 563—578).—

E. coli when subjected to heat show decreased respiration, prolonged latent period on subculture, and finally loss of viability. Regenerated respiration in heat-treated cells occurs at a const. rate typical of normal growth. Equations expressing growth at const. rate satisfactorily predict the growth properties of heated bacteria. A. W. M.

Undulant fever in children. O. E. Hagebusch and C. F. Frei (*Amer. J. clin. Path.*, 1941, 11, 497—515).—A review. C. J. C. B.

New developments in diagnosis and treatment of brucellosis. W. M. Simpson (*Minnesota Med.*, 1941, 24, 725—738).—A review. E. M. J.

Negative skin tests in brucellosis. M. L. Singewald (N.Y. *Sta. J. Med.*, 1941, 41, 1766—1767).—Only slight erythema after 24 hr. and a negative reaction after 48 hr. using brucellergen were seen in 2 cases of brucellosis with positive blood cultures and agglutination reactions. E. M. J.

Agglutinating properties of antibrucella rabbit sera. B. Wise (*Amer. J. clin. Path.*, 1941, 11, 617—619).—The results of the agglutination tests made with antibrucella sera and antigens of the colon-typhoid-dysentery group, *Proteus vulgaris*, and *tularense* show that these antibrucella sera exhibit but slight cross-agglutination with the antigens made from these organisms. C. J. C. B.

Fibrinolytic action of gas gangrene anaerobes. G. B. Reed, J. H. Orr, and D. Smith (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 228—231).—Most strains of *Cl. welchii*, *novyi*, *septicum*, and *sordellii* produce a fibrinolytic substance. *Cl. tetrum*, *fallax*, and *aerofatidum* do not. The proteolytic species *Cl. histolyticum*, *sporogenes*, and *tyrosinogenes* also dissolve fibrin. Sheep fibrin is more resistant than human, guinea-pig, or rabbit. Some strains produce anti-coagulant factors in addition. V. J. W.

Production of *Cl. welchii* toxin in peptone-free medium. J. T. Tamura, A. A. Tytell, M. J. Boyd, and M. A. Logan (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 284—287).—Good yield of toxin was obtained by culture on a medium containing mineral salts, casein hydrolysate, liver extract, riboflavin, and nicotinic acid. V. J. W.

Motile daughter colonies in *Cl. edematiens* group and other *Clostridia* (*Cl. botulinum* C, *Cl. tetani*, and *Cl. septicum*). A. W. Turner and C. E. Eales (*Austral. J. Exp. Biol.*, 1941, 19, 167—174).—24 out of 37 strains of the 3 types of *Cl. edematiens* give rise to wandering daughter colonies on the surface of agar media. The phenomenon, which occurs also with some strains of *Cl. botulinum* C, *Cl. tetani*, *Cl. septicum*, and an undetermined terminal spored anaerobe, is essentially the same as that shown by certain aerobic terminal spored bacilli. The migration of the daughter colonies is distinct from swarming, although it is sometimes associated with it. The colonies are organised in a more orderly manner, and they traverse curved spiral or circular paths and often return to the mother colony and fuse with it. The migration, which may and often does occur under conditions unsuitable for swarming, is discussed in relation to the latter phenomenon. J. N. A.

Fermentative decomposition of purines by *Clostridium acidurici* and *C. cylindrosporum*. H. A. Barker and J. V. Beck (*J. Biol. Chem.*, 1941, 141, 3—27).—*C. acidurici* and *C. cylindrosporum* decompose few org. substances, all of which, except glycine, are purines. Uric acid, xanthine, and guanine are rapidly and completely decomposed by cell suspensions and growing cultures, whilst hypoxanthine and some others liberate N slowly and incompletely, the relative rates of decomp. being approx. 100, 55, 90, and 1, respectively. *C. acidurici* yields NH_3 , CO_2 , and acetic acid but *C. cylindrosporum* also produces small amounts of glycine in anaerobic purine decomp. Glycine is decomposed by both organisms only in presence of a fermentable purine or strong H donor and it probably represents an intermediate in purine breakdown or CO_2 reduction. The mechanism probably represents oxidations in which CO_2 is the ultimate H acceptor and is reduced to acetic acid, the enzyme systems and intermediate compounds involved in purine decomp. by animal and plant tissues and aerobic micro-organisms not being involved. Decomp. is max. at pH 7.3 and falls off rapidly on either side of the max. Uric acid, guanine, and xanthine can be determined if present separately by measuring the NH_3 or CO_2 .

formed and identified by the relative amounts of NH_3 , CO_2 , and acetic acid. H. G. R.

Age variations in resistance of rat to diphtheria bacilli and toxin. E. Seligmann (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 241—244).—Resistance to diphtheria infection does not alter with age, but young rats are more sensitive than old ones to diphtheria toxin. V. J. W.

Cultivation of *B. dysenteriae* from blood of patients. K. Kikuta and H. Abe (*J. Orient. Med.*, 1938, 29, 152).—*B. dysenteriae* was successfully cultured from blood of 4 out of 23 patients. Bacteriolytic reaction of sera prepared 1—2 days before death was weaker than that of normal sera. Successive daily subculture of *B. dysenteriae* in serum-boillon medium (human serum diluted 5 times with bouillon) produced an antibacteriolytic bacillus on the 16th day which multiplied in serum. M. K.

Capsule formation. I. Conditions under which *Klebsiella pneumoniae* (Friedländer's bacterium) forms capsules. J. C. Hoogerheide [with M. H. Harrison] (*J. Bact.*, 1939, 38, 367—389).—Largest capsules were obtained by cultivation at 37° for 8 hr. in a medium containing peptone 1—4 and glucose 1% at pH 7.5. Yeast extract, blood serum, or brain-heart infusion contained unknown factors which inhibited capsule formation, but not the growth of the bacteria. In a synthetic medium, capsule formation took place only under special conditions. A. W. M.

Sulphanilamide and sulphapyridine in pneumococcal meningitis. C. W. Steele and J. Gottlieb (*Arch. intern. Med.*, 1941, 68, 211—231).—A case of type XIX pneumococcal meningitis was unsuccessfully treated with sulphapyridine + type-sp. serum. The literature dealing with 48 patients treated with sulphanilamide and with 67 patients treated with sulphapyridine shows that the mortality rate has been reduced from 100% to 33% and that sulphanilamide is probably the more effective drug. In children under 2 years the mortality rate is still 100% in spite of chemotherapy. C. A. K.

Immediate serum reactions in man. D. D. Rutstein, E. A. Reed, A. D. Langmuir, and E. S. Rogers (*Arch. intern. Med.*, 1941, 68, 25—56).—790 patients treated with conc. type-sp. antipneumococcus horse serum by intravenous injection showed 4 types of immediate serum reactions: thermal, anaphylactic, circulatory, and miscellaneous. Anaphylactic reactions were most frequent in young subjects and circulatory reactions mostly occurred in older patients, thermal reactions being uninfluenced by age. 25 fatal cases are reported and analysed. C. A. K.

Immunising substances in pneumococci. X. Relationship between the acetyl group of type I pneumococcus polysaccharide and antigenicity. L. D. Felton and B. Prescott (*J. Bact.*, 1939, 38, 579—593).—Type I pneumococcus polysaccharide was treated with aq. NH_3 , NaOH, H_2PO_4 , or p -toluenesulphonic acid. Presence or absence of the acetyl groups in the polysaccharide is not significant for its antigenicity in white mice. A. W. M.

