BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

ISSUED BY THE

Bureau of Chemical and Physiological Abstracts

[Supported by the Chemical Society, the Society of Chemical Industry, the Physiological Society, the Biochemical Society, and the Anatomical Society of Great Britain and Ireland]

MAY, 1943

BUREAU:

Chairman: L. H. LAMPITT, D.Sc., F.I.C.

Hon. Treasurer: F. P. DUNN, B.Sc., F.I.C.

JULIAN L. BAKER, F.I.C. G. L. BROWN, M.Sc., M.B., CH.B. H. W. CREMER, M.Sc., F.I.C., M.I.CHEM.E. C. W. DAVIES, D.Sc., F.I.C. H. J. T. ELLINGHAM, B.Sc., Ph.D., F.I.C.

C. R. HARINGTON, M.A., PH.D., F.R.S. L. A. JORDAN, D.Sc., F.I.C. G. A. R. KON, M.A., D.Sc., F.R.S. H. McCOMBIE, D.S.O., M.C., PH.D., D.Sc., F.I.C. B. A. McSWINEY, B.A., M.B., Sc.D.

Editor: T. F. BURTON, B.Sc.

Assistant Editors :

I. H. BIRKINSHAW, D.Sc., F.I.C.*

H. BURTON, M.Sc., D.Sc., F.I.C.

F. G. CROSSE, F.I.C.

Physical Anthropology

VII. Musc $\mathbf{III}.$ Nerv Sens Duct Repr Dige

Live Kidn

A. A. ELDRIDGE, B.Sc., F.I.C.

W. IEVONS, D.Sc., Ph.D. E. E. TURNER, M.A., D.Sc., F.I.C., F.R.S. F. L. USHER, D.Sc. H. WREN, M.A., D.Sc., PH.D. SAMSON WRIGHT, M.D., F.R.C.P.*

331

333 336

338

3

* Assisted by J. D. BOYD (Anatomy), A. HADDOW (Tumours), F. O. HOWITT (Biochemistry), A. G. POLLARD (Plant Physiology), K. TANSLEY (Sense Organs), V. J. WOOLLEY (Pharmacology), and F. G. YOUNG (Ductless Glands)

Indexer: MARGARET LE PLA, B.Sc.

A., III.—PHYSIOLOGY & BIOCHEMISTRY (INCLUDING ANATOMY) **CONTENTS**

I. General Anatomy and Morphology . . . 297 II. Descriptive and Experimental Embryology. Heredity 298 XVI. Other Organs, Tissues, and Body-Fluids Tumours KVII. XVIII. Nutrition and Vitamins 299 III. Physical Anthropology IV. Cytology, Histology, and Tissue Culture V. Blood and Lymph VI. Vascular System . /II. Respiration and Blood Gases Metabolism, General and Special Pharmacology and Toxicology. Physiology of Work and Industri 299 301

au by broad		· · · · · · · · · · · · · · · · · · ·							J - 1		- 37
ration and	Blood	Gase	s					. 3	306	XXII. Radiations	34
е.								. 3	307	XXIII. Physical and Colloidal Chemistry	34
us System								. 3	308	XXIV. Enzymes	34
Organs									309	XXV. Microbiological and Immunological Chemistry.	
ess Glands	exclu	ding	Gona	ds				. 3	320	Allergy	30
duction									324	XXVI. Plant Physiology	36
tive Systen	'n								327	XXVII. Plant Constituents .	36
and Bile		1.					-		130	XXVIII. Apparatus and Analytical Methods	-26
w and Uri	1e				-				330	XXIX, New Books	21
, and oth								-			2,

Offices of the Bureau: 56 VICTORIA STREET, LONDON, S.W.I

Publishers : THE CHEMICAL SOCIETY, BURLINGTON HOUSE, PICCADILLY, LONDON, W.1



THE JOURNAL OF BIOLOGICAL CHEMISTRY

FOUNDED BY CHRISTIAN A. HERTER AND SUSTAINED IN PART BY THE CHRISTIAN A. HERTER MEMORIAL FUND

EDITORIAL BOARD:

RUDOLPH J. ANDERSON. W. MANSFIELD CLARK. HANS T. CLARKE. CARL F. CORI. EDWARD A. DOISY. A. BAIRD HASTINGS.

Howard B. Lewis. Elmer V. McCollum. William C. Rose. William C. Stadie. Donald D. Van Slyke. Hubert B. Vickery.

SUBSCRIPTION PRICE

Beginning with January, 1939, 5 volumes to be issued a year £1 1s. 9d. per volume, post free

> INDEX TO VOLS. 101-125 8s. net to Subscribers 12s. net to Non-Subscribers

British Agents : BAILLIÈRE, TINDALL & COX 7 & 8 HENRIETTA STREET, LONDON, W.C.2

READY SHORTLY

VOLUME XXXIX OF THE ANNUAL REPORTS ON THE

PROGRESS OF CHEMISTRY

FOR 1942

Price 15s. 0d., post free.

CONTENTS

GENERAL AND PHYSICAL CHEMISTRY, by H. W. Melville. (Collaborators: C. E. H. BAWN, W. F. Berg, G. GEE).

INORGANIC CHEMISTRY, by H. J. EMELEUS. (Collaborators: A. L. G. REES, A. J. E. WELCH).

CRYSTALLOGRAPHY, by J. M. ROBERTSON .

ORGANIC CHEMISTRY, by F. S. Spring and T. S. Stevens. (Collaborators : M. P. Balfe, J. W. Cook, J. Kenyon, E. G. V. Percival).

BIOCHEMISTRY, by L. J. HARRIS. (Collaborators: C. G. Anderson, E. Chain, J. L. CRANMER, H. W. FLOREY, A. NEUBERGER, F. W. NORRIS, R. MARKHAM).

ANALYTICAL CHEMISTRY, by J. W. J. FAY and J. G. N. GASKIN.

RADIOACTIVITY AND SUB-ATOMIC PHENOMENA, by O. R. FRISCH.

Publishers: THE CHEMICAL SOCIETY, BURLINGTON HOUSE, PICCADILLY, LONDON, W.1.

BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

MAY, 1943.

I.—GENERAL ANATOMY AND MORPHOLOGY.

Relations of inferior laryngeal nerve to inferior thyroid artery. A. F. Reed (*Anat. Rec.*, 1943, 85, 17–23).—28 different types of relations based on 506 dissections are described. In 3 cadavers the right nerve arose from the vagus high in the neck and did not W. F. H. follow a recurrent course.

Muscular abdominal wall and its influence on position of viscera. A. J. Linzbach (Virchow's Arch., 1939, 304, 140-162).—The muscles of the abdominal wall (100 bodies) are of smaller wt. in cases of enteroptosis; this is more marked in women than in men and is more significant if correlated with the area of the soft abdominal wall. For the support of the abdominal wall and the viscera the recti are more important than the oblique and transverse muscles. Histologically atrophy, swelling of fibres, loss of striation, fatty degeneration, calcification of nuclear remnants, and increase in the J. A. no. of nuclei were found.

Cranio-facial union and maxillary tuber in mammals. W. M. Cobb (Amer. J. Anat., 1943, 72, 39-111).—The salient features and variations of craniofacial union and maxillary tuber are described from a study of 1100 skulls representing all the orders of mammals W. F. H. (cf. A., 1940, III, 466).

Bony palate of Uromastix. R. D. Saksena (Proc. Indian Acad. Sci., 1942, B, 16, 107—119).—Three species, viz., U. hardwickii, acanthinurus, and agyptius, were examined. The anterior extension of the pterygoid, the pteryo-palatine suture, the development of the quadrate process of the pterygoid, and the relation of pterygoid to prevomer show marked differences in the 3 species. The pterygoid in U. hardwickii is very similar to stage R in the development of Sphenodon. A process, hitherto not recorded, is described on the inner side of the transpalatine. W. F. H.

Growth of human pelvis from 10th to 20th year. R. A. Obiditsch (Virchow's Arch., 1939, 304, 163-170).—Calc. from post-mortem pelvimetric measurements of 48 males and 40 females of average height, the intercristal, superior and inferior interspinal (anterior) diameters show little difference in both sexes apart from an initial advantage for the male; in girls the transverse and oblique diameters are longer after 13, and the true conjugates after 16 years, and the diagonal conjugate and the conjugate of the midplane and exit during any year between 10 and 20 with the exception of the 15th-16th when the boys catch up for a short time. I. A.

Preserved and fresh homotransplants of cartilage. J. B. Brown (Surg. Gyneq. Obstet., 1940, 70, 1079—1082).—Brief review of the results of 11 years' experience using different sources of cartilage and different preservative techniques. P. C. W.

Scalenus anticus syndrome and cervical ribs. F. V. Theis (Surgery, 1939, 6, 112-125).-The syndrome is due to compression of the brachial plexus. Diagnostic procedures demonstrating changes in peripheral pulse vol. and oscillometric index are not pathognomonic since they may occur in normal individuals. Surgical treatment is not indicated in most cases. P. C. W.

Internal fixation of trochanteric fractures of femur. J. A. Key (Surgery, 1939, 6, 13-23). P. C. W.

Discoid cartilage, trigger knee. F. R. Ober (*Surgery*, 1939, 6, 24)...-Report of 3 cases in children and 1 in an adult. P. C. W. 30).-Report of 3 cases in children and 1 in an adult.

Malformations of vertebral column. O. Schulz (Virchow's Arch., 1939, 304, 203-222).-2 vertebral columns with reduction in no. malformation and fusion of vertebræ and ribs are described in detail; wedge-shaped and block vertebræ, bifurcate and bicapitate ribs were present giving a somewhat atypical Klippel Feil syndrome. J. A.

Regional fibrocystic disease of bone. C. O. Adams, E. L. Compere, and J. Jerome (*Surg. Gynec. Obstet.*, 1940, **70**, 22-32).—10 cases are described in which the extent of involvement and differences in gross pathology differentiate the condition from localised fibrocytic disease. The blood-Ca and -P were normal in 8 cases tested. P. C. W.

True total hemihypertrophy. J. Schwartzman, L. Grossman, and D. Dragutsky (Arch. Pediat., 1942, 59, 637-646).—A case report. С. Ј. С. В.

Congenital anomalies of primary mid-gut loop. J. M. Miller and E. G. Wakefield (*Amer. J. digest. Dis.*, 1942, 9, 383–387).—A classification with 10 case reports. N. F. M.

Maldevelopment of tricuspidal valves. R. A. Obiditsch (Virchow's Arch., 1939, 304, 97-105). J. A.

Cor biloculare with transposition of the great cardiac vessels and atresia of the pulmonary artery: phylogenetic and ontogenetic interpretation. J. I. Rossman (Amer. J. clin. Path., 1942, 12, 534 C. J. C. B. 542).—A case report.

Congenital bilateral absence of kidneys. F. Hinman (Surg. Gynec. Obstet., 1940, 70, 101-105).—Description of a case and review of the literature. P. C. W.

II.—DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

Development of urogenital system of albino rat. I. Kidney and its ducts. T. W. Torrey (*Amer. J. Anat.*, 1943, 72, 113—147).— The nephrogenic ridge and formation of the primary excretory duct are present in embryos of 13 somites. The primary excretory duct contacts the cloaca in embryos of 24 somites. The mesonephric tubules (max. no. 15 to 18 pairs in 36 somite embryos) terminate in Bowman's capsules. There are no glomeruli. In later stages the tubules decrease in no., lose their capsules, and combine to form complexes of 2—3 tubules each. Only the most anterior 3 pairs of tubules of the original series are retained. It is considered that phylogenetically and ontogenetically the pro-, meso-, and meta-where are parts of a single organ. W. F. H. nephros are parts of a single organ.

Presence or absence of nerves in umbilical blood vessels of man and guinea-pig. M. Spivack (Anat. Rec., 1943, 85, 85-109).-The umbilical blood vessels of the cord proper in man and guinea-pig are devoid of nerves. The abdominal portions of the vessels in both are supplied with non-myelinated nerve trunks and nerve fibres. Nerves were not found on abdominal umbilical vessels at the umbilical science to it. A network found in the capillaries of umbilicus or close to it. A network found in the capillaries of human fœtal membranes, and in the nutrient vessels of the umbilical cord of the guinea-pig, did not yield proof of its nervous origin, and is regarded as connective tissue. "W. F. H. and is regarded as connective tissue.

Development of conjunctival papillæ and of scleral bones in embryo chick. P. D. F. Murray (J. Anat., Lond., 1943, 77, 225-240).— Epidermal papillæ appear in the conjunctiva in chick embryos of 7 days' incubation as flat epidermal thickenings. In later stages the central part of each papilla thickens and grows downwards as a the central part of each papilla thickens and grows downwards as a concal mass; it also projects above the general level of the epidermis. The base of the papilla soon degenerates and the papilla disappears by the 12th day. Bone rudiments first appear as a condensation of mesenchyme below the papilla, after the disappearance of the central projection of each papilla, the mesenchyme cells become transformed into osteoblasts which lay down a bony matrix.

W. J. H.

Development of duck pituitary with special reference to changes in pars buccalis. B. T. Painter (Anat. Rec., 1942, 84, 387-405).—The infundibular outgrowth in the 9-day embryo shows only slight development. During later stages it assumes the complex, "speardevelopment. During later stages it assumes the complex, "spear-head "condition found in the adult gland; its distal portion becomes the pars nervosa. The pars tuberalis reaches the infundibulum about the 13th day of incubation. A pars intermedia is not formed. Definite acidophils and basophils appear in the pars anterior at the 16th day. Presenbils discances in black stages of the pars in the pars anterior is the 16th day. Basophils disappear in later stages but reappear in the cephalic lobe 2 weeks after hatching. By hatching time acidophils have extended from the cephalic lobe to the caudal lobe and are evenly distributed throughout the pars anterior. W. F. H.

Ovulation, maturation, and fertilisation in fox. O. P. Pearson and R. K. Enders (*Anat. Rec.*, 1943, 85, 69–83).—A complex folding of the granulosa occurs in large follicles. The folds play an important part in the formation of the corpus luteum. Ovulation takes place late on the first day or early on the 2nd day of receptivity. The first polar body is given off when the ovum is well down the oviduct. Fertilisation occurs in the mid-portion of the oviduct one or more days after ovulation. Corona cells are retained for a considerable 298

297E 2 (A., III.) time after fertilisation. Differences between the reproductive mechanisms of the dog and fox are described. W. F. H.

Effects of localised X-radiation on regeneration of the urodele limb. E. G. Butler and J. P. O'Brien (Anat. Rec., 1942, 84, 407-413).— The proximal portion of the thigh retains its full capacity to initiate regeneration of a complete limb, while in the distal region of the thigh the capacity to regenerate is totally lacking. A new foot can be regenerated following amputation through the metatarsals, but no regeneration takes place when the amputation is made 2 or 3 mm. more proximally. The results provide evidence that the regeneration process in certain essential features is strictly local in nature. The cells which enter into the formation of the regeneration blastema arise at the level of amputation. W. F. H.

Design and use of micro-electrodes for production of lesions in pituitary rudiment of chick embryos. H. H. Hilleman (Anat. Rec., 1942, 84, 343-357).—A method for destroying the pituitary primordia in early chick embryos without injury to other tissues is given. The method involves the use of a precision-made sparkgap, high-frequency apparatus equipped with a 20,000-v. condenser, and a positive micrometer control of power (min. to max.) for the finest type of electrocoagulation work. W. F. H.

Doubling of nuclei of cells and genes, and total number of genes and chromosomes in nucleus. N. Koyenuma (Z. Physik, 1942, 119, 522-526).—The water drop model used in nuclear physics is applied to the problem of the doubling of cell nuclei and genes. The at. and mol. forces coming into play are considered. The gene no, can be calc. if the no. of chromosomes is known. The no. of genes per chromosome is calc. to be 5.05×10^3 . A. J. M.

Effect of radiations on Mendelian phenotypes of Carassius auratus. H. B. Goodrich and J. B. Trinkaus (Biol. Bull., 1939, 77, 192-199).—Goldfish and the transparent shubunkin are not stimulated by ultra-violet light to produce melanophores. Hybrids when stimulated in a similar manner do produce new clusters. This is interpreted as due to a stimulation of precocious development of these spots which normally appear and disappear throughout life. D. M. Sa.

Relationship between type and production [in dairy cattle]. L. Copeland (J. Dairy Sci., 1941, 24, 297-304).—There is some relationship although not a pronounced correlation between conformation and productivity. J. G. D.

III.—PHYSICAL ANTHROPOLOGY.

Conditions for balancing head in primates. A. H. Schultz (Amer. J. phys. Anthrop., 1942, 29, 483-497).—Heads of primates when posed in the ear-eye horizon are always heavier in front of the occipital condyles than behind them. With the head in this position wts. were suspended from the inion in amounts sufficient for balancing. The upward pull at the most oral point for equilibrium of the head resting on its natural fulcrum was also measured. The data indicate that much less strength is required to balance the head in * adult man than in adults of other primates but the conditions for balancing are not nearly so far apart in man and the apes at earlier stages of growth. Fossil man does not bridge the large gap between the great apes and modern man regarding factors involved in balancing the head. W. F. H.

IV.—CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Glomus coccygeum and carotid body. W. H. Hollinshead (Anat. Rec., 1942, 84, 1--16).—The cells of the carotid body occur in small cell groups or anastomosing cords separated from each other by vessels while in the glomus coccygeum they are arranged in layers above the vascular lumen. The nerve plexus occurs between adjacent cells in the carotid body. Nerve fibres may surround the cell groups of the glomus coccygeum but were not demonstrated among the cells of a group. Cells of the carotid body contain numerous granules and cytoplasmic vacuoles, while those of the coccygeal body exhibit little structural detail other than a few fuchsinophilic granules. It is concluded that these bodies are not identical organs and the findings do not support the view that the coccygeal body may be a chemoreceptor. W. F. H.

Changes in birefringent material in adrenal cortex of rat following administration of adrenotrophic hormone. H. M. Weaver and W. O. Nelson (Anat. Rec., 1943, 85, 51-67).—On the basis of quant. and qual. differences in birefringent material, the normal adrenal cortex is divided into 4 zones. Adrenal cortices of castrated animals given 200-400 mg. of adrenotrophe over a period of 20 days were hypertrophied and exhibited marked changes in the distribution and character of the optically active material. The presence of small dust-like particles in the walls and lumina of capillaries is taken as evidence of active secretion of adrenal cortical hormone. W. F. H.

Effect of perfusion with sodium citrate on content and distribution of minerals in various cells of cat as shown by electron microscopy and microincineration. A. I. Lansing and G. H. Scott (Anat. Rec., 1942, 84, 91-96).—The animals were perfused with 0.9% Na citrate at body temp. and samples of liver, kidney, duodenum, rectus abdominis muscle, and femoral nerve removed for examination. It was found that Ca and Mg were removed from the nucleus, cytoplasm, and cell membranes. W. F. H.

an time

Chromaffin cells of nerve ganglia of *Hirudo medicinalis.* H. V. Z. Perez (*J. comp. Neurol.*, 1942, **76**, 367—401).—Chromaffin cells are found in the ganglia of the medicinal leech. The chromaffinity is due to an *o*-dihydric phenol, probably adrenaline. These cells may be the phylogenetic ancestors of the paraganglionic system of vertebrates. J. D. B.

Chromatin content of nerve cells. W. Andrew and N. V. Andrew (J. comp. Neurol., 1942, 76, 423-433).—A study of the chromatin content of nerve cells in man and in the mouse with special regard to the role of the nucleolus. A definite correlation is established between the appearance of the nucleolus and the chromatin content of the nucleus. In nerve cells which have an increased quantity of nuclear chromatin the nucleolus has lost the large chromatin particles and has, instead, only a narrow ring of chromatin. In prolonged inanition there is a marked increase in the nuclear chromatin and Nissl substance was obtained and Feulgen's reaction was never obtained in the cytoplasm of any nerve cell. I. D. B

Presence of nerve cells in neurohypophysis of dog. W. M. Shanklin (*J. Anat., Lond.*, 1943, 77, 241-242).—Typical nerve cells are found in the stalk and infundibular process of the neurohypophysis of the dog. The no. of cells was found, to be variable in different specimens and in different parts. W. J. H.

Cultures of nervous tissues infected by Schizotripanun cruzi. H. Meyer (Anais Acad. Brasil. Sci., 1942, 14, 253-256).—In cultures of brain and spinal ganglia from chicken embryos, the nerve cells support S. cruzi for three days, when, following movement of the parasites, the neurofibrillæ are destroyed and the nerve cells burst, releasing new parasites. F. R. G.

Structure and deposition of the shell of Tellina tenuis. E. R. Trueman (J. Roy. Microscop. Soc., 1942, 62, 69–92).—A detailed account of the microscopic structure of the shell of this mollusc. The shell itself consists wholly of aragonite and contains traces of Sr which, it is suggested, may influence the formation of the aragonite. The presence of Ca salts in the mantle was shown by reaction with NH_4 oxalate, followed by examination with polarised light. J. D. B.

Culture of whole organs. H. Okkels (J. Roy. Microscop. Soc., 1942, 62, 103-111).—A review. J. D. B.

Fine chromosome structure after enzyme action. (Nuclease and **pepsin**.) S. L. Frolova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 654-657).—When salivary gland chromosomes of *Chironomus* and *Drosophila* larvæ are treated with pepsin at 37° and pH 1.94 the structure becomes less definite after a few min. due to slight swelling but the band a become clear ergin in a few min. ing, but the bands become clear again in a few min. After approx. 10 min. new bands appear, especially on Chironomus chromosomes, the solid bands disintegrate into separate chromomeres, and the chromosomes gradually become more transparent. This is due to dissolution of proteins, which are constituents of the substance in the spaces between the chromonemata. Chromosomes of Droso-phila which contain only few chromonemata do not become so transparent. This increase in transparency is followed by dissolution of the cytoplasm around the chromosome. After approx. 15-20 min. there is a decrease in chromosome size but the structure is unaffected. No further change occurs during 24 hr. When spleen nucleases act on chromosomes until the Feulgen reaction is negative, subsequent action of pepsin causes a slight swelling during 10-30 min. Then bands and separate chromomeres become clearly visible, swelling suddenly occurs, and dissolution begins. In a few min. the finest structures (minute chromomeres) are visible, and sometimes very fine threads, possibly genonemata, which unite the chromomeres. This process lasts 20—45 min. If the chromo-somes are treated with nucleases after removal of thymonucleic acid, they dissolve completely, and subsequent action of pepsin is N. A. very rapid.

J. N. A. **Rapid bulk Nissl method.** R. S. Snider (*Strain Tech.*, 1943, **18**, 35-39).—Fresh nervous tissue is put into a mixture of dioxan 65-70 ml., water 15 ml., 95% alcohol 20-15 ml., toluidine-blue 1 g., for 18 hr. (4-mm. block) to 72 hr. (15-mm. block). Frozen sections are differentiated in 95% alcohol, taken through dioxan, cleared in benzene, and mounted in balsam. E. E. H.

Protargol method for staining nerve fibres in frozen or celloidin sections. J. O. Foley (Stain Tech., 1943, 18, 27-34).—Very full details of technique are given. The method includes coating the Cu activator with celloidin to diminish rate of activation of the protargol and so prolong the optimum phase of the staining reaction Alcohol and pyridine are added to the staining bath, the pyridine particularly increasing the no. of neurones stained. A selective E. E. H counterstain is included in the method.

Inexpensive trimmer for paraffin blocks. M. H. Book (Stain Tech., 1943, 18, 25-26) .- A single-edge safety razor blade is screwed to a piece of metal, the top edge being at an angle of 78° with the back of the metal holder. When the holder is inserted in the microtome knife holder, the razor is horizontal. The roughly trimmed paraffin block is inserted in the microtome, and kept rigid while the edge of the razor blade is pushed against first its bottom edge and then its top edge. Waste paraffin is removed, and the trimmer replaced E. E. H. by microtome knife.

V.—BLOOD AND LYMPH.

Quantitative study of variations in multiple sternal marrow samples taken simultaneously. C. Reich and E. M. Kolb (Amer. J. med. Sci., 1942, 204, 496-503). 4 samples of 2.5 c.c. of sternal bone marrow were aspirated from 2 different sites and compared. Statistical analysis indicated that quant. determinations on these samples are inaccurate but qualitatively the results were good. C. J. C. B.

Erythrocyte sedimentation rate determinations on normal youths. C. F. Roche, D. G. Stannus, and E. M. Isberg (*J. Lab. clin. Med.*, 1942, **28**, 297-298).—The erythrocyte sedimentation rates of 100 normal Miami Beach youths (Rourke-Ernstene technique) showed 75% from 0.09 to 0.65 mm. per min. and 53% from 0.35—0.65 mm. per min. C. J. C. B.

Acute pancreatitis following blood transfusion. L. V. Ackerman (Arch. Path., 1942, 34, 1065–1069).—A case following transfusion of incompatible blood is reported. (2 photomicrographs.) C

J. C. B.

Maximal responses to liver therapy in pernicious anæmia. B. L. Della Vida and S. C. Dyke (Lancet, 1942, 243, 275-278).-From studies in 125 patients with pernicious anemia a formula $I = 0.93 - 0.214E_0$ (where I = average weekly increase of red cells during first 2 weeks of treatment and $E_0 =$ red cell count before treatment) is proposed as the standard equation for assessment of the potency of liver extracts. The reticulocyte response is not reliable for this purpose. C. A. K.

Vitamin-C deficiency in irresponsive pernicious anæmia. S. C Dyke, B. L. Della Vida, and E. Delikat (Lancet, 1942, 243, 278).-The response of pernicious anæmia patients to liver extract was impaired in the spring and could be readily restored by giving a daily supplement of 100 mg. of vitamin-C for 1 month. C. A. K.

Pernicious anæmia and pituitary deficiency. L. J. Witts (Lancet, 1942, 243, 307-308).-2 cases are reported. C. A. K.

Pernicious anemia of pregnancy. H. G. Miller and T. C. Studdert (*Lancet*, 1942, 243, 332).—23 cases of pernicious anæmia of pregnancy responded to sp. therapy which was subsequently discontinued in 14 cases without relapse. Free HCl was present in the gastric juice in 18 cases. C. A. K.

Polycythæmia vera. R. Fitz, B. S. Walker, and C. F. Branch (Arch. intern. Med., 1942, 70, 919-934). Detailed case report, with A. K. autopsy.

Transmission of radioactive iron to human foetus.-See A., 1943, 242.

Cytology of the polymorphonuclear leucocyte in toxic conditions. E. Ponder and R. van O. Ponder (*J. Lab. clin. Med.*, 1942, **28**, 316–322).—In toxic conditions, using Giemsa's stain, the polymorphs show toxic granules, amœboid outline, cytoplasmic vacuoles, and pyknotic areas in the nucleus. The changes are graded from 0 (normal cells) to 12 (in extremely toxic conditions). The grade so assigned by this method reflects the clinical condition of the patient, C. J. C. B. much more than the total white blood cell count.

Experimental eosinophilia with keratin from Ascaris suum and other sources. D. H. Campbell (*J. infect. Dis.*, 1942, **71**, 270–276).— Substances producing eosinophilia in guinea-pigs by a single injection possessed at least two and perhaps three qualities, namely insolu-bility, antigenicity, and the presence of SH groups. The SH groups may act as non-sp. tissue stimulants causing an accentuation of the cellular response. The eosinophilia of parasitic infections is due not only to keratin content of the parasites but also to their wide distribution in the host which affords many sites at which antigen-antibody reactions can take place. F. S.

Reaction of blood lymphocytes to trauma and healing. A. H. Cruickshank (Lancet, 1942, 243, 304-306).—After severe operations in animals or patients blood lymphocytes fall but during healing there is a lymphocytosis. It is suggested that lymphocytes may be transformed into fibroblasts. C. A. K.

Prolonged water deprivation in dog.—See A., 1943, III, 262.

Pooled human plasma: testing for sterility in the presence of certain antiseptics. F. G. Morgan, R. T. Simmons, and C. L. Biggs (Med. J. Austral., 1942, II, 515-517).—A modified Hitchens

medium with thioglycollate is used to test the sterility of merthiolated plasma.

Obtaining plasma from birds. W. J. McFarland, R. Tennant, and A. A. Liebow (Yale J. Biol. Med., 1942, 15, 39-40).—The lumen of the ischiadic artery in the fowl has a diameter 3 times that of the carotid artery and is therefore more suitable for obtaining large quantities of blood. The technique of bleeding from this artery is described.

Soret effect in denatured methæmoglobin. T. L. Lopes (Anais Acad. Brasil. Sci., 1942, 14, 241-245).—The spectrum of natural hæmoglobin shows an absorption for which the Bunsen coeff. is 1.7 times that of denatured hæmoglobin. This is attributed to a modification of the protein radicals. F. R. G.

Verdoglobin as degradation product of hæmoglobin in organism. M. Kiese (Naturwiss., 1942, 30, 587-588).—After intravenous injection of 10-20 g. of hæmoglobin into dogs, spleen and liver extracts contained up to 12 and 20% respectively of their total globin as verdoglobin, the normal blood content being less than 5% of the total globin. From the absorption spectra the verdo-globin present is probably verdoglobin S (sulphhæmoglobin). The pyridine verdochromogen was not obtained. The properties of a green hæm derivative depend not only on the type of system form-ing the verdochromogen but also on the linking of the hæm. L. H. B. H. B.

Fæcal output of urobilinogen in hæmolysis. E. B. Miller, K. Singer, and W. Dameshek (Arch. intern. Med., 1942, 70, 722-737).-The daily fæcal output of urobilinogen is the most reliable indicator of increased hæmolysis. Normally the fæces contains 11-21 mg. of urobilinogen daily per 100 g. of circulating hæmoglobin (hæmo-lytic index). In pernicious anæmia this index was increased by 200-400%, and in hæmolytic anæmia up to 1670% of normal.

C. A. K. Mechanism of lysis of red blood cells. B. Maegraith, G. M. Findlay, and N. H. Martin (*Nature*, 1943, **151**, 252–253).—Lung, liver, kidney, spleen, bone marrow, and muscle tissues lyse red cells when tissue and cells have been washed. This lysis is inhibited by addition of the animal's serum, traces of NaCN or $HgCl_2$, or by heating the tissue to 80°. The lytic agent is and the serum inhibitor is not species-sp. Ē. R. S.

"Congo-red index" [in blood]. F. Scholl (Quart. J. Pharm., 1942, 15, 398-405).—A photometric modification of the Stern and Willheim method for determination of Congo-red in blood, involving the use of 0.05 ml. of serum, is described. The max. concn. in the blood of rabbits is obtained 2 min. after injection and absorption by the reticulo-endothelial or other absorptive tissues may com-mence immediately. These absorb 15 mg. of dye within the first hr. irrespective of the quantity injected, the body wt., or blood vol. The Congo-red index of Stern and Willheim is inversely proportional to the quantity of dye injected and considerable vari-ations are caused by other factors. It is suggested that it be replaced by a "mg. index" obtained by multiplying the original index by the quantity of dye injected. H. G. R.

Coagulation defect in hæmophilia: comparison of proteolytic activity of chloroform preparations of hæmophilic and normal human plasma. H. J. Tagnon, C. S. Davidson, and F. H. L. Taylor (*J. clin. Invest.*, 1943, 22, 127–129).—The rate of dissolution of the clot obtained by the action of CHCl₃ on hæmophilic plasma is slower than with normal human plasma preps. The rate at which CHCl₃ plasma preps. derived from normal human plasma can cause fibrinogenolysis is greater than that of similar preps. from hæmophilic plasma. It is concluded that the proteolytic activity of $CHCl_3$ preps. of hæmophilic plasma is less than for such preps. from normal human plasma. C.B.

Purification of thrombin. W. H. Seegers and D. A. McGinty (Biol. Chem., 1942, 146, 511-518).—Thrombin (cf. A., 1941, III, 967) possessing 11,492 units per mg. of protein-N is obtained by converting purified prothrombin into thrombin with Ca(NO₃)₂ and lung extract, dialysing against distilled water, and pptg. inert protein by adjusting to pH 5-0 with acetic acid. Solubility curves indicate that the products, which are white and form clear solutions, contain two active substances having potencies of 10,086 and 13,365 units per mg. of N. Some preps. had the potency required of pure thrombin. J. E. P.

Effect of heparin on retrograde blood flow. E. Leiter (Proc. Soc. Exp. Biol. Med., 1942, 51, 187-188).—Outflow from the distal cut end of a femoral artery in dogs or cats was not modified by heparin.

Inhibitory effect of heparin on histamine release by trypsin, antigen, and proteose. C. A. Dragstedt, J. A. Wells, and M. Rocha e Silva (Proc. Soc. Exp. Biol. Med., 1942, 51, 191-192).—Addition of adequate heparin (0.12%) inhibits release of histamine from cells to plasma in rabbit blood by trypsin, antigen, or proteose. Smaller amounts (0.02%) are ineffective. V. J. W.

Quantity of thrombin required to clot heparin-plasma mixtures. W. H. Seegers (Proc. Soc. Exp. Biol. Med., 1942, 51, 172-173).-

The amount of pure thrombin required to clot in 15 sec. is directly proportional to the heparin present. V. J. W.

Effect of trauma of liver on plasma-prothrombin. J. W. Lord (Surgery, 1939, 6, 896-898).-In 7 dogs the peritoneal cavity was opened and the liver massaged under nembutal anæsthesia. Following this treatment there was a fall of 20-30% in the plasma-prothrombin, which was restored to normal 94-144 hr. afterwards. Cholecystectomy with ligation and division of the common bile duct produced similar results; simple laparotomy had no effect. P. C. W.

Effect of hepatectomy on plasma-prothrombin and utilisation of vitamin-K. W. de W. Andrus, J. W. Lord, and R. A. Moore (Surgery, 1939, 6, 899-900).—Following complete hepatectomy in 6 dogs there was a fall in the plasma-prothrombin of 45% in the 1st hr. after operation and of 80% or more in the 8-10 hr. after operation. This fall was unaffected by the administration of 10,000 units of vitamin-K and 2 g. of bile salts into the duodenum at operation; this latter procedure caused a rapid regeneration of prothrombin; this latter procedure caused a rapid regeneration of prothrombin in dogs whose plasma-prothrombin was lowered by long-standing biliary fistulæ. **P.** C. W.

Determination of clot firmness. J. J. Lalich and A. L. Copley (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 232-235).—Blood is allowed to clot in a conical tube and the pressure required to force the clot through the narrow end is determined by a manometer. V. J. W.

Bence-Jones proteinæmia in multiple myeloma. D. H. Moore, E. A. Kabat, and A. B. Gutman (*J. clin. Invest.*, 1943, 22, 67–75).— In 2 cases of multiple myeloma with marked hyperglobulinæmia due to γ components which pptd. out chiefly with the Howe "euglobulin" fraction, sedimentation const. of the main component of the serum indicated a mol. size like that of normal γ -globulins. Application of the quart. precipitin technique to the serum of one of these cases showed the presence of 0.2 g.-% of Bence-Jones protein. Only a very small proportion of the protein increment was Bence-Jones protein in other cases of multiple myeloma with marked hyperproteinæmia. 2 cases with sera showing abnormal β or M components, and unusual Howe partitions not encountered in diseases other than multiple myeloma, were found by ultra-centrifugal and serological analysis to have Bence-Jones protein as the chief abnormal protein components of the serum. 2 cases of multiple myeloma with marked hyperproteinæmia had large concns. of abnormal, not readily classifiable proteins with sedimentation const. indicating an approx. mol. size of normal globulins. The serum is locase of multiple myelome had normal How and electro serum in 1 case of multiple myeloma had normal Howe and electro-C. J. C. B. phoretic serum-protein patterns.

Electrophoresis of new-born calf serum. E. Jameson, C. Alvarez-Tostado, and H. H. Sortor (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 163-165).—Before ingestion of colostrum the serum contains little β - and no γ -globulin. Both appear during suckling as albumin and a-globulin decrease. V. J. W.

Adrenals and serum-protein levels in cat.—See A., 1943, III, 238. Splenosis; multiple peritoneal splenic implants following abdominal injury. J. H. Buchbinder and C. J. Lipkoff (Surgery, 1939, 6, 927-934).—A case is reported and the literature reviewed.

P.C.W

Toxic effect of splenic extracts on *Streptococcus harmolyticus*. L. G. Nutini and C. W. Kreke (*J. Bact.*, 1942, 44, 661-666). Alcoholic extracts of human and ox spleens were bactericidal for *Streptococcus harmolyticus* in a concn. of 0.1%. The active substance was resistant to heat and acid. F. S.

Micro-determination of calcium in serum. P. F. Holt and H. J. Callow (Analyst, 1943, 68, 35-40).-Ca is separated by microfiltration as Ca oxalate, dissolved in H_2SO_4 , and titrated with KMnO₄. The small vols. and rapidity of washings permit more complete washing of the ppt. and tapitity of washings permit more reducing substances in the serum. Large excesses of precipitant give high results. Sera need to be filtered to remove insol. reducing substances. S. B.

Photo-electric determination of potassium in blood serum. J. M. Looney, and C. G. Dyer (*J. Lab. clin. Med.*, 1942, **28**, 355–363).— A modification of the Ag cobaltinitrite method for the determination of serum-K adapted for use with a photo-electric colorimeter is described. By the use of sulphanilamide and N-a-naphthylethylenediamine dihydrochloride to determine the concn. of nitrite in the K Ag cobaltinitrite ppt. a stable colour is produced which is sensitive to 0.002 mg. of K %. The colour produced follows Beer's law up to a concn. of 0.01 mg. of K in the final solution (= serum-K val. of 33.3 mg.-%). C. J. C. B.

Experimental and clinical hypochloræmia in man. J. B. Kirsner, W. L. Palmer, and K. Knowlton (*J. clin. Invest.*, 1943, **22**, 95–101).—Severe alkalosis without marked N retention may be induced in man by gradual continuous withdrawal of gastric secretion. The hypochloræmia and alkalosis were not associated with decreased renal function when adequate quantities of fluid are administered daily. Gastric secretion in man was not altered by severe hypo-C. J. C. B. chloræmia.

Determination of diodrast in whole blood. M. E. Bobey and J. W. Price (Proc. Soc. Exp. Biol. Med., 1942, 51, 217-218).—Alpert's method for determination of diodrast in plasma can be applied to whole blood in the case of the dog by the formula blood-I = $100 \times I$ of blood filtrate/(99.8-40V_c), where V_c is the cell fraction deter-V. J. W. mined by hæmatocrit.

Serum-phosphatase in leprosy. H. Ross (Int. J. Leprosy, 1941, 9, 57-62).—In 102 cases of leprosy, 89 had normal vals. of serumphosphatase (1.5-5.5 Bodansky units), 3 had 5.6-10.9 and 10 had 0.5-1.4 units. There was no relation between the ascorbic acid content of the plasma and phosphatase activity, though the concn. of ascorbic acid was below normal in 46 cases. F. S.

Value of blood-iodine determinations. H. R. Litchfield (West. J. urg. Obstet. Gynec., 1939, 47, 449-458). P. C. W. Surg. Obstet. Gynec., 1939, 47, 449-458).

Nature of blood-iodine and its determination. S. Silver (J. Lab. clin. Med., 1942, 28, 329-335; cf. A., 1941, III, 729).—All the normally circulating blood-I can be extracted with ethyl alcohol. The distinction between org. and inorg. blood-I based on alcohol-solubility is without foundation; "inorg." I in normal blood is an artifact of chemical manipulations. Practically all the circulating blood-I normally and in Graves' disease is in the plasma; it resists dialysis and is bound to protein. Dialysis removed from the blood all I added or ingested as I but not as di-iodotyrosine or thyroxine.

Urea spot test for detection of [blood-]nitrogen retention. H. N. Naumann, M. Plotz, and N. E. Reich (*J. Lab. clin. Med.*, 1942, 28, 335-338).—A simple urea spot test for the detection of changes in blood work in the state of the detection of changes in blood-urea is described, based on the yellow colour reaction with Ehrlich's aldehyde reagent. The test may be used for the detection and rough estimation of sulphonamides in blood. C. J. C. B.

Diagnostic value of serum choline-esterase determinations in jaundice and in cirrhosis of the liver.—See A., 1943, III, 248.

Possibility of differentiating between cerebro-glucosides and -galactosides.—See A., 1943, II, 116.

VI.—VASCULAR SYSTEM.

Clinical feetal electrocardiography. A. V. N. Goodyer, A. J. Geiger, and W. M. Monroe (*Yale J. Biol. Med.*, 1942, **15**, 1––19).– A portable amplifier type e.c.g. with a single-stage resistance-coupled pre-amplifier was used. Positive results were obtained with abdominal leads in 87% of 181 e.c.g. examinations on 154 gravid subjects from the 4th month of pregnancy onwards. There was no correlation between fœtal heart rate and duration of pregnancy, maternal heart rate, or sex of fœtus. The amplitude of the fœtal e.c.g. bore no relation to maternal size or to the age and size of the foctus except very near term, when the foctal deflexions usually became suddenly larger. F. S.

Significance of electrocardiogram with prominent S waves in leads I, II, and III. M. Wilburne and R. Langendorf (J. Lab. clin. Med., 1942, 28, 303-306).—Curves exhibiting prominent S waves (25%) or more of R) in leads I, II, and III were present in 84 cases of 1850 consecutive e.c.g. In 41 others abnormalities were found.

Effect of gall-bladder disease on electrocardiogram. M. M. Weiss and J. E. Hamilton (*Surgery*, 1939, **6**, 893–895).—The e.c.g. of 21 patients before and after operation for chronic cholecystitis with cholelithiasis was studied. In 2 cases there was inversion of the Twave in lead II before operation which reverted to normal 8 days P. C. W afterwards.