Immunological properties of an antibody containing a fluorescent group. A. H. Coons, H. J. Creech, and R. N. Jones (*Proc. Soc. Exp. Biol. Med.*, 1941, 43, 200—202).—By acting on antipneumococcus III rabbit serum with β -anthryl-carbimide a β -anthrylcarbimido-compound was formed with serum-protein. This retained all the immunological properties of the serum and rendered type III pneumococci highly fluorescent. V. J. W.

Rabbit antipneumococcus serum in lobar pneumonia. E. H. Loughlin, S. H. Spitz, and R. H. Bennett (*Arch. intern. Med.*, 1941, 68, 121—133).—320 patients with pneumococcal pneumonia were treated with refined unconc. rabbit antipneumococcus serum with a mortality rate of 4—7%. 80% of the patients had normal temp. within 24 hr. of injection; 86 cases with bacteraemia had a mortality rate of 14%. C. A. K.

Prevention and treatment of whooping cough. F. Clarke (*Nebraska Sta. Med. J.*, 1941, 26, 328—329).—165 children exposed to varying degrees were given 2 doses of 10—20 c.c. of human hyperimmune serum at 5—7 days' interval; 6.5% developed typical and 15.5% mild or very mild whooping cough. 3 or 4 doses of 10—20 c.c. were given as treatment in 165 children, 80 of whom were 6 months old or younger; the results were good in 63% and the death rate was 1.5%.

Human hyperimmune serum was prepared by giving healthy male adults who had had the disease 3 courses of 3 weekly injections of 2, 3, and 3 c.c. of Sauer's vaccine at 4 months' interval and withdrawing the blood 1 month after the last course. E. M. J.

Age factor in active immunisation against whooping cough. L. W. Sauer (*Amer. J. Path.*, 1941, 17, 719—723).—Pertussis developed in 15% of control children who had had no vaccine, in 8% of children injected before the 3rd month of life, in 2.5% of patients injected after the 6th month of life, and in 1.4% of children injected after the 7th month of life. C. J. C. B.

Influence of nicotinic acid on glucose fermentation by members of the colon-typhoid group of bacteria. I. J. Kligler and N. Grosowitz (*J. Bact.*, 1939, 38, 309—320).—Glucose is not fermented by *Salmonella paratyphi* A. and some species of *Shigella dysenteriae* in semi-synthetic media containing no nicotinic acid. Incubation at 37° inhibits, partly or wholly, the production of gas by *S. paratyphi* A. and C. respectively, but not by other species of paratyphoid or coli bacilli tested. A. W. M.

Nature of the catalase reaction in the residue of *Staphylococcus aureus* lysed by bacteriophage. F. L. Wynd and J. Bronfenbrenner (*J. Bact.*, 1939, 38, 659—675).—Although cultures of *S. aureus* lysed by bacteriophage do not utilise O_2 , the catalase activity is not destroyed. H_2O_2 is decomposed by the catalase in the filtrate of lysed cells, but this reaction is inhibited by CN^- . Decomp. of H_2O_2 is apparently a unimol. reaction and the reaction const. is that of the rate of inactivation of the enzyme, and not that of the disappearance of the substrate. Freed from contact with cellular structures, catalase cannot enter reversibly into the catalysed reaction. A. W. M.

Streptococci producing positive Hotis reactions. E. C. McCulloch and S. A. Fuller (*J. Bact.*, 1939, 38, 447—459).—Incubation of milk and aq. bromocresol-purple as advocated by Hotis is not sp. for *Streptococcus agalactiae*. Any organism which causes production of agglutinins, grows in 0.025% aq. bromocresol-purple and milk at 37.5°, and can ferment lactose to lactic acid at pH 5.4 will satisfy the conditions for the test. A. W. M.

Influence of sucrose on production of serologically reactive material by certain streptococci. J. M. Neill, J. Y. Sugg, E. J. Hehre, and E. Jaffe (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 339—344).—Lancefield H strain of streptococcus grown in broth containing 1% of sucrose produced material highly reactive with types 2 and 20 antipneumococcal and with antileuconostoc sera. It was different from the material reacting with antistreptococcal serum and was not produced in glucose broth. V. J. W.

Hæmorrhagic skin reactions in rabbits with cutaneous sensitisation to streptococci and pneumococci. D. M. Angevine and P. F. deGara (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 359—362).—Rabbits were sensitised over up to 140 days by intradermal injections of killed organisms. When sensitised they received an intradermal injection of homologous filtrate or vaccine, and 48 hr. later an intravenous injection of vaccine or broth culture. The last caused a hæmorrhagic reaction at the site of the intradermal injections in sensitised rabbits only. V. J. W.

Tissue reactions in fatal cases of *Streptococcus hæmolyticus* infection. G. K. Mallory and C. S. Keefer (*Arch. Path.*, 1941, 32, 334—335).—In the heart, the commonest lesions consisted of focal accumulations of cells (chiefly lymphocytes and plasma cells, sometimes polymorphs and eosinophils also). When infection was acute and fulminating, lesions having the same distribution and localisation but consisting of organisms alone, organisms plus an acute suppurative reaction, or an acute suppurative reaction alone were found. The common lesion was seen in patients who died on the 6th—15th day of their illness and was more conspicuous in patients with bacteraemia who survived longer than 10 days. C. J. C. B.

Hæmolytic streptococcus. III. Polysaccharide and protein fractions encountered in the precipitation of erythrocytic toxin from culture filtrates. A. H. Stock (*J. Bact.*, 1939, 38, 511—524).—A peptone- and a uronic acid-polysaccharide, a yellow "oil," syrupy protein products from the medium, and an acid-pptd. protein were obtained during the isolation of erythrocytic toxin from streptococcus culture filtrates.

Erythrogenic toxin was associated with some of these products when pptd. from the culture filtrates. A. W. M.

Some growth factors for haemolytic streptococci. D. W. Woolley and B. L. Hutchings (*J. Bact.*, 1939, **38**, 285–292).—In alkali-treated media haemolytic streptococci require riboflavin, pantothenic acid, and a suitable reducing agent. Vitamin-C, glutathione, thioglycolic acid, and reduced Fe were effective reducing agents for *Strep. epidemicus*. Na₂S was beneficial for all streptococci examined and essential for some of them. A. W. M.

Relationship between temperature and the streptococcal activity of sulphanilamide and sulphapyridine in vitro. H. J. White (*J. Bact.*, 1939, **38**, 549–562).—At 30° 1% and at 36° 0.1% of sulphanilamide were inactive. At 37° 100 times as much sulphanilamide was required to sterilise as at 39°. The average activity ratio of sulphapyridine was 4.5 times that for sulphanilamide. A. W. M.

Mode of action of sulphanilamide in vitro. J. T. Weld and L. C. Mitchell (*J. Bact.*, 1939, **38**, 335–350).—Sulphanilamide is bactericidal to streptococci multiplying slowly in rabbit serum. This action is increased when the organisms are grown at high temp. Results do not support the theory that sulphanilamide interferes with the power of streptococci to use serum-proteins or that peptone interferes with the bactericidal effect of sulphanilamide. A. W. M.