Action of Triturus toxin on heart of frog. D. Davenport and J. W. Smith (Proc. Soc. Exp. Biol. Med., 1942, 51, 81-82).—Perfusion of the frog's heart *in situ* with this prep. causes the ventricle to stop in diastole although it remains sensitive for a time to electrical stimul-ation. Sino-auricular contractions cease later. Washing out with Ringer's solution causes return of beat in the reverse order. Smaller concns. cause slowing and, in the e.c.g., a lengthened P-R interval. V. J. W.

Response of focus of origin of experimental ventricular extra-systoles to warming or cooling. D. Scherf (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 224-226).—Application of hypertonic NaCl or BaCl₂ solution to the surface of the dog's heart causes paroxysmal tachycardia or extrasystoles. Warming or cooling of the spot to tachycardia or extrasystoles. Warning or decrease respec-which such a solution is applied causes increase or decrease respec-V. J. W.

Normal cardiac response to water below body temperature (sub-mersion syndrome). W. W. Tuttle and J. L. Templin (*J. Lab. clin. Med.*, 1942, 28, 271-276).—Submersion in water of swimming pool temp. lowered heart rate in 6 of 68 normal persons; the amount of decrease varied with the resting heart rate. C. J. C. B.

Experimental study of surgical treatment of coronary disease. M. Fauteux (*Surg. Gynec. Obstet.*, 1940, 71, 151–155).—There was a high mortality (14/15) in dogs in which the ramus descendens was partly resected at a high level. The mortality was considerably

reduced if the vena magna cordis was simultaneously ligated; of 50 dogs so treated 39 survived more than 18 months, the others dying of operative infection, air embolus, or intercurrent infection. There was no mortality when 10 dogs whose vena magna cordis had been ligated 1 year previously had their ramus descendens partly resected. P. C. W.

New agent [aminophylline] for measurement of circulation time. H. Koster and S. J. Sarnoff (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 174).—Injection of 0-24 mg. of aminophylline into the basilic vein causes a sudden increase or gasp in respiration when circulation is completed. V. J. W.

Measurement and recording of gastroduodenal blood flow in man by thermal gradientometer. C. H. Richards, S. Wolf, and H. G. Wolff (J. dim. Invest., 1942, 21, 551-557).—An improved instrument (ibid., 1941, 20, 440) is described for measuring blood flow in the intact gastrointestinal tract of man: the subject swallows a small balloon with thermocouple in its wall, attached to a stomach tube. The thermocouple is pressed against the stomach wall by the balloon and heated to 2° above body temp. by a const. current. The heat loss varied with the circulation. Contractions of the wall of the stomach and duodenum were accompanied by a transitory acceleration of blood flow. Histamine induced a prolonged acceleration of blood flow in the gastric mucosa as do contemplation or discussion of appetising food, anxiety, tension, and resentment.

C. J. C. E

Capillary permeability and adrenal cortex studies of cervical lymph in adrenalectomised dog. O. Cope, A. G. Brenizer, jun., and H. Polderman (*Amer. J. Physiol.*, 1942, 137, 69—78).—Protein content of lymph collected from the cervical trunk of normal and adrenalectomised dogs under local anæsthesia (procaine 1%) averaged in normal dogs 2.8 g. per 100 c.c. and adrenalectomised dogs 4.3 g. The increase occurred in moderate as well as severe insufficiency and was not an accompaniment of a moribund state. The findings offer evidence of an increase in capillary permeability in one region of the dog in adrenal insufficiency. Flow of lymph in general was reduced in insufficiency; extracellular fluid vol., measured by thiocyanate, was increased or decreased. M. W. G.

No demonstrable substance causing increased capillary permeability in lymph from an injured area. N. E. Freeman and A. E. Schecter (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 29-31).—Intradermal injection into the abdominal wall of a dog of normal lymph from any dog, or of lymph from an injured limb or of blood serum from the same dog, causes no increase of capillary permeability as shown by dye diffusion. Intradermal injection of "injury" lymph or blood serum from another dog does cause it, and it is thus to be attributed to blood constituents in such lymph. V. I. W.

Pulmonary embolism : clinical and experimental study. W. J. Potts and S. Smith (Arch. Surg., Chicago, 1943, 46, 27-37).— Partial obstruction by a single ligature of the external jugular vein or the femoral vein in 14 dogs failed to produce thrombosis. Partial obstruction of the femoral vein by two ligatures 1-2 cm. apart produced thrombosis in 13 of 22 dogs. There were no thrombi in 14 similarly treated external jugular veins. (3 photomicrographs.) F S

Hyperactive vasodepressor carotid sinus reflex. L. H. Sigler (Arch. intern. Med., 1942, 70, 983-1001).—The vasodepressor carotid sinus reflex was studied in 700 subjects with normal blood pressure or varying grades of hypertension. 78% of males and 71% of females showed a fall of blood pressure greater than 10 mm. Hg. The response occurred more frequently and to a greater degree in older subjects and in those with hypertension. There was usually also cardiac inhibition. Many cases showed a marked difference in response to stimulation on the 2 sides. The response is most marked where arteriosclerosis exists and the seat of instability may lie in the medullary synapses or in the vasomotor nerve terminals on blood vessels. C. A. K.

Renal hæmodynamics in orthostatic hypotension. A. C. Corcoran, J. S. Browning, and I. H. Page (*J. Amer. Med. Assoc.*, 1942, **119**, 793—794).—Effective renal blood flow and arterial pressure decrease in the syncope of orthostatic hypotension. Injection of angiotonin at this time increases renal blood flow and blood pressure and relieves syncope. After treatment with the head-up bed (at angle of $40-60^{\circ}$) standing up temporarily lowered blood pressure and increased renal blood flow, and angiotonin then reduced renal blood flow as in normal subjects. C. A. K.

Function of separate kidneys in hyptertension. H. Chasis and J. Redish (Arch. intern. Med., 1942, 70, 738–748).—Effective renal blood flow ($C_{\rm D}$) and tubular excretory mass ($T_{\rm MD}$) were measured on separate kidneys, using ureteric catheters, in 21 patients with arterial hypertension. The decrease in blood flow was always the same in both kidneys and abnormalities in ureteropyelograms were shown to be of no significance. I hypertensive subject who had had bilateral splanchnicectomy showed reduced blood flow in both kidneys, and 2 subjects who had had omentopexy and nephropexy showed a smaller renal blood flow on the operated side; none of them showed reduction of blood pressure. C. A. K.

Renal torsion with ischæmia causing hypertension. L. A. Riskind and H. H. Greene (J. Amer. Med. Assoc., 1942, 119, 1016-1017).--Case report. C. A. K.

Renal function and hypertension. J. W. Dalton and F. R. Nuzum (*Arck. intern. Med.*, 1942, **70**, 948–958).—A statistical comparison of 100 hypertensives with 100 normal subjects showed that in the former there was fixation of the sp. gr. of the urine and delayed phenolsulphonephthalein output. There was retardation of urinary flow in patients with high diastolic pressures, and in hypertensives on an alkaline diet. C. A. K.

Secretion of renin by intact kidney. F. Huidobro and E. Braun-Menendez (Amer. J. Physiol., 1942, 137, 47-55).—Profound lowering of blood pressure by hæmorrhage (blood withdrawn from femoral artery = 4% of body wt.) or shock causes liberation of renin by the intact kidney of normal anæsthetised dogs (nembutal or amytal). Renin can be detected in systemic blood of these dogs. Renin could not be detected in the blood of nephrectomised dogs after hæmorrhage, or in normal dogs intoxicated with KCN or subjected to respiration of mixtures poor in O_4 . After short periods of profound arterial hypotension renin could be detected in systemic blood of normal dogs. M. W. G.

Pressor substances in urine and plasma from normal and hypertensive subjects. U. S. von Euler and T. Sjöstrand (*Nature*, 1943, 151, 168).—Pressor activity in ethereal extracts of urine (mainly due to isoamylamine) from patients with essential hypertension and chronic nephritis was subnormal; so was the pressor activity in the methanol extracts of plasma from hypertensives. P. C. W.

Surgical approach to hypertension. V. Adrenal medulla. VI. Autonomic nervous system. VII. Criteria for operation. VIII. Adrenal denervation and removal. IX. Post-operative care and complications. X. End results of adrenal surgery. F. M. Findlay (West. J. Surg. Obstet. Gynec., 1939, 47, 277-287, 339-345, 485-492, 543-551, 600-605, 705-713).—Reviews and discussion.

Shock and sympathetic nervous system. J. W. Tomb (Med. J. Austral., 1942, II, 483—484).—Review, with special reference to the use of ergotoxine in treatment. F. S.

Experimental freezing shock : changes in body fluids and tissues. E. E. Muirhead, C. T. Ashworth, L. A. Kregel, and J. M. Hill (Arch. Surg. Chicago, 1942, 45, 863-889).—Medium-sized dogs were anæsthetised and one hind-limb was placed for 25 min. in a freezing solution consisting of 8 lb. of solid CO₂ in 4—6 quarts of 95% alcohol. Thawing was complete in 1—14 hr. at room temp. and there was severe and fatal shock within 6—12 hr. in all dogs. In the first 2½ hr. the average hæmoglobin increased from 13 to 18.5 g.-% and there were no tissue changes except in the damaged limb and a decrease in lipin in the adrenal with polymorphonuclear infiltration. Hæmoconcn. then decreased, the hæmoglobin concn. increasing to no more than 20 g.-% in 8 hr. The blood pressure dropped at 5—8 hr. After the 4 hr. there was generalised capillariovenous dilatation with pulmonary œdema, capillary hæmorrhages, leucocytosis, and cellular changes in the parenchymatous organs. The CO₂ combining power of the plasma was greatly increased. The water available for dissolution of CNS' (extracellular) was decreased, with a corresponding increase in plasma-Na concn., suggesting the passage of water into body cells. F. S.

Prophylactic action of deoxycorticosterone in shock due to massive venous thrombosis.—See A., 1943, III, 238.

Adrenal steroids in circulatory failure.-See A., 1943, III, 238.

VII.—RESPIRATION AND BLOOD GASES.

Effective stimulus for increased pulmonary ventilation during muscular exertion. J. M. Barman, M. F. Moreira, and F. Consolazio (J. din. Invest., 1943, 22, 53—56).—Very light exercise (12 kg.-m. per min.) of the flexors of the hand during total ischæmia of the arms usually resulted in a smaller ventilation than with free arm circulation. Release of the ischæmia was followed at once by a marked hyperventilation. In subjects walking uphill on a treadmill (700 kg.-m. per min. for a 90-kg. subject), total ischæmia of both legs resulted in a marked diminution of pulmonary ventilation; release of the ischæmia was followed at once by a marked hyperventilation higher than the val. prior to ischæmia. These results indicate that the chemical stimulus for increased ventilation in exercise of these types is more important than the reflex. C. J. C. B.

Microcolorimetric method for measuring the oxygen saturation of blood. O. H. Lowry, C. A. Smith, and D. L. Cohen (J. Biol. Chem., 1942, 146, 519-526).—An apparatus is described with which the O_g content of 0.3 c.c. of blood may be measured in an Evelyn photoelectric colorimeter. The results for capillary blood compare favourably with those obtained by the Van Slyke-Neill manometric method using direct arterial puncture. J. E. P.

Function of respiratory pigments of certain turtle parasites. G. W. Wharton (J. Parasit., 1941, 27, 81-87).—Hæmoglobin is

present in Telorchis robustus, Allassostoma magnum, and Camallanus trispinosus. Cytochrome is present in A. magnum and spinosus. The dissociation curve of the hæmoglobin of C. trispinosus hæmoglobin curve, is far to the left of the host (*Pseudemys troostii*) hæmoglobin curve, indicating that the parasite hæmoglobin can take up O_2 at very low pressures or from the venous or reduced blood of the host.

Relation of postural hæmodilution to paroxysmal dyspncea. G. A. Perera and R. W. Berliner (*J. clin. Invest.*, 1943, 22, 25–28).— Serum-protein concns. are raised in health and disease by changes in position and by muscular activity. The decrease in serum-protein concn. in rest (average 0.8 g.-%) is the result of hæmo-dilution, due to an increase in plasma vol. An increase in plasma vol. is probably an important factor in the production of acute left-sided failure in individuals with organic heart disease.

C. J. C. B.

Effects of anoxia at birth on central nervous system of guinea-pig. W. F. Windle and R. F. Becker (Proc. Soc. Exp. Biol. Med., 1942, 51, 213—215).—Asphyxia pallida was produced in foctuses by clamping of uterine or umbilical vessels. guinea-pig 71% were resuscitated by artificial respiration after 6-21 min. Anoxia of more than 8 min. caused ataxia, convulsions, or paralysis with histological changes in brain and cord. V. J. W.

Effects of various chemical agents on survival of primitive respiratory mechanism. W. A. Selle (Proc. Soc. Exp. Biol. Med., 1942, 51 50-52).-Various substances were given subcutaneously to rats and survival time and movements of the isolated head recorded (A., 1942, III, 15). These were increased by morphine, alcohol, chloralose, urethane, and cyclopropane, and decreased by iodoacetic acid, thyroxine, dinitrophenol, ether, CHCl₃, and barbiturates.

Edema and congestion of lungs resulting from intracranial hæmorrhage. S. J. Weisman (*Surgery*, 1939, 6, 722-729).—About 60% of the lungs from 686 cases of intracranial hæmorrhage weighed more than 900 g.; only 2% of the lungs from a control series P. C. W. weighed as much.

Medical problems encountered in modern air travel.—See A., 1943, III, 269.

Influence of repeated daily exposure to low barometric pressure on urine output. H. Silvette (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 199—201).—Rats subjected for 3 hr. daily to an atm. pressure of 430 mm. Hg had a urinary output which was at first 3 times the normal and decreased to about twice normal after 28 days. They had hypertrophied kidneys, adrenals, and lymphoid tissue. W

Low-pressure phase of blast. A. L. Latner (*Lancet*, 1942, 243, 303-304).—Very brief exposure of mice to sudden low pressures killed 50% of mice very rapidly and typical blast effects were seen inside and outside the chest. C. A. K.

Management of thoracic war injuries. J. H. Forsee, L. M. Shefts, B. Burbank, L. J. Fitzpatrick, and T. H. Burford (*J. Lab. clin. Med.*, 1943, 28, 418-440).-A general outline. С. Ј. С. В.

Bronchoscopy in relation to thoracic surgery. P. C. Samson (West. J. Surg. Obstet. Gynec., 1939, 47, 687-691). P. C. W.

Acute respiratory infection resembling so-called acute pneumonitis. L. B. Duggan and W. L. Powers (*J. Lab. clin. Med.*, 1943, 28, 524– 530). C. J. C. B.

VIII.---MUSCLE.

Enzymic and mechanical properties of muscle-proteins. W. A. Engelhardt (*Yale J. Biol. Med.*, 1942, **15**, 21–38).—Translation of a review in the Russian journal "*Advances in Contemporary Biology*," 1941, 14, 177-190).

Adenosine triphosphate-myosin system. M. Ziff (Proc. Soc. Exp. Biol. Med., 1942, 51, 249—251).—The wt. of inorg. P liberated from adenosine triphosphate by myosin was unaffected by acetylcholine, adrenaline, eserine, or any other alkaloid. It was inhibited by Cu or Zn. V. J. W.

Rôle of potassium in muscle phosphorylations.-See A., 1943, III, 262

Influence of atropine on atrophy of denervated skeletal muscle of rat. E. Fischer (Proc. Soc. Exp. Biol. Med., 1942, 51, 208-209).-Atropine does not retard atrophy in denervated muscle, and the results of Levine et al. (A., 1942, III, 737) are due to the causation by atropine of a general cachexia which reduces the difference between the atrophied and the control muscles. V. J. W.

Nature of myasthenia gravis: effect of thymectomy on neuro-muscular transmission. A. M. Harvey, J. L. Lilienthal, jun., and S. A. Talbot (*J. Clin. Invest.*, 1942, 21, 579–588).—5 patients with severe myasthenia gravis were restudied up to 5 months after total extirpation of the thymus. 3 showed great clinical improvement. Electromyographically many muscle fibres responded to a max. motor nerve stimulus and there was greater efficiency in the trans-

mission of pairs and trains of max. motor nerve stimuli across the neuromuscular junction. Intra-arterial injection of prostigmine, in contrast to its effect before thymectomy, produced local fascicular twitching and repetitive response to a single stimulus. In 2 patients a normal depression of neuromuscular function developed and in one the muscle threshold to acetylcholine injected into the brachial C. J. C. B. artery rose.

IX.—NERVOUS SYSTEM.

Experimental demyelination of central nervous system. III. Experimental demyeunation of central nervous system. III. Poisoning with potassium cyanide, sodium azide, hydroxylamine, narcotics, carbon monoxide, etc., with consideration of bilateral necrosis occurring in basal nuclei. E. W. Hurst (Austral. J. Exp. Biol., 1942, 20, 297-312; cf. A., 1942, III, 378).—Repeated intra-muscular injection of KCN into monkeys leads to progressive demyelination, without necrosis, of the cerebral white matter. Distribution of the lesions closely resembles that in Schilder's disease. In some monkeys, encephalopathy does not progress when poisoning is discontinued, whilst in others its presence does when poisoning is discontinued, whilst in others its presence does not favour development of post-vaccinal encephalitis. Repeated large doses of KCN followed by resuscitation cause in some monkeys pronounced necrosis of cerebral and cerebellar cortex rather than damage to the basal nuclei or white matter. After intravenous injection of methylene-blue, although the dye may penetrate and remain fixed and unreduced for several days in brains of monkeys very ill after large doses of KCN, there is apparently no increased permeability or affinity of the brain for the dye. There is a more erratic response to KCN in sheep and rabbits. The symptomatology of poisoning with Na azide in monkeys is described. The effect of a single dose lasts longer than that of KCN and the animal becomes more susceptible to subsequent administration of Na azide or KCN. Repeated doses aften cause necrosis or demyelination in the optic nerves and tracts and necrosis in the caudate nucleus and putamen of the lenticular nucleus. Necrosis can occur after single or repeated large doses with prolonged unconsciousness or abruptly from summation of many small doses each producing few symptoms. Lesions in other parts of the grey and white matter are considerably less frequent and severe. Repeated administration of NH₂OH,HCl to sheep in amounts such that they survive for some weeks or months does not cause demyelination within 184 days. Barbiturates cause early changes in the white matter of monkey brain. Bilateral necrosis in the basal nuclei occurs after administration of CO, KCN, N_2O , CO_2 , CHCl₂, *cyclopropane*, ether, and morphine. It is suggested that experimental demyelination is a function of repeated periods of anoxia, each insufficient to produce lesions in the grey matter. J. N. A.

External field of nerve impulse. J. A. Gengerelli (Proc. Soc. Exp. Biol. Med., 1942, 51, 189-190).—No electromagnetic effect was detected on stimulation of the frog's sciatic which passed through a toroidal coil connected with an amplifier and oscillo-V. J. W. graph.

Vibratory sensibility. Quantitative study of its thresholds in ner-vous disorders.—See A., 1943, III, 237.

Intramedullary tractotomy. III. Studies on sensation.—See A., 1943, III, 237.

Relationship between cause and distribution of spasticity in child-hood. S. F. Stewart (West. J. Surg. Obstet. Gynec., 1939, 47, 507-P. C. W. 510).

Effects of lesions of periaqueductal grey matter in cat. P. Bailey and E. W. Davis (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 305–306).— Lesions produced by a special electrode in the grey matter surround-ing the aqueduct of Sylvius cause in cats behaviour changes resembling those described in man by Bailey *et al.* as arrest of con-sciousness and by Cairns *et al.* (A., 1942, III, 302) as akinetic V. J. W. mutism.

Syndrome of "obstinate progression" in cat. P. Bailey and E. W. Davis (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 307).—Lesions of the nucleus interpeduncularis cause cats to walk persistently forward in a straight line with no regard for obstacles or dangers. V. J. W.

Cerebellum. New interpretation. O. Larsell and R. S. Dow. (West. J. Surg. Obstet. Gynec., 1939, 47, 256-262).—Review of anatomy and function. P. C. W.

Tryptophan test [in cerebrospinal fluid] in general paresis. M. J. Madonick and J. Lissman (J. Lab. clin. Med., 1942, 28, 338-343). 109 of 133 paretic fluids gave a positive tryptophan response. It was positive in 3 (100%) cases of tabboaresis, negative in 4 (100%) cases of tabboaresis, of psychocical states of tables of tables of psychocical states of tables of tables of tables of psychocical states of tables cases of tables, and positive in 5 of 13 cases of psychosis with meningovascular or cerebral syphilis. The test is not necessarily dependent on a quant. increase in total c.s.f.-protein. In 102 controls without positive serology or history of syphilis, it was positive in only 2 cases, in 1 of cerebral arteriosclerosis, and in 1 of the positive fever. C. J. C. B. rheumatic fever.

Review of neuropsychiatry for 1942. S. Cobb (Arch. intern. Med., 1942, 70, 1017-1032).

Injection of air for localisation of lesions in spinal canal : pneumomyelography. F. L. Reichert (West. J. Surg. Obstet. Gynec., 1939, 47, 297-300). P. C. W.

Drug-induced convulsions in electrocardiogram in epilepsy.—See A., 1943, III, 229.

Influence of serum-bromide concentration on distribution of bromide ion between serum and spinal fluid.—See A., 1943, III, 269.

Suggested mechanism of biological acylations. I. Formation of acetylcholine.—See A., 1943, III, 262.

Physical and mental characteristics of a pair of like twins reared apart from infancy.—See A., 1943, III, 224.

X.—SENSE ORGANS.

Vision in war-time. P. Fridenberg (*Eye, Ear, Throat*, 1942, 21, 337-338).—A plea for better and more widespread examination and care of the eyes among the civilian population. K. T.

Ophthalmologist's place in prevention of traffic accidents. L. S. Selling (J. Amer. Med. Assoc., 1942, **120**, 261–265).—Low visual acuity, colour blindness, lack of binocular vision, and slight restriction of the visual fields do not necessarily prevent the patient from bring a safe and competent driver. It is probable that such disabilities as aniseikonia and poor muscle balance are much more important as factors in the causation of traffic accidents. The importance of considering each case individually and as a whole is stressed. K. T.

Lid-closure reflex from eyes transplanted to atypical locations in Triturus torosus, P. Weiss (J. comp. Neurol., 1942, 77, 131–169).— In larval newts, eyes were transplanted to the site of the ear or nasal organ. In 38 animals with grafts reared beyond metamorphosis, the typical lid closure reflex (retraction) of the host eye could be elicited by touching the cornea of the graft eye as well as the cornea of the host eye. The sensitivity of the graft eye was of the same order as that of the host eye. It is concluded that the grafts have specifically influenced their central reflex relations so as to become linked to the proper effector mechanism. A. GL.

Use-abuse theory of changes in refraction versus biologic theory. E. V. L. Brown (Arch. Ophthal., 1942, 28, pp. 845—850).—The term "use-abuse theory" implies that refractive changes in the direction of myopia are due to extrinsic factors, e.g., near work, poor lighting, insufficiency of some elements in the diet; while the biologic theory stresses the intrinsic factors of heredity and growth. The author found that 18 of 97 eyes refracted under atropine before the age of 2 years were myopic, but the average refraction was 1.5 D. of hypermetropia. There was a steady mean change towards the hypermetropic side until the end of the 6th year, following which there was a regular trend towards myopia until about 14; after this the curve became much more gradual until the age of 20, when further changes were negligible until later life. This evidence, based on the eyes of 1737 persons, suggests that changes of refraction after the age of 7 depend on factors which affect growth, and so supports the biologic theory. J. H. A.

' Further attempts to trace origin of afferent nerves to extrinsic eye muscles. K. B. Corbin and F. Harrison (J. comp. Neurol., 1942; 77, 187–190).—In cats action potentials were recorded from the oculomotor nucleus and the intramedullary portion of the oculomotor nerve as a result of stimulation of the inferior oblique branch of the oculomotor nerve. No other parts of the mesencephalon gave action potentials during such stimulation. A. GL.

Development of human eye at 5 mm. and 5/10 mm. embryonic stage. A. L. Kornzweig (Arch. Ophthal., 1942, 28, 670-678).— Description of retinal capillaries (? clusters of degenerate cells) in early embryonic retina as congenital basis for the v. Hippel-Linden disease. A. GL.

Treatment of special types of strabismus. G. H. Giles (*Dioptric Rev.*, 1942, **3**, 79–87).—The handling of those cases of strabismus in which a successful cure by orthoptic treatment only is improbable is described. These cases include (1) ocular torticollis and other vertical squints, (2) divergence excess, (3) large angles of squint, (4) cases of marked false fixation, (5) paralytic cases where the cause has long since disappeared, (6) all other unfavourable types. An extensive survey of the differences of opinion between the ophthalmic surgeon and the ophthalmic practitioner is also given with a description of those cases which need surgical treatment. P. G.

Great usefulness of bicylindric combinations in exploration of astigmatism. M. Márquez (Amer. J. Ophthal., 1942, 25, 1458—1470).— The term "biastigmatism " is used to cover the corneal astigmatism, plus the astigmatism of the other refracting surfaces of the eye, which is spoken of as "residual astigmatism." The corneal astigmatism is corr. from the results of retinoscopic and ophthalmometric examination, after which the residual astigmatism is corr. subjectively by means of the astigmatic chart or clock. If all the radii appear equal to the patient it does not necessarily mean that there is no second astigmatism, for in young hypermetropes it may exist in a latent form owing to unequal contraction of the ciliary muscle (astigmatic accommodation); this is unmasked subjectively by "fogging" and correcting with minus cylinders. In prescribing, the bicylindrical combination can be transformed into a spherocylindrical one by means of special tables, though sometimes it is better tolerated in its original form. J. H. A.

Congenital myopic astigmatism in identical twins. W. P. Hofmann and E. T. Carey (*Amer. J. Ophthal.*, 1942, **25**, 1495—1496).— The twins, girls aged 3 years, show refractive errors of the order of -10 to -11 D. sphere with against-the-rule astigmatism, the retinoscopic findings being identical (± 0.5 D.) in the case of the spheres and 10° in the case of the axis of the cylinders. Apart from generalised thinning of the retinæ, the eyes of both twins are normal, and very similar in every respect, as also are their other physical and mental characteristics. Both parents are emetropic. I. H. A.

Effect of undercorrection and base-in prism on the myopic refractive state. J. Chance, E. Ogden, and K. B. Stoddard (Amer. J. Ophthal., 1942, 25, 1471—1474).—The authors set out to investigate the theory that undercorrection of myopia, with incorporation of base-in prisms in the lenses, tends to decrease the refractive error. The basis of this theory is the by no means generally accepted view that inhibition of accommodation, which is the effect of wearing such lenses, can prevent an increase of myopia. Eleven students were treated in this way, and were also given orthoptic exercises designed to relax accommodation; no change in refraction was observed, though the eyes of two others which exhibited pseudomyopia were gradually reduced to the cycloplegic refractive state. J. H. A.

Ætiology of pathologic progressive axial myopia. R. D. Barnard (*Eye, Ear, Throat*, 1942, **21**, 331-332).—It is suggested that unilateral progressive myopia is due to choroid lesions, following childhood infections, during the period of growth of the eyeball. A case which is thought to illustrate this theory is described.

Multiple sclerosis as ætiologic factor in retrobulbar neuritis. W. L. Benedict (Arch. Ophthal., 1942, 28, 988—995).—The author has reviewed the records of more than 400 patients suffering from retrobulbar neuritis, seen at the Mayo Clinic between 1920 and 1940, in order to ascertain whether further signs of disseminated (multiple) sclerosis appeared afterwards, and if not whether any other cause of the condition subsequently became manifest. In 90 cases a tentative diagnosis of disseminated sclerosis had been made, and in 41 of these other evidence of the disease did appear later; in the remaining 49 no other cause of the condition was subsequently elicited. In the rest of the 400 cases the ætiology of the condition (e.g., exogenous or endogenous toxic amblyopia, brain tumour, or arachnoiditis) had been determined at the first visit. It is suggested therefore that it is justifiable, if other causal factors have been excluded, to regard a case of retrobulbar neuritis as one of disseminated sclerosis, even though it never develops the other features of the disease. J. H. A.

Slit-lamp microscope in nutrition surveys : observations in schoolchildren. J. H. Kodicek and J. Yudkin (Lancet, 1942, 243, 753— 756).—The eyes of 496 elementary school-children in Cambridge, from 8 to 11 years of age, were examined with the slit-lamp microscope. The corneal vascularisation, described by Sydenstricker as a sign of ariboflavinosis, was found in 4% of cases, mostly among older children (only cases of actual invasion of clear cornea by new vessels were included). In examining the conjunctiva, the authors were more concerned to study the epithelium than, as Kruse recommended, the subepithelial tissue, since the former is more likely to show evidence of vitamin-A deficiency. Five grades of epithelial change are described, varying from a smooth transparent epithelium to a marked degree of wrinkling and opacity. The most severe conjunctival changes were found among the older boys, particularly those from the poorest homes. J. H. A.

Use of vitamin-A in keratosis blennorrhagica. F. C. Combes and H. T. Behrman (Arch. Dermat. Syphilol., 1942, 46, 728-733).— Successful treatment of a case with massive doses is reported. C. J. C. B.

Superficial vascularisation of cornea. Riboflavin therapy. H. R. Sandstead (U.S. Publ. Health Repts., 1942, 57, 1821—1825).—In two controlled feeding projects no change in the degree of corneal vascularisation occurred which could be ascribed to riboflavin effect. In no instance where riboflavin was added to the diet was there a complete disappearance of the vessels and in several a progression was observed. It is doubtful whether superficial vascularisation of the cornea is a diagnostic sign of riboflavin deficiency.

C. G. W.

Technique for microscopic examination of cornea. B. D. Pullinger (J. Path. Bact., 1943, 54, 97-98).—The technique has the advantages that formalin fixation and frozen sections ensure the least possible shrinkage; sections cut with the knife edge starting at a tangent to the surface display cells and fibrillar lamellæ in their widest measurements; Ag impregnation reveals the processes of the corneal

corpuscles, which are seldom well stained by the usual dyes; the method is extremely simple and reliable. C. J. C. B.

White rings in cornea (coats). J. Waldman (Amer. J. Ophthal., 1942, 25, 1362-1365).—Five cases of white rings in the cornea are described. The typical appearance is of a minute circle of white dots beneath the epithelium or in the anterior part of Bowman's membrane. Only one case had probably been exposed to ocular injuries; corneal sensation was normal, and there was no evidence of past or present severe ocular disease, excluding cataract. The condition is non-progressive. J. H. A.

Hereditary corneal dystrophies. E. H. McBain (Arch. Ophthal., 1942, 28, 1020–1027).—An account is given of the classification into three types suggested by Bucklers (1938): (i) a dominant granular, fine superficial dots and lines which gradually extend deeply and coalesce, and compatible with the retention of fairly good vision till later life; (ii) a recessive macular type, which starts in the first decade as a diffuse opacity and progresses rapidly to almost com-plete blindness; (iii) a dominant lattice-like or reticular form, which starts about puberty, remains superficial, and is only slowly The literature is reviewed, and two cases of the first escribed. J. H. A. progressive. variety are described.

Uncomplicated hereditary megalocornea.—See A., 1943, III, 156.

Anatomic factors that influence the depth of the anterior chamber: their significance. H. S. Sugar (Amer. J. Ophihal., 1942, 25, 1341-1351).—Acute glaucoma is based on mechanical obstruction to the absorption of aqueous as a result of shallowing of the anterior chamber and angle. Factors which influence the depth include refractive errors (the chamber is shallower in hypermetropia than in myopia, owing to the smaller axial length of the globe); the increasing size of the lens with age; the small size of the cornea (more important in non-congestive cases); and possibly abnormal thickness of the peripheral part of the iris. It is emphasised that accurate measurement of the depth of the anterior chamber (as was performed in the present series) may unmask many cases of potential acute glaucoma; the diagnosis is confirmed if the tension rises following provocative mydriasis with paredrine of homatropine.

Aqueous veins. K. W. Ascher (Amer. J. Ophthal., 1942, 25, 1301-1315).—The effect of certain drugs on the content of the aqueous veins is described. Eserine and pilocarpine cause a reduction in red-cell content, accompanied in some cases by a dilatation of superficial veins and a change in the direction of flow in their tributaries. These changes are explained on the hypothesis that parasympathomimetic drugs increase the outflow of aqueous from the normal eye. Adrenaline and cocaine also reduce the red-cell content in the aqueous veins, whereas homatropine, dionin, pontocaine, and butyn increase the red cells and the venous pressure. All these effects have been observed in glaucomatous as well as in normal eyes, though in glaucoma pilocarpine occasionally increases the red-cell content, and the "glass-rod phenomenon" is extremely rare. J. H. A.

Evaluation of glaucoma operations. B. F. Payne (Amer. J. Ophthal., 1942, 25, 1474-1481).—A survey is given of the histology of about 100 glaucomatous eyeballs which had been submitted to various operative procedures. More eyes were lost after para-centesis, posterior sclerotomy, and iridectomy than after trephining and iris-inclusion operations. The main cause of operative failure was that the peripheral anterior synechiæ were intact in every case; the new drainage channel was often blocked by fibrous tissue. by prolapse of the iris and ciliary processes, or by forward displacement of a cataractous lens. J. H. A.

Efferent pathway for pupillary contraction. P. W. Nathan and W. A. Turner (Brain, 1942, 65, 343-351).—Foerster, Gagel, and Mahoney (1936) reported the existence of two efferent pathways for pupillary contraction, one serving the light reflex, which passes through the ciliary ganglion, the other concerned with the contraction of the pupil which accompanies convergence. In studying 10 cases (2 personally observed and 8 out of the literature) the authors confirm the view of Gagel et al. and show that the Argyll Robertson pupil may be caused by damage to the peripheral efferent pathway to the pupil. They suggest that there may be efferent fibres concerned in the synkinetic contraction of the pupils on accommodation and convergence, running from the third nucleus to the episcleral ciliary ganglion of Axenfeld and thence relaying to the ciliary body. P. G.

Primary sarcoma of iris (malignant melanoma). S. H. McKee (Arch. Ophthal., 1942, 28, 197-204).—Report of three cases.

Physiology of ciliary muscle. E. Sachs (*Amer. J. Ophthal.*, 1942, **25**, 1277–1290).—Electrical stimulation of the ciliary muscle through a scleral window in the excised eyes of dogs and cats revealed a backward movement of the anterior coronal region of the ciliary body, this being separated by a narrow ventral zone from the forwardmoving tissue of the posterior part of the ciliary body and of the choroid. The force of contraction producing the well-known forward movement was frequently greater than 200 mg., while the elastic resistance exerted by the posterior part of the choroid amounted to 14-33 mg., irrespective of whether the muscle was contracting or at rest. An increase of intraocular tension did not impair the muscle's efficiency until 70-80 mm. Hg was reached. J. H. A

Accommodation of the eye in nocturnal vision. Y. Le Grand (Compt. rend., 1942, 214, 683-685).-It is known from theory of diffraction that the resting eye is accommodated for 580 m μ .; by night this becomes 520 m μ . (a difference of 0.5 D.) when the scotopic visibility curve is used in calculation; correcting also for spherical aberration this becomes 450 m μ ., giving a difference of 1.5 D. from daylight K. J. W. C. vision.

Fibroblastic overgrowth of persistent tunica vasculosa lentis in infants born prematurely. III. Development and regression of hyaloid artery and tunica vasculosa lentis. T. L. Terry (Amer. J. Ophthal., 1942, 25, 1409—1423).—Serial sections of more than 50 human fœtuses have been studied at various stages of development, as well as of newborn infants and animals. It is concluded that socalled persistent tunica vasculosa lentis consists of an abnormal growth of embryonic connective tissue in the interstices of the vessels, for which the name "vetrolental fibroplasia" is suggested. Owing to the independent blood supply of the tunica vasculosa anterior (papillary membrane) from the long posterior ciliary arteries, this may persist without persistence of the hyaloid artery. There is no connexion between the hyaloid system and the vessels of the ciliary processes through the ciliary epithelium, and drainage of the tunica vasculosa lentis is into the deeper part of the iris; persistence of these connexions results in congenital posterior synechiæ. Regression of the hyaloid system is concurrent with the development of another means of nutrition for the lens, viz., formation of aqueous, which, occurring before the filtration angle is functioning, may produce physiological glaucoma and so account for the rapid growth of the eye in late intrauterine life. J. H. A.

Dark-adaptation and platinum chloride method of staining visual purple S. Stenius (Acta Physiol. Scand., 1941, 1, 380-382). When the dark-adapted eye of the frog was stained with PtCl₄ a broken ring of yellow colour was seen if the rods were cut trans-This finding is consistent with the view put forward both verselv. by Granit and by Lythgoe that visual purple is attached to the surface of the rods. K. T.

Evidence of two phases in regeneration of visual purple. M. Zewi (Acta Physiol. Scand., 1941, 1, 271-277).-In live frogs kept at 22.4° injection of pilocarpine caused a slight acceleration in the rate of regeneration of visual purple after the first hr. in the dark while atropine produced marked slowing. Neither drug had any effect in frogs kept at 8°. If the injection was given before light adaptation and the eyes were then removed and allowed to dark adapt at 22.4°, pilocarpine had no effect on the regeneration of visual purple in the excised eye but atropine definitely improved it. If the eyes were removed before light adaptation and one drop of If the eyes were beneficial adaptation and one of 0 of the bulb after light adaptation, pilocarpine depressed regeneration at $22 \cdot 4^{\circ}$, and there was some evidence that atropine had the same effect. From these results it appears that, in the intact animal, only that part of the regeneration of visual variable which is affected by these two dwares. purple which is sensitive to temp. is affected by these two drugs. K.

Rotation of activity and spontaneous rhythms in the retina. R. Granit (Acta Physiol. Scand., 1941, 1, 370-379).—Records of the responses of single active units in the frog and tortoise retina to monochromatic lights were obtained by the microelectrode technique of Granit and Svaetichin. Single retinal elements responding to intermittent illumination (flicker) showed a marked rotation of activity, individual elements pausing and again becoming active at irregular intervals. Spontaneous rhythms were also recorded and could be divided into two groups: (1) those which could be temporarily or completely inhibited by illumination or even temporarily inhibited by cessation of illumination; (2) those which continued independently of whether the eye were illuminated or not. Such spontaneous rhythms can be activated or facilitated by flicker (rhythmic stimulation). These results are considered to support the view that waves of excitation passing through the retina are surrounded by spreading patterns of excitatory and inhibitory influences. It is suggested that this rotation of the activity of retinal (or other sensory) elements may be one of the means of counteracting the effects of adaptation of such elements to prolonged stimuli. K. T

"Red" receptor of Testudo. R. Granit (Acta Physiol. Scand., 1941, 1, 386-388).—A very easily isolated "red" receptor was found in the pure cone retina of the tortoise Testudo. The whole sensitivity curve of this eye was dominated by the red receptor which showed a max. sensitivity at about 620 m μ . and is unaffected by light adaptation. Most of the red receptors found in the frog retina become more sensitive to the green $\lambda\lambda$ after light adaptation. K.T

Relation between rod and cone substances based on scotopic and photopic spectra of Cyprinus, Tinca, Anguilla, and Testudo. R. Granit (Acta Physiol. Scand., 1941, 2, 334-346).—The retinal

sensitivity curves of several fish and of the tortoise Testudo to light of different $\lambda\lambda$ was measured by the micro-electrode technique under conditions of both dark and light adaptation. The scotopic (darkadapted) curve for all the fish with the exception of the eel (Anguilla) showed a maximum sensitivity at 530—540 m μ . This corresponds with the spectral absorption of the form of visual purple (visual violet) present in these species. In Anguilla, whose visual purple has an absorption max. at 500 m μ ., the scotopic curve shows a max. sensitivity at this λ . In all fish the sensitivity to the shorter $\lambda\lambda$ was greater than would be expected from the absorption curves of their visual purple. The fish with visual violet gave average photopic (light-adapted) curves with a max. between 600 and 620 m μ . whereas the max. sensitivity of Anguilla (visual purple) was never at a λ longer than 560 m μ . The average sensitivity curves appear to be the result of the superimposition of a no. of curves with max. which may be 50 m μ . apart. This differential sensitivity of the retinal elements to λ may be the basis of colour discrimination. The practically pure cone eye of *Testudo* has a system of differentially sensitive elements similar to those of the light-adapted fish with visual violet. The uniform shift of the most effective λ about 60 m μ . towards the red end of the spectrum for eyes with visual violet as well as those with visual purple as a result of light adaptation suggests some chemical relation between the rod and cone substances of these eyes.

Colour receptors of frog's retina. R. Granit (Acta Physiol. Scand., 1942, 3, 137—151).—The sensitivity of the light- and dark-adapted frog retina to different $\lambda \lambda$ was studied by the micro-electrode technique. Most of the individual sensitive elements in the light-adapted retina had a sensitivity curve coinciding with that obtained when the responses of a large no. of elements are recorded together. The author calls these elements " dominators " and suggests that their response is the basis of the appreciation of brightness. The max. of the frog dominator curve is at 560 mµ. There are also elements in the light-adapted frog retina which give narrow sensitivity curves. These fall into 3 groups : (1) with the max. between 520 and 540 mµ.; (3) with the max. between 450 and 470 mµ. Elements giving the third type of curve are rare. The elements belonging to these 3 groups are called " modulators" and it is suggested that their response, superimposed on the broad " dominator" response, may form a basis for colour perception. During dark adaptation the sensitivity of all elements, including the red receptors, increases, whilst during the 2nd stage there is no increase in the sensitivity of all elements, including the red receptors, increases, whilst during the 2nd stage there is no increase in the sensitivity to red and the point of max. sensitivity of the whole retina shifts to 500 mµ. The author believes that this 2nd stage represents the true dark adaptation involving visual purple. The blue-sensitive elements (those giving curves of the group 3 type) dark-adapt more quickly than those belonging to group 2 and this provides a means of isolating the reeption suggested by these results is discussed. K. T.

Isolation of colour-sensitive elements in mammalian retina. R. Granit (Acta Physiol. Scand., 1941, 2, 93–109).—The spectral sensitivity curves of more or less restricted units of the rat retina have been studied by the micro-electrode technique of Granit and Svaetichin. In the dark-adapted state these sensitivity curves often correspond very well with Lythgoe's absorption curve for visual purple with a max. at 500 m μ . But sometimes there is an additional lower max. at 600 m μ . In retinas which show a curve with a double max. adequate light adaptation suppresses the green part of the curve more than the red so that the response of the "red" receptor may be all that remains on the record. As the retina recovers from light adaptation the "green" receptor again becomes sufficiently sensitive for its response to appear on the curve. In the initial stages of light adaptation the "green" receptor often has a narrower sensitivity curve than would be expected from the properties of visual purple and it also has a slow initial recovery during dark adaptation. It is, therefore, suggested that the first product of regeneration is not visual purple itself but rather a slightly modified visual purple mol. The "red" and "green "elements are always coupled in the rat retina and the evidence suggests that the two may be connected to the same fibre of the optic nerve.

K. T.

Spectral properties of visual receptor elements of guinea-pig. R. Granit (Acta Physiol. Scand., 1942, 3, 318-328).—The sensitivity of the guinea-pig retina to different monochromatic lights was measured by the micro-electrode technique. No response curves suggesting the presence of "dominator" elements, such as are found in the frog, were obtained. The average sensitivity curve both for light and for dark adaptation had its max. at 500 mµ., suggesting that visual purple is the main substance mediating sensation in this eye. In the dark-adapted eye the sensitivity curves of individual elements followed the absorption curve of visual purple very closely, but light adaptation revealed elements responding to a narrow band of $\lambda\lambda$ with its max. at 530 mµ. as well as some with their max. sensitivity around 460 mµ. On the basis of the results described, a complete scheme for the reactions of this retina (when light-adapted) E 3 (A., III.)

to changes in λ of the stimulating light is suggested. The possibility that the substance responsible for the "blue" sensation is related either to lactoflavin or to transient orange is discussed. The guineapig retina was especially sensitive to blue light. K. T.

Photopic spectrum of pigeon. R. Granit (Acta Physiol. Scand., 1942, **4**, 118—124).—The sensitivity curves of the pigeon retina to light of different $\lambda\lambda$ were measured by the micro-electrode technique. Records from single elements could not be obtained with this eye; all the sensitivity curves represented the average response of several retinal units. The light-adapted eye was maximally sensitive to a λ of 580 m μ ., whilst after dark adaptation the point of max. sensitivity shifted to 500 m μ . This shift is not found in some areas of the retina and the presumption is that these are free from rods. The pigeon eye is peculiar in having its photopic max. at 580 m μ . instead of at 560 m μ . as is usual in eyes with a scotopic max. at 500 m μ . It is possible that the presence of coloured oil droplets in the retina may account for this finding. K. T.

Physiology of colour vision. E. N. Willmer (*Nature*, 1943, **151**, 213—215).—An attempt is made to explain the main facts of colour vision in terms of rods and of cones of a single type (since there is no histological evidence of three varieties of cones). The ratio of rod to cone response changes continuously along the spectrum; this ratio, possibly complicated by inhibitory or summatory action between rods and cones, is proposed as the basis of colour-response. Difficulties of obtaining high enough intensities with mixtures of extreme spectral bands (giving, according to this theory, almost pure rod and cone response) are adduced to explain the impossibility of synthesising any spectral colour by such a mixture.

K. J. W. C. **Incidence of colour deficiency in females.** W. A. Mailer (*Dioptric* Rev., 1942, 3, 88-89).—3272 females have been examined by a special method (''Ishihara places'' based on the confusion background, followed by examination with the Edridge green lantern). In this test for colour deficiency 50 persons (1.53%) were found to be colour-defective. Colour deficiency develops if a colour-defective male mates with a colour-defective female or a female carrier and one of his sperms carrying the recessive gene fertilises an ovum carrying a similar recessive gene. The colourdefective male is produced by mating of a normal or colour-defective male with a colour-defective or normal carrier. Female carriers are the const. female offspring of the colour-defective male,

P. G.

Colour discrimination in industry. J. Tiffin and H. S. Kuhn (Arch. Ophthal., 1942, **28**, 851—857).—7000 industrial employees were tested by red-green discrimination tests of several grades of difficulty. $55\cdot3\%$ of these workers passed the most difficult item in the test, and were usually given a higher rating for job performance than those who passed only the easier items or none at all. Whether colour vision is of more importance in industry than is generally realised, or whether a low grade of both colour vision and job performance is due to poor general health (which in turn may be the result of over-indulgence in tobacco or alcohol), it appears that colour vision is not an "all or none" proposition, but exists in a continuous range from extreme sensitivity at one end to colour-blindness at the other; it shows a marked reduction with increasing age. I. H. A.

Royal Canadian Navy colour vision test lantern. D. Y. Solandt and C. H. Best (*Canad. Med. Assoc. J.*, 1943, 48, 18-21).—The construction of the test lantern used is described. C. J. C. B.

Critical evaluation of pseudo-isochromatic plates and suggestions for testing colour vision. J. R. Gallagher, C. D. Gallagher, and A. E. Sloane (Yale J. Biol. Med., 1942, 15, 79–98).

Selective suppression with ethyl alcohol of inhibition in optic nerve and of the negative component PIII of the electroretinogram. C. G. Bernhard and C. R. Skoglund (Acta Physiol. Scand., 1941, 2, 10— 21).—10% ethyl alcohol in Ringer's solution was added to excised, opened frog eyes and the effect on the electrical potentials developed in the retina (electroretinogram) and optic nerve during illumination observed. The initial negative a wave of the electroretinogram as well as the negative component of the "off" effect were suppressed by alcohol. The large a wave, produced by re-illumination during the "off" effect, was also suppressed. Alcohol also reduces the inhibition of the off-impulses in the optic nerve which is normally caused by re-illumination of the eye. All these effects, in both the retina and optic nerve, are associated with the negative PIII component of the retinal response to light and it seems, therefore, that alcohol has a selective suppressing action on this component. Alcohol acts like dark adaptation in lowering the crit. frequency of flicker (both subjectively and in the excised eye) and in changing the electroretinogram of a light-adapted eye into one characteristic of a dark-adapted eye. K. T.

Temporal sequence of component potentials in frog's retina and electronic potential in optic nerve. C. G. Bernhard (*Acta Physiol. Scand.*, 1942, 3, 301-310).—The pattern of potential changes produced in the frog retina and optic nerve at both the onset and cessation of illumination was recorded with a directly coupled amplifier and oscillograph. Analysis of the records show that the various slow potential changes occur in the following order both at "on" and "off": (1) the negative component, PIII; (2) the positive component, PII: (3) the electrotonic potential in the optic nerve; (4) the spike discharge in the optic nerve. In the retinal records the component potentials PII and PIII can be separated by treating the eye with KCl, which depresses PII, leaving the isolated response of PIII. The electrotonic potential of the optic nerve reproduces the properties of PII and cannot be elicited after treatment with KCl. The latent period of PIII was shorter than that of PII, while the latent period of the electronic potential was longer than that of PII and shorter than that of the earliest spike discharge. These results suggest that PIII originates in the visual receptors while PII and the electrotonic potential originate in the retinal synapses (the latter probably in the ganglion cells) and the spike discharge in the optic nerve itself. K. T.

Negative component PIII in retinogram of tortoise. C. G. Bernhard (Acta Physiol. Scand., 1942, 3, 132–136).—The electroretinogram of the pure cone eye of the tortoise (*Testudo graca*) is dominated by the negative component PIII; it also shows the positive (PII) component but not the PI. In general appearance the tortoise electroretinogram resembles that of a frog in which the PII component has been depressed by various means. The reactions of the tortoise electroretinogram to alcohol (depression of PIII) and KCl (depression of PII) are similar to those of the frog. These results provide further evidence that the PII component is associated with the rods and visual purple both of which are absent from the tortoise eye. K. T.

Night blindness induced. F. V. Gammage (Eye, Ear, Throat, 1942, 21, 306-309).

Night visual capacity of psychological cases. P. C. Livingston and B. Bolton (*Lancet*, 1943, 244, 263—264).—50 psychological patients were examined with the rotating hexagon night-vision test (involving form perception). Their average score was 9.6 as compared with 19 for R.A.F. personnel. Anxiety states provided poorer results than depressives. Subjects may complain of night blindness but the condition may not be confirmed by the test. Inability to concentrate on the test seems a major factor in poor performance of anxiety cases. Cases of epilepsy and psychopathic migraine showed no special features. K. J. W. C.

Photo-retinitis in anti-aircraft lookouts. J. Flynn (Med. J. Austral., 1942, II, 400-401).—A description of 4 cases of antiaircraft lookouts in the Australian navy who got burnt-out patches on the macula as a result of looking into the sun for approaching aircraft. The importance of adequate protective glass screens which cut off enough of the spectrum to prevent burning of the retina but do not obscure too much light is emphasised. K. T.

Association of nerve deafness and retinitis pigmentosa. F. H. McGovern (Arch. Otolaryngol., 1942, 36, 827-836).—A family of father, mother, daughter, and 8 sons was examined. 4 sons had undoubted retinitis pigmentosa and deafness, another son had some impairment of hearing for high frequencies, the father was probably deaf, and the mother and daughter were normal. In another family of 8 children examined, 3 girls were deaf-mutes with retinitis pigmentosa, 1 girl was feeble-minded, and the remaining 4 (boys) were said to be normal. It seems probable that the type of nerve deafness found associated with retinitis pigmentosa involves a similar degeneration of the organ of Corti to that which occurs in " waltzing mice" and " waltzing guinea-pigs." This combination of two similar degenerations (abiotrophies) in the retina and organ of Corti might be due to one gene or to two closely associated genes, one of which is responsible for the eye condition and the other for the ear condition, and which have both suffered some disturbance. K. T.

Laurence-Moon-Biedl syndrome. L. A. Lurie and S. Levey (J. Pediat., 1942, 21, 793-802).—A report of 2 cases with unusual combinations of heredofamilial deviations. C. J. C. B.

Eye dominance : its nature and treatment. I. S. Wile (Arch. Ophthal., 1942, 28, 780—790).—This paper propounds the theory that fixation of an object depends, not on mutual efforts by all the ocular muscles, but on "sighting" the object with the dominant eye and simultaneous adjustment of the other owing to the concomitant nature of their movements. A study of 50 school-children with dyslexia revealed left eye dominance in 31 cases, of whom 19 also showed left-handedness. Symptoms included confusion in writing and reading, and in some cases speech defects, disorientation, and resulting disorders of behaviour and personality. Treatment consisted of the correction of refractive errors, temporary occlusion of the left eye in cases of left eye dominance, and special tuition designed to encourage the use of the right hand. J. H. A.

Binocular vision—normal and abnormal. H. Werner (Arch. Ophthal., 1942, 28, 834—844).—The author sets out to demonstrate that stereopsis should be regarded as a dynamic function rather than as a static condition depending on anatomically corresponding retinal points. The second, generally accepted, view cannot satisfactorily account for the varying distances at which fused double

images may appear in front of or behind the fixation plane. The principles involved in the abnormal correspondence of squint are identical with those which underlie normal binocular vision; in fact, temporary loss of primary correspondence, with a shift of maximal stability to points previously disparate, is a feature of normal stereopsis, when the configuration of the stimuli fulfils certain conditions. I. H. A.

Simple quantitative test for acuity and reliability of binocular stereopsis. F. H. Verhoeff (Arch. Ophthal., 1942, 28, 1000—1014).— The test consists of a rectangular black screen with its long axis vertical, containing an oblong horizontal window, behind which is a smaller sliding screen, held so that it can slide only vertically. This latter contains four horizontal oblong windows, each of which is divided into four parts by three vertical thin black strips of varying width, some of which are fixed to the back and some to the front of the sliding plate. The window is evenly illuminated from behind, and the subject is required, without moving his head, to select the nearest and the furthest strips in each position of the sliding screen. This may be done at various distances, and the results recorded fractionally, as with visual acuity. The fact that the monocular criteria (different width of strips) are misleading means that binocular parallax is the only correct evidence of relative depth in this test, which is particularly useful in estimating the stereopsis of aviation candidates. J. H. A.

Parallactic angle in binocular depth perception. V. A. Byrnes (*Arch. Ophthal.*, 1942, **28**, 1098—1100).—The parallactic angle is the difference between the visual angle subtended by an object at one eye and the angle subtended by the same object at the other eye, and is one of the factors involved in binocular depth perception. Its importance in flying is briefly described, and the other factors concerned are enumerated. J. H. A.

Fusion, projection, and stereopsis. I. Franklin (*Amer. J. Ophthal.*, 1942, 25, 1316—1336).—The author challenges the accepted view that stereopsis, projection, and fusion are static psychosensory abstractions, existing apart from any motor response, by regarding them on phylogenetic grounds as processes subserving appropriate motor reactions, either actual or potential. In the lowly aquatic vertebrates, with no binocular field, projection and stereopsis consist of actual body movement towards the object of interest, but adequate stereoscopic reaction to the faster-moving objects seen on land entails the development of overlapping fields. In primates, the development of convergence and the partial chiasmal decussation are correlated with the evolution of proprioceptive sensations in the eye, limb, and body muscles, so that the body is able to localise and make a unified motor response (either actual or potential) towards an object in its visual field.

Nature, scope, and significance of aniseikonia. W. B. Lancaster (Arch. Ophthal., 1942, 28, 767-775).—Aniseikonia, viz., disparity in size and shape of the two vertical images, consists of normal and abnormal varieties. Normal aniseikonia is well-known as the basis of stereoscopic depth perception; it also comes into play in regarding a near object which is not equidistant from the two eyes, *i.e.*, in asymmetric convergence. Anomalous aniseikonia may occur naturally in uncorr. ametropia and heterophoria, or it may be induced by wearing size lenses: a patient may ordinarily show a high degree of adaptation to his disability, and possess accurate spatial localisation based on monocular clues and the fruits of experience, but this compensatory mechanism is always liable to break down and the symptoms of "eyestrain" to result. J. H. A.

Use of pseudo-isochromatic charts in detecting central scotomas due to lesions in conducting pathways. L. L. Sloan (Amer. J. Ophthal., 1942, 25, 1352—1356).—If congenital colour-blindness is excluded, failure to read the numbers on the Ishihara charts at 1 m. is a reliable sign that a central scotoma rather than a refractive error is the cause of subnormal visual acuity. There is an approx. relationship between density of scotoma and no. of errors in the test, but normal responses do not definitely rule out the presence of a very small scotoma or one in which the colour-sensitivity is only very slightly depressed. Since these charts test only for redgreen blindness, they are more useful when the lesion lies in the optic nerve than when it is in the choroid or retina, in which case certain of Stilling's charts consisting of blue numbers on a confusion background are of greater val. J. H. A.

Irregular and multiple homonymous visual field defects. M. B. Bender and I. S. Wechsler (Arch. Ophthal., 1942, 28, 904-912).---Multiple scotomas in homonymous fields are very rare. The authors report three cases, one of altitudinal and two of lateral hemianopia, in which the affected fields contained islands of relative vision. The bilaterality of the scotomas, their sudden onset, their lack of uniformity, and their association in two of the cases with visual hallucinations and spatial disorientation pointed to the occipital cortex rather than the radiation as the site of the lesions. J. H. A.

New entoptic phenomenon in polarised light. E. M. Brumberg and P. P. Feofilov (Compt. rend. Acad. Sci. U.R.S.S., 1941, 32, 192-195).—Interference fringes as well as the Haidinger brush are observed subjectively with a polariser and a Savar plate in front of the eye, and can be explained by radial polarisation in the fibres around the yellow spot. This can be imitated by a screen with strips of polaroid arranged radially and rotated rapidly with a polariser and Savar plate placed in front. The spectral hues giving best Haidinger brushes were found to lie between 400 and 510 m μ . being best at 490; this phenomenon may be related to the absorption curve of the yellow macular pigment. K. J. W. C.

Primary sarcoma of choroid. A. Barlow (Amer. J. Ophthal., 1942, 25, 1337-1340) — Description of a case in which the eye was enucleated 13 years after the tumour was diagnosed. The patient died 20 years later of an intercurrent disease without clinical or post-mortem evidence of metastasis. A. GL.

Numerical relations between ganglion cells of retina and fibres in optic nerves of dog. L. B. Arey and M. Gore (*J. comp. Neurol.*, 1942, 77, 609—617).—The no. of ganglion cells in the retinas of four adult dogs varied between 192,160 and 149,320. The smallest retina had the greatest relative concn. of ganglion cells. The average density of ganglion cells was not proportionate in retinas differing in area. The ratio of ganglion cells to optic nerve fibres was shown for the first time to be approx. 1: 1. The presence of large nos. of intermuncial ganglion cells was not confirmed. P. G.

Number of myelinated and unmyelinated fibres in optic nerve of vertebrates. S. R. Bruesch and L. B. Arey (*J. comp. Neurol.*, 1942, **77**, 631-665).—In 33 representative vertebrates the total fibre content of the optic nerve was determined by the use of a reduced Ag technique. The following counts are given : cat 119,000, dog 154,000, grey rat 80,100, macaque monkey 1,210,000, man 1,010,000 fibres. No unmyelinated fibres were found in the optic nerves of higher vertebrates, *i.e.*, cat, dog, macaque monkey, and man. The predominant rôle of vision in human activities can be emphasised by the statement that some 38% of all fibres entering or leaving the central nervous system do so by way of the "optic nerves." P. G.

Experimental production of primary optic atrophy in monkeys by administration of organic arsenical compounds. B. I. Longley, N. M. Clausen, and A. L. Tatum (*J. Pharm. Exp. Ther.*, 1942, 26, 202-206).—Blindness was produced in 9 out of 20 *rhesus* monkeys by intravenous administration of As preps. [atoxyl, tryparsamide, stovarsol, 3-amino-4- β -hydroxyethoxyphenylarsonic acid (No. 190), and 4- β - β '-hydroxyethoxyethoxyphenylarsonic acid (No. 266)]. These results give a means of detecting the possibilities of blindness caused in man by As compounds. At the same time it will be possible to study prophylactic methods for the reduction of optic atrophy after chemotherapy for neurosyphilis. P. G.

Effects of intensity and wave-length on driving cortical activity in monkeys. W C. Halstead, G. W. Knox, Y. J. Woolf, and A. E. Walker (J. Neurophysiol., 1942, 5, 483-486).—The effect of photic stimulation (intensity and λ) of the retina of Macaca mulata on driving cortical activity has been studied. The greatest driving power was obtained with flashes of an intensity of 80 ft.-candles. Monochromatic light is relatively more effective (1.6 times) than neutral light and the blue region of the spectrum was considerably more effective than the red. Cortical activity was recorded by taking encephalograms. P. G.

Discussion on ear, nose, and throat disease in mental disorder. T. C. Graves, H. G. B. Russell, and others (*J. ment. Sci.*, 1941, 87, 477-528). G. D. G.

Otolaryngological aspects of aviation. L. D. Carson (Laryngoscope, 1942, 52, 704—717).—The following conditions, so long as they are incurable, are sufficient cause for the rejection of men from training as pilots : any blocking of the nasal passages, since this prevents adequate ventilation at high altitudes; abnormalities of the Eustachian tube which prevent the entry of air into the middle ear during rapid descents. There is not much evidence of permanent loss of hearing due to excessive noise in flying but "fatigue of the auditory function" is common. A description of the symptoms of vestibular disturbance due to rapid manœuvres in the air is given. K. T.

Otogenic complications. Discussion of literature for 1941. L. G. Richards (*Laryngoscope*, 1942, 52, 745-754).—The literature on the following subjects is briefly reviewed: otitic meningitis; thrombosis of the lateral sinus; labyrinthitis; brain abscess; petrositis. K. T.

Relation of Enstachian tube to chronic progressive deafness. R. M. Decker (Arch. Otolarymgol., 1942, 36, 926-936).—A description of the causes of occlusion of the Eustachian tube and of how these may lead to deafness. Various methods of treatment are discussed. K. T.

Deafness in twins. Otosclerosis in identical twins. Three case histories. E. P. Flower (*Laryngoscope*, 1942, 52, 718-731).— Detailed physical examination of three pairs of identical twins, all of whom suffered from otosclerosis from a relatively early age, revealed no clue as to the cause, hereditary or environmental, of this disease. Only one pair of twins had an impressive history of deafness in the family, K. T.

Unilateral otosclerosis with microscopic description of the focus. O. Benesi (Laryngoscope, 1943, 53, pp. 17-26).—The description of a case which came to post-mortem for other causes. The ear was not considered deaf during life but it was not possible to take an audiogram. An otosclerotic focus was found with its centre immediately posterior to the fissula ante fenestram. The centre of the focus was chiefly composed of compact new bone while the peripheral parts were made up of the soft vascularised form. The fissula itself was dense connective tissue with no cartilage. There was an abnormal presence of blood vessels in this region which may have had something to do with the new bone growth. K. T.

Embryological observations bearing on otosclerosis. T. H. Bast (Arch. Otolaryngol., 1942, 36, 816-826).—The author does not believe that the effect of otosclerosis in causing impaired hearing can be mainly due to fixation of the stapes because fenestration improves the hearing in these cases. The suggestion is put forward that the fissula ante fenestram is concerned with the drainage of perilymph from the periotic labyrinth and that if otosclerosis involves the fissula this drainage is prevented but is re-established by fenestration. In support of this idea the following findings from a study of human foctuses and children are given: (1) the fissula is a const. structure in the human otic capsule (although not present in other animals); (2) the vestibular portion of the fissula contains a perilymphatic type of tissue continuous with the mucoperiosteal tissue at its tympanic end; (3) endothelium-lined channels in the fissular tissue suggest that the fissular tissue occurs in foctuses and young children and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the fissula itself is resistant to ossification but gradually becomes obliterated later and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the fissula itself is resistant to ossification but gradually becomes obliterated later and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the fissula itself is resistant to ossification but gradually becomes obliterated later and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the fissula itself is resistant to ossification but gradually becomes obliterated later and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the fissula itself is resistant to ossification but gradually becomes obliterated later and such parts later become unstable osseous tissue resembling otosclerotic bone; (5) the structure.

New bone growth due to cold water in the ears. E. P. Fowler and P. M. Osmun (Arch. Otolaryngol., 1942, 36, 455-466).—A preliminary report on the effect of repeated monaural irrigation of the external meatus of guinea-pigs with cold water. In all ears which were irrigated more than once there was diffuse but quite definite production of new bone in the submucosa of the bulla of the middle ear. There was no change in the labyrinthine capsule except for a slight growth of new bone on the promontory. Periosteal bone only was affected. (Illust.) K. T.

Amyl nitrite in treatment of acute aero-otitis media. I. W. Tomb (Med. J. Austral., 1942, II, 109).—To relieve the sudden compression of the Eustachian tube, caused by rapid descent from great heights, the inhalation of amyl nitrite is recommended; this immediately cured the severe pain and deafness. P. G.

Stapes, fissula ante fenestram, and associated structures in man. III. From embryos 6.7 to 50 mm. in length. E. W. Cauldwell and B. J. Anson (Arch. Otolaryngol., 1942, 36, 891—925).—A detailed description of the development of the stapes from the stage when its cytoblastema is first recognisable (7-mm. embryo) until it has become roughly stirrup-shaped with distinct crura, a base, and a short, but well moulded, head in a 50-mm. human foctus. At this last stage the stapes is composed of mature cartilage. The general conclusions are that the human stapes is derived both from the 2nd visceral (hyoid) bar and the lateral capsular wall. The primary origin is in the visceral bar which provides the greater mass of the stapes (the annulus stapedialis). Subsequent fusion with the lamina stapedialis of the otic capsule, with secondary differentiation of laminar tissue, forms the stapedial rim, the vestibular surface of the base, and the basal perichondrium. The annular ligament of the stapes is produced by further modification of the peripheral laminar tissue. K. T.

Bone conduction in audiometry. I. Literature review and report of preliminary observations. B. H. Senturia and A. R. Thea (Laryngoscope, 1942, 52, 675-687).—An improved method of testing hearing by bone conduction with an adapted pure tone audiometer and masking of the other ear is described. Several types of audiometer were used and definite discrepancies were found between the results obtained with different makes, so that a "normal" curve must be taken for each instrument and checked periodically. In all cases of nerve deafness there was a loss of hearing by bone conduction which tended to be greater at high frequencies and corresponded with the loss by air conduction except in syphilitics where bone conduction for low tones was either greatly depressed or completely absent. In cases of conduction deafness there was often excellent hearing by bone conduction with moderate or severe loss by air conduction. It is concluded that the external auditory meatus, tympanic membrane, and tympanum contribute little or nothing to the hearing of bone-conducted sound. K. T.

Microscopic examination of human labyrinths from patients exposed to loud noises. D. Wolff (Arch. Otolaryngol., 1942, 36, 843— 852).—A description of the post-mortem observations on 2 cases, one of a riveter and one of a pipe-fitter and welder, both suffering from some impairment of hearing. In both cases Reissner's membrane was either torn or missing and the organ of Corti was markedly abnormal throughout. In the first case there was also bilateral fracture of the stapes. The microscopic examination of the left inner ear of a woman who shot herself through the right temporal region is also described. The wound of exit was in the left temporal region so that the left ear must have been subjected to blast. In spite of this Reissner's membrane was intact and the organ of Corti *in situ* although somewhat abnormal. There was no injury to the stapes but the drum membrane had been seriously damaged by blast. K. T.

Deafness due to central lag. W. M. Mollison (*Proc. Roy. Soc. Med.*, 1942, 35, 792—793).—A report of cases in which slowly spoken sentences might be heard well, while rapidly spoken sentences were not grasped. The conducting and perception apparatus appeared to be normal but the central apparatus was sluggish. P. G.

Method for measuring percentage capacity for hearing speech. E. P. Fowler (Arch. Otolaryngol., 1942, 36, 874—890).—A table is given for computing the % hearing loss for speech on the basis of the audiometer results given by the patient for certain frequencies within the speech range. K. T.

Correlation of hearing acuity for speech with discrete frequency audiograms. W. Hughson and E. Thompson (Arch. Otolaryngol., 1942, 36, 526-540).—A method for getting a measurement of the hearing acuity for speech is described and the results obtained are correlated with those given by the discrete frequency audiometer. There was almost a direct proportionality between the % loss of speech reception and the % loss of hearing as measured by an audiometer. A 50% audiometric loss was equiv. to approx. 100% loss for speech. The difference between the threshold for intelligibility of speech and the threshold of audibility was about 10 db both for ears with normal and impaired hearing. Bone conduction and nerve deafness were not found to be significant factors in the % impairment of speech reception thresholds. The ability to hear frequencies above 2048 and below 512 has little significance in the ability to understand speech. K. T.

Activity of intratympanic muscles. F. W. Kobrak (*Proc. Roy. Soc. Med.*, 1942, 35, 791-792).—The observation of cases of Menière's syndrome in 1925 'suggested that a vestibular mechanism was involved in the control of the bones of intratympanic muscles. Recent clinical observations and experiments suggest a dual muscular effect : a linked reflex of "protective" and "corrective" damping of the intratympanic muscles. It seems possible that the protective damping is more dependent on vestibular stimulation, the corrective damping on cochlear stimulation. In view of the clinical findings and experiments suitable treatment of certain cases of deafness is proposed. P. G.

Effects of certain cerebral lesions upon caloric responses. G. Fitzgerald and C. S. Hallpike (*Proc. Roy. Soc. Med.*, 1942, 35, 801—804).—The caloric examination of 50 cases of supratentorial lesions of the central nervous system without evidence of aural disease or any spontaneous nystagmus confirm the results of Dusser le Barenne that the directional preponderance of induced nystagmus occurs in association with some lesion of the cerebrum. P. G.

Human vestibular function. I. Directional preponderance (Nystagmusberfetschaft) of caloric nystagmus resulting from cerebral lesions. G. Fitzgerald and C. S. Hallpike. II. Directional preponderance of caloric nystagmus resulting from unilateral labyrinthomectomy. III. Clinical features of Ménière's disease : with especial reference to results of caloric tests. T. E. Cawthorne, G. Fitzgerald, and C. S. Hallpike (Brain, 1942, 65, 115-137, 138-160, 161-181).-I. In ten cases of temporal lobe lesions a preponderance of the caloric nystagmus was absent in cortical lesions not involving the temporal lobes. The physical basis of the caloric tests is discussed and improvements of technique are described.

II. The results of caloric tests on nine patients before and after operational destruction of one labyrinth for intractable vertigo due to Ménière's disease are given. The responses of the unoperated ear revealed in all nine cases marked directional nystagmus to that side, which gradually diminished. The post-operative diminution of this directional nystagmus is believed to be identical with the gradual equalisation of the nystagmus responses to solation observed by Barang after destruction of one labyrinth. Barang's explanation of this phenomenon is discussed and a new explanation offered that the flow of endolymph of the human external canal is bidirectional.

III. 50 cases of Ménière's disease are described clinically including the results of audiometric and caloric tests. In all cases loss of cochlear function was observed and in 86% of cases the loss was bilateral. Deafness was nearly always of the internal ear type. 47 cases out of 50 showed the presence of a vestibular lesion, which was mostly on the side of the worst hearing ear but can also occur on the other side. According to the authors 3 types of unilateral vestibular lesions can be described : (1) utricle type, (2) external canal type, (3) combination of one and two. P. G.

Effects of various types of motion on differences in hydrostatic pressure between ends of a semicircular canal. R. Morgan, R. D.

Summers, and S. P: Reimann (Arch. Otolaryngol., 1942, 36, 691-703).—On the assumption that (1) there is no flow of endolymph in the semicircular canal, (2) the response to motion is due to pressure changes at the ends of the canals, (3) the walls of the canal are rigid, and (4) the endolymph is incompressible and fills the entire canal, a mathematical analysis is made of the hydrostatic pressure differences which would be produced at the ends of the canal by every possible type of motion. It is shown that such pressure differences could be produced by angular acceleration or velocity (depending on the axis of rotation) or by linear acceleration. Experimental results could be substituted in the mathematical equations for these pressure differences, thus providing evidence for the validity of the primary assumptions and therefore as to whether there has to be an endolymph flow to produce nerve stimuli in the semicircular canals. K. T.

Size, development, and innervation of labyrinth sensory areas in Squalus. W. B. Freedman and R. Walker (J. comp. Neurol., 1942, 77, 667–692).—Measurements of different sensory areas have been made on the inner ear of the dogfish in order to study the development and innervation of these areas. The ear of the adult dogfish is notable for the size of the labyrinth and sensory areas, which are greater than any measured by Weston. The sensory area ratio is 6:4 for pars superior to pars inferior in a 580-mm. adult fish. Further data and measurements of the different parts are given. P. G.

Age incidence of atrophy of olfactory nerves in man. C. G. Smith (J. comp. Neurol., 1942, 77, 589-595).—With reference to the demonstration (cf. A., 1942, III, 227) of the high degree of atrophy of human olfactory nerves the author states that the no. of olfactory fibres decreases with age. Nasal diseases also contribute to the disappearance of olfactory fibres. P. G.

Variability in pain threshold. L. H. Lanier (*Science*, 1943, 97, 49-50).—15 college women were examined with an apparatus (modified by Fender) which measured the electrical pain threshold. It was found that this threshold varies considerably from one day to another, as well as from one skin area to another. P. G.

Effect of morphine and prostigmine methosulphate on measurements of pain threshold. H. L. Andrews (J. Amer. Med. Assoc., 1942, 120, 525-527).—The addition of 0.5 mg. of prostigmine methosulphate to an 8-mg. dose of morphine, administered to normal human subjects, raised the pain threshold very slightly over that obtained with morphine alone but the difference was too small to be of practical importance. In addicts, where the effectiveness of morphine in raising the pain threshold is much reduced, the addition of prostigmine methosulphate considerably enhances the effect of morphine but the mean pain threshold curve is still low. The addition of prostigmine methosulphate does not appreciably alter the rate at which tolerance to morphine is developed.

K. T.

XI.-DUCTLESS GLANDS, EXCLUDING GONADS.

Organotherapy. B. Vidgoff (West. J. Surg. Obstet. Gynec., 1939, 47, 334-338). P. C. W.

Congenital factors in thyroid disease. W. B. Patterson (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 273—276).—The fœtal thyroid may be affected by I deficiency or become hyperplastic owing to maternal absorption of fœtal thyroxine. P. C. W.

Recurrent toxic goitre. R. F. Bowers (West. J. Surg. Obstet. Gynec., 1939, 47, 536-542). P. C. W.

Mechanism of exophthalmic goitre. G. Crile (West. J. Surg. Obstet. Gynec., 1939, 47, 243—248).—A lecture stressing brain-thyroidadrenal-sympathetic relations, particularly in man. P. C. W.

Treatment of severe thyrotoxicosis. W. O. Thompson, S. G. Taylor, R. W. McNealy, and K. A. Meyer (West. J. Surg. Obstet. Gynec., 1939, 47, 522-535). P. C. W.

Neglected adenomata of thyroid. R. W. Binkley (West. J. Surg. Obstet. Gynec., 1939, 47, 575-580). P. C. W.

Physiological development of thyroid gland of albino rat.—See A., 1943, III, 222.

Localisation of newly administered iodine in thyroid gland as indicated by radio-iodine.—See A., 1943, III, 225.

Fallacy of use of iodine immediately after bilateral thyroidectomy. M. Davison and L. J. Aries (*West. J. Surg. Obstet. Gynec.*, 1939, 47, 589—595).—The basal metabolic rate was increased by 20% in 10 normal people injected intravenously with 10 mg. of thyroxine ; the max. increase was attained 8—10 days after the injection and the rate returned to normal 24—28 days after the injection. This rise was unaffected by the administration of I before and/or throughout the period during which the thyroxine was effective. The symptomology of patients dying in thyroid crises post-operatively in spite of I administration shows no difference from those not treated with I. 2 groups of 114 cases of thyrotoxicosis receiving the same pre-operative I treatment were studied post-operatively, l group receiving I, the other not. The group without I showed less rise in temp. and pulse rate and quicker recovery. P. C. W.

X-Ray treatment of hyperthyroidism. M. H. Soley and R. S. Stone (Arch. intern. Med., 1942, 70, 1002-1016).—X-Ray treatment was successfully used in 43 patients with hyperthyroidism. C. A. K.

Liver function and dietary yeast in hyperthyroidism.—See A., 1943, III, 247.

Carbohydrate metabolism in thyrotoxicosis. I. Experimental study. E. E. Blanck (*Surg. Gynec. Obstet.*, 1940, **71**, 156—168).— Rabbits fed 5—15 grains of thyroid daily showed a loss of appetite with recovery, maintenance of appetite, and final fall in appetite preceding death. Liver-glycogen was depleted only in the terminal phase of appetite loss; otherwise hepatic glycogen was related to the degree of appetite. Animals fed higher doses of thyroid had lower amounts of liver-glycogen. Duration of treatment had no effect on liver-glycogen. Appetite was not stimulated by insulin injections and only temporarily by vitamin- B_1 administration. The average increase in liver-glycogen following intravenous infusion of 0.8—0.9 g. of glucose per kg. per hr. was the same in normal and thyroid-treated rabbits. Similar appetite patterns occur in clinical hyperthyroidism. P. C. W.

Diffuse colloid goitre. C. A. Hellwig (West. J. Surg. Obstet. Gynec., 1939, 47, 406-417).-A review. P. C. W.

Theory and results of prophylaxis of endemic goitre in Switzerland. H. Eggenberger and F. M. Messerli (West. J. Surg. Obstet. Gynec., 1939, **47**, 596-599). P. C. W.

Storage of manganese by thyroid. Effect on oxygen consumption in guinea-pig. T. W. Ray and L. J. Deysach (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 228—229).—Subcutaneous injection of $MnCl_2$ caused storage of Mn throughout the body of dogs and guinea-pigs, but especially in the thyroid. In guinea-pigs 10 μ g. per kg. caused an increase, and 10 mg. per kg. a decrease, in O₂ consumption.

Comparison of activity and distribution of iodine in reptilian and mammalian thyroids. E. J. Baumann, N. Metzger, and D. Marine (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 110—111).—Turtle, alligator, and dog thyroids which contained similar amounts of I and thyroxine had similar effects on the metamorphosis of tadpoles. V. J. W.

Quantitative approach to study of thyroid secretion. E. Uhlenhuth, K. Mech, J. U. Thompson, and J. E. Schenthal (West. J. Surg. Obstet. Gynec., 1939, 47, 263-272).—The amount of colloid in the thyroids of the Californian newt (Triturus torosus) was measured following the injection of various amounts of thyrotropin from beef pituitaries. Release of colloid proceeds until a min. level is reached which depends on the dose of thyrotropin and is also proportional to the amount of colloid initially present. Max. decrease in colloid content is obtained with daily intraperitoneal injections of the thyrotropin from 50 mg. of dried anterior lobe. There are alternate phases of colloid storage and release in the normal thyroid. Thyrotropin stimulates both formation and release of colloid. P. C. W.

Effect of vitamin- B_1 and yeast on caloric intake and weight balance of hyperthyroid dogs. V. A. Drill and C. B. Shaffer (*Endocrinol.*, 1942, 31, 567-572).—Dogs which received 0.4-0.6 g. of dried thyroid per kg. per day lost wt. and appetite unless they were given daily doses (1 mg.) of vitamin- B_1 , in addition to 10 g. of yeast concentrate. V. J. W.

Effects of normal and abnormal thyroid extracts on rabbit heart and liver. J. B. Wolffe (West. J. Surg. Obstet. Gynec., 1939, 47, 638-645).—6 rabbits injected with 1-5 grains of desiccated thyroid (U.S.P.) daily for 10 weeks showed sinus tachycardia, loss of wt., and no changes in e.c.g. apart from a slight shortening of auriculoventricular conduction time. At autopsy there was no histological abnormality of the heart and only slight congestive changes in the liver. Rabbits injected with desiccated thyroid from patients from whom the gland was removed because of thyrotoxicosis showed e.c.g. changes in 50% of cases. Degenerative heart lesions were produced in 3 of 5 rabbits injected with the extract from the thyroids of 3 patients operated for congestive heart failure who had normal basal metabolic rates. P. C. W.

Action of various steroids on hypophysis of thyroidectomised rat. C. P. Leblond, S. Albert, and H. Selye (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 159—161).—In thyroidectomised male rats, the formation of "thyroidectomy" vacuolated cells in the pituitary is prevented by daily doses of 50 µg. of æstradiol or ethinylæstradiol but not by 10 mg. daily of any other steroid tried, including testosterone, progesterone, and deoxycorticosterone. V. J. W.

Parathyroids and clearance of inorganic phosphate.—See A., 1943, III, 248.

Formation in vitro of thyroxine and di-iodotyrosine by thyroid tissue with radioactive iodine as indicator. M. E. Morton and I. L. Chaikoff (*J. Biol. Chem.*, 1943, 147, 1-9).—When rat thyroid gland

is incubated in a HCO_3 '-Ringer solution containing ¹³¹I 12% and 70% of the added ¹³¹I are converted into thyroxine and di-iodotyrosine, respectively, whereas with dog and sheep thyroids the vals. are 4 and 6 and 21 and 37%, respectively. This conversion takes place only with whole gland or slices and not with homogenate. H G. R

Antagonism between thyroxine and vitamin-A [and liver-glycogen]. —See A., 1943, III, 247.

Endocrine action of thyroglobulin antibodies. J. Lerman (*Endocrinol.*, 1942, **31**, 558-566).—Thyroglobulin is strongly antigenic, and the antibodies produced are able to neutralise thyroglobulin from all related species. Animals immunised become refractory to later thyroglobulin injections and usually develop myxeedema after 6 months. V. J. W.

Partial purification and the nature of the parathyroid hormone. W. F. Ross and T. R. Wood (*J. Biol. Chem.*, 1943, **146**, 49–58).— Acetone-dried and defatted glands are extracted with 3% aq. HCl at 100° and inert protein is separated with 80% aq. alcohol at pH 4·0. The active material is then fractionated by pptn. with $(NH_4)_2SO_4$ at pH 6·0 and further purified by adsorption on benzoic acid to yield a prep. with a potency of approx. 300 U.S.P. units per mg. of N. The prep. is heterogeneous, consisting of at least two components having mol. wt. approx. 20,000 and 500,000—1,000,000, the activity being associated with the former. The active principle is of protein nature and is very sensitive to pepsin. No evidence is obtained for the presence of an active group of low mol. wt. H. G. R.

Search for physiologically active substance in calf thymus. H. A. Hoster (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 201—203).—No effects were produced on blood-sugar, insulin tolerance, or wts. and histology of endocrine organs by the thymus extracts tried (cf. Wells *et al.*, A., 1942, III, 808). V. J. W.

Changes in adrenal function during "alarm" reaction. S. Albert (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 212—213).—Injection of formalin during 12 days into castrated rats causes the usual adrenal hypertrophy, but no change in the accessory sex organs in either sex. V. J. W.

Effect of ovarian transplants on adrenal X-zone of castrated male mice. H. J. Idzkowsky and W. F. Starkey (*Endocrinol.*, 1942, 31, 493—497).—Successful transplants of ovaries into the ears of castrate male mice produce androgenic effects, including reduction or disappearance of the adrenal X-zone. Injection of pregnant mare serum causes a greater % of "takes" and greater reduction of X-zone, but no luteal tissue in the grafts. V. J. W.

Regeneration of adrenal gland following enucleation and transplantation, with special reference to X-zone. M. K. McPhail and H. C. Read (*Endocrinol.*, 1942, **31**, 486-492).—Enucleation of the adrenal in male mice, or its implantation beneath the renal capsule, was followed in some cases by the development of dark cells in the central part of the gland, but no regeneration of a typical X-zone was observed. V. J. W.