Selective medium for isolation of *Strep. salivarius*. K. D. Rose and C. E. Georgi (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 344–347).—A medium containing 0.3% of K₂TeO₆ and 2 p.p.m. of crystal-violet is selective for certain groups of streptococci among which *salivarius* colonies can be distinguished by their gummy appearance. V. J. W.

Viability of the spirochaetes of syphilis and yaws in desiccated blood serum. T. B. Turner, J. H. Bauer, and F. C. Kluth (*Amer. J. med. Sci.*, 1941, **202**, 416–423).—Testicular emulsions rich in *T. pallidum* were frozen and desiccated. On rehydration, most of the spirochaetes were distorted and 9 of 10 specimens failed to produce lesions when inoculated into normal rabbits. After freezing and drying virulent *T. pallidum* or *T. portenue* no longer produced disease in rabbits. C. J. C. B.

Relative sensitivity and specificity of the Kolmer-Wassermann, Kahn, and Eagle precipitation tests. F. Boerner, M. Lukens, and R. L. Gilman (*J. Lab. clin. Med.*, 1936, **21**, 952–956).—In 646 syphilitic sera the Eagle test gave many more positive reactions than did the Wassermann or Kahn tests. The best combination of two tests is the Wassermann test using 0.2 c.c. and the Eagle test. With 200 non-syphilitic sera the Wassermann and Kahn tests gave no false positive reactions, whilst the Eagle test gave one doubtful reaction. C. H. A. S. (el)

Prevention and treatment of tetanus. J. K. Calvin (*N.Y. Sta. J. Med.*, 1941, **41**, 1636–1640). E. M. J.

Use of bovine antitoxin for prophylaxis of tetanus. J. Glaser (*J. Pediat.*, 1941, **19**, 403–413).—Bovine tetanus antitoxin was safely used in cases known to give severe anaphylactic reactions to horse serum. C. J. C. B.

Rotifer vulgaris and tetanus toxin. E. Gray (*Nature*, 1941, **148**, 470–471).—Addition of a filtrate of a meat broth culture of *Clostridium tetani* quickly killed *R. vulgaris* in water from a rain-gutter. Small monads also present in the water showed no diminution of activity. L. S. T.

Spread of tubercle bacilli by sputum, blood, and lymph in pulmonary tuberculosis. E. R. Long and R. Faust (*Amer. J. Path.*, 1941, **17**, 697–707).—126 cases of pulmonary tuberculosis were studied to determine the relative parts played by sputum, blood, and lymph in the dissemination of tuberculosis throughout the body. The tonsils and intestine were taken as measures of infection by sputum, and the upper cervical, paratracheal, axillary, mesenteric, and inguinal lymph nodes as measures of lymphatic spread. Blood spread was studied in the spleen, liver, kidneys, adrenal, myocardium, and pancreas. A high positive correlation existed in tuberculosis of the tonsils, upper cervical lymph nodes, intestine, and mesenteric lymph nodes, indicating sputum infection of the organs of the alimentary tract and secondary involvement of the draining lymph nodes by the lymph stream.

The tonsils, intestine, upper cervical, and mesenteric lymph nodes were tuberculous in $\frac{2}{3}$ of the cases. Tubercles were found in the axillary nodes in $\frac{1}{3}$ and in the inguinal nodes in more than $\frac{1}{3}$ of the cases. The incidence of haematogenous infection was shown by tubercles in $\frac{2}{3}$ of the cases in the liver and spleen, in $\frac{1}{3}$ in the kidney, 16% in the adrenal, and 2% each in the myocardium and pancreas. No difference was found between negroes and whites or between the sexes. C. J. C. B.

Isolation of purified protein derivatives and carbohydrates from tuberculins and their biological properties. W. Steenken, jun. (*J. Biol. Chem.*, 1941, **141**, 91–98).—Tuberculin was obtained from virulent (*Rv*) and avirulent (*Ra*) organisms from the same parent culture, the former giving a smaller yield of organisms but a greater yield of purified protein derivatives (*PPD*) and carbohydrate. No strain-specificity in guinea-pigs with *PPD* was observed and, although the carbohydrates did contain some protein, it was too small to elicit skin reactions in sensitised guinea-pigs. Precipitant tests indicated a strong reaction of *Ra* carbohydrate, and a stronger reaction of *Rv* carbohydrate, with the respective homologous serum. *Ra* serum reacts more strongly with *Ra* and *Rv* carbohydrates than does *Rv* serum. H. G. R.

Clinical studies on harmlessness of, and tuberculin reactivity following, B.C.G. vaccination by multiple puncture method. S. R. Rosenthal and I. S. Neiman (*J. Pediat.*, 1941, **19**, 16–23).—In 675 newborn infants vaccinated with B.C.G. by the multiple puncture or intradermal methods and followed for 3–39 months, there were no ill effects attributable to the vaccine. In 258 newborn infants vaccinated on the 3rd–10th day of life with B.C.G. by the multiple puncture method, and tuberculin tested within next 54 days, 14% reacted to old tuberculin at 11–13 days, 48% at 14–16 days, 97 at 23–31 days, and 98% at 32–54 days. The duration of the reactivity of one vaccination by the multiple puncture method was 99.6% at 3–13 months, 97.5% at 14–21 months, 93.4% at 20–27 months, 84.8% at 8–33 months, and 78.8% at 34–39 months. In a corresponding group of nonvaccinated infants the reaction to tuberculin was 0% at 3–7 months, 1.9% at 8–13 months, 5.8% at 14–21 months, 8.5% at 22–27 months, 11.6% at 28–33 months, and 19.2% at 34–39 months. C. J. C. B.

Typhoid fever; value of new antisera in therapy and eosinopenia in diagnosis. J. V. Landor (*Trans. R. Soc. trop. Med. Hyg.*, 1941, **35**, 1–11).—Treatment with serum prepared against strains of typhoid bacilli strong in O and Vi antigens was of val. in the Singapore epidemic of typhoid fever, even at a comparatively late stage of the disease. The absence of eosinophil cells in a differential white blood count is of (limited) val. in diagnosis. Congenital immunity against typhoid fever is marked for several years of childhood, in Malaya and presumably elsewhere also. C. J. C. B.

Immunising capacity of virus of Eastern equine encephalomyelitis inactivated by ultra-violet light. I. M. Morgan and G. I. Lavin (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 497–499).—Irradiation of this virus (Hg arc) destroyed its infective power without abolishing its antigenic activity. V. J. W.

Immunisation of man against influenza-A. W. P. Martin and M. D. Eaton (*Proc. Soc. Exp. Biol. Med.*, 1941, **47**, 405–409).—At each of 2 public institutions a no. of subjects received injections of either a living virus or a formalised vaccine. No difference was observed between the two methods of immunisation, but both methods reduced case-incidence at one institution but not at the other. V. J. W.

Diverse aetiology of epidemic influenza. E. H. Lennette, E. R. Rickard, G. K. Hirst, and F. L. Horsfall (*U.S. Publ. Health Repts.*, 1941, **56**, 1777–1788).—Sera and throat washings obtained from numerous cases of influenza during 3 epidemic periods in 1 year were studied. In each epidemic period some cases were infected by influenza A virus, others by B virus, and many by neither. Since even in single institutional outbreaks cases of influenza A, B, and influenza of unknown cause sometimes occurred simultaneously, epidemics of influenza may be of diverse aetiology. C. G. W.

Infections of respiratory tract of chick embryos by viruses of psittacosis and infectious laryngotracheitis. Comparison with influenza virus infections. F. M. Burnet and M. Foley (*Austral. J. Exp. Biol.*, 1941, **19**, 235–240).—The viruses of

psittacosis and infectious laryngotracheitis of fowls multiply and produce lesions when inoculated amniotically into chick embryos but neither spreads so rapidly through the respiratory system as does the influenza virus. The passage of laryngotracheitis virus can be carried on for several generations but there are many embryos which are resistant to infection. Psittacosis virus multiplies freely but only minor lesions are produced which are practically restricted to superficial cells in the epithelium of the larger bronchi. When mixed with a strain of influenza virus, a strain of psittacosis virus persists for over 30 passages. In presence of influenza virus, the amniotic method can detect virus in much greater dilution than is effective in the mouse lung. Amniotic fluid from embryos infected with psittacosis contains much more virus than does the allantoic fluid. J. N. A.

Typhus virus isolated from chicken fleas. G. D. Brigham (*U.S. Publ. Health Repts.*, 1941, 56, 1803—1804).—The recovery of endemic typhus fever virus from naturally infected chicken fleas is reported for the first time. C. G. W.

Specificity of complement fixation test in typhus fever. I. A. Bengston and N. H. Topping (*U.S. Publ. Health Repts.*, 1941, 56, 1723—1727).—The complement fixation test for endemic typhus fever has been shown to be sp. by comparing the results obtained by using sera from known proved cases of endemic typhus fever and from cases diagnosed clinically as endemic typhus with those obtained using sera from cases of syphilis, leprosy, tuberculosis, rheumatic fever, malaria, undulant fever, tularaemia, trachoma, and a few specimens from miscellaneous diseases including lymphopathia venereum, psittacosis, and amoebiasis. C. G. W.

Preparation and properties of cucumber virus 4. C. A. Knight and W. M. Stanley (*J. Biol. Chem.*, 1941, 141, 29—38).—The virus, isolated from diseased plants and purified by differential centrifuging, has the same properties as that by differential centrifuging, has the same properties as that purified by chemical methods except that the activity is greater and the S content of the dry virus is 0.84%. The denatured virus gives a negative nitroprusside test for dithiol groups, whilst the nucleic acid isolated is of the yeast type. The particles are rod-shaped (diameter 15 μ ., length 257 μ .) and have mol. wt. approx. 4×10^7 . A strong serological relationship exists between cucumber virus 3 and 4, but only a weak relationship exists between the latter and strains of the tobacco mosaic group. H. G. R.

Aromatic amino-acids in strains of tobacco mosaic virus and in related cucumber viruses 3 and 4. C. A. Knight and W. M. Stanley (*J. Biol. Chem.*, 1941, 141, 39—49).—A close serological relationship exists between tobacco mosaic virus antiserum and strains of tobacco mosaic virus (except Holmes' ribgrass strain) but not cucumber virus 3 and 4. The tyrosine, tryptophan, and phenylalanine contents of 12 preps. of tobacco mosaic virus (as well as yellow and green acubia, Holmes' masked, and J14D1 strains), Holmes' ribgrass strain, and cucumber virus 3 and 4 are 3.8, 4.5, 6.0; 6.4, 3.5, 4.3; and 3.8, 1.4, 10.2%, respectively. The P content of various strains indicates quant. differences in the nucleic acid component, although qual. tests show them all to be of the yeast type. Mutation of tobacco mosaic virus to form a new strain arises by diversion of the synthetic process by means of which the virus multiplies rather than an alteration of complete formed virus mols. H. G. R.

Primary ocular reaction to Schwartzman toxins. C. Ajó (*Proc. Soc. Exp. Biol. Med.*, 1941, 47, 500—501).—Intravenous injection of these toxins into rabbits causes severe inflammation of the eyes which persists about 24 hr. V. J. W.

Prolonged preservation of antigenic specificity of sheep corpuscles with production of increased resistance to hypotonic solutions. W. Ashby (*J. Lab. clin. Med.*, 1936, 21, 943—948).—Cells of sheep's blood diluted (1:10) with isotonic solutions containing 9 parts of sucrose, glucose, or MgCl_2 to 1 part of Na citrate and kept for not more than 1 year at 3—8° can be used in the Kolmer-Wassermann test. Formaldehyde causes loss of antigenic specificity, and phenol causes hemolysis. The development of resistance to autolysis is associated with an increase in resistance to the action of hypotonic salt solutions. CH. ABS. (el)

Effect of heat on flocculating antibodies of rabbit antisera. A. Kleczkowski (*Brit. J. exp. Path.*, 1941, 22, 192—208).—When whole antisera are heated at 70—80° complexes of

antibody and of other unspecific proteins in the sera are formed. Antibodies changed in this way can still combine with their antigens, but the result depends on the quantity and quality of the unspecific protein. Complexes formed with euglobulin fraction flocculate their antigens but complexes formed with other serum fractions, notably albumin, fail to flocculate; this combination interferes with the flocculating action of the antibodies that are unchanged. This interference is large with O antigens and small with H antigens. This fact, and not a difference in heat-stability, explains the differences in the behaviour of heated antisera to the two types of antigen. F. S.

Properties of complexes formed when antigens are heated in presence of serologically unspecific proteins. F. C. Bawden and A. Kleczkowski (*Brit. J. exp. Path.*, 1941, 22, 208—219).—When tomato bushy stunt virus, human serum-globulin and -albumin (somatic type antigens) are heated at 80° in the absence of serologically unspecific proteins, they are still able to ppt. with their sp. antisera but if heated in the presence of unspecific protein, they produce complexes behaving like non-pptg. haptens (cf. behaviour of antibodies in preceding abstract). The presence of albumin in solutions of tobacco mosaic virus heated at p_H 7.0 reduces the rate of inactivation, but this flagellar type antigen still flocculates with its antiserum. It is suggested that combination of somatic type antigen or antibody with small amounts of unspecific protein increases the solubility of the complex formed by antigen and antibody sufficiently to prevent flocculation, whereas complexes with much larger amounts of unspecific protein are necessary to keep the combination of flagellar type antigen and antibody in solution. F. S.

Acute local anaphylactic inflammation of lungs. P. R. Cannon, T. E. Walsh, and C. E. Marshall (*Amer. J. Path.*, 1941, 17, 777—783).—Rabbits made hypersensitive (actively or passively) to purified ovalbumin, and normal controls, were given simultaneous intranasal instillations of a solution of purified egg-albumin. In the hypersensitive rabbits, only the entrance of ovalbumin into the lungs caused acute pneumonitis; the perivascular lymphatics were dilated. The primary effect of the antigen-antibody reaction in the lungs was increased capillary permeability, followed later by severe vascular injury. The effect is due to a humoral element, presumably the anaphylactic antibody. (8 photomicrographs.) C. J. C. B.

Concept of atopy in light of recent investigations. E. Urbach (*Arch. Pediat.*, 1941, 58, 482—494).—A review. C. J. C. B.