Cytology of adrenal cortex of normal pigeons and in experimentally induced atrophy and hypertrophy.—See A., 1943, III, 224.

Phosphorylation of fat in absence of adrenal glands measured with radioactive phosphorus. N. Stillman, C. Entenman, E. Anderson, and I. L. Chaikoff (*Endocrinol.*, 1942, **31**, 481–485).—Radioactive P, administered subcutaneously as Na₂HPO₄, was incorporated in equal amounts into hepatic phospholipins in normal and adrenal-ectomised rats, and irrespectively of NaCl intake. V. J. W.

Partial maintenance of adrenal weight in hypophysectomised immature male rats by testosterone injections. S. L. Leonard (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 302–303).—Injections of 1.25 mg. of testosterone propionate daily for 10 days after hypophysectomy partly prevented the usual adrenal cortical atrophy. V.J.W.

Clinical assay of adrenaline and ephedrine analogues. W. T. Vaughan, R. M. Perkins, and V. J. Derbes (*J. Lab. clin. Med.*, 1942, 28, 255–268).—The method consists in serial determinations (before and after hypodermic administration of the drug) of pulse rate, blood pressure, and vital capacity; effect on evolution and involution of histamine wheals; local reaction in the nose. Superiority over ephedrine requires an increase of vital capacity of 75 c.c. more. C. J. C. B.

Effect of adrenal cortex extract and of various steroids on capillary permeability. V. Menkin (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 39—41).—Capillary exudation of trypan-blue, caused by inflammatory exudate or '' leucotoxine '' extracted from it, in rabbits is inhibited by deoxycorticosterone acetate, or by Kendall's compounds *A*, *B*, or *E*, provided that these are dissolved in oil and not merely suspended in serum. V. J. W.

Activity of deoxycorticosterone acetate on oral administration. H. Fraenkel-Conrat (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 300–302). —Dosages of 0.09–0.33 mg. daily favoured growth and survival of adrenalectomised rats on a salt-free diet. V. J. W. Electrolyte and water exchange between skeletal muscle, "available (thiocyanate) fluid," and plasma in dog following administration of deoxycorticosterone acetate. D. M. Harkness, E. Muntwyler, F. R. Mautz, and R. C. Mellors (*J. Lab. clin. Med.*, 1942, 28, 307— 313).—In normal dogs on a high-Na, low-K diet the plasma vol. and the "available thiocyanate fluid" increased while receiving deoxycorticosterone acetate (I mg. per kg.) for 2 weeks; plasma-K and -Cl' fell and -Na rose; skeletal muscle-K fell; -Na rose and -Cl' was unchanged. The loss of intracellular K was not completely compensated by increased Na in the intracellular phase.

C. J. C. B

Adenoma of pancreas with hyperinsulinism. H. F. West (West. J. Surg. Obstet. Gynec., 1939, 47, 364-370).—2 cases, first cousins, are reported, one of whom was cured by surgical removal of the adenoma.

Dangers of indiscriminate coverance of parenterally administered glucose with insulin. P. C. Eschweiler (Surg. Gynec. Obstet., 1940, 71, 141-145).—Intravenous glucose-tolerance tests were performed on 5 patients with diabetes mellitus of varying degrees of severity and on 1 normal patient. Following the intravenous administration of 500 ml. of 10% glucose, fasting blood-sugar levels were reached in all cases within $1\frac{1}{2}$ -2 hr.; the milder was the diabetic condition the nearer the tolerance curve was to the normal. Routine administration of insulin with parenterally injected glucose is dangerous in diabetics unless the severity of the diabetes is considered.

P. C. W.

Acromegaly with long-standing tumour infiltration of cavernous sinuses. C. Spark and S. B. Biller (Arch. Path., 1943, 35, 93-111).---A case report. C. J. C. B.

A case report.Primary eosinophil adenocarcinoma of hypophysis.G. A. C.Snyder and C. P. Larson (West. J. Surg. Obstet. Gynec., 1939, 47, 581-583).-A case is reported.P. C. W.

Anterior pituitary-stimulating action of yohimbine. N. W. Fugo and E. G. Gross (*Endrocrinol.*, 1942, **31**, 529-534).—Yohimbine caused no precocious sexual development in immature female rats and no cestrus in spayed adults. In normal females 1-2 mg. daily caused prolonged cestrus, and 2-4 mg. caused pseudopregnancy and homosexual behaviour. No cestrus was caused in hypophysectomised females. If immature ovaries were implanted into the anterior chambers of male rats administration of yohimbine caused formation of corpora lutea. V. J. W.

Role of anterior pituitary in adrenaline hyperglycæmia and liver glycogenolysis.—See A., 1943, III, 261.

Peculiarities in histological differentiation of pituitary body of Bufo bufo and Pelobates fuscus tadpoles. A. L. Irichimovitsch (Compt. rend. Acad. Sci. U.R.S.S., 1941, 32, 512—514).—In B. bufo, eosinophilic and basophilic cells are present in the hypophysis at the time of the appearance of the hind limbs; basophilic cells are not present in the hypophysis of R. temporaria at this stage. The basophilic cells in B. bufo do not develop so greatly as in R. temporaria and the height of the thyroid epithelium is about const. throughout the development of the tadpoles without the stages of low and high thyrotropin secretion seen in R. temporaria. P. fuscus differs from the 2 previous species in its ability to hibernate in the tadpole state; tadpoles of this species in an exposed pond which dried in summer metamorphosed in the same year, whilst those in a shady pond did not develop so rapidly and remained tadpoles until the next summer. The hypophyses of the latter tadpoles did not contain any basophilic cells, which only appeared at the time of metamorphosis in the second summer. Hibernating tadpoles taken from the pool and placed in water at 28—30° metamorphosed in 2—3 weeks, whilst control animals placed in water at 20—22° did not metamorphose in 6 months. The appearance of basophilic cells in the hypophysis coincided with metamorphosis. P. C. W.

Effect of hypophysectomy on basal metabolism of growing chicks. A. Nalbandov and L. E. Card (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 294–296).—Hypophysectomy at 46–51 days causes chicks to eat $\frac{1}{3}$ — $\frac{1}{2}$ their normal requirements and reduces basal heat production by 20% in males and 40% in females. Restriction of food intake to the same degree in normal birds has a similar effect on metabolic rate. V. J. W.

Effects of anterior pituitary preparations and insulin on islet cells of pigeon pancreas. R. A. Miller (*Endocrinol.*, 1942, **31**, 535—544).— Hypophysectomy or under-feeding causes degeneration of β -cells but they can be stimulated by over-feeding, prolactin, partial pancreatectomy, or some preps. of adrenotropic hormone. 30 units of insulin daily cause their atrophy. Anterior pituitary preps. contain a substance which stimulates δ -cells and which is max. in the ppt. at $\frac{1}{3}$ saturation with (NH₄)₂SO₄. It is insol. on dialysis and is not associated with any known hormone. Insulin causes some stimulation of δ -cells and degranulation of α -cells. V. J. W.

Lack of effect of growth hormone on deposition of radiostrontium in bone. W. Marx and W. O. Reinhardt (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 112—114).—Hypophysectomised rats treated with growth hormone, and injected intraperitoneally with ⁸⁹Sr lactate, deposited in the femur and mandible the same amounts of Sr as rats which received no hormone. V. J. W.

Effects of pituitary preparations on blood-non-protein-nitrogen. J. Fraenkel-Conrat, H. Fraenkal-Conrat, and H. M. Evans (Amer. J. Physiol., 1942, 137, 200-212).—Blood-urea in normal rats was lowered by both thyroxine and thyrotropic hormone, but not by pituitary growth hormone. Blood-amino-acids were lowered by thyrotropic and growth hormones, but not by thyroxine. In thyroidectomised rats thyrotropic hormone still lowered bloodamino-acids. The high blood-non-protein-N and -urea of hypophysectomised rats was lowered by thyrotropic hormone and thyroxine. The observed decrease in blood-urea was not due to increased excretion or to harmodilution. T. F. D.

Initiation of secretory changes in transplanted mammary adenocarcinoma of rat by pituitary lactogenic hormone. M. J. Eisen (*Proc.* Soc. Exp. Biol. Med., 1942, 51, 260—262).—Injection of hormone caused secretory changes in transplanted tumours in nursing female rats, but not in male or non-nursing females. Progesterone had no effect. V. J. W.

Direct mammotrophic action of lactogenic hormone. W. R. Lyons (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 308–311).—In spayed rabbits, treated for 4 weeks with daily doses of 20 μ g. of estrone and 1 mg. of progesterone, injection into a mammary duct of 1.5 i.u. of lactogenic hormone caused lactation 5 times out of 6 in the mammary sector of that duct. 0.75 i.u. caused lactation in 3 out of 6. V. J. W.

Pituitary lactogenic hormone. VII. Isolation. C. H. Li, M. E. Simpson, and H. M. Evans. VIII. Diffusion and viscosity measurements. C. H. Li (J. Biol. Chem., 1942, 146, 627-631, 633-638).— VII. 2 kg. of fresh sheep pituitaries are ground twice with 1 l. of water and poured into 8 l. of acetone + 200 c.c. of conc. HCl. The mixture is stirred for 1 hr. and filtered at room temp. To the filtrate 32 l. of acetone (at -5°) are added, and the ppt. is collected after keeping overnight, washed with cold acetone, and dried (yield, about 35 g.). This powder is twice extracted with 0·IM-Na₂HPO₄, and the combined extracts are brought to half-saturation with (NH₄)₂SO₄. The ppt. is dissolved in 250 c.c. of water and dialysed until salt-free. The solution is then adjusted to pH 3·0 (glass electrode) with m-HCl, diluted to 1%, and saturated aq. NaClis added to 0·36m. The ppt. is dissolved in water at pH 7·5, clarified, dialysed against PO₄^('') buffer at pH 6·4 and then against acetate buffer at pH 5·6, and the final ppt. dissolved in water at pH 3·0. The steps following (NH₄)₂SO₄ pptn. are repeated twice. The final pH 5·6 ppt. is further purified by stepwise dialysis at pH 4·0 and 5·6, and, after adjustment of the solution to pH 3·0, pptn. by 0·36m-NaCl is repeated until the supernatant has a const. N val. per c.c. The ppt. then contains 25—30 i.u. per mg. of protein. Solubility, electrophoresis, and diffusion measurements indicate it to be a single substance.

it to be a single substance. VIII.. The hormone has $[a]_{20^{\circ}}^{20^{\circ}} - 40.5^{\circ}$. The partial sp. vol. is 0.721, diffusion const. $D_{200^{\circ}}$ 9.0 \times 10⁻⁷ cm.² per sec., dissymmetry const. 1.29. The mol. wt. is estimated at 22,000. P. G. M.

Early effects of urinary gonadotropin in prepuberal male rats. E. Z. Burkhart (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 152—153).— Injection of 20 r.u. of Antuitrin-S into 20-day-old rats caused increased mitotic activity in the seminal vesicles in 28—30 hr., and in the prostate in 35—43 hr. V. J. W.

Fertility of and sex ratios from adult female rats and rabbits treated while immature with gondadotropic hormone. L. E. Casida and R. L. Murphree (*Endocrinol.*, 1942, **31**, 545-548).—Immature animals received doses of pituitary preps. which gave marked ovarian stimulation. Sex ratios in the subsequent offspring did not differ from the normal. V. J. W.

Pituitary and nervous control of chromatic responses in Fundulus. E. F. B. Fries (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 170–171).— The melanophore response to black or white background is not affected by hypophysectomy, but the xanthophore response to a yellow background is decreased. V. J. W.

Purification of antigonadotropic sera by enzymic digestion. H. Schwerma and R. K. Meyer (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 114—115).—Sera from a horse injected with sheep pituitary and from a goat injected with pregnancy urine were digested with takadiastase at pH 4. After filtration and dialysis the antigonadotropic substance was pptd. from goat serum by 40% and from horse serum by 50% (NH₄)₂SO₄. These ppts. represented 3.1 and 12% respectively of the original solids.

XII.--REPRODUCTION.

Histological studies on canine female genital tract.—See A., 1943, III, 225.

Endrocrine function of ovarian tissue after growth or storage in vitro. M. A. Payne and R. K. Meyer (Proc. Soc. Exp. Biol. Med., 1942, 51, 188-189).—Rat ovary, grown in vitro at 37° or kept at 10°, caused œstrous vaginal smears when implanted into the anterior chamber of the eye in spayed rats. If placed in liquid air it became ineffective. V. J. W.

Ovarian hypofunction before climacteric. L. F. Hawkinson (West. J. Surg. Obstet. Gynec., 1939, 47, 584-588), --300 cases of ovarian hypofunction between the ages of 14 and 35 were treated with cestrogen and the results are analysed. 24% showed no improvement or relief of symptoms; menstrual disorders associated with the subjective symptoms did not respond to treatment. 54 of the patients showed some degree of anzemia; 29 of these patients showed an improvement in hæmoglobin concn. and red cell count under treatment. P. C. W.

Pre-implantation abortion in Elephantulus. C. J. van der Horst and J. Gillman (S. Afr. J. Med. Sci., 1942, 7, 120—126).—In Elephantulus the presence of the embryo at the implantation site provokes (a) œdema, (b) formation of an embryo chamber, (c) swelling of the uterine glands, and (d) development of the decidua compacta. There is an interval between arrival at the implantation site and implantation during which time abortion may occur. Serial sections of uteri in which such abortion has occurred show that the uterine reactions above are evoked, seriatim (though c and d are simultaneous) and independently of each other, by the presence of the embryo. Depending on the time of abortion there may be intense œdema, abnormally large embryo chamber, or pathological decidual reaction. P. C. W.

Spontaneous development of deciduomata in Elephantulus. C. J. van der Horst and J. Gillman (S. Afr. J. Med. Sci., 1942, 7, 127-133).—The spontaneous development of deciduomata in Elephantulus is described. Old or young corpora lutea are invariably present in the ovary associated with the tumour; the exciting stimulus is provided by an embryo which dies soon after. The uterine development proceeds as in normal pregnancy and is limited by the degree of intimacy attained by the uterus and embryo before the latter dies; if the chamber epithelium is not eroded then development proceeds to the stage before giant cell formation; if the epithelium is eroded then development proceeds to a stage resembling moderately advanced pregnancy. The corpus luteum degeneration precedes that of the deciduoma. P. C. W.

Early gravid and premenstrual phenomena in uterus of Elephantulus, Macaca, and human female. C. J. van der Horst and J. Gillman (S. Afr. J. Med. Sci., 1942, 7, 134—143).—In Elephantulus the histological appearances of the uterus in the pre-menstrual and early gravid stages are dissimilar and are determined by the presence or absence of a fertilised ovum. Although the appearances in Macaca are similar the pre-menstrual development of the endometrium cannot be regarded as a necessary preliminary to the ealready implanted. In women premenstrual differentiation is dependent on whether the ovum is fertilised or not. Premenstrual and early gravid differentiation are essentially dissimilar processes. P. C. W.

Effect of Lactobacillus casei ϵ eluate fraction on reproduction in fowl. W. W. Cravens, E. E. Sebesta, J. G. Halpin, and E. B. Hart (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 106—108).—Fowls on a diet deficient in the factor contained in norite eluate fraction of liver extract which is essential to this organism are able to lay fertile eggs but such eggs do not develop (cf. Hutchings, A., 1942, III, 61). V. J. W.

Tubal sterilisation by Madlener method. A. L. Dippel (Surg. Gynec. Obstet., 1940, 70, 94—100).—Causes of failure are described in 5 of 101 patients. P. C. W.

Rentgenological evidence of fætal death. H. Thoms (Surg. Gynec. Obstet., 1940, 71, 169—171).—A case of a living fætus showing overlapping of the skull bones and of a dead one without such overlapping are reported. P. C. W.

Interactions of vitamins and hormones (sensitising effect of prolan on the female sex apparatus). M. L. Rochlina and A. A. Bodrova (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **33**, 172—175).—Injection of carotene into immature mice increases the gonadotropic action of prolan. β -Ionone has no such effect. The effect of carotene is reduced by implantation of pituitary glands. R. L. E.

Selective filtration of vitamin-C by placenta. E. McDevitt, M. A. Dove, R. F. Dove, and I. S. Wright (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 289—290).—Fœtal was higher than maternal blood-vitamin-C in all of 7 subjects, and fœtal concn. was usually adequate in spite of low maternal vals. If, however, these were excessively low (*e.g.*, 0.06 mg.-%) there might be latent scurvy in the fœtus (0.33 mg.-%).

Normal development and experimental treatment of opossum mammary gland primordium. D. W. Plagge (Proc. Soc. Exp. Biol. Med., 1942, 51, 219-220).—Mammary rudiments of 18-46-day-old opossums showed stimulation of growth on inunction of œstradiol or testosterone. Pregnant mare serum had no effect. V. J. W.

Rôle of inositol and p-aminobenzoic acid in normal lactation. D. R. Climenko and E. W. McChesney (Proc. Soc. Exp. Biol. Med.,

*

1942, **51**, 157—159).—Both these substances are necessary supplements to a vitamin-*B*-deficient diet in order that normal lactation may be maintained in rats. V. J. W.

Lactogenic hormone prolongs the time during which deciduomata may be induced in lactating rats. R. Lyon (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 156-157).—Out of 15 lactating rats, subjected to uterine stimulation on the 24th day *post partum* and thereafter receiving 100 i.u. of Schering lactogenic hormone daily for 4 days, 13 developed deciduomata and showed large corpora lutea.

V. J. W.

Distribution of sodium pregnanediol glycuronide between *n*-butanol and urine of pregnant women: its practical application. R. B. Woolf, E. Viergiver, and W. M. Allen (*J. Biol. Chem.*, 1942, 146, 323—330).—The glycuronide is 13 times as sol. in butanol as in neutral urine and 12 times as sol. if the urine is made strongly alkaline with NaOH. The total amount present in a sample may be calc. from the amount obtained by a single extraction with approx. 1/3 vol. of butanol and is identical with the val. obtained by complete extraction. H. G. R.

Water exchange in relation to toxemias of pregnancy. F. L. McPhail (West. J. Surg. Obstet. Gynec., 1939, 47, 306-317).— Discussion and classification with illustrative cases stressing the importance of high fluid intake to prevent the retention of urinary solids in toxemia. P. C. W.

Tetany in pre-eclamptic toxæmia [use of calcium, vitamin-D, parathormone]. J. C. Brougher (West. J. Surg. Obstet. Gynec., 1939, 47, 331-334).-65 cases of pre-eclamptic toxæmia among 600 pregnancies were studied. Symptoms of maternal tetany were relieved by the administration of Ca and vitamin-D. Administration of parathyroid extract reduced the ædema and blood pressure, though the latter did not fall to normal levels until after delivery. P. C. W.

Induction of labour [with pituitrin] in patients with toxemia. A. W. Holman and A. Mathieu (West. J. Surg. Obstet. Gynec., 1939, 47, 182-192).—Among 970 patients in whom labour was induced with pituitrin there were 77 with toxæmia and 21 with nephritis. Induction was successful in 97% of these 98 cases which responded equally as well as the normal cases. P. C. W.

Placenta previa and abruptio placentæ. A. F. Maxwell (West. J. Surg. Obstet. Gynec., 1939, 47, 199—209).—Findings and results in 47 cases of placenta previa and 67 cases of premature separation of the placenta among 11,080 deliveries are compared with previous series. P. C. W.

Immediate postpartum hæmorrhage. J. W. Sherrick (West. J. Surg. Obstet. Gynec., 1939, 47, 210-222).—Analysis of published statistics. P. C. W.

Late postpartum hæmorrhage. N. H. Williams (West. J. Surg. Obstet. Gynec., 1939, 47, 223—239).—Classification and discussion with 5 illustrative cases. P. C. W.

Hæmorrhage in early pregnancy. C. W. Page (West. J. Surg. Obstet. Gynec., 1939, 47, 193-198).-Classification and discussion. P. C. W.

Effect of hexcestrol and a-methylstilbene on insulin content of rabbit pancreas. M. Griffiths (*Nature*, 1943, **151**, 82).—Hexcestrol injected in an average total dose of 40 mg. over 4—10 weeks into 5 rabbits increased the insulin content of the pancreas (5.2 units per g. to 8.9 units per g.) and decreased testicular wt. The non-cestrogenic substance a-methylstilbene similarly given in a total dose of 320 mg. increased the pancreatic insulin to 24.5 units per g. and had no effect on the testes. P. C. W.

Metabolism of cestrone in men and non-pregnant women. G. Pincus and W. H. Pearlman (*Endocrinol.*, 1942, **31**, 507—514).— Up to 4 injections of 2 mg. of cestrone were given to patients of either sex and the urine was fractionated for cestrone, cestradiol, and cestrol. Conversion was mainly into cestriol, but less than 2% was recovered altogether. There were no sex differences. V. J. W.

Excretion of cestrogen in bile. A. Cantarow, A. E. Rakoff, K. E. Paschkis, L. P. Hansen, and A. A. Walking (*Endocrinol.*, 1942, **31**, 515–519).—After injection of diethylstilbæstrol in dogs, only about half as much æstrogen is found in the bile as was found (A., 1942, III, 811) in similar experiments with natural æstrogens. V. J. W.

Effect of diethylstilbæstrol on mammary gland development in dairy animals. A. A. Lewis and C. W. Turner (*Endocrinol.*, 1942, 31, 520—528).—Treatment with diethylstilbæstrol or its dipropionate caused normal lobule-alveolar development in mammary glands of 5 virgin goats, and proliferation of gland cells as solid masses in 3. In a lactating multiparous goat there was little change and no effects were produced in a male. Lobule-alveolar stimulation was also caused in an aged and sterile cow. V. J. W.

Response of metrial gland to treatment with various steroids. G. Masson and H. Selye (*Endocrinol.*, 1942, **31**, 548-552).—Testosterone, deoxycorticosterone, and pregnenolone act like progesterone (A., 1942, III, 751) in preventing involution of the metrial gland.

V. J. W.

Cyclic changes in blood-calcium, -phosphorus, and -fat in relation to egg-laying and cestrogen production. O. Riddle (*Endocrinol.*, 1942, **31**, 498-506) —Mainly a review. Vals. for serum-fat of the pigeon during the cycle are added to those previously published for Ca, lipin-P, and oviduct wt., and are comparable with vals. for Ca, both showing a marked increase at ovulation. Oviduct wt. is increased by large doses of androgens or small doses (10 µg.) of estrogens, but large doses (3 mg.) of estradiol benzoate cause only half as much growth as occurs at a normal ovulatory cycle.

V. J. W.

I. Grayman, N. Influence of sex on carbohydrate metabolism. I. Grayman, N. Nelson, and I. A. Mirsky (*Endocrinol.*, 1942, **31**, 553-557).—After subcutaneous injection of 2 g. per kg. of glucose, female and castrated male rats show a slower increase, and later a greater decrease, in liver-glycogen and blood-sugar than do normal males. These results are not modified by testosterone administration. V. J. W.

Middle-piece beads in Cavia spermatozoon. J. B. Gatenby and L. Collery (*Nature*, 1943, **151**, 253-254).—There are two beads on spermatozoa from the epididymis. The upper, argentophile, bead does not arise by budding from the Golgi body; the lower bead appears after the spermatozoa have entered the epididymis.

E. R. S.

Semen and seminal stains. O. J. Pollak (Arch. Path., 1943, 35, 140-191).—A review of methods used in medicolegal investigations. C. J. C. B.

Sperm and Sertoli cells of rat in tissue culture.—See A., 1943, III, 224

Histochemical studies of interstitial cells of the testis.-See A., 1943, **HII**, 224

Comparative effects of testosterone propionate administered intraperitoneally and subcutaneously. H. S. Rubinstein (Proc. Soc. Exp. Biol. Med., 1942, 51, 230-232).—Daily injections of 50 µg. were given to rats from the 22nd to 32nd day. Intraperitoneally these caused 11% less body growth, 274% increase in vesicular growth, and 42% decrease in testis growth as compared with controls. Sub-cutaneous injections caused 185% increase in vesicular growth and 53% decrease in testis growth, and no effect on body growth. J. W

Testosterone propionate in treatment of gynecological disorders. J. P. Greenhill and S. C. Freed (*West. J. Surg. Obstet. Gynec.*, 1939, **47**, 301-305).-21 patients with menorrhagia or dysmenorrhæ were injected with testosterone propionate (25-50 mg.) every other day during the first or last fortnight of, or throughout, the menstrual cycle. Improvement is claimed in some of the cases, generally when testosterone were the whele sure the cases. generally when testosterone was given over the whole cycle. P.C

Effect of testosterone propionate in treatment of arteriosclerosis obliterans. H. Zurrow, G. Saland, C. Klein, and S. Goldman (J. Lab. clin. Med., 1942, 28 269-271).—No improvement was noted in 8 cases receiving biweekly intramuscular injections of 25 mg. of testosterone propionate compared with 15 controls. C. J. C. B.

XIII.—DIGESTIVE SYSTEM.

Restoration of functional capacity of stomach deprived of its main arterial blood supply. B. P. Babkin, J. C. Armour, and D. R. Webster (*Canad. Med. Assoc. J.*, 1943, **48**, 1-10).—Tying all the gastric arteries and veins in the dog produces gangrene of the stomach and death. In dogs with œsophagotomy and a gastric fistula ligation of most of the gastric arteries has little effect on the secretory function of the stomach. After ligation of the main gastric arteries many new anastomoses are formed. Peptic ulcers or mucosal erosions did not develop. C. J. C. B.

Gastric peristalsis. S. Gordon and A. C. Singleton. (Surgery, 1939, 6, 697-702).—The peristaltic waves in the stomach of dogs were examined during a Ba meal, Pb beads having been previously sewn into the gastric musculature. 2 types of peristalsis are recognised; one, involving all the layers of the stomach wall, is wide and probably purely propulsive; the other involves only the mucosa and muscularis mucosa and serves both mixing and pro-pulsing functions P. C. W.

Effect of ulcer on acidity and neutralising ability in duodenal bulb. J. E. Berk, M. E. Rehfuss, and J. E. Thomas (Arch. intern. Med., 1942, 70, 959-974).—The contents of the duodenal bulb are more acid (average pH 3.9) in patients with duodenal ulcer than in normal subjects after an Ewald test meal, and free acid is more frequently encountered in the former. The acidity of gastric contents is less important than the neutralising capacity of the duodenal bulb in determining the pH of bulb contents. C. A.K

Radium and gastric acidity. J. A. Jenkins and M. McGeorge (Arch. intern. Med., 1942, 70, 714-721).-Ra, applied to the stomach through a tube, reduced gastric acidity in 13 of 14 patients with duodenal ulcer, and produced clinical improvement in most cases. C. A. K.

Structure of basal granular cell (argentophin) in human (Bantu) alimentary tract with special reference to anti-anzemic factor. J. Gillman (S. Afr. J. Med. Sci., 1942, 7, 144-159). Counterstaining with Mallory's azan stain following Masson's Ag impregnation selectively displays the sp. granules of the basal granular cells and also differentiates Paneth and goblet cells of the small intestine as well as various cells of the gastric and duodenal glands. In the Bantu alimentary tract basal granular cells are absent from the stomach most abundant in the duodenum, and progressively diminish through the small and large intestine. In these cells the Golgi apparatus is supranuclear despite the accumulation of the granules at the opposite pole of the cell; the position of the Golgi body suggests that the cells are of entodermal origin. The anti-anæmic factor is either not secreted in the Bantu stomach or is not secreted P. C. W. by the basal granular cells.

Gastroscopic observations in gastric distress following stomach operations. H. J. Moersch and W. Walters (Surg. Gynec. Obstet., 1940, 71, 129-134).- A review of 100 cases, in which there were 56 with post-operative gastritis, 5 of carcinoma of the stomach, 6 with gastrojejunal ulcer, and 30 without visible disease. P. C. W.

Surgical treatment of chronic gastric ulcer. W. Walters (Surg. Gynec. Obstet., 1940, 70, 75-79).-Analysis of 272 cases.

P. C. W.

Absorption of radioactive sodium from pouches of body and antrum of dog stomach. O. Cope, W. E. Cohn, and A. G. Brenizer, jun. (*J. clin. Invest.*, 1943, 22, 103—110).—Radioactive Na is absorbed in small quantities from the body. 2—3 times as much is absorbed in the resting compared with the secreting state. The gastric antrum absorbs 100 times as much per unit of surface area as the acid-secreting body, whether fasting or secreting. Variations in the osmotic pressure of the Na solution and in serum-electrolyte concns. had no effect on the rate of Na absorption. С. Ј. С. В.

Absorption of heavy water from pouches of body and antrum of dog stomach. O. Cope, N. Blatt, and M. R. Ball (J. clin. Invest., 1943, 22, 111–115).—There was no difference in the rate of absorption between body and antral pouches, whether the body pouch was J. C. B. secreting or resting.

Preparation and partial analysis of pancreatic protein material of unusual growth-promoting properties. L. A. Kazal, R. J. Westfall, L. S. Ciereszko, E. A. Risley, and L. E. Arnow (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 268-269).—Vals. are tabulated for ash, lipin, N, P, tryptophan, and tyrosine of 4 fractions into which the protein was separated by different methods of trituration. V. J. W.

H.L Relation of pancreatic secretion to fatty changes in liver. Popper and H. Necheles (Proc. Soc. Exp. Biol. Med., 1942, 51, 63-65).—In 2 dogs in which all the pancreatic ducts were tied, extensive fatty changes developed in the liver in 12 months. In 2 other dogs in which only the main duct was tied, no such changes were observed after $7\frac{1}{2}$ and $8\frac{1}{2}$ months. V. J. W

Acute pancreatitis. E. E. Larson (West. J. Surg. Obstet. Gynec., 1939, 47, 371-382).—A review of 75 cases stressing the diagnostic importance of raised serum- and urinary diastase. P. C. W

Choledochojejunostomy. W. H. Bachrach and S. J. Fogelson (Surgery, 1939, 6, 882–892).—Removal of $\frac{7}{8}$ of the stomach and all the duodenum in 13 dogs with transplantation of the biliary duct and pancreatic ducts allowed 7 of the animals to survive for 2-3 years. In no case did pernicious anæmia develop. Modifications of the standard operative procedure are described which decrease morstandard operative procedure are described indepartic and gall-tality, bile duct obstruction, and incidence of hepatic and gall-P. C. W. bladder infection. P. C.

Idiopathic segmental infarction of greater omentum. B. Pines and J. Rabinovitch (Surg. Gynec. Obstet., 1940, 70, 80-85).-6 cases are described with recovery following resection of the infarcted P. C. W segment.

Aseptic end-to-end anastomosis of intestine. K. H. Martzloff, P. H. Moore, and J. Gardner (West. J. Surg. Obstet. Gynec., 1939, 47, 611-625).—Report of 197 successful anastomoses in dogs. P. C. W.

Influence of hot and cold application on gastric and intestinal motor activity. J. D. Bisgard and D. Nye (Surg. Gynec. Obstet., 1940, 71, 172-180).—Gastro-intestinal motor activity in man was inhibited by application of heat to the abdominal wall and oral administration of iced water; it was stimulated by applying ice packs to the abdominal wall and by the taking of hot water by mouth. Both free and total acids are increased by external application of ice packs, and inhibited by the ingestion of iced water. P. C. W.

Effect of intravenous solutions and of insulin on intestinal peri-W. P. Kleitsch and C. B. Puestow (Surgery, 1939, 6, 679stalsis. 696).—The effect of intravenous administration of various solutions was studied in dogs with isolated lengths of small intestine trans-planted into the abdominal wall. Physiological saline given by continuous drip increased the rate and strength of peristalsis; 10% glucose solutions had little effect. 10 units of insulin injected subcutaneously decreased the rate and strength of peristalsis and the

tone of the intestine; when injected intravenously in glucose solution insulin had similar effects though the decrease in peristaltic rate was transitory. P. C. W.

Nutritional disturbances in regional enteritis. D. Casten (Surgery, 1939, 6, 708—716).—A case is reported involving all but 6 ft. of the small intestine. Marked depletion of plasma-protein and avitaminosis were present. P. C. W.

Absorption of carbohydrates in man. W. Goldfarb and M. Golden (Proc. Soc. Exp. Biol. Med., 1942, 51, 134—136).—Glucose in 5—30% solution was given by mouth to fasting subjects. The more dil. solutions caused a more rapid rise in blood-sugar, and also produced a quicker arousal from insulin coma. V. J. W.

Studies on ileocæcal junction. J. A. Bargen, H. R. Wesson, and R. J. Jackman (Surg. Gynec. Obstet., 1940, 70, 33-38).—An embryological review and anatomical study of the structure in man with clinical observations on two women. The circular and longitudinal muscles of the ileum and colon enter the labia of the junction and form a sphincter. The clinical significance of a lymphatic block at the lip of the labia is discussed; the labia have an abundant blood supply with extensive anastomoses. Mechanical stimulation of the junction causes contraction and relaxation of the sphincter. The term ileocæcus is suggested. P. C. W.

Mucocoele of appendix. J. C. Doyle (West. J. Surg. Obstet. Gynec., 1939, 47, 515-521).—Report of 12 cases. P. C. W.

Appendicitis in patients over 60 years of age. L. K. Stalker (Surg. Gynec. Obstet., 1940, 70, 54-59).—A series of 82 cases is described. Atypical symptoms were present in more than half the cases; there were 51 cases of perforation. P. C. W.

Polyploid disease of colon. [Colon dimensions.] R. F. Hedin (Surgery, 1939, 6, 909—914).—Measurements were made of the colon post-mortem in 25 cases. Thickness, as determined by the wt. of similar sized pieces of the colon and by the transmission of light through the walls, increased along its length so that the left colon was thicker than the right. The length of the various segments was also measured; the average distance from anus to splenic flexure was 60 cm. A colonoscope capable of penetrating to this distance is described. P. C. W.

Activity of isolated segments of colon of dog. R. E. Reagan and C. B. Puestow (Surgery, 1939, 6, 663-678).—An 8-10-cm. length of colon was transplanted to the external abdominal wall in dogs which were allowed to recover. 3 normal types of movement were observed : small contractions of the circular musculature producing mixing of the contents of the colon without propulsion; peristaltic contractions of the circular muscle; and combined contractions of the circular and longitudinal muscles. These types of movement occurred every 20-40 sec., every 15-20 min., and every 6-12 hr. respectively. Pitressin (10-20 units) produced increased tonus but had no effect on movement; morphine increased tonus, frequency and strength of contractions. Attropine had no effect on motility. Prostigmine (0.5 mg.) caused marked increase in tonus or a state of tonic contraction. Physiological saline had little effect while 10-20% saline solutions produced a short-lived increase in motility. P. C. W.

Inpermeability of viable obstructed bowel of dogs to Clostridium botulinum torin. C. J. Bellis, W. P. Larsen, and B. Stevens (Surgery, 1939, 6, 901-908).—Intravenous or intraperitoneal injection of Cl. botulinum toxin is lethal for the dog, toxin being found in the blood and peritoneal fluid in both cases. Death could not be produced nor toxin demonstrated in the blood following administration of the toxin by stomach tube or injection into the jejunum, either exteriorised by the Biebl method with its continuity conserved or exteriorised and isolated. Following injection into the exteriorised isolated jejunum toxin could not be demonstrated in the contents of the isolated loop 12-24 hr. after the injection. P. C. W.

Occurrence of zinc and other metals in intestines of Strongylus spp. W. P. Rogers (J. Helminth., 1940, 18, 103-116).—Zn was the most plentiful metal in the intestines of S. edentatus and S. vulgaris, with a max. of 0.58 mg. per worm. Cu, Hg, and Fe were also present. Zn was probably present as ZnS. In the intestinal mucosa of the horse Zn had a max. of 9.0 mg. per 100 g. To obtain the amount of Zn found, S. endentatus must ingest 3.9 to 21.2 g. of horse mucosa (= 53-282 times its own wt.) and S. vulgatus 0.7-3.4 g. (= 62-284 times its own wt.). The accumulation of Zn and S in the parasites indicates that Zn may act as a S acceptor in S metabolism. F. S.

Digestion in parasitic nematodes. I. Digestion of carbohydrates. W. P. Rogers (J. Helminth., 1940, 18, 143-154).—Amylolytic enzymes were extracted from the intestines of Strongylus edentatus and Ascaris lumbricoides by grinding with water or dil. glycerol. Of KI, NaCl. Na₂HPO₄, Na₂SO₄, and NaNO₃, KI assisted the amyloclastic action of S. edentatus amylase to the greatest extent and NaHCO₃ was most effective with A. lumbricoides amylase. NaCl activated neither to any extent and Na₂HPO₄ was fairly effective with both. Amyloclastic and saccharogenic activity was greatest at pH 9.4 (A. lumbricoides) and pH 8.0 (S. edentatus). With the latter glucose was produced. Sucrose action was absent or slight. The situations of the parasites in their hosts are such that the reaction of host juices ingested gives optimum conditions for the action of the carbohydrate-splitting enzymes of the parasites. F. S.

Significance of Salmonella in ulcerative cæcitis of rats. A. L. Bloomfield and W. Lew (Proc. Soc. Exp. Biol. Med., 1942, 51, 179—182).—S. enteritidis could always be isolated from faces and lesions of rats with cæcitis, but feeding rats with this organism caused acute enteritis and not cæcitis. V. J. W.

XIV.-LIVER AND BILE.

Capacity of rat's liver to inactivate deoxycorticosterone acetate.— See A., 1943, III, 169.

Evaluation of anti-pernicious anæmia effective liver extracts.— See A., 1943, III, 159.

Induction of cirrhosis of liver and of hepatomas in mice with carbon tetrachloride. Effect of supplementary methionine or choline plus cystine on incidence of p-dimethylaminoazobenzene-induced hepatic tumours in rat. See A., 1943, III, 182.

Protective action of sulphanilamide against liver cirrhosis from chronic poisoning with carbon tetrachloride. J. C. Forbes, B. E. Leach, and G. Z. Williams (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 47–48).—Daily oral administration of 75 mg. per kg., or of 300 mg. per kg. every other day, reduced markedly the incidence of hepatic cirrhosis and mortality in rats. No other substance so tested was found effective, and the action was not interfered with by *p*-aminobenzoic acid. V. J. W.

Sulphhydryl groups in normal and tumorous hepatic tissue extracts before and after addition of salts.—See A., 1943, III, 183.

Choledochal denervation. H. Reich (Surg. Gynec. Obstet., 1940, **70**, 39–43).—Denervation of the common bile duct in a patient caused a fall of pressure within the duct. The pressure was raised only temporarily by injection of morphine (45 min. instead of the normal 2—3 hr.) and this rise is attributed to the rise in tone and increased frequency of contractions in the duodenal musculature which persists for a similar period following morphine injection. There is a psychic rise in pressure at the sight of food. The procedure is recommended for the relief of biliary dyskinesia. P. C. W.

XV.---KIDNEY AND URINE.

Effect of pregnancy on excretion of intravenous diodrast [by kidney] in rabbits. E. G. Crabtree, D. Abramson, and S. H. Robins (Surg. Gynec. Obstet., 1940, 70, 60-67).—Radiograms were taken at 1-min. intervals following the injection of diodrast into non-pregnant and 21-22 days pregnant rabbits under normal conditions and when the abdominal viscera were constricted at the level of the pelvis by means of a tightly bound band with attached blocks of wood shaped to fit over the pelvic bones. The times for the best plate to appear after the injection were $3\cdot4$ min. and $2\cdot6$ min. in the non-pregnant rabbits with and without pressure and $11\cdot0$ and $16\cdot0$ min. in the pregnant rabbits. The ureters were filled further down towards the bladder in the pregnant rabbits and dilatation of the ureters produced by pressure was more marked in them. P. C. W.

Lipæmia in rats with nephrotoxic nephritis. L. E. Farr, J. E. Smadel, and R. F. Holden, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 178—179).—In 12 rats with nephritis induced by nephrotoxic serum, blood-lipin-C rose from a normal val. of 559 to 916—8660 mg.-%. Cholesterol was raised in the same proportions, but there was no correlation with blood-urea. V. J. W.

Lipoid nephrosis complicated by pneumococcus peritonitis. J. M. Dobbins and H. Rappaport (Arch. Pediat., 1942, 59, 646-652).—A case of lipoid nephrosis complicated by pneumococcus peritonitis is reported successfully treated by operation, high-protein, highcarbohydrate, and low-fat diet, blood transfusion, and thyroid extract. The condition was extrarenal and apparently metabolic in origin. C. J. C. B.

Urological aspects of hypertension.--See A., 1943, III, 162.

Determination of thiamin in urine by thiochrome method. Blank determination. H. L. Mason and R. D. Williams (J. Biol. Chem., 1942, 146, 589-594; cf. A., 1941, III, 892).—Non-thiamin material which behaves like thiamin is determined (blank experiment) by heating 5-20 ml. of urine at 100° and pH 5 for 15 min. with 25 mg. of Na₃SO₃. Thiamin is thus destroyed and the non-thiamin material is determined by the procedure of Hennessy (A., 1941, III, 596), which is also used for determining thiamin + thiaminlike material. W. McC.

Determination of creatinine and creatine in urine with photoelectric colorimeter.—See A., 1943, III, 220.

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

331

Technique for appraising ability to resist gravitational shock in rabbits. A. Locke, R. B. Locke, A. P. McIlroy, and L. Chung (*Proc.* Soc. Exp. Biol. Med., 1942, 51, 184—187).—Rabbits are cooled in water to 96° F. and recovery towards normal temp. in 30 min. in vertical and horizontal positions is compared. This varied from 0.9° in susceptible to 4° in hardened animals. Susceptibility was increased by thyroid feeding and diminished by ascorbic acid.