Chemotaxis. J. E. Klein (*J. Lab. clin. Med.*, 1936, 21, 1017—1021).—Subcutaneous injection into guinea-pigs of 0.2 min. lethal dose of diphtheria toxin per day for 1 week produced extensive local reaction with infiltration of lymphocytes and polymorphonuclear cells, necrosis, and extravasation through the subcutaneous tissue. Injection of thyroglobulin caused marked lymphocytic response. Injection of dil. solutions of lactic acid or HCl produced moderate local and general reaction, whilst NaOH had little effect. CH. ABS. (el)

Allergy and resistance to infection. F. Smith (*Amer. J. med. Sci.*, 1941, 202, 447—455).—A review. C. J. C. B.

Comparative study of incidence of acute infectious diseases in allergic and non-allergic persons. W. T. Vaughan and V. J. Derbes (*J. Allergy*, 1941, 12, 477—480).—No significant difference was found in the incidence of acute infectious diseases in 250 allergic and 250 non-allergic persons. C. J. C. B.

Effect of administration of histaminase on symptoms and the histamine content of blood in patients with allergy. B. Rose (*J. Allergy*, 1941, 12, 441—449).—Blood-histamine was unaltered in 31 allergic patients during or after the administration of the histaminase orally or intramuscularly. In 4 of the 7 patients treated by intramuscular injection of histaminase, reactions consisting of swelling, redness, and tenderness at the site of injection were observed. C. J. C. B.

Progress in allergic children as shown by increments in height, weight, and maturity. M. B. Cohen, R. R. Weller, and S. Cohen (*Amer. J. Dis. Child.*, 1940, 60, 1058—1066).—The growth of the child is an index of the efficacy of treatment. C. J. C. B.

Allergic reactions in abdomen. T. W. Clarke (*N.Y. Sta. J. Med.*, 1941, 41, 1642—1645).—A review. E. M. J.

Specific therapy in co-seasonal management of hay fever. L. E. Seyler (*Ohio Sta. J. Med.*, 1941, 37, 768—770).—Frequent small subcutaneous injections of pollen extract at a few days' interval are advised, dosage being determined by the intensity of the symptoms. E. M. J.

Species specificity of *Alternaria* in asthma and hay fever. H. N. Pratt and C. L. Roorbach (*J. Allergy*, 1941, 12, 431—437).—Direct testing of children and adults with several species of *Alternaria* varying in cultural characteristics and biological sources indicated a common atopic excitant in the genus *Alternaria*. This result was partly confirmed by *in vivo* and *in vitro* neutralisation experiments. Reciprocal neutralisation was common but not invariable. This contradiction may be explained partly by the lack of a method for accurate standardisation of the atopic content of mould extracts. C. J. C. B.

Stability of reagin-neutralising substance in ragweed pollen at various hydrogen-ion concentrations. A. C. Batchelder and T. A. Gonder, jun. (*J. Allergy*, 1941, 12, 425—430).—More than 75% of the activity is destroyed in solutions after 4 hr. at 37°, at a pH outside the limits of 4.5 and 7.5. The pH region of max. stability was 5.5—6.5. Inactivation may be due to the denaturation of an active protein component of ragweed pollen. C. J. C. B.

Linden (*Tilia*) as factor in seasonal pollinosis. V. J. Derbes (*J. Allergy*, 1941, 12, 502—506).—4 cases of seasonal pollinosis due to the linden are reported. C. J. C. B.

Importance of fungi in respiratory allergy. G. L. Waldbott, K. E. Blair, and A. B. Ackley (*J. Lab. clin. Med.*, 1941, 26, 1593—1599).—Skin reactions to one or more fungi were positive in 69% of the 841 allergic patients. Fewer positive reactions were obtained to fungi than to pollens and epidermals, but about as many as to foods. The strongest positive reactions to fungi occurred in patients who also reacted strongly positive to other antigens. In cultures from nasal and bronchial secretions, *Penicillium*, *Alternaria*, *Monilia*, and yeast prevailed. C. J. C. B.

Asthma from insect emanations. E. Urbach and P. M. Gottlieb (*J. Allergy*, 1941, 12, 485—492).—A case is reported of asthma and allergic rhinitis of 9 years' duration, due to the common or webbing clothes moth as shown by the history, the positive inhalation and skin tests, and control of symptoms by injections of moth extract. C. J. C. B.

Water flea sensitivity. K. D. Way (*J. Allergy*, 1941, 12, 495—497).—A case of bronchial asthma caused by sensitivity on inhalation of dried water fleas is reported. C. J. C. B.

Hypersensitivity to beetles (Coleoptera). J. M. Sheldon and J. H. Johnston (*J. Allergy*, 1941, 12, 493—494).—Report of a case. C. J. C. B.

Cocobole wood dermatitis. S. J. Levin (*J. Allergy*, 1941, 12, 498—501).—Report of a case due to wooden handles on kitchen knives. C. J. C. B.

Oral immunisation for poison ivy dermatitis. L. Zisserman (*J. Allergy*, 1941, 12, 474—476).—An unsuccessful attempt was made to immunise 100 persons against the poison ivy plant by oral administration of the plant extract in enteric coated tablets. C. J. C. B.

Flour allergy and epithelial hypersensitivity to ammonium persulphate in bakers and millers. H. A. E. von Dishoeck and D. J. Roux (*J. Allergy*, 1941, 12, 481—484).—The hypersensitivity to $(NH_4)_2S_2O_8$ was entirely an attribute of the skin of bakers suffering from eczema and was always accompanied by hypersensitivity to flour. Isolated hypersensitivity to persulphate has never been found. C. J. C. B.

Skin testing methods: multiple single sitting versus serial small group tests. O. Swineford, jun. (*J. Allergy*, 1941, 12, 470—473).—Numerous simultaneous average-positive skin tests did not cause systemic reactions by their cumulative effects. Systemic reactions seem to be associated with one reaction, or a few huge, rapidly developing, local reactions, indicative of extreme hypersensitivity to one or perhaps a few allergens. Only 2 of 2018 patients, tested with 80—150

allergens at one sitting, had constitutional reactions; neither reaction was alarming. In all, over 200,000 tests were done. C. J. C. B.

XXVI.—PLANT PHYSIOLOGY.

Temperature and growth of Marquis wheat. D. J. Wort (*Plant Physiol.*, 1940, 15, 335—342).—Effects of soil temp. 22—40° on the rates of growth of tops, roots, and leaves and on heading are examined under glasshouse conditions. A. G. P.

Effect of drought on wheat plants. A. G. O. Whitside (*Sci. Agric.*, 1941, 21, 320—334).—Inadequate water supplies to wheat plants result in diminished height of culm, size of leaves, distance between veins, and distance between and size of stomata. Cells developing under these conditions are smaller. Under glasshouse conditions drought lowers transpiration rates and the water content of the plant, and increases the osmotic pressure and permeability of cells, and their resistance to desiccation. A. G. P.

Vernalisation and photoperiodic induction. II. White clover (*Trifolium repens*). D. Cairns (*New Zealand J. Sci. Tech.*, 1941, 22, A, 279—289).—Increased green matter yields of white clover were obtained by pretreatment of seed at 3° for 10 days (completion of thermostage). Short periods (6 hr.) in the photostage were insufficient to affect reproductive cells in the embryo. Prolonged chilling (15—30 days) accelerated maturation in the plants but lowered the total yield. All treatments diminished the yield of seeds. A. G. P.