V. J. W.

Growth of Platypoecilus maculatus free from micro-organisms. J. A. Baker and M. S. Ferguson (Proc. Soc. Exp. Biol. Med., 1942, 51, 116—119).—Young fish, removed aseptically from pregnant fémales, were kept alive for as long as 4 months and made some growth. They remained free from micro-organisms throughout. V I W

Electron microscope study of some structural colours of insects. T. F. Anderson and A. G. Richards, jun. (*J. Appl. Physics*, 1942, 13, 748—758).—Two types of iridescent structures are described: (i) a line grating type, (ii) vanes with regularly-spaced linear thickenings 0.2μ . apart, reinforcing reflexion of blue light from the wing-scales of *Morpho cypris*. The scales are not composed of chitin, and are not chemically affected by electron bombardment. L. J. J.

Salamander alkaloids.-See A., 1943, II, 144.

XVII.—TUMOURS.

Epithelial tumours of bladder in dogs induced by pure β -naphthylamine. G. M. Bonser (*J. Path. Bact.*, 1943, 54, 1—5).—By massive oral administration of pure β -naphthylamine over a period of 5 years, a graded series of changes was observed in the bladder epithelium of the dog ranging from simple hyperplasia to anaplastic carcinoma with infiltration of smooth muscle and permeation of lymphatic vessels. Metastases did not occur. The renal pelves, ureters, and urethra were free from tumours. (9 photomicrographs.)

C. J.C.B. Mechanism of tumour production by chemical agents. F. Bergmann (*Cancer Res.*, 1942, 2, 660-663).—The following hypothetical principles for tumour production by chemical agents are suggested. (1) The form and size of a carcinogenic hydrocarbon and of its related heterocyclic compounds determine activity. (2) In the living cell, the carcinogens are absorbed by an acceptor of definite area. This fixes the upper limit of size for active compounds. The lower limit is fixed by decreasing adsorbability. (3) All carcinogens are conceived as parts of an "ideal carcinogenic structure." (4) A carcinogen can be inactivated by preventing its proper adsorption. F. L. W.

Occurrence of benign and malignant mammary lesions in rats treated with crystalline cestrogen. M. J. Eisen (*Cancer Res.*, 1942, 2, 632-644).—Œstradiol dipropionate implanted in rats of 3—5 weeks of age induced chronic diffuse changes in the genitomammary system of both sexes. The main effect was a benign fibrocystic mammary disorder. Mammary adenocarcinoma occurred in 2 rats. One squamous-cell cancer of the cervix was found. F. L. W.

Tumour inhibitor studies. I. Effect of pure chemical compounds on tumour takes. B. E. Kline, W. L. Wasley, and H. P. Rusch (*Cancer Res.*, 1942, 2, 645—648).—The inhibitory action of more than 40 compounds was tested on suspensions of tumour cells (Flexner-Jobling rat carcinoma). The degree of inhibition was estimated by subsequent inoculation of the treated cells into rats. β -Indolylpropionic and -butyric acid, chloral hydrate, chloretone, and Na trichloroacetate prevented the tumour cells from taking. F. L. W.

Heterologous transplantation of human fibrosarcoma. H. S. N. Greene (*Cancer Res.*, 1942, 2, 649-654).—A human fibrosarcoma was transplanted to the anterior chamber of the eyes of guinea-pigs and maintained through 14 generations over 2 years. The tumour was also transferred to the guinea-pig's testicle. F. L. W.

Human neoplasms in tissue culture. D. R. Coman (*Cancer Res.*, 1942, 2, 618—625).—Human neoplasms including carcinomas, sarcomas, and benign growths were cultured by the roller-tube method and their growth patterns recorded. Benign glandular epithelial tumours formed acini; malignant epithelial tumours never formed acini. A squamous-cell carcinoma produced structures resembling epithelial pearls. Lymphosarcomas produced lymphoblasts in two cases and macrophages in one. An angiosarcoma formed endothelial tubes resembling vessels and producing lateral branches. The val. of the roller-tube method in oncology is emphasised. F. L. W.

Mitochondria in lymphocytes of normal and leukæmic mice. J. S. Potter and E. N. Ward (*Cancer Res.*, 1942, 2, 655—659).— Differences were demonstrated in the average no. of mitochondria among populations of lymphocytes from the peripheral blood of normal mice and mice with spontaneous or transplantable leukæmia. It is concluded that these differences indicate different proportions of cell types, and that particular stages of differentiation of the normal and leukæmic lymphocyte have the same mitochondrial characteristics. The pathological cell has not an aberrant mitochondrial content. F. L. W.

Agent of fowl leucosis in tissue cultures. L. Doljanski and M. Pikovski (*Cancer Res.*, 1942, 2, 626-631).—Bone marrow from normal fowls explanted in leukotic plasma and cultivated *in vitro* up to 3 weeks produced leukosis on inoculation into chickens. Myocardium similarly treated for 4 weeks is also infective. In cultures of normal fibroblasts infected with the agent of fowl leukosis and planted in normal plasma the agent remains active up to 38 days. In the absence of living cells the agent loses activity in 24 hr. By serial cultivation of infected fibroblasts the agent was maintained for 178 days. Both cells and cell-free fluid were infective. It is suggested that a real increase of leukotic agent occurs *in vitro*. F. L. W.

Electrophoretic analysis of extracts of rabbit papillomas. A. R. Taylor, D. G. Sharp, D. Beard, and J. W. Beard (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 137-138; cf. A., 1942, III, 903).—Results closely resemble those obtained from rabbit serum, but the proteins of the extract differ in that some coagulation takes place when it is kept at 56° for 30 min. V. J. W.

Neutralisation of purified papilloma virus. II. Reversibility of serum effect by simple dilution. D. Beard, A. R. Taylor, D. G. Sharp, and J. W. Beard (*J. infect. Dis.*, 1941, **69**, 173-192).— Mixtures of antiserum and virus in proper concns. showed ppts. Virus and antibody in both free and neutralised states were present in both sol. and insol. phases. The serum effect was reversible on dilution of either the supernatant fluid or the sediment. F. S.

Attempts to transmit human infectious (benign) epitheliomatoses to rabbits. F. Callomon (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 183).— Inoculation of rabbits with ground-up warts and laryngeal papillomata gave negative results. V. I. W.

Transformation of virus of rabbit fibroma (Shope) into that of infectious myxomatosis (Sanarelli). R. B. Houlihan (Proc. Soc. Exp. Biol. Med., 1942, 51, 259-260).—The transformation was brought about in 1 out of 21 rabbits in which it was attempted. V. J. W.

Cancerous neoplasm of plants. Autonomous bacteria-free crowngall tissue. P. R. White and A. C. Braun (*Cancer Res.*, 1942, 2, 597—617).—In sunflower plants inoculated with *Phytomonas tumefaciens* primary tumours arise at the site of inoculation. Secondary or metastatic tumours frequently appear at considerable distances from the primary growths. These were shown by cultural and serological methods to be bacteria-free. Tissue cultures from these tumours are produced by implantation of these tissues into uninfected plants of the same or related species. F. L. W.

Relation of cancer to pregnancy, delivery, and marital and social status. I. Cancer of breast and genital organs. S. Peller (Surg. Gynec. Obstet., 1940, 70, 1—8).—An analysis of the 94,400 deaths from cancer in England and Wales during 1930—32. The decline in the birth rate has not affected the total mortality from cancer of the breast and genital organs. The death rate from mammary cancer rises more rapidly with increasing age amog spinsters than among married women or widows; the mortality rate from cancer of the uterus is lower among spinsters. The incidence of ovarian cancer decreases with age. When all genital and breast cancers are taken together there is little difference between the three groups. The death rate from genital cancer is higher in lower economic grades. The differences are not entirely explicable on the basis of the lower fertility rate among the richer classes. The husband's death increases the rate of mortality from breast and uterine cancer. P. C. W.

Cancer and its relation to pregnancy, delivery, and marital and social status. II. Cancer of organs other than those of reproduction and total mortality. S. Peller (Surg. Gynec. Obstet., 1940, 71, 181–186).— Total mortality and site of tumour are both influenced by marital status. The cancer rate is higher in married women than in spinsters during the reproductive age, the rates gradually become equal at 64 years of age. Reproductive activity alters the relative frequency of cancer of the different organs though the total incidence is not affected. P. C. W.

Histologic analogy of bronchial adenoma to late prenatal and early postnatal structures. W. H. Harris, jun. (Arch. Path., 1943, 35, 85-92).—There is a similarity of infantile types of structures, especially the bronchial mucous glands and the peribronchial and peritracheal lymphadenoid tissue, to the histological findings in bronchial adenoma. (8 photomicrographs.) C. J. C. B.

Microscopic focus of oat-cell carcinoma in bronchiectatic lung. M. J. Stewart and P. R. Allison (*J. Path. Bact.*, 1943, 54, 105-107), A case report. (3 photomicrographs.) C. J. C. B.

Curability of carcinoma of stomach. 'L. Parsons and C. E. Welch (Surgery, 1939, 6, 327-338).—A study of 691 cases. The no. of cases recognised and operated on increases from year to year. The

% of 5-year cures remains const. at about 20% of all cases resected, or about 33% of those who survive the operation. P. C. W.

Carcinoma of stomach. R. H. Abrahamson and J. W. Hinton (Surg. Gynec. Obstet., 1940, 71, 135-141).—Review of 444 cases. P. C. W.

Ovarian tumours and uterine bleeding. I. Granulosa cell tumours. G. E. Seegar and H. W. Jones (Surgery, 1939, 6, 368-388).—Abnormal uterine bleeding in association with ovarian tumours was analysed in 376 cases. Highest occurrence of abnormal bleeding was associated with tumours derived from granulosa cells. 35 cases previously classified as papillary serous cystadenocarcinoma are now classified as papillary granulosa cell carcinoma on the basis of morphological and clinical data; 46% of these cases showed abnormal uterine bleeding. 62% of a group of solid granulosa cell tumours showed abnormal bleeding. All endometria examined from both groups showed that the abnormal bleeding was associated with uterine hyperplasia, presumably produced by the estrogen secretion of the tumour. P. C. W.

Cystadenoma of ovary incorporated between leaves of mesosigmoid. E. A. Gaston (*Surgery*, 1939, **6**, 389–397).—A case is described and compared with a similar case found in the literature. A pelvic cyst in infancy is probably responsible for the location of the cyst.

P. C. W. **Prognosis of malignant papillary cystic tumours of ovary.** L. B. Morton (West. J. Surg. Obstet. Gynec., 1939, 47, 393–397).—8 of 16 patients died within 5 years of the operation. P. C. W.

Cancer of ovary. J. V. Meigs (Surg. Gynec. Obstet., 1940, 70, 44-53).—Analysis of 154 cases. Curability was 15-5%. P. C. W.

Pathological considerations in mammary sarcoma. J. M. Miller and W. C. MacCarty (Surgery, 1939, 6, 746—761).—36 sarcomas and 1 mixed tumour are described. In 24 of 33 cases the fibrosarcomas originated from adenofibromas. P. C. W.

Neurogenic fibroma of transverse colon. F. Glenn (Surgery, 1939, 47, 703-707).—A case is reported. P. C. W.

Prognosis of malignant goitre in relation to pathological type. R. Ward (West. J. Surg. Obstet. Gynec., 1939, 47, 437-448).— Classification and analysis of 84 cases, showing papillary carcinoma to offer better prognosis than other malignant tumours of the thyroid. There was 46% survival in those with papillary carcinoma and 24% in those with malignant adenomas. P. C. W.

Total cystectomy for cancer. F. Hinman and D. Smith (Surgery, 1939, 6, 851-881).—A crit. review with analysis of 25 cases. (159 refs.) P. C. W.

Perirenal lipoma. J. H. Blue and C. R. Lafferty (Surgery, 1939, 6, 944-946).—A case report. P. C. W.

Is the maintained sedimentation rate specific for malignancy? J. J. Hertz and S. H. Rinzler (J. Lab. clin. Med., 1942, 28, 323-325). —Sedimentation tests done serially (methods of Koster and Feldman) on 33 patients with proved malignancies and 67 patients with pathologic conditions other than malignancy showed 54% positive results in the malignant cases and 72% negative results in the nonmalignant cases. C. J. C. B.

Cancer research in India. V. R. Khanolkar (Current Sci., 1942, 11, 325-328).

Isolation of androsterone sulphate. See A., 1943, II, 96.

Linking of "natural" and "unnatural" peptidases in animal and cancer cells.—See A., 1943, III, 350.

Carcinoma of parathyroid gland.-See A., 1943, III, 238.

Benign ovarian neoplasms.-See A., 1943, III, 242.

Granulosa cell tumour of ovary.—See A., 1943, III, 242.

Adenoma of interstitial cells of testis.-See A., 1943, III, 244.

Tumours of salivary glands.—See A., 1943, III, 244.

XVIII.-NUTRITION AND VITAMINS.

Nitrogen balance in human tryptophan deficiency. W. M. Cox, jun., A. J. Mueller, and D. Fickas (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 303-305).—In a patient fed entirely by a gastrostomy opening. N equilibrium could be maintained by a pancreatic digest of casein, but not by an acid hydrolysate. V. J. W.

Occurrences of brain hæmorrhages in choline-deficient rats. G. A. Jervis (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 193—195).— Offspring of rats which had received from the 8th day of pregnancy a diet deficient in choline and containing 0.5% of cystine developed paralytic or convulsive symptoms and were found to have cerebellar hæmorrhages. V. J. W.

Effect of ethanolamine and betaine on perosis in chicks. J. McGinnis, L. C. Norris, and G. F. Heuser (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 293-294).--Addition of 0-2% of betaine hydrochloride effectively prevented perosis in chicks on a choline-deficient diet. Further addition of 0.2% of ethanolamine caused a greater effect, but addition of ethanolamine alone gave variable results.

Effect of exercise on rats fed a diet deficient in potassium. R. H. Follis, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 71-72).—Excessive exercise in such rats caused no histological changes in the voluntary muscles, but in cardiac muscle caused the changes already described (A., 1942, III, 537). Violent twitchings of the limbs followed the cessation of exercise. V. J. W.

Ocular changes and deficiency manifestations in mature cows fed on ration deficient in vitamin-A.—See A., 1943, III, 166.

Increase of vitamin-*B* constituents in germinating seeds.—See A. 1943, III, 217.

Effect of vitamin- B_1 on secretion and motor activities of stomach.— See A., 1943, III, 176.

Necessity for quantitative equilibrium between nutrients of diet and vitamin- B_1 . L. Randoin and R. Jacquot (*Compt. rend.*, 1942, 214, 390—393).—Nicotinamide is not a dietary requirement of rats. Rats fed on a ration inadequate to produce normal growth show a further decrease in rate of growth when vitamin- B_1 is added to the diet. F. O. H.

Mechanism of bradycardia in rats with thiamin deficiency. D. McEachern and D. Brophy (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 75-76).—Rate of beat in the isolated auricle *in vitro* is no slower in thiamin-deficient rats than in controls. V. J. W.

Mechanism of vitamin- B_1 destruction by factor in raw smelt. H. F. Deutsch and G. L. Ott (*Proc. Soc. Exp. Biol. Med.*, 1942, 51. 119—122).—Thiamin in killed yeast, but not in living yeast, is destroyed when such yeast is in contact with raw smelt under moist conditions for 12 hr. The destructive factor is destroyed by air-drying at room temp., or by heating to 100°, and can be extracted by 5% alcohol. V. J. W.

Vitamin- B_1 content of blood during parturition.—See A., 1943, III, 161.

Riboflavin : significance of its photodynamic action and importance of its properties for the visual act.—See A., 1943, III, 167.

W. McC. Nicotinic acid in chick nutrition. G. M. Briggs, jun., R. C. Mills, C. A. Elvehjem, and E. B. Hart (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 59-61).—Growing chicks need about 1.8 mg. of nicotinic acid per 100 g. of diet for growth and prevention of "black-tongue." V. I. W.

Evaluation of nicotinic acid nutrition by studies of urinary excretion. G. A. Goldsmith (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 42-43).— Normal subjects who received by mouth 300 mg. of nicotinamide excreted about twice as much trigonelline as hospital patients, but there was little difference in this respect between vitamin-*B*deficient patients and others. V. J. W.

Nicotinic acid and thiamin hydrochloride as growth-promoting factors for *Brucella*.—See A., 1943, III, 210.

Distribution of nicotinic acid in feeds. E. B. Hale, G. K. Davis, and H. R. Baldwin (J. Biol. Chem., 1942, 146, 565–570; see below). —The nicotinic acid contents, determined chemically and microbiologically, of many cereals and other foods and feeding stuffs are recorded. For the most part, the results agree well with previously published vals. W. McC.

Chemical determination of nicotinic acid in plants. E. B. Hale, G. K. Davis, and H. R. Baldwin (*J. Biol. Chem.*, 1942, 146, 553— 563).—Nicotinic acid, extracted with water at 100° during 45 min. from 0.5—1.5 g. of material, is determined by a modification of Kodicek's method (A., 1940, III, 619). NaOH is used for hydrolysis of seeds and roots free from chlorophyll and HCl for that of material containing chlorophyll, interfering substances are removed by pptn. with alcohol, and the pH of the solution is adjusted to 6 before addition of p-aminoacetophenone and measurement of depth of colour. CNBr is used to remove colour not due to nicotinic acid. The results agree well with those obtained by the micro-biological method applied to material extracted with acid or alkali. Such extraction is necessary because the bacteria cannot completely utilise combined nicotinic acid. Material (e.g., forage) yielding extracts containing much pigment gives anomalous results possibly because the pigment interferes. W. McC.

Yeast microbiological methods for determination of vitamins. Pyridoxine. L. Atkin, A. S. Schultz, W. L. Williams, and C. N. Frey (*Ind. Eng. Chem.* [Anal.], 1943, 15, 141—144).—A microbiological method for determination of pyridoxine employs a yeast strain characterised by a sp. response to pyridoxine. The yeast is grown in test-tubes which are shaken at 30° for 10—18 hr. Yeast growth is estimated with a photo-electric colorimeter. Recovery experiments are described and the pyridoxine content of a series of representative foods and other substances is reported. J. D. R.

State of pantothenic acid in blood. L. D. Wright (*J. Biol. Chem.*, 1943, 147, 261–262).—The greater part of pantothenic acid in the blood exists in a "combined" state and is pptd. by protein precipitants; it is rendered available to *Lactobacillus casei* by heat-treatment, *e.g.*, that used for sterilisation purposes. F. O. H.

Pantothenic acid content of pollen. P. B. Pearson (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 291–292).—Pollen samples assayed by method of Pennington *et al.* (A., 1940, III, 915) averaged 30.3 µg. of pantothenic acid per g. dry wt. V. J. W.

Vitamin-C saturation test of Harris and Abbasy. W. R. G. Atkins (*Nature*, 1943, **151**, 21; cf. A., 1935, 417; 1938, 111, 132; 1942, 111, 912).—Urine was collected 5—6 hr. after dosing with 0.75 g. of ascorbic acid and diluted to 0.5—1 l. 1.0 ml. of reagent was equiv. to 0.1 mg. of vitamin-C. These changes reduce the time required for analysis and calculation. The vitamin suffers less destruction when taken after food, and it is not stored for long. E. R. S.

Vitamin-C saturation test: standardisation measurements at graded levels of intake. L. J. Harris (*Nature*, 1943, **151**, 21–22).— Groups of boys received a basal diet of known vitamin-C content and various graded supplements of -C for 3–4 months. 700 mg. per 10 stone daily was given as test dose and an excretion of 50 mg. per 10 stone in the 4th and 5th hr. after dosing taken as evidence of saturation. 75–45 mg. supplement gave 1st-day responses of decreasing magnitude, 25 mg. gave 2nd–3rd-day responses. Scurvy patients required 7–10 days' dosing for saturation. E. R. S.

Rose hips and evergreens as sources of vitamin-C. G. Hunter and J. Tuba (Canad. Med. Assoc. J., 1943, 48, 32).—The vitamin-C content of evergreen leaves is $\frac{1}{10}$ th of that of rose hip flesh, but yet 3—5 times more than that of orange juice. C. J. C. B.

Vitamin-C in rose-hip syrup.—See B., 1943, III, 62.

Evaluation of vitamin-*C.* W. Halden, R. M. Czmiel, and E. Schauenstein (*Naturwiss.*, 1942, **30**, 586).—Ultra-violet absorption offers a more reliable method for following the decline in activity of ascorbic acid in presence of stabilising agents than the usual titration with an indicator. The absorption vals. are closer to those obtained by biological assay and afford a sp. criterion of the transformation of ascorbic acid into the dehydro-form. J. H. B.

Photo-electric determination of ascorbic acid. H. F. W. Kirkpatrick (*J.S.C.I.*, 1943, **62**, 39–41).—A photo-electric method for the determination of ascorbic acid in coloured or turbid extracts is described. In this method excess of dichlorophenol-indophenol is added to the extract and the unreduced dye is removed with $CHCl_3$. The necessary photo-electric measurements are then made on the $CHCl_3$ solutions thus obtained.

Effect of dietary calcium, phosphorus, and vitamin-D. I. Effect of phytic acid on availability of iron. II. Effect of vitamin-D on body-iron and hemoglobin production. III. Relation of rickets to anæmia. I. Fuhr and H. Steenbock (J. Biol. Chem., 1943, 147, 59—64, 65—69, 71—75).—I. When P is supplied as phytic acid to a diet low in Fe (as FeCl₃) but containing an optimal amount of Ca for growth and calcification, less hæmoglobin is formed than when P is present as mixed K phosphates. Excess of Ca also reduces formation of hæmoglobin, whilst vitamin-D increases it in the presence of optimal amounts of Ca and P. A low Fe content of a basal milk diet produces 19% less hæmoglobin when present as Fe^{III} phytate than as Fe^{III} NH₄ sulphate. II. Although -D has no effect on body-wt. and does not affect

11. Although -D has no effect on body-wt. and does not affect storage of Cu, in the presence of optimal amounts of Ca and P it produces an increase in liver wt., promotes storage of Fe, and increases hæmoglobin formation.

III. Rickets due to low intake of Ca or P does not affect Fe storage or hæmoglobin formation. P. G. M.

Comparison of physiological effects of dihydrotachysterol and vitamin-D in rachitic and normal dog. H. E. Harrison and H. C. Harrison (Amer. J. Physiol., 1942, 137, 171–177).—Vitamin-D given to the rachitic dog causes a prompt increase in maximal reabsorption of $PO_4^{(\prime\prime)}$ by the renal tubules (T_m) associated with a rise in serum-Ca and $-PO_4^{(\prime\prime)}$. On giving dihydrotachysterol to the -D-depleted dog there is a progressive decrease in $PO_4^{(\prime\prime)}T_m$ and in serum- $PO_4^{(\prime\prime)}$; serum-Ca increases. In the normal dog, which has been given -D, dihydrotachysterol produces a marked rise of serum-Ca an increase in $PO_4^{(\prime\prime)}T_m$ and serum- $PO_4^{(\prime\prime)}$.

of dihydrotachysterol in the normal dog are similar to those of -D, but it cannot replace -D in the rachitic dog. M. W. G.

Absorption and retention by dogs of single massive doses of various forms of vitamin-D. A. F. Morgan and N. Shimotori (*J. Biol. Chem.*, 1943, 147, 189—200).—When single doses of 20,000 i.u. of vitamin-D per kg. of body wt. were given orally as delsterol (activated animal sterol), irradiated ergosterol, or tuna-liver oil to young dogs, -D was not excreted in the fæces after the 1st day, but remained in the blood for 100—150 days. Delsterol caused an immediate rise in blood-Ca which fell to normal within a week. After irradiated ergosterol, the blood-Ca lasted for two months, whilst tuna-liver oil caused only a mild transitory hypercalcæmia. The dogs were protected against rickets and showed optimum growth for 12—14 months. A single massive dose (200,000 per kg. body wt.) of delsterol produced immediate prostration but irradiated ergosterol had less effect. -D appeared in the fæces for 2—3 days and was found in the serum and most of the tissues, although this accounted for only 10% of -D. Delsterol increased the Ca excretion but irradiated ergosterol raised the serum-Ca. The val. of single massive doses of -D for antirachitic prophylaxis for infants is discussed.

Mechanism of vitamin-D action in dogs shown by radioactive phosphorus. N. Shimotori and A. F. Morgan (J. Biol. Chem., 1943, 147, 201-210).—Vitamin-D fed as irradiated ergosterol or delsterol (single oral dose of 200,000 per kg. body wt.) did not affect the rate of disappearance of labelled inorg. $PO_4^{\prime\prime\prime\prime}$ from the blood stream. The urinary excretion of total $PO_4^{\prime\prime\prime\prime}$ was increased although the labelled $PO_4^{\prime\prime\prime}$ excretion decreased slightly. Irradiated ergosterol increased the fæcal loss of radioactive P but delsterol decreased this loss. The large dose of -D decreased the P turnover in most soft tissues but almost doubled the P metabolism of the femur, the P uptake being intensified in the epiphyseal and metaphyseal portions of the bone. -D exerts its therapeutic effects by intensifying the P turnover in bone, thus producing hyperphosphatæmia and decreased visceral P turnover. J. E. P.

Comparative toxicity of three forms of vitamin-D for rats. R. Meazer, C. R. Novak, and C. I. Reed (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 49-50).—Rats of 3 groups received by mouth 75 i.u. per g. daily of 3 different preps. "Ertron," an electrically activated ergosterol, was least toxic, and death occurred in 70 days. Calciferol (Winthrop) caused death in 42 days, and activated 7-dehydrocholesterol killed 8 out of 9 by the 26th day and the 9th by the 67th day. V. J. W.

Partial synthesis of vitamin- D_2 and its 3-epi-compound.—See A., 1943, II, 136.

Ultra-violet absorption of, and effect of light on, vitamin- K_1 . D. T. Ewing, F. S. Tomkins, and O. Kamm (J. Biol. Chem., 1943, 147, 233-241).—For pure vitamin- K_1 , E_1^{1} , at λ 249 m μ . is 435 \pm 5; a new max. of 239 m μ . in the absorption curve is reported. - K_1 , which is stable in hexane solution in the dark for 5 months, is rapidly decomposed by ultra-violet light; visible and infra-red irradiation have no effect. The absorption data reported by Dam et al. (A., 1939, III, 498) indicate that their - K_1 prep. was 60-80% pure. F. O. H.

Prothrombin and vitamin-K.—See A., 1943, III, 159.

XIX.—METABOLISM, GENERAL AND SPECIAL.

Applicability of different substrates for cell respiration. M. Bulow (Annalen, 1942, 552, 176-190).-Glucose disappears rapidly during oxidation of its solutions in the presence of tissue from the intestine, brain, chicken embryo, and Jensen sarcoma. With the first two the O2 absorbed corresponds with that required for complete oxidation. With chicken embryo the respiration is often in considerable excess of the disappearance of sugar whilst with tumours the experiments indicate a total combustion of glucose. Brain and tumour consume lactic acid in about the same measure as glucose but with mucous membrane and embryo there is little or no reaction. With brain and mucous membrane there is considerable oxidation of pyruvic acid. Restriction of substrate respiration by HCN is observed with glucose and lactic acid but a certain residual respiration remains unaffected. Disappearance of glucose in the case of mucous membrane and tumour is less affected since marked glycolysis occurs. O_2 and glucose consumption in the cases of brain and mucous membrane are strongly restricted by iodoacetic acid to an extent which increases with the time. In presence of brain tissue and lactic acid there is no reaction with iodoacetic acid whereas in presence of mucous membrane respiration is restricted exactly as with glucose or in blank experiments. Pyruvic acid is sensitive to the presence of iodoacetic acid. Reaction of glucose is unaffected the presence of iodoacetic acid. The presence of mucous membrane and restricted to 50% in by NaF in presence of mucous membrane and restricted to 50% in H. W. the case of brain tissue.

Relative ineffectiveness of arsenocholine as methylating agent in chick. H. J. Almquist and T. H. Jukes (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 243-245).—Chicks reared on a low-cystine diet grew almost normally when dl-homocystine + 0.5% of choline was added to the diet, but failed to do so if this choline was replaced by arsenocholine. V. J. W.

Urea synthesis in mammalian liver. H. A. Krebs, S. J. Bach, and S. Williamson (*Nature*, 1943, 151, 23; cf. A., 1943, III, 45).—Polemical. E. R. S.

Metabolism of nitrogen and acetone bodies in fasting hypophysectomised rats after low-protein diet. R. A. Shipley (*Proc. Soc.* Exp. Biol. Med., 1942, 51, 210-211).—The usual decrease in N excretion and increase in ketosis during fasting are not prevented by hypophysectomy. V. J. W.

Availability of mesolanthionine for growth promotion when added to cystine-deficient diet. D. B. Jones, J. P. Divine, and M. J. Horn (J. Biol. Chem., 1942, 146, 571-575).—Experiments on rats show that mesolanthionine does not serve in lieu of cystine as supporter of growth possibly because the meso-acid does not undergo cleavage in the organism or is so split that d- instead of l-cysteine is produced. W. McC.

Effect of dicarboxylic acid administration on excretion of tyrosine metabolites by guinea-pig. R. R. Sealock (J. Biol. Chem., 1942, 146, 503—509; cf. A., 1940, III, 819).—In guinea-pigs on a vitamin-Cdeficient diet supplemented with tyrosine, a single small dose of glutamic acid causes temporary cessation of urinary excretion of tyrosine metabolites (p-hydroxyphenylpyruvic and homogentisic acid). Repeated doses of glutamic acid are less effective or without effect. Other acids (e.g., succinic, fumaric, glutaric, tartaric) and NH₄Cl act like glutamic acid. Since the effect is counteracted or more than counteracted by neutralising the acids with NaHCO₃ or using excess of NaHCO₃ and since the usual effect of ascorbic acid is likewise abolished by NaHCO₃ administration the effects are due chiefly to the acidifying action of acids. W. McC.

Occurrence and rate of turnover of sphingomyelin in tissues of healthy and tumour-bearing rats. F. E. Hunter and S. R. Levy (J. Biol. Chem., 1942, 146, 577—581).—The sphingomyelin contents (0.26 and 0.35% respectively) of the fresh liver and spleen of healthy male rats do not differ appreciably from those (0.22 and 0.33%) of tumour-bearing rats. The corresponding phospholipin contents are 3.45 and 1.51% and 3.51 and 1.73%. The kidneys of healthy rats contain 0.63% of sphingomyelin and 2.77% of phospholipin. Experiments in which radioactive PO₄^{'''} is administered show that sphingomyelin is produced at the same rate as are other phospholipins in the kidney but more slowly than they are in the liver. W. MCC.

Influence of essential fatty acid deficiency on transport of fatty acids into liver. R. H. Barnes, I. I. Rusoff, and G. O. Burr (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 235-237).—Rats which have been reared on a fat-free diet show the same rate of incorporation of spectroscopically detectable fatty acids into liver-phospholipins as do rats which have been cured of fat-deficiency by corn-oil administration. V I W

Extra-renal regulation of muscle- and serum-potassium following extracellular fluid and sodium depletion. H. C. Miller (J. Biol. Chem., 1943, 147, 121—129).—In rats injured by scalding, depletion or immobilisation of extracellular electrolyte followed by increase in the K and P and sometimes in the N content of the muscle cell occurs within a few hr., these changes being accompanied by increase in the concn. of K in the serum. The changes are independent of renal action : they depend on the loss by the muscle cell of some unidentified org. substance. The increase produced in the concn. of K in serum by burns and other shock-producing injuries is possibly related to this loss. W. McC.

Effect of sulphanilamide accompanied by acid or alkali on the acid-base equilibrium of the dog. Possible influence of carbonic anhydrase. A. H. Free, D. F. Davies, and V. C. Myers (*J. Biol. Chem.*, 1943, 147, 167—173).—Therapeutic quantities of sulphanilamide do not cause marked changes in the acid-base equilibrium in the dog. Sulphanilamide prevents any increase in serum-pH when given with alkali (Na citrate), but accentuates the decrease in serum-pH after acid (NH₄Cl), indicating that it inactivates carbonic anhydrase *in vivo*. J. E. P.

Fate of oxalic acid in the rat. W. H. Adolph and C. C. Liang (J. Biol. Chem., 1942, 146, 497-502).—When its diet is free from oxalate, the rat excretes approx. 1 mg. of oxalic acid daily, entirely in the urine. When Na oxalate (30-100 mg. daily) is orally administered in a low-Ca diet, 29% is recovered in the urine and 19% in the faces. When an equiv. amount of Ca lactate is administered together with oxalate, the corresponding vals. are 3.9 and 80.0%, respectively, and, when the oxalate is subcutaneously injected, they are 42.4 and 0.0%, respectively. The results show that the partition of exogenous oxalic acid between urine and faces depends chiefly on the Ca content of the diet. Ca detoxicates the acid, causing it to pass as Ca oxalate into the faces. Non-excreted oxalic acid is probably destroyed by micro-organisms or oxidised in the body of the rat. W. MCC.

Phenylpyruvic oligophrenia : chemical studies of urine. M. Dann, E. Marples, and S. Z. Levine (J. clin. Invest., 1943, 22, 87–93).— The patient (an infant) always excreted phenylpyruvic acid (0.45-1.03 g, per 24 hr.). The daily excretion of phenyl-lactic acid was 0.29-0.55 g. and of phenylalanine 0.21-0.32 g. The administration of *dl*-phenylalanine (0.5 g, per kg.) raised the excretion to phenyl-pyruvic and -lactic acids and phenylalanine. 24 hr. after feeding, 76% of it had been excreted, 32% as extra phenylpyruvic acid, 13% as phenyl-lactic acid, and 31% as extra phenylalanine, 75% of the latter being *d*-phenylalanine and the remainder the *l*-isomeride. Within 48 hr., the extra excretion was 98% of the ingested dose. The administration of *l*-tyrosine (0.5 g. per kg.) had no effect on the excretion of phenylpyruvic acid, and there was no abnormality in the metabolism of tyrosine. The administration or large doses of ascorbic acid (0.4 g. per day) had no effect. The absence in the urine of hydroxyphenyl compounds in this patient, spontaneously and even after the ingestion of phenylalanine into tyrosine, which takes place in the normal organism, is deficient in patients with phenylpyruvic oligophrenia. C. J.C. B.

XX.—PHARMACOLOGY AND TOXICOLOGY.

Concentration of penicillin in body fluids and exudates. C. H. Rammelkamp (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 95–97).— Serial dilutions are made of the fluid and of a standard solution of penicillin, and their bacteriostatic effects compared on cultures of hæmolytic streptococcus containing blood cells. V. J. W.

Activity of penicillin against sulphonamide-resistant pneumococci. C. M. McKee and G. Rake (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 275–278).—4 resistant strains were shown to be susceptible to penicillin, of which one Florey unit protected 84% of mice against 10 lethal doses when given intraperitoneally at the same time. 2 strains were acclimatised to penicillin *in vitro*, but were no more resistant to it in mouse protection tests. V. J. W.

Sulphanilylamidines.—See A., 1943, II, 128.

In-vitro test for chemotherapeutic agents used in subacute bacterial endocarditis. M. H. Uhley and L. N. Katz (J. infect. Dis., 1941, 68, 291–300).—The method consists of suspending a column of fibrin, inoculated with a strain of Strep. viridans, in a serum medium containing the drug to be tested. Sulphanilamide, sulphapyridine, and neoarsphenamine were antibacterial when used in sufficient concn. F. S.

Mechanism of action of certain sulphonamide compounds. A. Dorfman and S. A. Koser (J. infect. Dis., 1942, 71, 241-252).— Sulphapyridine and sulphathiazole, but not sulphanilamide, inhibit the nicotinamide-stimulated respiration of dysentery bacilli when grown in a medium deficient in nicotinamide. This inhibition is not reversed by p-aminobenzoic acid. Quant. evidence indicates that the inhibition is competitive. All 3 compounds inhibit growth, but sulphanilamide is much less effective than the other 2. Growth inhibition is reversed by p-aminobenzoic acid, but increase in concn. of nicotinamide decreases the concn. of p-aminobenzoic acid required for reversal of inhibition of sulphapyridine and sulphathiazole. This would indicate that nicotinamide increases the synthesis of p-aminobenzoic acid or that a high concn. of nicotinamide makes possible a modification of metabolism requiring less p-aminobenzoic acid.

p-Aminobenzoic acid and sulphonamides in rat nutrition. G. J. Martin (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 56–59).—Deficiency symptoms arising in rats on a diet free from *p*-aminobenzoic acid (*Amer. J. Physiol.*, 1942, 136, 124) are partly but not wholly prevented by inclusion of sulphanilamide in the diet. V. J. W.

Protection of mice against meningococcal infection by sulphadiazine, and inhibition of protection by p-aminobenzoic acid. L. Thomas and J. H. Dingle (Proc. Soc. Exp. Biol. Med., 1942, 51, 76—78).—2.5 μ g. of sulphadiazine prevented death in mice inoculated intraperitoneally with 10,000 50% lethal doses of meningococcus. This protective action was not inhibited by 0.6 mg. of p-aminobenzoic acid, but was inhibited by 0.5 mg. every 3 hr. for 21 hr. V I W

Production of diazotisable substance by *E. coli* during sulphonamide bacteriostasis. C. L. Fox, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 102—104).—During growth of *E. coli* in a synthetic medium containing bacteriostatic concn. of sulphadiazine, a diazotisable substance was produced which differed from *p*-aminobenzoic acid in having no anti-sulphonamide activity. It was not produced in the absence of sulphonamide or if bacteriostasis was prevented by *p*-aminobenzoic acid. V. J. W.

Antibacterial action of sulphonamides. III. Correlation of activity with binding to plasma-proteins. B. D. Davis and W. B. Wood, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 283-285).— Binding is determined from relative concn. of drug in plasma and buffer dialysed to equilibrium. Bacteriostatic power against *E. coli* is correlated with this binding in those compounds which are bacteriostatic, but related compounds not containing the p-amino-group become equally bound without having bacteriostatic activity which depends on the acid-base dissociation const. and the structure of the dissociated anion. V. J. W.

Effect of sulphanilamide on hæmorrhage induced in tumours by bacterial toxins. P. A. Zahl and S. H. Hutner (Proc. Soc. Exp. Biol. Med., 1942, 51, 285—287).—Injection of Salmonella toxin into sarcomatous mice causes hæmorrhage into the tumour. Sulphonamides antagonise this action to the same degree that they antagonise the lethal action of the toxin. V. J. W.

Absorption and excretion of sulphamethyldiazine in man. R. A. Goodwin, jun., O. L. Paterson, and M. Finland (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 262—265).—A single dose of this substance gives a higher blood concn. which is effected more rapidly and lasts longer than does sulphadiazine. It is excreted more completely but more is present in the conjugated form. Toxic results include renal damage not caused by cryst. deposits. V. J. W.

damage not caused by cryst. deposite. Influence of diet on action of sulphonamides. E. M. Greisheimer, R. Hafkesbring, and G. E. Wertenberger (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 143—145).—Rats were injected intraperitoneally with 10 c.c. per kg. of 7.5% solutions of Na sulphapyridine. In rats on a normal diet this caused after 3 hr. a rise in blood-sugar and a fall in liver wt. and -glycogen. In rats on a high-protein diet it caused a greater rise in blood-sugar, an increase in liver wt., and a smaller fall in liver-glycogen. V. J. W.

Sulphonamides and blood-pH. G. E. Wertenberger (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 145—146).—Intraperitoneal injections of 10 c.c. per kg. of 10% solutions into rats caused a rise in blood-pH in the case of Na sulphapyridine, a smaller rise with Na sulphathiazole, and no change with Na sulphadiazine. V. J. W.

In-vitro effect of urea-sulphathiazole combination on sulphathiazole-resistant staphylococci. H. M. Tsuchiya, D. J. Tenenberg, E. A. Strakosch, and W. G. Clark (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 245—247).—Mixtures of 1.25—1.75% of urea with 60 mg.-% Na sulphathiazole inhibited growth of 3 strains of staphylococci which were resistant to these concess of these substances separately. V. J. W.

In-vitro effect of sulphonamides plus urea on E. coli in presence of p-aminobenzoic acid. D. J. Tenenberg, H. M. Tsuchiya, W. G. Clark, and E. A. Strakosch (Proc. Soc. Exp. Biol. Med., 1942, 51, 247-249).—Addition of 4-6% of urea caused sulphanilamide, Na sulphathiazole, and Na sulphadiazine to be bacteriostatic in presence of concns. of p-aminobenzoic acid which in absence of urea inhibited their bacteriostatic potency. V. J. W.

Distribution of sulphonamide compounds between cells and serum of human blood. M. Heinemann (J. clin. Invest., 1943, 22, 29-32).— Sulphanilamide, sulphathiazole, sulphapyridine, and sulphadiazine were measured colorimetrically after addition to defibrinated human blood. The reaction associated with the distribution of these substances is instantaneous, and independent of temp. and the presence of O₂. Transfer of these compounds occurs, under suitable experimental conditions, in both directions, from serum to cells and from cells to serum. Sulphonamide compounds attain equal concns. in erythrocytes and in leucocytes. Of the 4 compounds studied, only sulphanilamide was found in higher concn. in cells than in serum; sulphathiazole reached the highest relative concn. in Serum. C. J. C. B.

Hæmolytic streptococcal meningitis [treatment with sulphonamide]. A. F. Hartmann, D. Wolff, F. M. Love, and B. S. Kendall (*J. Pediat.*, 1942, **21**, 591—625).—8 of 12 children infected completely recovered following adequate sulphonamide treatment. C. J. C. B.

[Sulphonamides for] lateral sinus phlebitis. A. F. Hartmann, D. Wolff, and F. Love (*J. Pediat.*, 1942, **21**, 435–474).—Sulphonamide therapy in sepsis from lateral sinus phlebitis has reduced the previous mortality rate of 35% in 60 cases to 10% in 20 cases.

C. J. C. B.

Sterilisation of sulphanilamide powder (*Pharm. J.*, 1943, 150, 46).— A report of a conference on sterilisation of sulphanilamide. The following methods are recommended for small-scale sterilisation in hospitals : (a) dry heating at 150° for 1 hr. in parafin bath, (b) dry heating at 150° for 1 hr. in electric oven with precautions to ensure even heating throughout, and (c) autoclaving in a dressings steriliser. With all methods the powder should not cake and should not be more than slightly discoloured. J. N. A.