Respiration of cereal grains and flax seed. C. H. Bailey (*Plant Physiol.*, 1940, 15, 257—274).—The relationship $y = ac^x$, where x = moisture content and y = CO_2 respired, holds for cereals over the moisture range 11—17%. For wheat and maize $c = 0.672$. Oats show a relatively smaller increase in respiration per unit increase in moisture; vials for rye deviate still more. No correlation was apparent between market grades of barley and oats and their rates of respiration at unit levels of moisture content. Shrivelled or small barley grains respired more rapidly than did plump grains. The respiratory rate of flax seed exceeded that of all cereals. The abs. water content of the hydrophilic matter in flax seed may be much greater than the mean val. for the whole seed. A. G. P.

Does "C.P. grade" sucrose contain impurities significant for nutrition of excised tomato roots? P. R. White (*Plant Physiol.*, 1940, 15, 349—354).—No evidence was obtained of the existence in "C.P. grade" sucrose of substances necessary for or even beneficial to growth of excised tomato roots. A. G. P.

Sucrose versus glucose as carbohydrate source for excised tomato roots. P. R. White (*Plant Physiol.*, 1940, 15, 354—358; cf. A., 1934, 1418).—Sucrose is superior to glucose as C source for the excised roots (see also Robbins *et al.*, A., 1938, III, 500; 1939, III, 214). A. G. P.

Development of certain cell-wall constituents of forage plants. E. Bennett (*Plant Physiol.*, 1940, 15, 327—334).—Analyses of red clover and Kentucky blue grass at various stages of growth are recorded. With advancing growth the % of ash and total N in the plants declined progressively, the % of hemicellulose and lignin increased, and the % of pectin remained substantially const. The pectin content of blue grass was similar to that of wood or straw; in clover vials were comparable with those of leaves. In blue grass the ratio hemicellulose/pectin was approx. 25; in clover the ratio never exceeded 2 and at times was less than 1. No evidence was obtained of relationships between the pectin, lignin, and hemicellulose in the whole plant. A. G. P.

Formation of "H" pieces in walls of *Ulothrix* and *Hormidium*. F. W. Jane and N. Woodhead (*New Phytol.*, 1941, 40, 183—189).—The wall of *Ulothrix* is of two layers and the outer portion of the wall is bounded by a fatty membrane. Swellings of the septa and adjacent walls are produced by the outer part of the cell wall in *Ulothrix* and probably in *Hormidium* also. In the latter the swellings assist fragmentation of the filament. L. G. G. W.

Catalase activity in *Mangifera indica*. H. K. Banerjee and B. K. Kar (*Current Sci.*, 1941, 10, 289—290; cf. A., 1939, III, 1111).—There is a close correlation between the activity

of catalase and the life of *M. indica* from fruit setting to ripening, the chief well-marked phases of which are an early phase of very low activity, a phase of rapid and steady increase, a period of high-level activity, a steep rise to max. activity, and a rapid fall to a min. The max. catalase and peroxidase activities correspond with the mature stage and the consequent climacteric and higher respiratory efficiency of the fruit. There is also a positive correlation between catalase and peroxidase activity of the fruit and the haematin content of the tissue. Treatment with ethylene at 28–32° causes an increase in catalase activity as compared with storage at 8–12° or 28–32°. J. N. A.

Sugar transformations in the plant. C. E. Hartt (*Rept. Exp. Sta. Hawaiian Sugar Planters' Assoc.*, 1940–1, 118–123; *Int. Sugar J.*, 1941, 43, 315).—Continuing earlier work (A., 1941, III, 635) on the mechanism of the synthesis of sucrose in the sugar-cane plant it was found, using detached blades and roots, that these organs continue to make sucrose when supplied with simple sugars in the dark. The effect of poisons, vitamins, co-enzymes, and various org. and inorg. additions, as well as of aeration, was also studied. J. P. O.

Transpiration and carbon assimilation in cacao. D. B. Murray (*Trop. Agric. Trinidad*, 1940, 17, 166–168).—Suitable methods are described for measuring loss of water and CO₂ uptake of attached cacao leaves in the field. Transpiration rose to a max. at midday but C assimilation fell off at midday with light intensities exceeding $\frac{1}{2}$ full sunlight. Shade gave better leaf environment than did full sunlight. A. W. M.

Function of pyrenoids in algae. S. R. Bose (*Nature*, 1941, 148, 440–441).—*Rhopalodia gibba* and *Synedra affinis*, var. *fasciculata*, grown in 2% glucose, fatty acid, and glycerol medium show grouping of oil drops around the pyrenoids, the oil drops first formed being deposited invariably around the pyrenoids. Green filaments of *Spirogyra* growing in fatty acids and glycerol medium synthesise drops of oil around the pyrenoids within the starch sheath in 3 days. Acid decreases in concn. during the process. Filaments of *Spirogyra* under the decomp. show the first formation of oil drops around the pyrenoids within as well as surrounding the starch sheath. The pyrenoids serve probably as receptacles of enzymes for the synthesis of food substances in these plants. The central portion of the pyrenoids gives a test for protein with Millon's reagent. Photomicrographs are reproduced. L. S. T.

Germination and staining of basidia in *Gymnosporangium*. L. S. Olive (*Stain Tech.*, 1941, 16, 149–153).—Spores are germinated for about 3 hr. on slides in a damp chamber, the natural gelatin in the teliospore stalks glueing the material to the slide. Germinated spores are killed by osmic acid to the slide. Germinated spores are killed by osmic acid to the slide and stained with Heidenhain's haematoxylin with differentiation with Fe alum. Details of germination and of nuclear division are intact. E. E. H.

Photoperiod in relation to vegetative growth of plants. J. Bonner (*Plant Physiol.*, 1940, 15, 319–325).—The vitamin-B₁ and content of *Xanthium*, *Brassica alba*, *B. nigra*, *Cosmos*, and *Lycopersicum* grown under long photoperiod (18 hr.) conditions was greater than when grown with a short photoperiod (9 hr.). Response of *Xanthium* and *Brassica* to additions of -B₁ was greater under short than under long photoperiod conditions. The effect of photoperiod on vegetative growth may be conditioned by its effect on the production of -B₁ and/or other growth factors. A. G. P.

Effect of light intensity on development of the photosynthetic mechanism. M. C. Sargent (*Plant Physiol.*, 1940, 15, 275–290).—*Chlorella pyrenoidosa* showed low chlorophyll contents and high photosynthetic capacity when grown under conditions of intense illumination. With relatively low illumination the chlorophyll content was high but the capacity for undergoing the Blackman reaction was small. Under both conditions the relative effects of [CO₂] and of CN⁻ were proportionally the same and the photosynthetic quotient was 1. Cell size was similar in sun and shade plants. Increase in cell density in the culture was associated with increase in average cell size, decrease in capacity for Blackman reaction, and, in highly illuminated cultures, with increased chlorophyll content. A. G. P.

Effect of temperature during irradiation on X-ray sensitivity of maize seed. J. H. Kempton and L. R. Maxwell (*J. Agric.*

Res., 1941, 62, 603–618).—Exposure of maize seed to X-rays resulted in early death of seedlings after apparently normal germination. The effect varied with the temp. at which the treatment was made, max. sensitivity being at 0°.

A. G. P.

Relation between quantity of chlorophyll and capacity for photosynthesis. R. Emerson, L. Green, and J. L. Webb (*Plant Physiol.*, 1940, 15, 311–317).—In *Chlorella pyrenoidosa* grown under optimum external conditions in flashing light the ratio mols. of chlorophyll present/mols. of CO₂ respired per flash is not const. but varies with conditions of previous growth, age of culture, and colour and intensity of illumination. A. G. P.

Photosynthesis of brown cells in interaction of chlorophyll and carotenoids.—See A., 1942, I, 25.

Colchicine treatment as a means of inducing polyploidy in cotton. S. G. Stephens (*Trop. Agric. Trinidad*, 1940, 17, 23–25).—Success was obtained in one type of St. Vincent Sea Island cotton. A. W. M.

New polyploids in cotton by the use of colchicine. S. C. Harland (*Trop. Agric. Trinidad*, 1940, 17, 53–54).—Artificial polyploidisation in the genus *Gossypium* is reported. A. W. M.

Vegetative propagation of mango from gootes (marcotte) and cuttings by treatment with high concentrations of auxin. A. G. Thakurta and B. K. Dutt (*Current Sci.*, 1941, 10, 297; cf. A., 1940, III, 617).—Rooted plants were raised by treating gootes from 2–3-year trees with indolylacetic acid. The bark of twigs was ringed and 3% indolylacetic acid in lanoline was applied to the ring. After 24 hr. twigs were cut off at the lower end of the ring and planted in a sloping position. Satisfactory rooting occurred some months later. 1% indolylacetic acid produced little and 1 and 3% naphthylacetic acid no root formation. Twigs from older trees did not respond to the treatment. A. G. P.

Experimental production of parthenocarpic strawberries. A. W. S. Hunter (*Canad. J. Res.*, 1941, 19, C, 413–419).—By spraying unpollinated blossoms with aq. indolylbutyric or naphthylacetic acids or colchicine or by dusting with powdered acenaphthene development of parthenocarpic fruit was induced from treated and untreated flowers. These substances probably act by mobilising other substances which are translocated to ovaries and initiate fruit growth. A. G. P.

Effects of wounding and of wound hormones on root formation. C. D. La Rue (*Proc. Nat. Acad. Sci.*, 1941, 27, 388–392).—In cuttings of herbaceous plants and in petioles of *Coleus* wounding stimulated the formation of adventitious roots. Both wounding and treatment with extracts containing wound hormones accelerated the rooting of cuttings and increased the no. of roots formed. The stimulative effect of wounding on root initiation was almost as great as that of indolylbutyric acid treatment. A. G. P.

Experimental infection in vitro of excised roots of leguminosae. A. Seppilli, M. Schreiber, and G. Hirsch (*Ann. Acad. Brasil. Sci.*, 1941, 13, 69–84).—Excised roots of *Arachis hypogaea*, grown in agar-sucrose nutrient and infected with appropriate strains of *Rhizobium*, do not assume the symbiotic state characteristic of intact, infected roots but show degenerative changes and necrosis of the infected tissue typical of a parasitic infection, a condition also reflected in the morphology of the infecting bacilli. F. O. H.

Staining scab actinomycetes in potato tuber tissues. H. L. Hutchins and B. F. Lutman (*Stain Tech.*, 1941, 16, 63–66).—Actinomycetes hyphae stain by a modified Gram method. Sections are stained for 24 hr. with 5% crystal-violet in aniline, treated with I for 24 hr., and decolorised slowly in abs. alcohol until no more colour comes out. The hyphae are embedded in the cell walls. E. E. H.

Plant virus differentiation by trypan-blue reactions within infected tissue. F. P. McWhorter (*Stain Tech.*, 1941, 16, 143–148).—Cytological evidence of the presence of viruses is provided by the presence of amorphous and cryst. inclusions which stain selectively and in varying degrees with trypan-blue or phloxine. Permanent mounts can be made from formalin-fixed material, although the tests are especially applicable to temporary mounts of living tissue. E. E. H.

Pasternack's paraffin method modified for plant tissue. K. R. Kerns (*Stain Tech.*, 1941, 16, 155—156).—Pasternack's 1-hr. method for prep. of paraffin sections of animal tissues is adapted to plant tissues. The speed of every stage is increased by heat and by the use of screw-top vessels whereby v.p. is increased. Albumin fixative is used for sections followed by a coating of celloidin. Root-tip chromosome counts can be made in 3 hr. E. E. H.

Preparation of stem sections of woody herbarium specimens. F. Hyland (*Stain Tech.*, 1941, 16, 49—52).—A method suitable for dried, hard, or woody material is described. Convenient sized blocks are boiled (1 hr.) in water, cooled, left in 5% NaOH (24 hr.), washed in running water (several hr.), and softened in HF until easily cut with a razor. After further washing (24 hr.) they are dehydrated and embedded in paraffin (m.p. 56—58°) and sections are cut and completed as usual. If only xylem is present, NaOH treatment is omitted. E. E. H.

XXVII.—PLANT CONSTITUENTS.

Localisation of certain chemical constituents in plant and animal tissues. Electrographic method. H. Yagoda (*Ind. Eng. Chem. [Anal.]*, 1940, 12, 698—703).—Details are given of the prep. of paper sensitised with Ag_2CrO_4 . The cut section of vegetable or fruit is pressed against this sensitised paper and electrolysed, the Cl^- in the specimen giving AgCl on the paper, which is processed by removing Ag_2CrO_4 with HNO_3 and developing the AgCl image. In this way (minute details of equipment and procedure are given) "chloride patterns," showing the distribution of Cl^- in the section of numerous vegetable and animal tissues, are produced. Tentative processes for preparing Na and K patterns, using Zn U acetate and Na cobaltinitrite, respectively, are presented. Many photomicrographs of chloride patterns are reproduced. J. D. R.

Coumarin content of sweet clover. I. Breeding of a low-coumarin line of *Mellilotus alba*. T. M. Stevenson and W. J. White. II. Sources of variation in tests for coumarin. W. J. White and W. H. Horner (*Sci. Agric.*, 1940, 21, 18—28, 29—35).—I. Pure breeding lines of sweet clover containing 0.00—0.05% of coumarin have been obtained by selection. Low-coumarin character is inherited and probably depends on a single recessive character.

II. Coumarin contents of clover were high in buds and higher in new than in older leaves. Vals. generally were max. at the late budding or early flowering stage. The Clayton-Larmour (1935) test for coumarin was subject to appreciable variation. A. G. P.

Auxin in marine algae. J. van Overbeek (*Plant Physiol.*, 1940, 15, 291—299; cf. A., 1941, III, 818).—The auxin contents of algae examined were: *Macrocystis* 0.5, *Bryopsis* 80, and *Elodea* 50 μg . per kg. fresh wt. Young blades showed the highest and the stipe the least auxin content. The auxin of *Macrocystis* is indolylacetic acid, or a closely related substance, rather than auxin-a or -b. A. G. P.