Local chemotherapy in wounds and burns. D. N. Matthews (Lancet, 1942, 243, 271–275).—Local application of sulphonamides reduced the no. of bacteria in infected human wounds. The use of supersaturated sulphanilamide solution at 105° F. is suggested for even distribution in irregular-shaped wounds. C. A. K.

Experimental chemotherapy of burns and shock. S. M. Rosenthal (U.S. Publ. Health Repts., 1942, 57, 1923-1935).—A procedure is described whereby a standardised burn is produced in mice. Conditions can be adjusted so that the majority of animals succumb either during the first few days from shock or later from toxæmia and secondary infection. A study of agents commonly used in the local therapy of burns revealed that increases in early mortality

were produced by cod-liver oil, mineral oil, tannic acid solutions and ointment, and 5% Na sulphadiazine when applied to a scalded area comprising approx. $\frac{2}{3}$ of the body surface. No effect on early mortality was observed following application of a 5% sulphaniiamide jelly or 3% sulphadiazine jelly. Ringer's solution or 0.8% saline lowered the early mortality. The addition of adrenaline or posterior pituitary extract to the solution caused a further decrease in mortality. The present study bears on burns only in so far as their relation to shock is concerned. C. G. W.

Plastic film treatment of experimental burns. H. G. Skinner and R. A. Waud (*Canad. Med. Assoc. J.*, 1943, **48**, 13—18).—In 229 noninfected experimental burns on rabbits, burn fluids 19 and 20 were superior to tannic acid, weak and strong triple dye in healing power and eschar formation. These fluids contain glycerin, triethanolamine, urea, sulphonamide (either sulphathiazole or sulphanilamide), and polyvinyl alcohol. C. J. C. B.

Treatment of burns with chemotherapeutic membranes. W. DeW. Andrus, W. F. Nickel, and F. C. Schmelkes (*Arch. Surg., Chicago*, 1943, 46, 1-8).—Good results were obtained with hydrated films prepared from methylcellulose into which 10% of sulphanilamide was incorporated. F. S.

Treatment of group C streptococcus infection in guinea-pigs with vitamin-C and sulphanilamide. L. Karel, T. C. Grubb, and C. W. Chapman (*J. infect. Dis.*, 1941, 69, 125–130).—Sulphanilamide was effective in the treatment of a group C streptococcus infection in guinea-pigs. Neither high ascorbic acid diet nor 10 days of vitamin-C depletion influenced the effect of sulphanilamide, or the course of the infection in the absence of sulphanilamide. F. S.

Sulphonamides in bacterial endocarditis. E. S. Orgain and M. A. Poston (Arch. intern. Med., 1942, 70, 777-784).—Some degree of correlation between in-vitro and in-vivo bacteriostatic activities of various sulphonamides was seen in 17 patients with bacterial endocarditis. It is suggested that the drugs should be tested against the organisms in vitro before a choice is made for therapeutic administration. C. A. K.

Sulphadiazine in acute respiratory infections. M. Siegel (J. Amer. Med. Assoc., 1942, 119, 783-785).—Sulphadiazine was given at the onset of symptoms of respiratory infections in 54 children and the effects compared with 55 untreated controls. Treated cases usually appeared less toxic and recovered more rapidly than controls.

C. A. K. Sulphamethazine in children. P. A. Jennings and W. H. Patterson (Lancet, 1942, 243, 308-309).—Sulphamethazine was effective and well tolerated in children with pneumonia and meningococcal meningitis. C. A. K.

Sulphonamides in staphylococcal pneumonia. J. Gordon (Lancet, 1942, 243, 281).---Sulphapyridine was ineffective in a case of staphylococcal pneumonia and produced leucopenia. Marked improvement followed sulphathiazole administration and the leucocyte count rose.

C. A. K. Sulphonamides and serum in anthrax. H. Gold (Arch. intern. Med., 1942, 70, 785-821).-20 of 21 cases of anthrax recovered after intravenous injection of antianthrax serum. 39 of 42 cases recovered after sulphonamides, of which sulphapyridine was the most effective. C. A. K.

Effect of sulphonamides and other compounds against experimental influenza and poliomyelitis infections in mice. L. T. Coggeshall and J. Maier (J. Pharm. Exp. Ther., 1942, 76, 161-166).—None of 25 compounds examined had any therapeutic effect in these infections. V. J. W. Action of sulphonamide compounds in H. influenze. M. Pittman

V. J. W. Action of sulphonamide compounds in H. influenze. M. Pittman (U.S. Publ. Health Repts., 1942, 57, 1899—1910).—Using a single dose, in protecting mice against type b Hæmophilus influenze infection, sulphadiazine was most effective; sulphathiazole and p-nitrobenzoic acid of similar activity were slightly better than sulphapyridine; sulphanilylsulphanilamide was less active than sulphapyridine. Antibacterial action of sulphanilamide was demonstrable against only 1 of 6 strains. In vitro, sulphadiazine, sulphathiazole, sulphapyridine, and sulphanilylsulphanilamide either markedly retarded growth or killed the bacteria. The action of sulphadiazine and sulphathiazole was similar to and slightly better than that of sulphapyridine; the action of sulphanilylsulphanilamide was like that of sulphapyridine. C. G. W.

Action of sulphonamides in vitro on organisms of Brucella group and counteracting effect of p-aminobenzoic acid. B. Wise (J. Pharm. Exp. Ther., 1942, 76, 156–160).—Sulphathiazole and sulphadiazine were found to have almost the same bacteriostatic action against. Brucella strains whilst that of sulphaguanidine was more variable and less marked, often varying directly with concn. p-Aminobenzoic acid in concns. of 0 1 and 1.0 g.-6 partly or almost completely inhibited the action of sulphathizole. Organisms exposed to the action of sulphathiazole for 48 hr. and then explanted to drugfree broth showed a continued inhibition of growth, not due to " carry over" of sulphathiazole. This effect was counteracted by p-aminobenzoic acid. L. U. W. Chemotherapy in Cl. welchii infection in mice. L. R. Hac, M. L. Eilert, and F. L. Adair (Proc. Soc. Exp. Biol. Med., 1942, 51, 108-110).—After 4 days on a drug-containing diet intramuscular inocul-ation with *Cl. welchii* was followed by the following survival rates: 0·4% sulphadiazine 93·4%, 2% sulphathiazole 79·6%, 1·5% sulpha-pyridine 46·4%, and 2% sulphanilamide 13·8%. V. J. W.

Prevention by succinylsulphathiazole of ulcerative cæcitis in rats. A. L. Bloomfield and W. Lew (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 28-29).—Addition to diet of rats of 1% of succinylsulphathiazole prevented cæcal ulceration which occurred in 38% of controls.

V. J.

Effect of sulphapyridine on experimental avian coccidiosis. P. P. Levine (*J. Parasit.*, 1940, **26**, 233—235).—Sulphapyridine in a concn. of 0.7% in diet was effective in reducing infection with *E. pracox*, E. milis, and E. hagani but was of no val. against the most destructive species E. tenella and E. necatrix.

Effect of sulphanilamide on several parasitic infections of laboratory rats and mice. S. Zurett and J. T. Culbertson (*J. Parasit.*, 1940, 26, 235-236).—Sulphanilamide in daily doses of 100 mg. per 150 g. body wt. given orally or intraperitoneally was without effect in experimental infections with *Trypanosoma lewisi*, *T. cruzi*, and *T. equiperdum* in rats and with *T. duttoni* in mice. It was also without effect on natural protozoal infections of mice with *Endamæba* muris, Trichomonas muris, Giardia muris, and Hexamita muris.

Sulphanilamide in treatment of leprosy. G. H. Faget, F. A. Johansen, and H. Ross (U.S. Publ. Health Repts., 1942, 57, 1892– 1899).—Sulphanilamide therapy was effective in the treatment of secondary infections complicating leprosy, and as a help in the healing of secondarily infected leprous ulcerations. Sulphanilamide cannot be regarded as a curative agent for leprous lesions, either of the mean agent and agent of during the during during the mean agent of the mean agent of during the mean agent of the mean the macular or lepromatous type. Eosinophilia developed during sulphanilamide treatment. C. G. W.

Suppanhamme treatment. C. G. W. Effect of sulphonamide drugs on free-living organisms. F. F. Ferguson, J. R. Holmes, and E. Lavor (J. Elisha Mitchell Sci. Soc., 1942, 58, 53-59).-0.25% aq. sulphanilamide killed brown Hydra in 24 hr.; 0.1% or less had no effect. 1.0% sulphanilamide killed rotifers in 24 hr., Stenostosum in 10 hr., the annelid Dero in 12 hr. Crustacea were relatively resistant, only half being killed in 10 hr. Protozoa withstood 0.33%. The toxic effects of sulphantiazole on Hydra were slightly greater than those of sulphanilamide. Protozoa withstood 0.1% of sulphathiazole. 0.33% sulphapyridine was instantly fatal to Hydra; 0.1% killed in 10 min. and 0.05% killed in 12 hr. 0.25% sulphapyridine killed protozoa in a few sec., 0.1% in 10 min., and 0.06% in 12 hr. 0.5% sulphaguanidine killed Hydra and lower concns. produced disintegration only after 36 hr. The order of toxicity was : sulphapyridine (most toxic), sulpha-The order of toxicity was: sulphapyridine (most toxic), sulpha-thiazole, sulphanilamide, and sulphaguanidine. Exposure to the drugs produced cedema, suggesting that there was an alteration in cell membrane permeability. F. S.

Sulphanilamide application to peripheral nerves. W. Holmes and P. B. Medawar (Lancet, 1942, 243, 334—335).—Application of finely powdered sulphanilamide to the rabbit's sciatic nerve interrupted conduction along sensory and motor nerves in 24 hr. and after 15 days Wallerian degeneration was seen. These effects occurred with 2 g. but not with 1 g. of the drug. C. A. K.

Pathological lesions produced by sulphathazole. W. C. Merkel and R. C. Crawford (*J. Amer. Med. Assoc.*, 1942, **119**, 770-776).--5 cases with different types of infection died following sulphathiazole therapy. Autopsy showed areas of focal necrosis, many of which were infiltrated with polymorphonuclear cells, in liver, spleen, bone marrow, lymph nodes, lungs, and kidneys. The lesions contained no bacteria and were similar to those seen in mice killed by overdosage of sulphathiazole. C. Á. K.

Phytopharmacological reactions of blood following treatment with sulphanilamide and derivatives. D. I. Macht (Arch. Dermat. Syphilol., 1942, 46, 635-642).—Effect on root growth of Lupinus albus seedlings of serum from rabbits and human beings treated with sulphanilamide and its derivatives was studied; the sera were less toxic than normal rabbit or human serum. Aq. solutions of sulphanilamide and derivatives of it in plant-physiological saline solution exert a diphasic action on L. *albus* seedlings, dil. solutions stimulating and more conc. solutions inhibiting root growth.

C. J. C.

Varioliform eruption from sulphathiazole. A. G. Franks and E. F. Traub (Arch. Dermat. Syphilol., 1942, 46, 737-738).--A case report. C. J. C. B.

Sulphapyridine anuria. J. Carson and G. S. Smith (Lancet, 1942, 243, 359—360).—A fatal case of anuria after 22 g. of sulphapyridine is reported. Autopsy showed hæmorrhagic pyelitis and ureteritis with massive deposition of acetylsulphapyridine. C. A. K.

Sulphapyridine anuria. R. C. S. Benson and R. C. Percival (Lancet, 1942, 243, 360-361).—Anuria developed after 21 g. of sulphapyridine. Recovery followed ureteric catheterisation.

C. A. K.

Death following sulphthiazole therapy. M. A. Simon and M. Kaufmann (*Canad. Med. Assoc. J.*, 1943, 48, 23-27).—A case of death following moderate doses of sulphathiazole is reported which showed extensive focal necrosis involving liver, kidneys, spleen, heart, and adrenal glands. C. J. C. B. heart, and adrenal glands.

Lesions in rats receiving sulphaguanidine. L. L. Ashburn, F. S. Daft, K. M. Endicott, and W. H. Sebrell (U.S. Publ. Health Repts., 1942, 57, 1883–1891).—Rats fed a purified diet deficient in vitamin-B complex and containing 1% of sulphaguanidine regularly develop lesions of blood vessels, voluntary muscles, and bone marrow, and less often lesions of the heart and liver, and hæmorrhages into various organs and subcutaneous tissues. All the animals received supplements of riboflavin, thiamin, pyridoxine, pantothenic acid, choline, and nicotinic acid, and some received additional supplements of impure biotin concentrates. C. G. W

Histological reactions to oils and sulphonamide preparations. F. Hawking (J. Path. Bact., 1943, 54, 41–52).—The oils studied (paraffin, cod-liver oil, wool fat, linseed oil, and cotton-seed oil) caused a negligible immediate reaction after subcutaneous or intramuscular injection, but each provoked in the rat a delayed con-nective tissue reaction which was typical for the particular oil employed. The least response was caused by cotton-seed oil; cod-liver oil produced an intense giant-cell reaction. Micro-cryst. preps. of sulphonamides caused a small immediate reaction and little or no delayed reactions and little or no delayed reaction; simple aq. preps. of sulphanilamide with a small amount of oleate or stearate caused a slightly greater reaction. A prep. containing sulphanilamide and alginate left large deposits of hyaline material in the tissues. Preps. containing oil provoked the same reactions as the pure oils. (8 photomicrographs.)

J. C. B Determination of activity of various drugs against the malaria parasite. L. T. Coggeshall and J. Maier (*J. infect. Dis.*, 1941, 69, 108-113).—The inhibitory effects of 9 different drugs on the respiration of the parasite *in vitro* could not be uniformly correlated with the response of the backward of the local states. with the response of the host in experimental infections with 5 species of plasmodia.

Bacteriostatic activity of fluoro- and bromo-derivatives of some organic acids. G. P. Hager and T. C. Grubb (*J. infect. Dis.*, 1942, 71, 228-231).—The addition of a nuclear halogen enhanced the activity of benzoic, cinnamic, mandelic, and phenylacetic acids, particularly against *Staph. aureus*. Br in the *p*-position increased activity against *Staph. aureus* more than F in any position, but, although it increased the activity of benzoic and mandelic acids against *B. typhosum*, it decreased the activity of phenylacetic and increasing acids that the activity of phenylacetic and cinnamic acids against that organism. In general a p- or m-F-substituted acid was more active than an o-F-substituted acid. There was some correlation between high activity and high oilwater distribution coeff.

Factors influencing bacterial survival in presence of antiseptics. J. J. Graydon and C. L. Biggs (*Med. J. Austral.*, 1942, II, 513—515). —The addition of 0.05% of thioglycollic acid or its Na salt to the medium is the most satisfactory means of overcoming the bacteriostatic action of mercurial antiseptics. The presence of glucose is advantageous, giving a ready source of energy. Cu should be avoided; traces of Cu catalyse the oxidation of SH groups and thus prevent growth.

Antimicrobial action of pyocyanine, hemipyocyanine, pyocyanase, and tyrothricin. J. L. Stokes, R. L. Peck, and C. R. Woodward, jun. (Proc. Soc. Exp. Biol. Med., 1942, 51, 126-130).—Growth inhibition by these *Pyocyaneus* products (Kramer, Z. Immunitäts., 1935, **84**, 505) and by tyrothricin on a no. of bacteria, yeasts, and pathogenic fungi is tabulated. All are much more effective than the sulphon-amides and their activity is not correlated with Gram-staining properties except in the case of tyrothricin. V. J. W.

In-vivo activity of streptothricin against Brucella abortus. H. J. Metzer, S. A. Waksman, and L. H. Pugh (Proc. Soc. Exp. Biol. Med., 1942, 51, 251-252).—This substance (A., 1942, III, 629) destroyed B. abortus infections of the chorio-allantoic membrane of incubated eggs when applied the day after inoculation. It is inoculation, and in guinea-pigs when given at the same time as inoculation, and V. J. W. eggs when applied the day after inoculation. It inhibited infection and

In-vitro effect of tyrothricin and tyrocidine hydrochloride on poly-morphonuclear leucocytes. M. P. Clapp (Proc. Soc. Exp. Biol. Med., 1942, 51, 279-281).—Presence of 1:400 tyrothricin or of dilute tyrocidine (concn. not given) caused partial disintegration of rabbit leucocytes and hindered phagocytosis. V. J. W.

Effect of benzyldimethylalkylammonium chlorides (zephiran) on tetanus toxin. E. Neter (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 254–256).—This derivative of the fatty acids of coconut oil inactivates tetanus toxin when present in a concn. of 1:2000 but not of 1:20,000Addition of human serum reduces its potency, but addition of serum to the toxin-zephiran mixture does not reactivate the toxin.

V. J. W. Effect of oxidation-reduction on germicidal efficiency of some metallic salts. H. L. Guest and A. J. Salle (Proc. Soc. Exp. Biol.

OTA

Med., 1942, **51**, 272-273).—Certain inorg salts, which alone are only slightly germicidal, acquire germicidal properties when 2 are mixed so as to form an oxidation-reduction system. E.g., $FeCl_2 + 2FeCl_3$; $FeSO_4 + Fe_2(SO_4)_3$; $SnCl_2 + SnCl_4$; $AgNO_3 + 2Fe(NO_3)_3 + FeSO_4$; $MnSO_4 + SnCl_4$. The phenomenon depends on the presence of positive ions in different states of oxidation. It is not shown by $Na_2SO_4 + Na_2SO_3$. V. J. W.

Use of chick embryo in evaluating disinfectants. T. W. Green and J. M. Birkeland (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 55-56).— The chorio-allantoic membrane was inoculated with *Staph. aureus* and the disinfectant to be tested was applied daily for 5 succeeding days. Cetylpyridinium chloride proved much superior to either phenol or I. V. J. W.

Isotonic aqueous iodine solution as skin antiseptic. M. Lee and P. I. Hoxworth (Surgery, 1939, 6, 762-769).—Antiseptic properties of Lond methods and the solution of the solu of I and merthiolate were compared by taking and culturing swabs from the skin of 216 successive surgical patients after prep. of the operative field. Although I is efficient and satisfactory as a skin antiseptic, merthiolate is to be preferred in ease of application and absence of skin irritation. P. C. W

Antimalarial properties of optically active acridines. G. F. Gauze and V. V. Alpatov (Compt. rend. Acad. Sci. U.R.S.S., 1941, 32, 526-528).—The toxicity of acridine compounds in Paramecium is parallel to their antimalarial activity in birds. d- and l-Acridine hydrochloride have the same toxicity in *Paramecium* and the same antimalarial activity in birds, but the toxicity of the former is only half that of the latter when injected into siskins or mice.

Effect of benzophenone and allied compounds on human tubercle bacilli in vitro. B. L. Freedlander (Proc. Soc. Exp. Biol. Med., 1942, **51**, 153—156).—27 compounds were tested; the most effective was 2:4'-dichlorobenzophenone, which was bacteriostatic at 1:100,000. Promin required a concn. of over 1:3000.

V. J. W.

Cerberin and cerberoside, the cardiac principles of Cerbera odollam. K. C. Chen and F. A. Steldt (J. Pharm. Exp. Ther., 1942, **76**, 167– 174).—Cerberin, $C_{29}H_{46}O_8$, m.p. 208° (corr.), may be isolated from defatted kernels of nuts of C. odollam. In one batch of nuts another glycoside, cerberoside, $C_{41}H_{70}O_{20}$, m.p. 188° (corr.), was isolated. Each glycoside has a digitalis-like action, cerberin having more effect on the heart than cerberceide effect on the heart than cerberoside. L. L. W.

Digitalis in arteriosclerotic heart failure. N. Flaxman (J. Amer. Med. Assoc., 1942, 119, 252-255).-Among 51 patients with arteriosclerotic heart failure with normal rhythm, those with normal heart rate responded better than those with sinus tachycardia.

C. A. K Effects of intravenous injections of *l*-dopa on blood pressure. K.A. Oster and S. Z. Sorkin (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 67–70). -Intravenous injections caused a rise of blood pressure in hypertensive cats and men; no rise was caused in normal cats or in cats in normal men. A small pressor effect was produced V. J. W.

Comparative pressor effects of *p*-hydroxyphenylisopropyl-amine (paredrine) and -methylamine (paredrinol). M. H. Nathanson and H. Engelberg (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 239-241).-Each of these substances causes a rise of blood pressure, and can be given subcutaneously or by mouth. Paredrine has a more V. J. W. powerful action than paredrinol.

Effect of paredrine on blood specific gravity and blood volume. H. Engelberg and M. H. Nathanson (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 242–243).—Doses sufficient to cause large rise of blood pressure do not affect sp. gr. or vol. of blood. V. J. W.

Intestinal motility as influenced through extrinsic nerves as result of central stimulation by bulbocapnine. M. J. Oppenheimer, N. M. Glyer, and R. H. Hamilton (Proc. Soc. Exp. Biol. Med., 1942, 51, 79-80).—In normal dogs, bulbocapnine decreased amplitude of intestinal movements. After the vagi were cut, it increased amplitude in the upper jejunum and decreased it in the lower ileum. When the splanchnics were cut, it increased amplitude throughout. Peristalsis rates were not affected and blood-sugar V. J. W. results varied.

Antispasmodic action of morpholine and other compounds. L. W Rowe (J. Amer. Pharm. Assoc., 1942, 31, 57-59).-Of 32 morpholine compounds tested, several were as active as papaverine and γ -morpholino- $\beta\beta$ -dimethyl-*n*-propyl diphenylacetate (cf. A., 1942, II, 334) was twice as active as, but had only approx. 12% of the toxicity of, papaverine. Dilantin has a relatively weak antispasmodic F. O. H. action.

Phenothiazine. IX. Biliary excretion and anthelmintic action of thionol. F. DeEds and J. O. Thomas (*J. Parasit.*, 1941, **27**, 143–151).—Gastric or oral administration of phenothiazine in man, rabbits, and dogs resulted in the biliary excretion of phenothiazine, thionol, and leucothionol. At pH 7.0 the potential of the thionol-leucothionol system is +0.158 v., only slightly more positive than the hæmoglobin-methæmoglobin system (+0.152 v.), and is therefore not likely to interfere with the hæmoglobin-oxyhæmoglobin mechanism. Other biological systems, where O_2 transport depends on cytochrome, pyocyanine, flavoprotein, ascorbic acid, flavin phosphate, or lactoflavin, are much more negative in potential and could reduce thionol to leucothionol and in turn be oxidised. F. S.

Excretion of phenothiazone. F. DeEds and J. O. Thomas (J. Parasit., 1942, 28, 363-367).—The reversible oxidation-reduction system phenothiazone-leucophenothiazone, as well as thionolleucothionol, occurs in urine of rats, rabbits, and man receiving phenothiazine. Leucophenothiazone was identified in urine by its m.p., 172-173°. Leucothionol oxidises so rapidly that its m.p. could not be determined.

Anthelmintic studies on the mono-ethers of dihydroxybenzenes. L. W. Landsberg and C. F. Lischer (J. Parasit., 1941, 27, 357-361). Of 14 of the mono-ethers of dihydroxybenzenes, resorcinol monon-hexyl ether had the greatest anthelmintic activity when tested by the in-vitro Ascaris technique. F. S.

Effects of some nitrate esters of xanthine derivatives. G. Lehmann, A. M. Ambrose, and P. K. Knoefel (J. Pharm. Exp. Ther., 1942, 76, 126–136).—The nitrate ester of 7-hydroxycaffeine is 4 times as powerful as nitroglycerin in lowering blood pressure of etherised dogs. Addition of an 8-chloro-group reduces this activity but the lethal dose is 4 times as great. 10 mg. per kg. given to dogs 3 times daily maintains blood pressure below normal. V. J. W. V. J. W.

Quinones as blood pressure reducing agents in hypertensive rats. B. Friedman, S. Soloway, J. Marrus, and B. S. Oppenheimer (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 195—198).—Rats were made hypertensive by wrapping one or both kidneys in Cellophane. Blood pressure was reduced by oral or subcutaneous administration of 2 : 5-dimethyl-, 2-methyl-5-isopropyl-, or trimethyl-*p*-benzoquinone, or Na rhodizonate. No febrile reactions occurred and no effect was produced on blood pressure of normal rats. V. J. W.

Relation between structure and histamine-like activity. C. Nie-mann and J. T. Hays (J. Amer. Chem. Soc., 1942, 64, 2288–2289). dl- β -3- (prep. from dl- β -3-pyridylalanine in diphenylamine at 245– 250°) [dihydrochloride, m.p. 195–205° (decomp.)] and dl- β -4-Pyridylethylamine resemble β -phenylethylamine and not histamine in biolethylamine Junio Line (Line). Pyridylethylamine resemble p-pinelylethylamine and not instantial in biological activity. Histamine-like activity depends on the grouping $CH \cdot a \cdot N \cdot b \cdot C([CH_2]_2 \cdot N H_2) \cdot c \cdot CH$, in which $a = 1 \cdot 36 \pm 0 \cdot 01$, $b = 1 \cdot 38 \pm 0 \cdot 02$, and $c = 1 \cdot 40 \pm 0 \cdot 01$ A., chelation occurring between the two N in the cation. R. S. C.

Trichloroethylene anæsthesia. J. Elam (Lancet, 1942, 243, 309).-Report of successful use in 1000 cases. C. A. K.

Administration of pernocton in guinea-pigs. G. Fleischauer and B. Gebauer (Zentr. Bakt., 1942, I, 149, 334—336).—Pernocton (10% Na sec.-butyl- β -bromoallylbarbiturate) was used subcut-aneously as an anæsthetic in 3500 guinea-pigs. The dose was 1·2 c.c. of a 10% solution of pernocton in saline for guinea-pigs of 250—450 g. and 1·5 c.c. for larger pigs. If the pig was not under in 20 min. a further 0·5 c.c. was given. Pigs of 250—300 g. were under in 10—33 min. (average 21 min.) and anæsthesia lasted 70— 110 min. (average 31 min.). Pigs of 330—460 g. were under in 12— 43 min. (average 31 min.) and anæsthesia lasted 50—170 min. (average 100 min.). The death rate was 0·65%. Administration to fasting pigs should be avoided. F. S. to fasting pigs should be avoided. F.S.

Avertin anæsthesia for thyrotoxicosis. E. C. Cutler and S. O. Hoerr (West. J. Surg. Obstet. Gynec., 1939, 47, 661-667).-No advantages were found for avertin in a consecutive series of 93 thyroidectomies for thyrotoxicosis. P. C. W.

Choice of anæsthetic agents and methods for surgical procedures. J. H. Hutton (West. J. Surg. Obstet. Gynec., 1939, 47, 673-677). P. C. W.

Use of pentothal sodium in intravenous anæsthesia. N. E. Hamilton (West. J. Surg. Obstet. Gynec., 1939, 47, 668-672).-Analysis of 195 cases. P.C

S-Methylisothiourea sulphate to maintain blood pressure in spinal anæsthesia. F. H. Smirk and M. McGeorge (Lancet, 1942, 243, 301-303).—S-Methylisothiourea raised blood pressure depressed by spinal anæsthesia in 20 cases. C. A. K.

Fate of procaine in body after subarachnoid injection. A. Goldberg, H. Koster, and R. Warshaw (Arch. Surg., Chicago, 1943, 46, 49-58). Procaine within the subarachnoid space remains unchanged. The fall in procaine concn., which is responsible for the wearing off of anæsthesia, is due to vascular absorption. In the blood stream procaine is rapidly hydrolysed by an enzyme. There is also a less active enzyme which acetylates the free amino-group. At no time is there any appreciable trace of procaine in the blood. The pro-ducts of detoxication leave the blood stream rapidly until equilibrium is reached between the blood and tissues. 90% of the injected procaine is excreted in the urine in the form of p-acetamidobenzoic acid ϕ -acetamidobinpuric acid and ϕ acetamidobenzoic acid, p-acetamidohippuric acid, and p-acetamidobenzoylglycuronate F. S.

Nupercaine anæsthesia. L. V. Hand and L. F. Sise (Surg. Gynec. Obstet., 1940, 70, 9-21).—Detailed report of 180 cases anæsthetised

with nupercaine. This anæsthetic is recommended for operations of long duration or of positional importance. Using solution of 1:1500 there is little clinical evidence of toxicity. P. C. W

Sodium amytal [treatment of mental patients]. F. Reitman (J: ment. Sci., 1941, 87, 96-100) .- In the treatment of mental patients by injection of Na amytal as an aid to hypno-analysis, a rise in blood-sugar and certain neurological signs were observed. The effect blood-sugar and certain neurological signs were observed. of the drug is probably not only that of a cortical depressant

G. D. G.

Effect of liver damage on urinary morphine excretion. E. G. Gross (Proc. Soc. Exp. Biol. Med., 1942, 51, 61-63). After damage to the liver by CCl_4 , more free morphine and less of the easily hydrolysable fraction of combined morphine is excreted by dogs. Total recoverable morphine and the difficultly hydrolysable fraction are not altered. V. J. W.

Action of lupicaine on eye.—See A., 1943, 235.

Alterations in respiration caused by alcohol. F. A. Hitchcock (Quart. J. Stud. Alcohol, 1942, 2, 641-660).-3 extensively-studied normal men showed increased ventilation vol. and ventilation equiv. (vol. of air breathed per 100 ml. of O_2 absorbed) in the 30 min. following the ingestion of 35—75 ml. of 95% alcohol, diluted to 200 ml. Breathing was frequently increased in rate and decreased in depth, with concomitant fall in alveolar CO_2 concn. With low levels of blood- O_3 there was a decreased sensitivity to excess CO_2 or anoxia; with higher levels the decrease was less or there was an increased sensitivity. These facts support the view that the effects increased sensitivity. These facts support the view that the effects are not produced reflexly by irritation of the gastro-intestinal mucosa. Smaller and slower effects are produced when the alcohol is given in higher concn., presumably through slower absorption.

P. C. W.

Occurrence of polyneuritis and abnormal pupillary reactions in chronic alcoholism. L. Secunda and E. H. Trowbridge (Quart. J. Stud. Alcohol, 1942, 2, 669—671).—Of 641 patients with chronic alcoholism, 17% had polyneuritis and 44% anomalous pupils, more commonly in association with psychotics. Alcoholic psychoses with marked mental confusion or impairment of the sensorium are particularly like to peluparative and marking provider allows. particularly liable to polyneuritis and pupil anomalies. P. C. W.

Inebriety: classification. I. A. Darling (Quart. J. Stud. Alcohol, 1942, 2, 677-685). - Discussion with 11 illustrative cases.

PCW

Alcoholism and crime. R. S. Banay (Quart. J. Stud. Alcohol, 1942, 2, 686-716).—The incidence of alcoholism among the 3135 admissions to Sing Sing prison during 1938-1940 is studied and analysed. In 25% of cases alcoholism was closely related to, or directly responsible for, the commission of the crime. Crimes of violence or assault predominate in the alcoholics; crimes against property among the non-alcoholics. P. C. W.

Treatment of alcohol addiction. W. L. Voegtlin and F. Lemere (*Quart. J. Stud. Alcohol*, 1942, 2, 717-803).—A review of the liter-ature with 239 references. P. C. W.

Colorimetric method for determining narcotic power of hemp drugs. B. K. Mukhopadhyay, K. S. Subramanian, and H. B. Dunnicliff (Analyst, 1943, 68, 70-74).--" Ganja," the dried flowering and fruiting tops, and "charas," the resinous exudate from Cannabis sativa, L., are extracted with CCl_4 and the phenols, other than the inactive cannabinol, separated by extraction with dil. aq. NaOH from the resin. These phenols react with diazotised p-nitroaniline to give a red dye which is filtered off, dissolved in alcohol, and determined colorimetrically by comparison with a standard drug. SB

Ejaculation induced by a uterine drug (Gravitol). G. Barkan (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 52-54).—This substance, the hydrochloride of 2-methoxy-6-allylphenyl diethylaminoethyl ether, causes ejaculation in 50% of adult male guinea-pigs when injected subcutaneously in doses of 27–28 mg. per kg. V. J. W.

Use of zinc peroxide in treatment of diabetic gangrene of lower extremities. F. L. Meleney (Surgery, 1939, 6, 845-850). P. C. W.

Effect of calcium carbonate, aluminium phosphate, and aluminium hydroxide on mineral excretion in man. J. B. Kirsner (*J. clin. Invest.*, 1943, 22, 47-52).—The ingestion of $CaCO_3$, AIPO₄, or Al(OH)₃ in the quantities used in the treatment of peptic ulcer places no serious burden on acid-base balance. The electrolyte constitution of the plasma is not disturbed. C. I. C. B.

Physiological action of metallic magnesium. S. F. Meek, J. J. Prendergast, G. C. Harrold, and C. P. McCord (*J. Ind. Hyg.*, 1942, **24**, 142–147).—Accumulation of H_2 and tissue necrosis result from implanting Mg or alloys with a high Mg content in animal tissues. Inserting a clinical thermometer with the powdered Mg showed that the raised temp. due to chemical reactions was insufficient to cause necrosis. Superficial imbedding of light-metal powders into the skin led to proteolysis with Mg and its alloys, although healing was no slower than with other metals. H₂, O₂, or N₂ injected subcutaneously into rats persisted but caused no necrosis. Spicules of Mg or its alloy caused gas production in the tissues, but in smaller degree than the powdered metal. E. M. K.

Magnesiogenous pneumagranuloma. R. Z. Schulz and C. W Walter (*J. Ind. Hyg.*, 1942, 24, 148—153).—The addition of powdered Mg to water or plasma causes a rise in pH associated with formation of Mg(OH)2; at const. temp., the rate of change of pH is determined by particle size. Implantation of a Mg disc in the rectus muscle of a dog was followed by an inflammatory reaction with blebs of gas and degeneration of muscle; organisation of fibroblasts produced a dense granulation tissue with enclosure of gas by pavement-like cells. A disc of Mg implanted beneath the meninges of a dog's brain caused a granulomatous tumour containing gas and pressing on the brain, with degeneration and gliosis. The granulo-matous response was induced by repeated injection of filtered water or placeme in which Mg had disculted E. M. K. or plasma in which Mg had dissolved.

Urine of the newborn following ammoniated mercury rubs. W. E Allyn and W. E. Allyn, jun. (Arch. Pediat., 1942, 59, 631-636).-The 6 of specimens showing albumin, red cells, and pus was higher in children who had 33 % ammoniated Hg rubs the first 4th and 8th day of life. C. J. C. B.

Mercurial and xanthine diuretics in chronic congestive heart failure. J. I. Goodman, J. F. Corsaro, and R. Stacy (Arch. intern. Med., 1942, 70, 975–982).—Diuretic effects were measured in patients with chronic congestive heart failure in a " state of balance," changes of body wt. being the measure of response. Intravenous mersalyl + theophylline (or theophylline with ethylenediamine) was less effective than mersalyl alone. Theophylline with ethylene-diamine intravenously was ineffective. Oral and rectal routes were mostly ineffective. The greatest diuresis occurred when 1 c.c. of mersalyl was given intramuscularly 1 hr. after intravenous injection of 0.5 g. of theophylline with ethylenediamine. The effect was equal to that produced by 4 c.c. of mersalyl alone. C. A. K

Immediate fatality following the use of mercupurin. J. Vaughn (J. Pediat., 1942, 21, 680-683).—Immediate death of an anaphylactic nature following the injection of 2 c.c. of mercupurin is reported in a case of congenital heart disease with congestive failure. C. J. C. B.

Acute toxicity of mercurial diuretics. A. C. de Graff and R. A. Lehman (J. Amer. Med. Assoc., 1942, 119, 998-1001).—Mersalyl (+ theophylline) was the least toxic, and esidrone (without theophylline) was the most toxic, of a no. of Hg diuretics tested for lethal dose by intravenous injection in cats. Previous treatment with oral NH_4Cl or phenobarbitone, with intravenous aminophylline or digitoxin, did not influence the lethal dose of mercupurin. Slowing the rate of injection or diluting the drugs did not diminish toxicity. Death was due to toxic actions on the heart, intraventricular block early on, and terminal ventricular fibrillation. C. A. K.

Sudden death and mercurial diuretics. M. H. Barker, H. A. Lindberg, and M. E. Thomas (J. Amer. Med. Assoc., 1942, 119, 1001-1004).-4 fatal cases following intravenous injection of Hg diuretics are reported. Experiments on dogs suggest that Hg ions act directly on ventricles to produce ventricular fibrillation and death. C. A. K.

Immediate death following intravenous mercupurin. G. Brown, L. Friedfeld, M. Kissin, W. Modell, and R. M. Sussman (J. Amer. Med. Assoc., 1942, 119, 1004-1005).—Immediate death followed intravenous injection of 2 c.c. of mercupurin in 4 cases of congestive heart failure. In 3 of the cases previous injections had produced dyspnœa, sweating, pallor, bradycardia, and syncope, although diuresis had been satisfactory. C. A. K.

Treatment of mange with tetraethylthiuram monosulphide. S. Jennings (Vet. Rec., 1942, 54, 330-331).-21 cases of mange in dogs, 1 in a horse, and 8 in cattle were treated with a 2% aq. solution of a 25-40% emulsion of tetraethylthiuram monosulphide. Rapid cure resulted in all animals except 1 dog; there was no evidence of toxicity or irritation. E. G. W.

Isotopic metallic iodine in treatment of syphilis. P. C. Barrette and K. M. McCoy (West. J. Surg. Obstet. Gynec., 1939, 47, 328-330).—Addition of isotopic I to the medication of a group of 30 syphilitics hastened the reversal of the Wassermann reaction and reduced the incidence of side effects of As and Bi. P. C. W

Phosphorus toxicology. R. B. L. Fleming, J. W. Miller, and V. R. Swayne, jun. (*J. Ind. Hyg.*, 1942, **24**, 154–158).—P dissolved in peanut oil was injected subcutaneously into rats and guinea-pigs twice a week. The mortality rate varied with the dosage. When P was fed to rats, they tolerated higher doses than when injected, although the effect on body wt. was more marked. Whatever the mode of administration, P caused thickening of the epiphyseal line with extension of thin, closely packed trabeculæ into the shaft of the bone. E. M. K.

Mustard gas keratitis.—See A., 1943, III, 235.

Toxic effects of pentachlorophenol and sodium pentachlorophenoxide on experimental animals. W. Deichmann, W. Machle, K. V. Kitz-miller, and G. Thomas (J. Pharm. Exp. Ther., 1942, 76, 104-117).

Repeated applications to the skin of rabbits of 1% solutions cause no toxic effects, but solutions of 4% and upwards cause absorption but no toxic effects other than loss of wt. Soap and water is more effective than alcohol for removing these agents from the skin (cf. A., 1939, III, 780). V. J. W.

Percutaneous absorption of ammonium hydrogen sulphide and hydrogen sulphide. E. P. Lang and J. H. Draize (J. Pharm. Exp. Ther., 1942, 76, 179–188).—NH₄HS is absorbed through the intact skin and more readily through abraded skin of rabbits and causes death with formation of sulphhæmoglobin. H_2S is not so toxic. Artificial respiration or methylene-blue affords some protection against lethal effects. V. J. W.

Use of rabbits for detection of pyrogenic substances in solutions for intravenous administration. C. J. Chapman (*Quart. J. Pharm.*, 1942, 15, 361-366).—The method, a modification of that of Tui et al. (A., 1937, III, 435), depends on production of a marked leucopenia (a decrease of at least 4000 cells per cu. mm. of blood represents a positive reaction) in the circulating blood of rabbits occurring after intravenous injection of pyrogen-containing solutions. Rectal temp. is also recorded but is not as consistent as the counts, high temp. occurring occasionally without leucopenia, due probably to excitement of the animals caused by manipulation. H. G. R.

Adult life span animal feeding experiments with thiourea. A. Hartzell (Contr. Boyce Thompson Inst., 1942, 12, 471-480).—The growth of mice and rats fed thiourea in drinking-water at daily rates of 1.72, 6.88, and 27.5 mg. per kg. was normal. There was no evidence of cumulative effect on survival rate, nor, in autopsies of animals that died, of pathological changes attributable to the chemical. The mortality rate was not significantly different from that of the controls. R. H. H.

Acute toxicity of choline chloride to mice and rats. H. C. Hodge and M. R. Goldstein (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 281–282).—LD₅₀ is 320 mg, per kg. intraperitoneally in mice and 6.7 g. per kg. orally in rats. V. J. W.

Toxicity of acetates for rats. A. Hemingway and A. Sparrow (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 44–45).—Acetic acid can be tolerated in daily doses of 30 m-mols. per kg. for 2 weeks, but 40 kills in 3-5 days. Max. dose of Na acetate is 70–80, and of NH₄ acetate 60 m-mols. per kg. per day. V. J. W.

Estimation of reduced degradation products in experimental trinitrotoluene poisoning. B. B. Westfall and M. I. Smith (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 122—124).—Products in urine are diazotised, and coupled with Bratton and Marshall's colour reagent (A., 1939, III, 773). Comparison is made with standards containing known amounts of 6-nitro-2: 4-diaminotoluene. For rabbit urine a 20: 80 mixture of amino- and hydroxylamino-compounds, and for dogs 2: 4: 6-triaminotoluene, give better comparisons.

Methanol poisoning. I. Exposure of dogs to methanol vapour in air. R. R. Sayers, W. P. Yant, H. H. Schrenk, J. Chornyak, S. J. Pearce, F. A. Patty, and J. G. Linn (U.S. Bur. Mines, Rept. Invest., 3617, 1942, 10 pp.).—Four dogs were exposed 8 hr. daily for 379 days to 450—500 p.p.m. of methanol vapour in air. Four pups born to a pair of exposed dogs were continued in test for 289 days. No symptoms were observed and the animals either gained wt. or remained steady. Blood showed no change in non-protein-N, sugar, or creatinine during the experimental period, and cell counts, hæmoglobin content, and coagulation time all remained unaffected. When dogs were killed, microscopic pathology revealed no significant effects. Blood concn. of methanol at the end of an exposure was about 15 mg.-% but occasionally vals. as high as 50 mg.-% were recorded; immediately before exposure the blood concn. was 0—5 mg.-%. E. M. K.