Isolation of unsaponifiable constituents from green plant tissue. P. W. Mormal, H. G. Petering, and E. J. Miller (*Ind. Eng. Chem.*, 1941, 33, 1298—1302).—Improvements in the method (cf. A., 1940, III, 549) for isolating carotene from dehydrated lucerne leaf meal by the $\text{Ba}(\text{OH})_2$ process are detailed. Large-scale preps. have resulted in the isolation of constituents other than carotene, e.g., xanthophyll, sterols, and chlorophyll. The addition of diatomaceous earth during the $\text{Ba}(\text{OH})_2$ saponification of the chlorophyll prevents the formation of large hard lumps of Ba ppt. which are difficult to wash free from valuable constituents. Carotene is extracted from the Ba sludge by repeated treatment with cold acetone. This extract usually contained a little Ba (as a sol. salt) which was pptd. by MgSO_4 . Treatment of the crude concentrate with hot petroleum naphtha followed by cooling to -4° pptd. most of the xanthophyll together with much waxy material. The purified concentrate of unsaponifiable constituents was a deep red oil without objectionable odour or taste. It contained 3.6% of carotene, 1.18% of xanthophyll, and an antioxidant, and was equiv. to 60,000 U.S.P. units of vitamin-A per g. Irradiation to

convert the sterols into -D causes no loss of carotene. Cryst. carotene was easily isolated from the concentrate. R. G. W.

Relationships between protein-nitrogen and -sulphur and chlorophyll in leaves of Sudan grass. E. A. Hanson, B. S. Barrien, and J. G. Wood (*Austral. J. Exp. Biol.*, 1941, 19, 231—234).—The amounts of total protein-N and -S, chlorophyll, and chloroplast protein-N and -S all reach a coincident max. during the life cycle of *Andropogon sudanensis*, L. and B., and then decrease. Approx. 7% of the total amount of protein is present as chloroplast protein in young leaves, but this increases to 35—40% in older leaves. The chloroplast proteins are rich in S and contain approx. 70% of the total protein-S. The ratio of N to S in the chloroplast protein remains approx. const. during the life cycle, but that in the total protein decreases owing to the greater use of cytoplasmic proteins during senescence. Young leaves contain relatively large amounts of chlorophyll and small amounts of protein; as growth occurs, there is a marked increase in the amount of chloroplast protein, whilst afterwards the amounts of chlorophyll and protein decrease. During senescence of the leaves, the amount of chlorophyll decreases more rapidly than does that of protein. If the mol. wt. of the protein is assumed to be 68,000, then approx. 20 mols. of chlorophyll are associated with each mol. of protein during the greater part of the life cycle of the plant. J. N. A.

Kundt's rule. G. Mackinney (*Plant Physiol.*, 1940, 15, 359).—A reply to criticism of Egle (*Sitzungsber. Heidelberg Akad. Wiss. Kl. Math. Nat.*, 1939, 1, 19) to the author's observation relating to org. solvents for chlorophyll (A., 1939, III, 220). A. G. P.

Oil of *Artemisia tridentata* (American sage brush).—See A., 1942, II, 27.

Isolation of ecgonidine methyl ester from coca seeds.—See A., 1942, II, 38.

Isolation of toxic principle from seeds of *Macrozamia spiralis*.—See A., 1942, II, 38.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Electron microscope. G. Rosengarten (*Amer. J. Pharm.*, 1941, 113, 358—363).—A description of the principles underlying its construction and use. T. F. W.

Method of allowing for influence of diffusion in manometric measurements of rapid biochemical reactions. F. J. W. Roughton (*J. Biol. Chem.*, 1941, 141, 129—145).—In gas-liquid reactions, allowance is made for the effect of diffusion by assuming the existence of a stationary liquid film at the phase boundary and equations which permit calculation of the magnitude of the allowance are given. Observations on the rate of CO_2 uptake by and CO_2 output from simple physical solution, rate of CO_2 uptake by buffer solutions in presence of carbonic anhydrase, rate of CO_2 output from HCO_3^- buffer mixtures of various p_{H} with and without addition of the anhydrase, and rate of O_2 output from H_2O_2 -catalase mixtures show that the calc. allowances establish good agreement between theory and experiment. W. McC.

Micro-diffusion methods based on the bisulphite reaction. I. Determination of acetone. T. Winnick (*J. Biol. Chem.*, 1941, 141, 115—120).—Simplicity, specificity, and accuracy are achieved in the direct determination of acetone in urine, whole blood, and serum by a modification of Klein's procedure (A., 1940, III, 840). The acetone which diffuses is absorbed during 6 hr. in large excess of NaHSO_3 , the excess is destroyed at 5° by adding N-I , solid Na_2HPO_4 is added, and the liberated NaHSO_3 is titrated with 0.005N-I. With acetone contents of 10—30 mg.-% the method is accurate to within approx. 2—3%. Werch's method (A., 1941, III, 484) is untrustworthy. W. McC.

Gravimetric determination of bromide in organic material. S. Behrman, D. Brinton, and R. G. L. Waller (*Biochem. J.*, 1941, 35, 967—973).— AgCl and AgBr are pptd. together by a known excess of AgNO_3 in HNO_3 , and the excess of Ag^+ by NaCl . From the wt. of the ppts. Br and Cl can be calc. The technique is described in detail. R. L. E.

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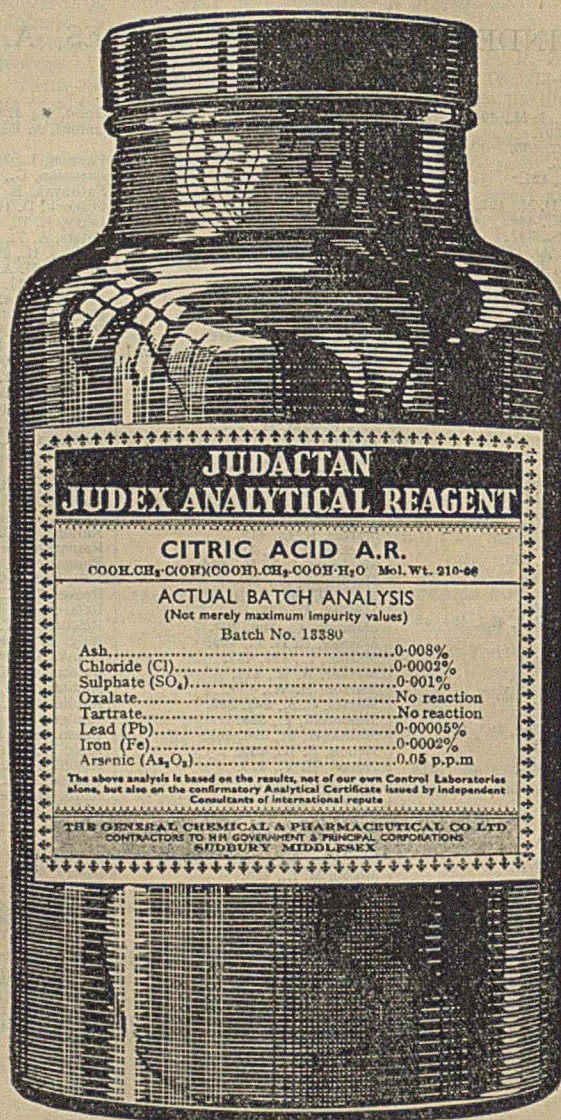
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