Vascular effects of bufotenin. Raymond-Hamet (Compt. rend., 1942, 214, 506-508).—Injection of bufotenin into the general system causes hypertension accompanied by marked and lasting vascoconstriction. As with adrenaline, this hypertension is transformed by yohimbine into a hypotension increased by harmalol. H. W.

Fate of mannide mono-oleate in animal body. W. E. Evans, jun., H. Wollenweber, M. Ruppersberger, and J. C. Krantz, jun. (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 222–223).—This substance is absorbed from the intestine of the rat and causes no toxic symptoms in rats or monkeys. V. J. W.

Pharmacological effects of the choline ester of chaulmoogric acid. G. A. Emerson (*Int. J. Leprosy*, 1941, 9, 341-345).—This ester has muscarine-like activity, slightly greater than that of mol. equiv. amounts of choline. F. S.

XXI.—PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Action of finely-divided magnesium on lungs. L. U. Gardner and A. B. Delahant (Amer. J. Publ. Health., 1943, 33, 153-156).—Finely-

divided Mg introduced into the respiratory tract in animals caused a mild bronchopneumonia which rapidly cleared up. Subcutaneous injection caused an emphysematous acute inflammation as the H_2 set free could not easily escape. C. J. C. B.

Sulphur dioxide in the foundry. An aspect of industrial hygiene. F. A. Allen (*Metal Ind.*, 1940, 57, 172). E. R. R.

XXII.—RADIATIONS.

X-Ray visualisation of soft tissues of normal and abnormal advanced pregnancy.—See A., 1943, III, 174.

X-Ray treatment of amenorrhœa and sterility.—See A., 1943, III, 173.

Irradiation of transplanted Bagg-Jacksen and Yale carcinomas in mice, as affected by diet and foster nursing.—See A., 1943, III, 183.

Relationship between dosage and rate of tumour induction by ultraviolet radiation. Limits of accuracy in experimental carcinogenesis as exemplified by tumour induction with ultra-violet radiation.— See A., 1943, III, 182.

Physical methods of dosage determination in radiation therapy. E. H. Quimby (J. Appl. Physics, 1942, 13, 678-687).—A review covering the choice of a unit of dose, standard ionisation chambers and their calibration, relations between "skin," "air," and "deep tissue" doses and their experimental study, the use of "thimble" ionisation chambers in practical dose measurements, and the calibration of X-ray sources. A. J. E. W.

Effects of radiation on cardiovascular and urinary systems. S. Warren (Arch. Path., 1942, 34, 1070-1084).—A general review. C. J. C. B.

Effects of radiation on gonads. S. Warren (Arch. Path., 1943, 35, 121-127).—A general review. C. J. C. B.

Neutron and X-ray effects on regeneration of forelimb of larval Amblystoma. Spermatocyte chromosome aberrations in grasshoppers subjected to X-radiation during embryonic stages. Mechanism of induction by irradiation of chromosome aberrations in Tradescantia.—See A., 1943, III, 155, 156.

Lethal action of short ultra-violet rays on pathogenic bacteria.— See A., 1943, III, 205.

Methods and instruments for selective irradiation of chromatin. S. Zamenhof (*Rev. Sci. Instr.*, 1943, **14**, 17–21).—The production of minute spots of ultra-violet light 0.2 and 1 μ . in diameter may be accomplished by focussing with a quartz or fluorite lens or by using a screen with a minute opening. Selection of biological material is briefly discussed. A. A. E.

XXIII.—PHYSICAL AND COLLOIDAL CHEMISTRY.

Blood-aqueous humour dynamics and inferred mechanism of aqueous humour formation.—See A., 1943, III, 166.

Dependence of double refraction of protoplasmic leptones on their orientation by centrifuging. H. H. Pfeiffer (Kolloid-Z., 1942, 100, 254-263).—Egg cells of Rana temporaria, when examined microscopically by polarised light during centrifuging, exhibit positive double refraction that increases with the speed of rotation, and hence with the extent of deformation. The orientation of the leptones brought about by centrifuging is only partly reversible. F. L. U.

Monodisperse myosin solutions. G. Schramm and H. H. Weber (Kolloid-Z., 1942, 100, 242-247).—Ultracentrifugal analysis of muscle extract reveals the presence of 4 components with distinct sedimentation consts. (s). Two of these consist of spherical particles and remain dissolved when the extract at pH 7.5 is diluted to an ionic strength of 0.03, whilst the ppt., on re-dissolution in 0.48M-KCl, contains two markedly anisodimensional components a and β with $s_{20} = 6.2$ and 29. Both are monodisperse, but whereas the lighter component a retains the const. 6.2 throughout subsequent pptns. and re-dissolutions, that of β increases from 20 in the original extract to 29, 30, and 36 in successive operations. The view that both of the myosin proteins consist of rod-like bundles of mols. is supported by independent evidence. The relation of the structure of the particles to the structure and function of muscle fibrils is discussed. F. L. U.

Lipoprotein films from serum-albumin. E. Saïas (Compt. rend., 1942, 214, 393-395).—Surface films of cholesterol-albumin systems are described. On aq. buffer at pH 7.2, a complex of cholesterol and albumin in wt.-ratio of approx. 1:4 appears to exist. Formation of complexes on addition of a digitonoside to surface films of albumin or cholesterol-albumin is probably indicative of the hæmolytic action of the digitonoside. The nature of unimol. films of albuminricinoleic acid suggests that a stoicheiometric complex is formed.

F.O. H.

Polarographic investigations of proteins. VI. Plant proteins. C. Tropp and W. Stoye (Z. physiol. Chem., 1942, 275, 80–92; cf. A., 1942, III, 904).—Examination of gliadin in $CoCl_2$ -NH₄Cl-aq. NH₃ buffer and of extracts of wheat and rye in 0.9% aq. NaCl shows that the ratio of the heights of the curves forming the doublewaves never falls to 1 or less, there being no crossing effect. Gliadin is not polarographically affected by boiling with water, which apparently causes no denaturation. Denaturation with acid and pepsin increases the difference in height between the curves, indicating a loosening effect on the mol. Urea lowers the curves but scarcely affects the ratio. The results express great differences between plant and animal proteins. It is supposed that the whole amino-acid complex is polarographically active in plant proteins, whilst in animal proteins only the cystine residues are active. The ratio is a measure of the activity.' W. McC.

XXIV.—ENZYMES.

Catecholase (tyrosinase) : reversible inactivation and reactivation. L. E. Tenenbaum and H. Jensen (J. Biol. Chem., 1943, 147, 27-31). —Tyrosinase activity is inhibited by KCN, Na diethyldithiocarbamate, and K ethylxanthate and may be reactivated by Cu^{*}. The amount of reactivation decreases as the time between the addition of the inactivating agent and of the Cu^{*} is increased. Fe^{**} and Co^{**} cause little reactivation except when Na diethyldithiocarbamate is the activating agent and Mn^{**} produces some reactivation in PO₄^{***}-citrate but not in acetate buffer. Inactivation by K ethylxanthate and Na diethyldithiocarbamate occurs to the same extent in both PO₄^{****}-citrate and acetate buffers whereas KCN is 3 times as active in the former. The inactivation is probably due to fixing of the free bonds of the Cu portion of the enzyme complex. H. G. R.

Biochemical hydrogenations. IX. Fumarate-hydrogenase as yellow enzyme. F. G. Fischer, A. Roedig, and K. Rauch (Annalen, 1942, 552, 203-242).—Difficulties in the prep. of fumarate-hydro-1942, 302, 203-242). —Difficulties in the pipe, of runated in the genuse are due to dissociation of the protein from the prosthetic group which prohibits repeated pptn, with org. solvents or $(NH_4)_2SO_4$ particularly in feebly acid solution, repeated adsorption, or protracted dialysis. A possible method consists in the purification of the protein component followed by recombination. The observations emphasise the necessity for caution in judging the purity (in the sense of uniform enzymic action and homogeneous protein component) of other yellow enzymes. It is not sufficient that the ratio of yellow group to protein carrier should indicate an extensive enrichment of a flavoprotein. The prep. of a flavin enzyme by the absorption method of Weygand *et al.* (A., 1937, III, 314) does not lead to a homogeneous lactoflavin protein but to a mixture of it with the dinucleotide protein of fumarate-hydrogenase and, probably, other flavoproteins. The electrophoretic method of Thorelli does not lead to a separation of flavin enzyme and fumarate-hydrogenase in the neighbourhood of the isoelectric point (pH 5.25) of the former. At pH 8.5 the ionic mobilities of the 2 enzymes are sufficiently different to permit extensive separation. The yellow enzyme is found to contain at least 2 proteins which are active to methylene-blue and have different rates of migration, probably the "old" yellow enzyme of Warburg and Christian and the "new"

enzyme of Haas. Recombination experiments show that alloxazineadenine-dinucleotide is the sole prosthetic group of fumaratehydrogenase; reunion is a slow process. Lactoflavin phosphate exercises essentially an accelerating action towards leuco-dyes which is also exerted by non-phosphorylated lactoflavin. Fumaratehydrogenase is not identical with any hitherto known yellow enzyme. Xanthine, d-amino-acid, and aldehyde dehydrogenases are not present in the crude yellow enzyme. The '' old '' yellow enzyme is distinct from fumarate-hydrogenase in prosthetic group and protein component; if its protein is combined with alloxazine-adeninedinucleotide an enzyme results which has no fumarate-hydrogenase activity. The prosthetic `group of cytochrome c reductase is not identical with that of fumarate-hydrogenase. The flavoprotein obtained from yeast by Green et al. (A. 1941, III, 535) has fumaratehydrogenase activity somewhat exceeding that of the '' crude yellow enzyme.'' Fumarate-hydrogenase is incapable of hydrogenating the ethylenic linking of af-unsaturated alcohols and hence is certainly different from '' ethylene hydrogenase.'' The succinodehydrogenase action persist. H. W.

Vegetable aldehyde-dehydrogenases. I. W. Franke and F. Schumann (Annalen, 1942, 552, 243-270).—The kind of potato and time of year have a great influence on the amount of aldehyde-dehydrogenase, which is best obtained by successive extraction with $0\cdot1_M\cdot Na_2HPO_4$, dialysis, and pptn. with $(NH_4)_2SO_4$, whereby the activity is increased 125-fold. Adsorption on kaolin, pptn. with acetone, or direct pptn. of the juice by $(NH_4)_2SO_4$, is ineffective. The activity of the enzyme is measured by the reduction of NO_3' to NO_2' , which is determined colorimetrically or manometrically after addition of $NH_2\cdot SO_3 H$; alternatively the reduction of methylene-blue is utilised. In the NO_3' reduction there is a close proportionality between enzyme concn. and rate of reaction. The sub-

strate affinity is 4—5 times that of the animal enzyme. The shape of the activity-pH curve and particularly the location of the optimum depends greatly on the choice of buffer. The temp. optimum is 40°. In the methylene-blue reduction there is at first approx. proportionality between enzyme concn. and rate of reaction but this is followed by a stage in which rate is independent of quantity of enzyme. The dependence of enzyme action on substrate concn. is similar to that in the nitrate experiments. The pH-activity curve resembles that of most dehydrogenases. Potato aldehydedehydrogenase is a globulin. It is rapidly damaged by org. solvents even at low temp. It does not require a dialysable co-enzyme. It is very sensitive towards dil. acid but indifferent to dil. alkali. It is destroyed at 74°. Contrary to Bernheim, benzoquinone does not appear able to function as acceptor. The position of O₂ is doubtful since its presence harms the enzyme but for the present it appears that the vegetable aldehyde-dehydrogenases should be classed with the anaerodehydrogenases. H. W.

Modification of Thunberg method for determination of dehydrogenases in tissues. U. Friedemann and A. Hollander (J. Lab. clin. Med., 1942, 28, 353-355).—Tissue suspensions, methylene-blue, and substrates are mixed with melted agar and decolorisation is observed in the solidified medium. The agar provides anaērobic conditions and prevents sedimentation of the tissue elements. C. I. C. B.

Isolation of a new oxidation-reduction enzyme from lemon peel (vitamin-P). C. Z. Wawra and J. L. Webb (Science, 1942, 96, 302—303).—Hesperidin chalkone (3:2':4':6'-tetrahydroxy-4methoxychalkone glycoside), m.p. 251—252°, identical with Szent-Györgyi's eriodictin, was isolated by dissolving hesperidin from lemon peel in cold alkaline solution, and neutralising. It is autoxidisable and can increase O_2 consumption in a respiratory system. The intact enzyme (hesperidin chalkone + protein), which was isolated from the aq. extract by pptn. with (NH₄)₂SO₄, and the chalkone, can act as H transporters in mammalian tissues. The chalkone decreases the fragility of the capillaries and prevents local hæmorrhages. E. R. R.

Biological catalysis of exchange reaction between water and hydrogen. H. D. Hoberman and D. Rittenberg (*J. Biol. Chem.*, 1943, 147, 211-227).—The bacterial enzyme (e.g., of *Proteus vulgaris*) catalysing the exchange reaction between water and H₂ is reversibly inhibited by oxidation, probably of the Fe of a Fe porphyrin-protein complex. Reactivation is due to reduction, probably by biological reducing agents; it occurs when glucose, pyruvate, formate, fumarate, or succinate is added. The two enzymes, hydrogenase and hydrogenlyase, responsible for the exchange reaction are not separable. Reduction of methylene-blue by H₂ is inhibited by urethane without effect on the exchange reaction. The rate-determining step of the exchange reaction, which at high bacterial concns. becomes the rate at which H₂ diffuses to the enzyme, is the rate of chemical reaction between water and H₂. The rate decreases with increase in pressure. The reaction H₂ + D₂ = 2HD does not occur to a significant extent. F. O. H.

Enzymic fixation of carbon dioxide in oxalacetate. L. O. Krampitz, H. G. Wood, and C. H. Werkman (J. Biol. Chem., 1943, **147**, 243— 253).—The exchange of ${}^{13}CO_2$ with the carboxyl groups of oxalacetic acid is not significant during spontaneous decarboxylation but is evident during enzymic decarboxylation (cf. A., 1941, III, 708); the exchange is limited to the carboxyl adjacent to the methylene group. A dynamic equilibrium involving the shift of the OH of enol oxalacetate does not occur. Oxalacetate derived from oxidation of fumarate gives high exchange vals. No exchange occurs during the oxidative decarboxylation of pyruvate or a-ketoglutarate, and pyruvate derived from oxidation of lactate does not give exchange. F. O. H.

Esterase (butyric) activity. I. Esterase content of serum of mice from concer-resistant and cancer-susceptible strains.—See A., 1943, III, 182.

Lactase of Escherichia coli-mutabile.-See A., 1943, III, 210.

Separation of d-amino-acid oxidase and d-dipeptidases. R. Merten and A. Schmitz (*Naturwiss.*, 1942, **30**, 588—589).—Acetone-dried extracts of pig's kidney contain d-amino-acid oxidase and d-dipeptidases which can be separated by adsorption of the latter on Al_2O_3 -A. They may be partly eluted by an alkaline solution of NH_3 , HCO_3' , or HPO_4'' containing 20% of glycerol. The prep. is described. J. H. B.

Linking of "natural" and "unnatural" peptidases in animal and cancer cells. E. Maschmann (*Naturwiss.*, 1942, 37, 565—567).— The peptidases of liver or kidney tissue (rat, rabbit, guinea-pig) which has been frozen by solid CO_2 and dried in vac. over P_2O_5 are easily extractable by water. If acetone is used as the desiccating agent part of the peptidase is insol. in water. Peptidases from Ehrlich mouse carcinoma are easily extracted by water from tissue dried by either process. F. L. W.

Proteinase in brain.—See A., 1943, III, 164.

Estimation of trypsin by fibrinolysis. J. H. Ferguson (Proc. Soc. Exp. Biol. Med., 1942, 51, 73-74).—A stable fibrinogen solution (A., 1942, III, 511) is mixed with a stable thrombin (Parfentjev, *ibid.*, 89), and trypsin is added a few sec. before clotting occurs. From time taken to reach max. transparency (88%) by Evelyn photometer trypsin is determined, and unknown solutions can be compared with cryst. samples. V. J. W.

351

Enzymic nature of angiotonin formation from renin and renin activator. A. A. Plentl and I. H. Page (J. Biol. Chem., 1943, 147, 135—141; cf. A., 1940, III, 192).—Renin activator containing 85% of globulins is obtained from serum of pig by fractional pptn. with $(NH_4)_2SO_4$ at pH 6.5. When vols. of renin solution are plotted against pressor responses obtained on injecting activated renin into pithed cat, the curve produced is characteristic of a reaction of the first order. Also, the curve obtained by plotting log of concn. of activator as function of pressor response against time is a straight line. The results show that the reaction between renin and its activator is of the first order, renin being an enzyme and the activator its substrate. W. McC.

Action of pancreatic amylase. II. J. E. Little and M. L. Caldwell (J. Biol. Chem., 1943, 147, 229–232; cf. A., 1942, III, 489).— The rate and order of the inactivation reaction of HNO_2 on the saccharogenic activity of pancreatic amylase are very different from those for the action of HNO_2 on the phenolic group of tyrosine. This supports the view that the activity of the enzyme is intimately connected with the free primary NH_2 groups of the intact protein mol. F. O. H.

Amylases of Ipomaa batatas and Solanum tuberosum.—See A., 1943, III, 219.

Factors in the culture medium that affect the phosphatase content of yeast.—See A., 1943, III, 203.

Oxidation-reduction and phosphorylation processes regulated by cozymase and their significance for stability and synthesis of cozymase. A. Lennerstrand (Arkiv Kemi, Min., Geol., 1941, 14, A, No. 16, 109 pp.).-During glycolytic decomp. of hexosediphosphoric acid in the system hæmolysed horse erythrocytes, cozymase, hexose-diphosphoric acid, pyocyanine, and PO₄"' buffer, glyceraldehyde-phosphoric acid is oxidised to phosphoglyceric acid under the influence of pyocyanine and simultaneously inorg. is converted into org. $PO_4^{\prime\prime\prime}$. Addition of muscle-adenylic acid to the hæmolysed system causes an accumulation of adenosinetriphosphoric acid. If dismutation is inhibited, as in absence of cozymase, pyocyanine, or $PO_4^{\prime\prime\prime}$, or by addition of iodoacetate, pyrophosphate formation does not occur. NaF does not inhibit the reactions in the hæmolysed For γ , or by addition of a balance of the reactions in the hæmolysed not occur. NaF does not inhibit the reactions in the hæmolysed system. In the phosphorylation of adenylic acid by inorg. PO₄^{'''} through 1: 3-diphosphoglyceric acid the 1-PO₄^{'''} group must be esterified by adenylic acid in presence of NaF. Dephosphorylation of 3-monophosphoglyceric acid by apozymase occurs only in presence of adenylic acid and cozymase. NaF and oxalate considerably inhibit esterification of 3-monophosphoglyceric acid with adenylic acid. Fermentation of glucose by the apozymase system is acaction. For instrumentation of glucose by the apozymase system is ac-celerated by addition of muscle-adenylic acid. Apozymase contains an enzyme which destroys cozymase at const. rate and inactivates the Warburg co-enzyme. $PO_4^{\prime\prime\prime}$ and oxalate strongly inhibit this decomp. of cozymase; lactate, citrate, and arsenate have less, and NaF no, effect. Muscle-adenylic acid, adenosine triphosphoric acid, and adenosine in presence of $PO_4^{\prime\prime\prime}$ also inhibit, whilst yeast-adenylic acid, adenine, and nicotinamide are without effect. Hexosedi-phosphoric acid increases the stability of cozymers towards to account action, addenne, and incommande are written chosen are approximately phosphoric acid increases the stability of cozymase towards apozymase, and in presence of $PQ_4^{\prime\prime\prime}$ a greater protective action is exerted than with either substance alone. NaF completely annuls the effect of hexosediphosphoric acid. Since 3-monophosphoglyceric acid does not suppress the inactivating effect of apozymase, phosphorylation as well as oxidation-reduction processes are needed for maintenance of cozymase activity, and the stability of cozymase during fermentation of glucose by the apozymase system depends on the unhindered course of both processes. Glucose alone, but not in presence of adenylic acid or $PO_4^{\prime\prime\prime}$, inhibits the stabilising effect of hexosediphosphoric acid on cozymase. Inactivation of cozymase by addition of NaF to the fermentation system is independent of the inhibiting acetaldehyde which is formed. In the pyocyanine system the rate of consumption and amount of O2 used are proportional to the concn. of cozymase. Inactivation of cozymase in isolated muscle tissue is inhibited by $PO_4^{\prime\prime\prime}$ and hexosediphosphoric acid. The increased glycolysis caused by tetanisation does not decrease the cozymase content of muscle. Only an insignificant decomp. of cozymase occurs during the glycolytic decomp. of hexosediphosphoric acid in the hæmolysed system of horse erythrocytes, whilst in the hæmolysed system alone there is approx. 40% inactiv-ation after 3 hr. at 37°. After inactivation of cozymase by apozym-ase, addition of glucose, hexosediphosphoric acid, and PO₄^{$\prime\prime\prime}$ causes some reactivation, but most of the cozymase is irreversibly in-</sup> Quicker reactivation occurs in presence of muscleactivated. adenylic acid or acetaldehyde. Each of these added substances alone has only a slight or no effect on reactivation, and for max. reactivation of non-irreversibly inactivated cozymase addition of the complete fermentation system is necessary. Absence of $PO_4^{\prime\prime\prime}$

also causes inactivation. and subsequent addition of PO₄"" has a pronounced activating effect. Changes in the rate of fermentation caused by alteration of temp. produce corresponding changes in rate of reactivation of cozymase. If the induction period in the fermentation system is eliminated by addition of muscle-adenylic acid and acetaldehyde reactivation of cozymase is an exponential function and at any instant is proportional to rate of fermentation. NaF causes a decrease in concn. of cozymase in living yeast cells, but there is complete resynthesis of cozymase after removal of NaF by washing, from which it is concluded that the living cell contains a system which decomposes cozymase. When yeast cells are suspended in a solution containing adenine and nicotinamide there is a great increase in the amount of cozymase, which is further increased if glucose is also present. NaF completely inhibits synthesis of cozymase from nicotinamide and adenine. The factors which govern the concn. of cozymase in the living cell are discussed. I. N. A.

XXV.—MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Linkage of physico-chemical processes in biological systems. E. J. Conway and E. O'Malley (*Nature*, 1943, **151**, 252).—The shift of equilibrium between intracellular and extracellular cations during fermentation observed with K (A., 1942, III, 852) is shown to occur with NH₄ (cf. A., 1942, III, 639). E. R. S.

Intermediate reactions of fermentation. O. Meyerhof (Wallerstein Lab. Comm., 1942, 5, 181-186).—A review. I. A. P.

Biological degradation of acetic acid. I. Induction period with impoverished yeast. F. Lynen (Annalen, 1942, 552, 270-306).---The induction period in the biological degradation of acetic acid by impoverished yeast is shortened by ethyl alcohol and to a still by impoverished yeast is shortened by ethyl alcohol and to a still greater extent by glucose. Lactic and pyruvic acid have little effect by themselves but in conjunction with ethyl alcohol they accelerate the degradation. This "primary effect" is explained by the hypothesis of the intermediate production of oxalacetic acid, $CO_2 + CH_3 \cdot CO \cdot CO_3 H \rightarrow CO_2 H \cdot CH_2 \cdot CO \cdot CO_2 H$. With succinic acid in relatively high concn. ("secondary effect") a diminution in the induction period is also observed which is further shortened by ethyl alcohol or glucose. In this case, however, the former was as helpful as or more helpful than the latter. The superiority of sugar in the absence of succinic acid is solely due to its ability to furnish in the absence of succinic acid is solely due to its ability to furnish pyruvic and thence oxalacetic acid, which can be obtained directly from succinic through fumaric and malic acid. This "secondary effect" is produced also by pyruvic acid, propyl and butyl alcohol and probably involves the dehydrogenation of aldehyde to acid. The primary step in the biological degradation of acetic acid is regarded as the condensation of acetic with oxalacetic to citric acid, which is only possible if an aldehyde is simultaneously dehydrogenated to an acid. The observed action of the alcohols is shown to be due to the aldehydes to which they are oxidised. It is assumed that as a consequence of the aldehydic dehydrogenation either oxalacetic or acetic acid (or both) is so "activated" that condensation to citric acid occurs. Complete schemes for the primary and secondary effect are given, the former of which pivots around β -aldehydopropionic acid, the action of which is verified experimentally. The induction period is due to the time required by the impoverished yeast to accumulate sufficient oxalacetic acid (primary effect) and aldehyde (secondary effect) from its reserve materials In the action of pyruvate alone there appears to be an initial period in which the effect is independent of the amount. This period, at present unexplained, is nullified by ethyl, propyl, or butyl alcohol, acetaldehyde, or propaldehyde. Under certain conditions pyruvic acid and ethyl alcohol appear mutually replaceable. H. W.

Preparation of hexose di- and mono-phosphate and phosphoglyceric acid.—See A., 1943, II, 123.

Aspartic acid as partial substitute for biotin in stimulation of growth of Torula cremoris. S. A. Koser, M. H. Wright, and A. Dorfman (Proc. Soc. Exp. Biol. Med., 1942, 51, 204-205).--l- or dl-Aspartic acid partly replaced biotin in culture media, but 20,000 times as much was required. 18 other amino-acids were similarly tested. All gave negative results except for a slight effect of l-glutamic acid. V. J. W.

Determination of vitamin-B_1 in yeast. H. Rothchild and P. P. Gray (*Wallerstein Lab. Comm.*, 1942, 5, 187–192).—A modification of the Melnick-Field method (A., 1939, III, 402) is described, suitable as a rapid control test for brewers' yeast. Specialised equipment is unnecessary. Ale yeasts tend to give lower results than lager yeasts, but the results for successive yeast samples from a given brewery remain approx. const. I. A. P.

Metabolism of Aspergillus niger. I. Degradation of citric acid. M. Definer (Annalen, 1943, 553, 191-202).—In the animal organism, fungi, and yeast the degradation of citric acid occurs through isocitric, oxalosuccinic, a-ketoglutaric acid, etc. With organisms which utilise citric acid as sole C source the a-ketoglutaric acid is transformed by NH, into glutamic acid from which the other aminoacids are derived. Only in the case of bacteria is citric acid degraded aerobically and anaerobically through acetic and oxaloacetic acid. With bacteria which utilise citric acid as sole C source oxalacetic or fumaric acid is transformed by NH₃ into aspartic acid and thence into the other amino-acids. H. W.

200

Seed-borne disease of barley caused by Helminthosporium sativum, Pammel, King, and Bakke.—See A., 1943, III, 218.

Pencillin B, an antibacterial substance from Penicillium notatum E. C. Roberts, C. K. Cain, R. D. Muir, F. J. Reithel, W. L. Gaby, J. T. Van Bruggen, D. M. Homan, P. A. Katzman, L. R. Jones, and E. A. Doisy (*J. Biol. Chem.*, 1943, 147, 47-58).—The antibacterial substance *penicillin B* differs from penicillin. It is adsorbed from the culture medium on benzoic acid at pH 3.5 (H_3PO_4) and the crude material obtained by dissolving the benzoic acid with acetone. It may be purified by extraction with cold water and fractional pptn. with acctone, the lst ppt. obtained on adding acetone being discarded, or by extrac-tion with 30% aq. acetone and pptn. by increasing the acetone concn. to 50%. The assay depending on the bactericidal action on Castle dependent of the acetone and pptn. Staph. aureus is described. The dry, purified material is stable for 5-6 months but is rapidly inactivated in solutions of pH less than 2 or greater than 8. The activity is not affected by treatment with H_1O_2 or Na_2SO_3 at pH 7 or HCN at pH 3.8 but is rapidly destroyed by glacial active or forwards and the state of the by glacial acetic or formic acids, conc. phthalate buffer, or alcohol in presence of salts. The material is protein in nature, free NH, groups not being necessary for the activity, and may be salted out from aq. solution by $\frac{1}{2}$ saturation with $(NH_4)_2SO_4$ or saturation with MgSO₄ and the activity is unaffected by digestion with pepsin, trypsin, taka-diastase, or emulsin although papain (activated with HCN) causes almost complete inactivation in 24 hr. Penicillin B is toxic to mice but this is not cumulative and attempts to reduce the toxicity were not successful. It is highly active against both Gram-positive and -negative bacteria and the activity is dependent on the presence of certain carbohydrates in the medium (d-glucose, d-galactose, d- and l-xylose), the activity being bactericidal in nature rather than bacteriostatic. It is insol. in fat solvents but under certain conditions (e.g., addition of yeast extract to the medium) the presence of a fat-sol., substance may also be demonstrated. H. G. R.

Development of *Penicillium* on the cut surfaces of certain vegetables. W. A. R. D. Weston and R. E. Taylor (*Nature*, 1943, 151, 54-55).—Dipping cut surfaces of potato tubers and other vegetables in 2-5% aq. Cu" or Co" solutions promoted the growth of *Penicillium*; Ni and Fe were less effective. A. A. E.

Cultural characteristics of *Penicillium notatum* in relation to production of antibacterial substance: indication of dual nature of the antibacterial substance. W. Kocholaty (*J. Bact.*, 1942, 44, 469– 477).—5 different strains of *P. notatum* varied widely in their production of penicillin. The optimum growth of the mould or optimal temp. of growth did not necessarily coincide with optimal production of penicillin. When equiv. amounts of Zn, Cu, or Mn sulphate were substituted in the medium for 10 mg, of FeSO₄, 7H₂O per 1., Mn surpassed Fe and Fe greatly surpassed Cu in promoting the production of antibacterial substances. At least 3 strains produced 2 different antibacterial substances one of which is much more active against *Bact. coli* than that present in purified penicillin.

Cultivation and nutrient requirements of a chytridiaceous fungus, *Rhizophlyctis rosea*. R. Y. Stanier (*J. Bact.*, 1942, **43**, 499–520).— Of 25 substances tested as sources of C and energy, only the carbohydrates, cellulose, cellobiose, and glucose, supported satisfactory growth. Cellulose and cellobiose were much better C sources than glucose. With a suitable carbohydrate growth was excellent in a medium containing NH_3 and the necessary mineral nutrients. The best N source was NH_3 . Amino-acids, peptone, and yeast extract could also be used, but not NO_3 '. F. S.

Fungicidal versus fungistatic [action].—See B., 1943, III, 49.

Essential factors for the growth of the ciliate protozoon Colpidium campylum. R. E. Peterson (J. Biol. Chem., 1942, 146, 537-545).----Yeast autolysate contains at least 4 sp. factors (B, F_1 , F_2 , and IV) required for the growth of the organism. F_1 and F_2 are dialysable, B and IV are not. IV has not been isolated but B, F_1 , and F_2 have been conc. 70-, 140-, and 400-fold respectively by methods described. The factors are probably not identical with known vitamins or growth-factors. The organism also has a sp. N or protein requirement; it grows in proteose-peptone but not in casein-peptone and other similar media. Possibly the size of the protein degradation product is the determining factor in satisfying protein requirement. W. McC.

Microcataphoresis of animal parasites. H. A. Senekjie and L. C. Scott (Proc. Soc. Exp. Biol. Med., 1942, 51, 174—175).—All organisms examined, including trypanosomes, worms, and Entamæba kistolytica, bore a negative charge as do all bacteria, so that their cultures cannot be purified by this method. V. J. W.

Method for reclamation of agar. O. F. Edwards (Proc. Soc. Exp. Biol. Med., 1942, 51, 84).-Used agar culture media can be reclaimed

by repeated freezing and thawing, impurities being removed by adding distilled water and filtering. V. J. W.

Pyrex suspensions in turbidimetric and colorimetric determinations. F. J. Hallinan (*Amer. J. Publ. Health*, 1943, **33**, 137-140).—These glass suspensions are more stable than $BaSO_4$ suspensions. They are standardised by the photoelectric method and the methods for obtaining differently coloured suspensions are described. C. I. C. B.

Effect of carcinogens on small organisms. IV. Exposure of bacteria to high temperature.—See A., 1943, III, 182.

New acid-resistant Actinomyces, A. ondulans, n. sp. A. Sartory (Compt. rend., 1942, 214, 502—504).—The isolation of A. ondulans from the sputum of a person suspected of pulmonary tuberculosis is described. H. W.

Agar-decomposing strains of Actinomyces coelicolor species-group. R. Y. Stanier (J. Bact., 1942, 44, 555-570). F. S.

Bacteriostatic and bacteriolytic properties of actinomycetes. M. Welsch (J. Bact., 1942, 44, 571–588).—Bacteriolytic activities against killed Gram-positive and Gram-negative bacteria and against living Gram-positive bacteria are widely distributed among the actinomycetes. There was no lytic activity against living Gram-negative bacteria. Growth-inhibiting properties were significantly associated with bacteriolytic action on living Grampositive bacteria. Similar antibacterial properties were also found in certain *Proactinomyces* and *Micromonospora*. There was no production of adaptive lysins by actinomycetes grown in association with bacteria. True lysozyme was not produced by actinomycetes.

Rapid test for activity of certain antibiotic substances. G. Rake, C. M. McKee, and H. Jones (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 273-274).—Solutions containing aspergillic acid are compared with standard solutions by determining the quantity needed to abolish luminescence in a culture of *Photobacterium fischeri* in 30 min. at 25°. This activity is not possessed by penicillin.

V. J. W. Bactericidal action. I. Disinfecting power of alcohols in nonaqueous solvents. G. Endres and E. Rohr (Annalen, 1942, 552, 167-175).—The bactericidal action of methyl, ethyl, and propyl alcohol in presence of water towards S. aureus and B. coli increases with increasing mol.-wt. whereas the reverse is true when the alcohol is diluted with CCl₄ or light petroleum. This decline is attributed to the increase in the difficulty of reaching the concn. of alcohol in the cell necessary for the pptn. of the plasma-colloids as the mol. wt. of the alcohol increases. Distribution experiments with the system alcohol-CCl₄-water show that more alcohol is alcohols to embryos in light petroleum or CCl₄ has a similar effect. The hypothesis that the chemical reactions of alcohols which cause disinfection do not occur in the lipoid but in the aq. phase of the cell contents appears generally true but Overton's theory of narcosis does not appear to be directly applicable to disinfection. H. W.

Oxidation of hydrocarbons by marine bacteria. C. W. Grant and C. E. ZoBell (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 266–267).— O_2 consumption was determined by comparing O_2 contents of sea water in a stoppered culture flask before and after 14 days' incubation at 22³. A no. of organisms were isolated from sea water and mud, and the ability to oxidise hydrocarbons was not confined to any one. Compounds oxidised included light petroleum, kerosene, petrol, and toluene. V. J. W.

Growth stimulant for Lactobacillus casei. M. A. Pollack and M. Lindner (J. Biol. Chem., 1943, 147, 183-187).—The presence in natural extracts of a new growth factor is demonstrated. It is water-sol, slightly sol. in org. solvents, stable in slightly acidic or alkaline solutions, but destroyed by conc. acid or alkali. It is not a peptide but is amphoteric with an isoelectric point in the pH range 3:5-4:5. The growth factor is resistant to adsorption and is partly pptd. by flavianic acid and heavy metals. J. E. P.

Inability of pimelic acid to replace biotin as growth factor for Lactobacillus case. L. D. Wright (Proc. Soc. Exp. Biol. Med., 1942, 51, 27).—Addition of 5 μ g. of pimelic acid to culture tubes failed to augment production of acid, which was increased 2—3 times by presence of 0.0005 μ g. of biotin. V. J. W.

Unidentified micro-organism pathogenic for man. J. I. Schleifstein and M. B. Coleman (N.Y. Sta. J. Med., 1939, 39, 1749-1753).— A motile Gram-negative micro-organism with a tendency to bipolar staining, of which coccoid and rod forms were seen on different media, was isolated from 5 patients. In 2 cases it was found in granulomatous lesions about the face, in one in an intestinal ulcer, and in 2 cases in the faces of children showing symptoms of enteritis. It was highly virulent for mice, less so for guinea-pigs, still less for the white rat, and doubtfully pathogenic for the rabbit. Some cultural and biochemical properties are similar to those of B. lignizi and Past. pseudotuberculosis. E. M. J. **Oxidation of steroids by** Alkaligenes facalis. H. B. Hughes and L. H. Schmidt (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 162–163).— This organism, in serum culture, oxidised deoxycholic, hyodeoxy-cholic, and lithocholic acids and dehydroisoandrosterone but had no action on æstradiol or æstriol. v. J. W

Intestinal bacteria in uncooked food. H. Schretzmair (Zentr. Bakt., 1942, I, 149, 281-294).—In 103 samples of various raw foods, including vegetables, salads, cheese, milk, and fruit, Bact. coli was present in 69, paracolon bacilli in 80, enterococci in 59, Ps. pyocyaneus in 8, and Proteus in 1 cheese. Of the Bact. coli isolated, 30 were of type I (translucent colonies on Endo agar) and 116 were of the toxic types III and IV (opaque colonies). Although these organisms are non-pathogenic they may, when ingested, alter the intestinal flora and overgrow the normally preponderant type I Bact. coli which is antagonistic to pathogenic organisms. F. S.

Causes of Bact. coli antagonism [to other bacteria]. J. Mercier (Zentr. Bakt., 1942, I, 149, 295-393).—A highly antagonistic strain of Bact. coli was more resistant than a moderately antagonistic strain to 1% phenol, 0.15% zephirol, and a temp. of 55°. The highly antagonistic strain also multiplied more rapidly in ordinary and deficient media, but was no less susceptible to differences in pH. Filtrates of cultures of the two strains allowed equal growth when incoulated with either strain or with *Bact. tythosum.* F. S. when inoculated with either strain or with Bact. typhosum.

Mode of action of sulphonamides on E. coli.-See A., 1943, III, 194.

Effect of various substances on oxygen uptake of Blastomyces dermatiditis. F. Bernheim (J. Bact., 1942, 44, 533-539).—Washed suspensions of Blastomyces dermatiditis oxidised added glucose, mannose, lactate, and pyruvate. The action of anisaldehyde, monoiodoacetate, and Na selenite on the oxidation of these substances indicated that separate enzyme systems were involved. Lower fatty acids were oxidised but higher fatty acids inhibited the control respiration and the oxidation of added substrates. Free NH₃ was produced by the suspensions. Both the natural and non-natural isomerides of the amino-acids increased the O_2 uptake but were not deaminated. Glucose and, to a smaller extent, acetate depressed NH_3 production. Pyruvate and lactate had no effect. CN' inhibited the oxidation of all added substrates including succinic acid, but had little effect on the control respiration, possibly because of a failure to penetrate the cell. F. S.

Physiological studies of *Brucella*. I. Quantitative accessory growth factor requirement of certain strains of *Brucella*. II. Accessory growth requirement of recently isolated strains of *Brucella abortus*. N. B. McCullough and L. A. Dick (*J. infect. Dis.*, 1942, 71, 193-197, 198-200).--I. With a synthetic amino-acid-glucoseinorg. salt medium the appropriate amounts for accessory factor tests with laboratory strains of Br. mediums, Br. abortus, and Br. suis were per c.c.: thiamin 0.2 µg., nicotinic acid 0.2 µg., Ca panto-thenate 0.04 µg., and biotin 0.001 µg. II. All of 41 recently isolated strains of Br. abortus required an

increased CO_2 tension and failed at first to grow on the synthetic medium with the 4 accessory factors. After acclimatisation to atm. conditions growth of 31 strains was obtained and 23 were successfully grown in the presence of thiamin and biotin. Nicotinic acid and Ca pantothenate enhanced the growth of some strains.

F. S

Staining procedure for use in *Brucella* opsonocytophagic test.—See A., 1943, III, 157.

Globucid and serum treatment of experimental gas gangrene. H Klose and W. Schroer (Zentr. Bakt., 1942, I, 149, 304-316).-Globucid (sulphonamide) in doses up to 1.5 g, per kg-body wt. was of less val. than polyvalent serum in doses of 0.5 c.c. (mice) and 1.0 c.c. (guinea-pigs) in the prevention and treatment of infection with cultures of *Cl. welchii, Cl. ædematiens*, and *Cl. septique* in mice and guinea-pigs. F. S.

Amino-acid fermentations by anaerobic bacteria. B. P. Cardon (Proc. Soc. Exp. Biol. Med., 1942, 51, 267-268).-Two Gramnegative organisms are described, of which one ferments alanine, serine, or threonine and the other attacks glycine. Fermentation products include NH₃ and sometimes H₂. V. J. W.

Carbohydrate metabolism of diphtheria bacilli. I. Acid fission of carbohydrate in peptone solution by the types of Corynebacterium diphtheriæ. H. Hompesch (Zentr. Bakt., 1942, I, 149, 257—280).— In a medium containing 1% of Witte peptone and 0.5% of NaCl, adjusted to pH 7.6, C. diphtheriæ produced acid in the presence of glucose, fructose, galactose, mannose, maltose, starch, glycogen, dextrin, and glycerol but not of sorbose, arabinose, xylose, rhamnose, lactose, sucrose, raffinose, inulin, adonitol, dulcitol, mannitol, and sorbitol. Type gravis produced most acid with glucose and fructose, less with starch, mannose, dextrin, and maltose, and least with galactose and glycerol. Type *mitis* produced most acid with glucose and fructose, less with mannose, maltose, and galactose, and least with starch, glycerol, and dextrin. Type *intermedius* produced more acid from mannose than from fructose, glucose, maltose, or galactose, and least from dextrin, starch, and glycerol. In general the production of acid fell after 1 day's incubation and the max.

acid val. was reached at 2-3 days, followed by a fall to 21 days. The min. pH was usually reached before the max. acid val. by titration against NaOH. In the carbohydrate-free peptone solution the pH fell slightly and then at 2-3 days rose above neutrality.

Reproduction of bacteria from large bodies of *B. funduliformis.* L. Dienes and W. E. Smith (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 297-298).—Large bodies, grown anaërobically on agar, gave rise by division to normal bacteria as well as to other morphological V I W J. W forms.

Hamobartonella tyzzeri in Colombia. H. Groot (Proc. Soc. Exp. Biol. Med., 1942, 51, 279).—This organism, previously found in Peruvian guinea-pigs, was found as a natural infection in V. J. W. Colombia.

Treatment of experimental leptospirosis with serum. C. L. Larson (U.S. Publ. Health Repts., 1943, 58, 10–15).—Serum from patients convalescent from Weil's disease and immune rabbit serum and plasma prevent the death of young white mice infected with L. *icterohæmorrhagiæ*. The effect of these materials is marked if administered on or before the 4th day after infection. C. G. W.

Production of Shwartzman phenomenon with sulphonamide conju-gate of bacterial filtrate. I. E. Gerber and M. Gross (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 237–238).—A meningococcal filtrate coupled with p-aminobenzenesulphonacetylimide could be used interchangeably with the original filtrate for either skin prep. or injection to bring about this reaction. W

Accessory growth factor requirements of members of genus Pasteurella. S. Berkman (J. infect. Dis., 1942, 71, 201-211).—The hæmorrhagic septicæmia group of Pasteurella grew in a hydrolysed gelatin basal medium when nicotinamide (or di- or tri-phosphopyridine nucleotide) and pantothenic acid were added. Nicotinic acid could not replace nicotinamide or diphosphopyridine nucleotide in supporting growth. These organisms converted nicotinamide into diphosphopyridine nucleotide or into some substance physiologically similar to it. The component parts of pantothenic acid, alone or in combination, did not substitute for the intact mol. Past. tularense grew slowly in a hydrolysed gelatin basal medium plus thiamin or cocarboxylase. 4 of 5 strains of *Past. pestis*, 5 of *Past. pseudo-tuberculosis*, and the 1 strain of *Past. hæmolytica* tested grew readily in an amino-acid medium in the absence of accessory growth factors.

Immunological and electrophoretic comparison of the antibody to C polysaccharide and the C-reactive protein of acute phase serum. E. Perlman, J. G. M. Bullowa, and R. Goodkind (*J. exp. Med.*, 1943, 77, 97—110).—The pptn. reactions of C polysaccharide, prepared from a rough type II pneumococcus, with C protein, the reactive protein in the sera of patients suffering from acute infections, and of C polysaccharide with C antibody, prepared in rabbit sera, were similar. Electrophoretic analysis showed that C antibody is in the weglobulin fraction whereas C protein mirrated with the callody. γ -globulin fraction whereas C protein migrated with the a-globulin fraction of acute phase serum. Tests with antibodies to sp. ppts. indicated that, whereas antibody globulin may be a reoriented normal globulin, C protein is probably an entirely new serum-F. S. protein.

Destruction of sulphonamide inhibition present in sera by soil bacillus (Mirick). D. A. Boroff and J. G. M. Bullowa (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 139-140).—When tubes of broth containing inhibiting serum, sulphapyridine, and this organism were kept overnight at 37° and then sterilised, they were found capable of inhibiting growth of pneumococci which grew readily in controls. V. J. W

Constitution-specificity of nicotinic acid as growth promoter of Proteus vulgaris and Streptobacterium plantarum. E. F. Möller and L. Birkofer (Ber., 1942, 75, [B], 1108—1118).—Experiments with nicotinic acid, its methyl ester, amide, and amide methiodide, coramine, pyridine-3-sulphonic acid, its amide and diethylamide, methyl picolinate, 6-methyl- and 2:6-dimethyl-nicotinamide, 2-acetylnicotinic acid, nicotine, pyrazine-3-carboxylic and -2:3-dicarboxylic acid, thiazole-5-carboxylic acid, cozymase, S-coramine, picolinic acid, thionicotinamide, thionicolinamide, guinoline-2, and picolinic acid, thionicotinamide, thiopicolinamide, quinoline-2- and -3-carboxylic acid confirm the constitution-specificity of nicotinic acid but do not afford so accurate a picture of the nature, importance, and position of substituents as is available in the case of aneurin. H. W.

Antagonism to nicotinic acid in its action towards Proteus vulgaris and Streptobacterium plantarum. E. F. Möller and L. Birkofer (Ber., 1942, 75, [B], 1118-1126).—The compounds investigated are much less active towards P. vulgaris than towards S. plantarum, the requisite concess. of, e.g., sulphapyridine and picolinic acid being 15:1 and 8:1. Pyridine-3-sulphonic acid does not restrict. The methiodides of nicotinic acid and pyridine-3-sulphonamide are more methodides of nicotinic acid and pyrame-3-suphonamide are more active than the parent compounds but comparison with NaI shows the effect to be due solely to I'. Thionicotinamide is slightly more restrictive than nicotinamide towards *P. vulgaris*; towards *S. plantarum* restriction to 50% growth is obtained with a much smaller proportion but complete inhibition necessitates relatively large amounts. With *S. plantarum*, the restriction curves of thiopicolinamide and picolinic acid are closely similar. Quinoline-2and -3-carboxylic acid have very marked control but little final effect; the -2- is more active than the -3-compound but the differences are not so pronounced as with the pyridinecarboxylic acids. Thiazolecarboxylic acid, nicotinic acid, cozymase, and Fe^{***} completely nullify the bacteriostatic action of pyridine-3-sulphonic acid. Fe^{***}-Zn^{**}-nicotinic acid are not more effective than the acid alone. The antagonism nicotinic acid-pyridine-3-sulphonamide is not of the same simple type as that between sulphanilic and p-aminobenzoic acid or between sulphopantothenic and pantothenic acid. The difficulties of interpreting the observations are discussed. H. W.

301

Salmonella typing in a public health laboratory. E. K. Borman, K. M. Wheeler, D. E. West, and F. L. Mickle (*Amer. J. Publ. Health*, 1943, 33, 127—134).—The methods used and the results obtained in the authors' laboratory are described. Antigenic analysis is employed to differentiate human from animal types and to distinguish the main somatic groups (*B*, *C*, *D*, and *E*). C. J. C. B.

Sulphathiazole-resistant Shigella paradysenteriæ. M. L. Cooper and H. M. Keller (Proc. Soc. Exp. Biol. Med., 1942, 51, 238).--Flexner and Sonne strains were developed which had increased resistance in vitro. The Flexner strain retained its virulence but was non-resistant in vivo, and the Sonne strain lost its virulence.

v. J. W.

Rapid method for determination of races of Shigella dysenteria, Flexner. L. M. Gonzáles and P. M. Otero (Proc. Soc. Exp. Biol. Med., 1942, 51, 94—95).—The polysaccharide fraction (Fuller, A., 1938, III, 700) was tested for precipitin reaction with serum of rabbits immunised with known strains, in recently isolated culture. V. I. W.

V. J. W. Anaërobic plates. M. S. Marshall and H. P. Nordby (*J. Bact.*, 1942, 44, 619).—Anaērobic conditions are provided with a small Petri dish in which Serratia marcescens is sown on ordinary agar. The edge of the inoculated half of the small dish is pressed with a slight turning motion into the agar of the larger plate, in which the anaërobes or suspected anaërobes have been sown on thioglycollate medium. The growth of S. marcescens quickly consumes the residual O₂ in the space between the agar surfaces and any seepage is immediately consumed. F. S.

Bacterial filtrates in treatment of cutaneous infections. F. C. Combes (N.Y. Sta. J. Med., 1942, 42, 1143—1145).—Bacterial filtrates were prepared from Staph. albus, aureus, and citreus, Strep. viridans, pyogenes, and hæmolyticus, and B. pyocyaneus and applied in solution or as a 12% ointment in carbuncles, furuncles, impetigo contagiosa, and pustular acne (68 cases) with almost invariably good effect. No effect was seen in 6 cases of sycosis, 5 of acne vulgaris, and 1 of staphylococcia. E. M. J.

Isolation of Staph. albus from hæmolymph of cockroach. O. E. Tauber and J. T. Griffiths, jun. (Proc. Soc. Exp. Biol. Med., 1942, 51, 45-47).—A fatal paralytic disease of cockroaches was found to be due to infection of the hæmolymph by this organism. V. J. W.

Ætiology and serum treatment of persistent epidemic and postoperative hiccup. [Causal streptococcus.] E. C. Rosenow (J. Lab. clin. Med., 1942, 28, 277-289).—A spasm-producing type of streptococcus (Str. singullus) was isolated from the nasopharynx, milk supplies, and outdoor air during epidemics of hiccup and certain respiratory infections and from the air of rooms occupied by persons having persistent hiccup. Persistent epidemic and postoperative hiccup are forms of mild myoclonic encephalitis. Antistreptococcic serum for epidemic encephalitis is curative in persistent hiccup.

C. J. C. B. Lethal agent produced by hæmolytic streptococcus. T. N. Harris (J. Bact., 1942, 43, 739-748).—A substance produced in broth cultures of Strep. hæmolyticus, group A, caused immediate death in mice on intravenous injection and characteristic neuromuscular effects in smaller doses. It is distinct from the hæmolysin produced in such cultures. It is non-protein in nature and is probably a small, alcohol-sol. mol., colourless in aq. solution. This lethal agent may be responsible for the toxic effects described by Todd (A., 1939, III, 332) as due to the hæmolysin. F. S.

Chronic choroiditis produced with Streptococcus viridans and Streptococcus hæmolyticus in normal and in immunised rabbits. S. R. Rothbard and D. M. Angevine (J. infect. Dis., 1942, 70, 201-207).—Previous immunisation with killed cultures of the homologous organism increased the susceptibility of rabbits to the development of chronic choroiditis after intravenous injection of living cultures of Strep. viridans or Strep. hæmolyticus. (5 photomicrographs.) F. S.

Milk-borne outbreaks due to serologically typed hæmolytic streptococci. T. D. Dublin, E. F. H. Rogers, J. E. Perkins, and F. W. Graves (*Amer. J. Publ. Health*, 1943, 33, 157—166).—9 such outbreaks are described. In one, the infection could be traced to a cow with an udder wound infected by a milker with a streptococcal throat. C. J. C. B.

Strains of Spirochæta persica in Palestine. R. Ashbel (Ann. trop. Med. Parasit., 1942, 36, 97-101).—This spirochæte was neurotropic in guinea-pigs and rats and was recovered from the brains of guineapigs up to 398 days after the blood was non-infective for susceptible animals. Relapses in human beings occurred with and without immunological changes, *i.e.*, mutations, in the spirochætes. In some cases a relapse-strain protected completely against itself and the original strain, while the original strain did not protect against the relapse-strain, indicating the presence of antigens common to both strains and new antigens in the relapse-strains. F. S.

Comparison of tissue and spirochætal antigens in complementfixation tests for syphilis based on the results observed in Washington serologic survey. J. A. Kolmer (Amer. J. clin. Path., 1942, 12, 480— 487).—The Eagle spirochætal complement-fixation test had a specificity rating of 98·1%, the Kolmer spirochætal complement-fixation test a rating of 93·7%, in 627 tests on sera of normal individuals and non-syphilitic donors, excluding those with leprosy and malaria. Spirochætal and tissue or lipoidal antigens gave a high % of positive or doubtful reactions with the sera of a small group of febrile and afebrile cases of malaria. In leprosy of any stage the Eagle Wasserman test gave $39\cdot8\%$ and the Eagle spirochætal antigen $20\cdot6\%$ positive or doubtful reactions. The Kolmer simplified test gave $57\cdot6\%$ and the spirochætal antigen $27\cdot1\%$ positive or doubtful reactions. All the spinal fluids of non-syphilitic donors gave negative reactions in both the Eagle and Kolmer tests employing tissue and spirochætal antigens. The sensitivity rating of the Eagle Wassermann test with the sera of 371 syphilitic individuals was $59\cdot2\%$ and with spirochætal antigen $75\cdot9\%$. The rating for the Kolmer simplified test was $74\cdot1\%$ and for spirochætal antigen $70\cdot6\%$. The Eagle Wassermann test gave $85\cdot6\%$ and the spirochætal antigen $82\cdot7\%$ positive or doubtful reactions with the spiral fluids of individuals with syphilis of the central nervous system. The Kolmer simplified test gave $73\cdot3\%$ and the spirochætal antigen $83\cdot1\%$ positive or doubtful reactions. C. J. C. B.

Effect of electrolytes on Kahn precipitates from human and animal sera. M. N. Green and H. J. Shaughnessy (*Proc. Soc. Exp. Biol.* Med., 1942, 51, 287—289).—Data are given as to the appearance and re-dissolution of Kahn ppts. in human syphilitic and non-syphilitic serum, and in sera of various animals, in presence of various concns. of NaCl. V. J. W.

Testing of antigenic power of tetanus toxoid in mice. W. L. Koerber and G. E. Mook (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 299– 300).—Swiss mice can be used in place of guinea-pigs for this assay. The test takes 3 weeks instead of 6, lower cost permits more animals to be used, and individual differences are less. V. J. W.

Comparison of glycerol and trehalose as nutrients for growth of tubercle bacilli. H. J. Henderson (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 67).—Replacement of glycerol by trehalose in Long's medium caused decrease of growth. V. J. W.

Detection of tubercle bacillus polysaccharides in infected material. J. T. Riordan (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 168—170).—No polysaccharides were found by the methods previously (A., 1942, III, 855) used *in vitro* unless the tissues examined were so treated as to disintegrate the bacilli. V. J. W.

Tuberculin tests in guinea-pigs with purified protein derivative.E.Bogen (Proc. Soc. Exp. Biol. Med., 1942, 51, 221-222).—Thepurified protein derivative of Seibert caused less local reaction andgreater lethal effect than old tuberculin.V. J. W.

Age of tissue in agar-slant cultures and multiplication of virus of herpes simplex. F. S. Cheever and G. P. Willmert (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 35–38).—The virus can be cultivated indefinitely in fresh tissue cultures, but if these are 4 days old the virus decreases and disappears by the 16th day. If they are 17 days old it disappears in about 4 days. V. J. W.

Preparation of purified influenza virus. M. Schaeffer (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 32—34).—By adsorption on $Ca_3(PO_4)_2$ and subsequent filtration through collodion, the N content of virus suspension was reduced from 3.52 to 0.04 mg. per c.c. with only slight loss of infectivity. V. I. W.

Swine lungworm as reservoir and intermediate host for swine influenza virus. III. Factors influencing transmission of the virus and the provocation of influenza. IV. Demonstration of masked swine influenza virus in lungworm larvæ and swine under natural conditions. R. E. Shope (J. exp. Med., 1943, 77, 111-126, 127-138). F. S.

Electron micrography of Western strain equine encephalomyelitis virus. D. G. Sharp, A. R. Taylor, D. Beard, and J. W. Beard (*Proc.* Soc. Exp. Biol. Med., 1942, 51, 206-207).—Virus particles are round and have a diameter of 40 m μ . (1 photomicrograph × 52,500.) V. J. W.

Response to poliomyelitis virus (Lansing) of mice on different levels of thiamin intake. C. Foster, J. H. Jones, W. Henle, and F. Dorfman (*Proc. Soc. Exp. Biol. Med.*, 1942, **51** 215–216).—Mice which received 100 μ g.-% of thiamin in their diet had a much greater incidence of paralysis and mortality on inoculation with this virus than those which received 10 μ g.-%. V. J. W.

Transmission of murine strain of poliomyelitis to Syrian hamster. H. Plotz, R. Reagan, and H. L. Hamilton (Proc. Soc. Exp. Biol. Med., 1942, 51, 124-126).-Virus was passed serially through 16 hamsters and produced typical poliomyelitis in 46 out of 75 inoculated. V. J. W.

359

Community study of carriers in epidemic poliomyelitis. H. A. Wenner and A. E. Casey (*J. clin. Invest.*, 1943, **22**, 117–125).— Stools from 176 persons were tested to determine the carrier rate for poliomyelitis virus in the adult and juvenile population in a post-epidemic period. The virus was detected in 3 children, 2–6 years of age, but in none of the adults' stools. C. J. C. B.

Hypothetical relationship of water supplies to poliomyelitis. K. F. Maxey (Amer. J. Publ. Health, 1943, 33, 41-45).—A discussion.

Complement fixation with the neurotropic viruses. W. P. Havens, D. W. Watson, R. H. Green, G. I. Lavin, and J. E. Smadel (*J. exp. Med.*, 1943, 77, 139—153).—Suspensions of infected brain tissue of hamsters and mice were freed from the material which reacts with normal serum by centrifuging at 12,400 r.p.m. for 1 hr. Infectivity was destroyed by ultra-violet irradiation. With sp. antisera prepared in hamsters and guinea-pigs, cross reactions were obtained with the viruses of Eastern and Western equine encephalitis and none between St. Louis, Japanese, and West Nile viruses. F. S.

Complement-fixation in human pneumonitis with group-reactive virus antigens. M. D. Eaton and M. Corey (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 165—168).—Sera from certain cases of pneumonia, in which no infective bacteria were identifiable, gave positive complement-fixation results with viruses of lymphogranuloma, meningopneumonitis, and Nigg's mouse pneumonia. V. J. W.

Inhibiting effect of methionine, choline, and betaine on rabbit's susceptibility to infection with vaccinia. D. H. Sprunt (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 226–227).—Daily injections of 300 mg. of methionine or choline increased 18 times the rabbit's resistance to vaccinia infection. Betaine gave a 5-fold increase. V. J. W.

LS antigen of vaccinia. III. Physical-chemical properties and degradation products. T. Shedlovsky, A. Rothen, and J. E. Smadel. IV. Chemical analysis of, and the effect of chymotrypsin on, the antigen. J. E. Smadel, C. L. Hoagland, and T. Shedlovsky (*J. exp. Med.*, 1943, 77, 155--164, 165--171).--III. *LS*-protein, the sol. double antigen of vaccinia, is homogeneous electrically and in the ultracentrifuge and has an isoelectric point at pH 4-8. At 4° its partial sp. vol. is 0-72 c.c. per g. and its diffusion const. is $1-50 \times 10^{-7}$ cm.² per sec. The sedimentation const. is 6-35 at 20°, the mol. wt. is 214,000, and the mol. appears to have an elongated ellipsoidal shape with an axis ratio of 1: 20. *L'S* and *L''S'*, degradation products of *LS*, are homogeneous electrically but not in the centrifuge, *L''S'* being extremely polydisperse. V. Pure *LS*-antigen contains $15\cdot8\%$ N and $50\cdot6\%$ C. The absence

V. Pure LS-antigen contains 15.8% N and 50.6% C. The absence of lipins, P, nucleic acid, and glucosamine confirms its protein nature. Both the L- and S-activities of the antigen are destroyed by digestion with papain. Cryst. chyrhotrypsin destroys the serological activity of the S portion without affecting the L portion. This new degradation product of LS, LS'', contains the same amount of N as the native substance but, unlike LS, it forms needle-shaped crystals. F. S.

Peptidase and phosphatase determinations in polyhedral virus of Lymantria monacha, L. F. Duspiva and G. Bergold (Naturwiss, 1942, **30**, 604—605).—The substrate used for dipeptidase activity determinations was alanylglycine at pH 7·4, and for phosphatase activity phenylphosphoric acid at pH 5·8 and 9·5. No dipeptidase or phosphatase activity, even in the presence of Mg, was observed. These results contrast with previous positive findings with vaccinia virus, which has a relatively high mol. wt. P. G. M.

Host influence in characterisation of response to the papilloma protein and to vaccinia virus.—See A., 1943, III, 183.

New crystalline forms of tomato bushy stunt virus. S. S. Cohen (Proc. Soc. Exp. Biol. Med., 1942, 51, 104—105).—Two cryst. forms were prepared by cooling of virus solutions to which had been added Na heparinate and Na polyanetholesulphonate respectively.

Characteristics of toxoplasma-neutralising antibody. A. B. Sabin and I. Ruchman (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 1--6).--Antibody was determined by injection of rhesus serum containing it, with infective mouse brain suspension, subcutaneously into rabbits, and noting the skin lesion produced. It is very unstable and disappears after 1--2 weeks at 5° or in 30 min. at 56°. It appears in rhesus serum 1--2 weeks after infection and persists at least 14 months although the toxoplasma disappears within 14 weeks. None was found in infected rabbits, mice, cats, or dogs. V. J. W.

Toxoplasma-neutralising antibody in human beings and morbid conditions associated with it. A. B. Sabin (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 6–10).—Antibody was found in the serum of 59 out of 151 subjects consisting of children suffering from various nervous diseases and their relatives. It was present in 9 out of 10 cases of macular chorioretinitis in children and in 8 of their mothers, and in 3 out of 4 women who gave birth to hydro- or micro-cephalic infants. It was not found in hydro- or micro-cephalic children who had neither chorioretinitis nor cerebral calcification. V. J. W. **Complement-fixation reaction in toxoplasmic infection.** J. Warren and A. B. Sabin (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 11– 14).—Extract of infected rabbit brain, but not of other tissues, gave an antigen which fixed complement in presence of immune serum from infected rhesus monkeys but not from rabbits, dogs, or cats. It appears 1—4 weeks after inoculation but disappears after 2 months, although the neutralising antibody persists. Human subjects gave complement-fixing reactions if the infection was recent. V. J. W.

Effect of certain antiprotozoal drugs on toxoplasma in viro and in vivo. J. Warren and A. B. Sabin (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 15—18).—Infected peritoneal exudate was kept at 37° for 3, 6, or 24 hr. with various drugs. It became non-infective in the times given : atebrin 1 : 50,000, 3 hr.; trypaflavin, rivanol lactate, K Sb tartrate, or optochin 1 : 10,000, or mapharsen 1 : 20,000, 3—6 hr.; neosalvarsan 1 : 20,000, tryparsamide or quinine hydrochloride 1 : 10,000, 6—24 hr. Stibosan, 4 : 4'-diamidinostilbene, and sulphonamides were ineffective. None had any therapeutic effect *in vivo*. V. J. W.

Therapeutic effectiveness of certain sulphonamides on infection by an intracellular protozoan (toxoplasma). A. B. Sabin and J. Warren (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 19—23).—Sulphathiazole and sulphapyridine, but not sulphanilamide, though ineffective *in vitro*, inhibit development of disease in infected mice when given as 1%of diet, but development occurs when administration is discontinued. Injections of 1.5—2 g. of sulphathiazole daily have a curative effect in rabbits but 0.1 g. daily was ineffective (see preceding abstract). V. J. W.

Biological and immunological properties of pleuropneumonia-like organism of human origin. J. Warren and A. B. Sabin (*Proc. Soc. Exp. Biol. Med.*, 1942, 51, 24—26).—The organism first isolated by Dienes (*ibid.*, 1940, 44, 468) was cultivated in a broth containing ascitic fluid or rabbit serum and grown on ascitic agar plates, and then in rabbit serum broth. Antiserum and agglutinating antigen were prepared by intravenous inoculation of rabbits. They differed immunologically from those prepared from all strains of mouse pleuropneumonia. V. J. W.

Effect of salicylates on the precipitation of antigen with antibody. A. F. Coburn and E. M. Kapp (J. exp. Med., 1943, 77, 173-183).— Na salicylate (0.145M.) reduced the amount of ppt. formed with horse euglobulin and sp. rabbit antiserum. With cryst. egg-albumin and its antibody there was a progressive decrease in the amount of ppt. as the concn. of salicylate was increased to 1.0M. Pptn. in the equivalence zone was more readily prevented than in the region of antibody excess. Formed ppts. were partly dissolved by resuspension in the presence of salicylate. Salicylate was more effective than other anions of a lyotropic series tested. F. S.

Antigenic relationship between horse antibodies and the proteins of normal horse serum. G. G. Wright (J. infect. Dis., 1942, 70, 103-111),—Const.-antiserum optimum proportion ratios of serum from rabbits immunised with horse serum were determined with horse antipneumococcus serum, horse diphtheria antitoxin, albumin, total globulin, and water-sol. globulin from horse antipneumococcus serum. The antipneumococcus antibody and antitoxin pptn. were also determined in optimum mixtures of the rabbit sera and antipneumococcus and antitoxic sera respectively. The results indicated that the antigenic nature of horse antibody protein is essentially the same as horse normal γ -globulin. If antibodies against γ -globulin are present in a rabbit anti-horse serum which shows multiple zones of optimum flocculation with horse serum, horse antibody will be pptd. only in the zone due to γ -globulin. F. S.

Complement-fixing antibodies (Brown-Pearce carcinoma) in blood serum and in aqueous fluid of anterior chamber of eye.—See A., 1943, III, 183.

Oxidised cotton, an immunologically specific polysaccharide. M. Heidelberger and G. L. Hobby (*Proc. Nat. Acad. Sci.*, 1942, 28, 516—518).—Cotton is oxidised by NO₂ to products of varying carboxyl content (cf. Yackel, Unwin, and Kenyon, A., 1942, II. 166) which would therefore be similar chemically to the polysaccharides of type III and type VIII pneumococci. Weighed quantities of oxidised cotton, containing 16 and 21% of \cdot CH₂OH oxidised to \cdot CO₂H, were dissolved in excess of N-NaHCO₃. The excess of NaHCO₃ was neutralised and the solution diluted first with water to 0·1bn-Na⁺ and then with 0·15n-NaCl. Both samples, at high dilutions, pptd. antipneumococcus types III and VIII horse sera and failed to react with type I and II antisera. With the 16% \cdot CO₄H sample there was a degree of cross-reactivity comparable with that with the corresponding pneumococcus sp. polysaccharides. As would be expected from its chemical structure the 16% \cdot CO₄H sample corresponded more closely immunologically with the type VIII substance than with the type III polysaccharide. F. S.

Preparation of antiscorpion serum. A. H. Mohammed (*Lancet*, 1942, 243, 364—365),—Lethal doses of active scorpion toxin can be safely injected into dogs, rabbits, or goats which have received atropine and ergotoxine to paralyse parasympathetic and motor sympathetic functions. Neither of these drugs interferes with the

antigenic action of the toxin and it is suggested that antiscorpion serum could be thus prepared in horses. C. A. K.

Anaphylaxis in the mouse. R. S. Weiser, O. J. Golub, and D. M. Hamre (J. infect. Dis., 1941, 68, 97–112).—Mice vary greatly in their response to active anaphylactic sensitisation, the response being directly correlated with precipitin-building capacity. Details are given of the influence of the size, no., spacing, and routes of administration of antigen and immune sera on the rise and duration of active and passive sensitisation. Adrenalectomy greatly increased the susceptibility to anaphylaxis. F. S.

Alterations in blood-histamine in patients with allergic disease. B. Rose (J. clin. Invest., 1941, 20, 419—428; cf. A., 1941, III, 1079). —The histamine content of the blood of a group of 80 patients with allergic disease including asthma, urticaria, angioneurotic œdema, eczema, vasomotor rhinitis, and colitis showed that with the exception of cases of urticaria, there was much more fluctuation in the histamine content of the blood of patients with allergic disease than in that of normal persons. In cases of asthma, eczema, or vasomotor rhinitis, these fluctuations are not necessarily correlated with the enset of symptoms. With the development of angioneurotic edema, a marked diminution of the blood-histamine occurs, but the level returns to normal when the symptoms subside. C. J. C. B.

Hay fever. R. Pressburger (Schweiz. med. Wschr., 1942, 72, 469-472).—A review. A. S.

Allergenic relationship of the pollens of dwarf and giant ragweed to several of their botanic relations. F. A. Simon (J. exp. Med., 1943,77, 185—194).—38 of 40 patients, allergic to dwarf and giant ragweed, were allergic also to botanically related species. Antibody neutralisation tests in 6 cases showed that 4 could have been sensitised only by dwarf ragweed, I by dwarf or giant ragweed, and I by a ragweed or some undetermined pollen. In none could cosmos, sunflower, goldenrod, or dandelion have been the only sensitising allergen. The pollens of the ragweeds and their botanic relatives contain, in addition to species-sp. allergens, multiple common allergenic determinants which vary in their distribution among related species. F. S.

Allergic manifestations in central nervous system [and leukopenic index].—See A., 1943, III, 164.

XXVI.—PLANT PHYSIOLOGY.

Blossom production in the long-day plant Hyoscyamus niger under short-day conditions by infiltration of the leaves with sugar solutions. G. Melchers and A. Lang (*Naturwiss.*, 1942, 30, 589-590).—By infiltration of glucose, fructose, sucrose, or maltose, and probably of mannose, into the leaves of *H. niger* exposed to short-day conditions, the formation of blossoms is initiated or accelerated.

I. H. B.

Transference of the inhibitory action of leaves on blossom formation in *Hyoscyamus niger* in short-day conditions by grafting. A. Lang (*Naturwiss.*, 1942, 30, 590-591).—When a leaf is grafted on to a defoliated plant of *H. niger* under short-day conditions blossom formation is inhibited. J. H. B.

Chemical and physiological studies on the uneven ripening of Concord grapes in Oklahoma. J. E. Webster and F. B. Cross (Oklahoma Agric. Expt. Sta. Tech. Bull., 1942, No. T-13, 48 pp.).—Colour develops in grapes only when the sugar content is over 7%. Increased lighting and use of N fertilisers slightly improve colour formation. Solids and ash % increase until harvest, but acidity and pH of juice decrease and K H tartrate generally increases as grapes mature. Reducing sugars increase with maturity; sucrose is always present in small amounts. Sub-irrigation gave the smallest no. of coloured berries of any experiment. During colouring the glucose : fructose ratio varies from 1.0 to 1.2. Tannins increase with ripening in coloured fruit; in uncoloured fruit tannins increase at first and subsequently decrease steadily. The % of Ca is appreciably and that of Fe slightly lower in coloured than in green fruit. During colouring catalase activity increases and oxidase and peroxidase activity are marked. Total sugar % in leaves at first increases and then decreases just before and during colouring. After harvesting, % of sugar again rises. Analyses show no unusual fluctuations in the composition of Sheridan and Concord leaves which would explain uneven colouring of the fruit. A. A. M.

Biochemistry of varieties of apples, plums, and grapes grown in Minnesota. E. O. Barnes (Minnesota Agric. Exp. Sta. Tech. Bull., 1940, No. 143, 35 pp.).—Data showing the pH, titratable acidity, d, pectin, sugars, and astringent contents of juices of peaches, apples, plums, and grapes at varying stages of maturity are recorded. The buffer systems of all these fruits are largely determined by the predominant org. acids present and the character of the ash constituents in the juices. Marked variations were found in the chemical composition of the fruit juices derived from selected fruit varieties. Apple juice acidity was lowered by extending the storage period. A. A. M.

Factors affecting the usefulness of honey-bees in pollination. G. H. Vansell (U.S. Dept. Agric. Circ., 1942, No. 650, 31 pp.).—The be-

haviour of honey-bees in visiting blossoms for nectar and pollen was observed. Bees were practically the sole distributors of pear pollen. On the same day, the average sugar concns. of nectar from fruit blossoms were : apple 46.2, peach and nectarine 28.9, plum 25.8, sour cherry 23.5, and pear 7.9 and 9.9%. Bees tend to go to those blossoms with the largest sugar concns. in the nectar. Mauzanita plants advanced in blossoming are richest in nectar and are preferred by bees to those with recently opened blossoms. A. A. M.

Metabolism of apples .-- See B., 1943, III, 58.

Nitrogen metabolism of plants. V. Relation of carbohydrate content to protein synthesis in leaves. J. G. Wood and A. H. K. Petrie. VI. Inter-relations between respiration rate, carbohydrates, soluble nitrogen compounds, and protein in leaves. J. G. Wood (Austral. J. Exp. Biol., 1942, 20, 249-256, 257-262; cf. A., 1942, III, 76).—V. When Phalaris tuberosa, L., is treated with a const. amount of N, an increase in the amount of sucrose applied externally causes an increased amount of carbohydrate in the plant. With const. amount of sucrose and increasing amounts of NH₄ salts, there is a decrease in the amount of carbohydrate. High external applications of sucrose are associated with decrease in water content. The amount of protein increases with decrease of carbohydrate in the plant, and there is no relationship between the amounts of protein and NH₄^{*} in the cell, although NH₄^{*} is limiting and the amount of protein sof sucroses are associated with exariance of proteins is accounted for by the contents of amino-acids and water. It is suggested that proteins are synthesised from the whole amino-acids within the cell rather than along any alternative route. The interrelationships between protein, amino-acid, and water contents are not affected by changes in the amounts of glucose, sucrose, and fructose.

fructose. VI. The probable course of N metabolism in leaves when plants are supplied with N and carbohydrates under const. conditions of light intensity, temp., humidity, and soil-water content is discussed. Increase of protein and of all sol. org. N compounds is associated with decrease in the amounts of individual carbohydrates, all of which, and especially sucrose and glucose, may contribute separately to fornation of org. N compounds. It is concluded that an intermediate of carbohydrate degradation, either a hydrolysis or oxidation product which forms the starting point for the synthesis of org. N compounds, is formed at a rate independent of the concn. of carbohydrate. With increased application of NH₄ salts there is increase of NH₃-N, amino-acids, asparagine, and glutamine in the leaves, up to a point that is probably limited by the amount of the carbohydrate intermediate. External application of asparagine does not cause accumulation of the amide, but produces an increase in the amounts of protein, amino-acids, and amides. The rate of respiration is correlated with the concn. of amino-acids, and probably some amino-acids are oxidised more readily than others. Such a differential oxidation is at least one factor that accounts for the relations hips between proteins, amino-acids, and water. J. N. A.

Conditions of oxidation in leaves of *Elodea densa.* D. I. Saposhnikov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1941, **32**, 79–80).—The formation of NO_3 ' from NH_4 salts by the leaves was dependent on the presence of free O_2 . The leaves of plants kept in the dark for long periods were unable to carry out this oxidative process. R. H. H.

Carbohydrate metabolism in wheats under conditions of insufficient soil moisture. K. G. Miroschnitschenko (*Compt. rend. Acad. Sci.* U.R.S.S., 1941, **32**, 81-84).—The sol. carbohydrate and hemicellulose contents of root, stem, leaf, and spike of drought-resistant and non-resistant varieties of wheat subjected to varying periods of drought are recorded. R. H. H.

Tracer studies with radioactive hydrogen. Experiments on photosynthesis and chlorophyll. T. H. Norris, S. Ruben, and M. B. Allen (J. Amer. Chem. Soc., 1942, 64, 3037–3040).—Formation of chlorophyll during photosynthesis of Chlorella pyrenoidosa in $HTO-H_2O$ could not be detected. No thermal exchange between purified chlorophyll and 80% alcohol containing HTO was observed. The implications of these results with respect to the theory that chlorophyll acts as a H donor in photosynthesis are discussed. W. R. A.

Antagonism between sulphanilamides and p-aminobenzoic acid in peas. S. Wiedling (*Naturwiss.*, 1943, 31, 114—115).—The growth of roots and especially of shoots of pea seedlings is inhibited by sulphapyrimidine and, to a smaller extent, by sulphanilamide, sulphapyridine, and sulphathiazole. At neutral reaction growth of shoots is greatly inhibited by 15 mg.-% of sulphanilamide and completely prevented by 30 mg.-%. The inhibition is counteracted by p-aminobenzoic acid, which exhibits less antagonism to sulphapyrimidine than to the other compounds. Possibly the acid is an essential metabolite for peas. W. McC.

Absorption of selenium by maize from Astragalus extracts and solutions containing proteins. S. F. Trelease, S. S. Greenfield, and A. A. DiSomma (Science, 1942, 96, 234–235).—Maize plants grown in mineral nutrient solution extracts of A. bisulcatus, or in the same solutions containing $Na_2SeO_3 + protein$ derivatives, amino-acids, or proteins (especially casein), absorbed several times as much Se as those grown in the same solution containing equiv. amounts of Na_2SeO_3 but no org. matter. The effect of Se on growth was similar in all the solutions. Seleniferous soils to which much org. matter is added might thus markedly increase Se absorption by crop plants. E. R. R.

XXVII.—PLANT CONSTITUENTS.

Determination of zinc in plant materials.—See A., 1943, III, 220. Substances in potato responsible for odour and taste. W. Kröner and H. Wegner (*Naturwiss.*, 1942, 30, 586—587).—The substances are volatile in steam. 100 kg. of potatoes yield 0.6—1.0 g. of crude oil containing fatty acids, which may be removed by redistillation and chilling. The oil fractionated in high vac. afforded a pentanol (3: 5-dinitrobenzoate, m.p. 47—48°). S was present, mostly in the higher fractions and distillation residue. J. H. B.

Polysaccharides of carragheen moss (Chondrius crispus).—See A., 1943, II, 124.

Polysaccharides of Iceland moss (Cetraria islandica). I. Hemicelluloses.—See A., 1943, II, 124.

Fractionation of starch by selective precipitation with butanol.— See A., 1943, II, 124.

Constituents of cascara sagrada. IV. Aloe-emodin, chrysophanic acid, and emodin.—See A., 1943, III, 196.

Occurrence of rotenone and related substances in the seeds of the berebera tree. Separation of deguelin and tephrosin. E. P. Clark (J. Amer. Chem. Soc., 1943, 65, 27–29).—Defatted seeds of Millettia ferruginea, Hochst., yield to ether rotenone (approx. 1%) and, from the mother-liquors by alkali, dehydrorotenone, tephrosin, m.p. 201–202° (lit. 198°), substances, $C_{19}H_{14}O_4(OMe)_2$, m.p. 164–165°, and $C_{22}H_{17}O_5$ ·OMe, dimorphic, m.p. 189–190°. The new substances do not give the Durham or FeCl₃ test, acetates, or oximes, and resist dehydration by acetic anhydride and oxidation by I in alcohol, Tephrosin, *iso*tephrosin, and deguelin are separated and purified by passage in CHCl₃ through a column of Al₂O₃. R. S. C.

Determination of concentration of chlorophyll.—See A., 1943, II, 116. Melanthigenin and its identity with hederagenin.—See A., 1943, II, 137.

Alstonia alkaloids. I, II.—See A., 1943, II, 112. Alkaloids of Nicotiana species.—See A., 1943, II, 137.

XXVIII.—APPARATUS AND ANALYTICAL METHODS.

Freezing myriapods for photographing. M. W. Johnson and J. H. Starling (Science, 1942, 96, 324). E. R. R.

New agar medium for Drosophila cultures. M. T. Lewis (Science, 1942, 96, 282).—The formula given is : water 1000 c.c., tomato paste 100 g., white corn syrup 100 g., granulated agar-agar 20 g., Moldex 1 g., and Fleischmann's yeast 1 drop. E. R. R.

Mouse holders facilitating intravenous and intraperitoneal injections. R. Schneiter (*J. Lab. clin. Med.*, 1942, 28, 326–327).—2 types of holders are described which facilitate the intravenous and intraperitoneal injection of mice and rats. C. J. C. B.

Biological applications of the counter tube. H. J. Born, N. W. Timoféeff-Ressovsky, and K. G. Zimmer (*Naturwiss.*, 1942, **30**, 600–603).—A review dealing with the biological applications of the indicator method using radioactive isotopes, and employing a Geiger counter tube. A. J. M.

Automatic distilling unit.—See A., 1943, I, 139.

Centrifugal micro-filter.—See A., 1943, I, 139.

Accurate, cheap constant-temperature water-bath.—See A., 1943, I, 139.

Barcroft-Warburg manometric apparatus. Use, recent developments, and applications. J. J. Perkins (Ind. Eng. Chem. [Anal.], 1943, 15, 61–68). L. S. T.

Determination of osmotic pressure of biological fluids. R. Aschaffenburg (*Nature*, 1943, 151, 169-170).—The disadvantages found with Blegen and Rehberg's method (A., 1939, III, 195, 440) are discussed. E. R. S.

Ash "free from carbon." J. L. St. John (*J. Assoc. Off. Agric. Chem.*, 1942, **25**, 969–973).—Ash obtained at 500°, 550°, 600°, and 700° from various plant and mineral materials revealed differences in appearance. Even ash obtained at 700° contained C. The colour is not an accurate indication of completeness of ashing. A. A. E.

Determination of aliphatic nitrate esters. Determination of sulphanilamide.—See A., 1943, II, 147.

Separation of basic amino-acids from protein hydrolysates. R. J. Block (*Proc. Soc. Exp. Biol. Med.*, 1942, **51**, 252—253).—By passing through a column of a synthetic ion-exchange resin, NH₃, arginine, histidine, and lysine can be separated from other constituents of a fibrin hydrolysate. V. J. W.

Determination of bilirubin in urine and faces. T. K. With (Z. physiol. Chem., 1942, 275, 166-175).—The bilirubin content of

1-5 ml. of fresh urine is determined by a modified Jendrassik-Grof method (A., 1938, III, 496), interference by diazotisable substances other than bilirubin being avoided, where necessary, by extracting with CHCl₃ after diazotisation. CHCl₃ takes up approx. $\frac{2}{3}$ of the azobilirubin. Fæces (0.5 g.) are ground with Na₂SO₄ after addition of a few drops of acetic acid. The powder thus obtained is suspended in 96% alcohol and repeatedly diazotised, extraction with alcohol being continued until no further colour is extracted. The bilirubin in the extract is determined as with urine. The infant excretes 35-125 mg. of bilirubin in its fæces during the first 10 days of life. Bilirubin is much more stable in fæces than in urine. W. McC.

Determination of urobilin in urine and fæces. T. K. With (*Z physiol. Chem.*, 1942, **275**, 176–182).—A method combining the advantages of those of Heilmeyer and Krebs (A., 1931, 778) and Watson (A., 1937, III, 121) is described, ether being used for extraction in preference to light petroleum. W. McC.

Comparison of procedures for removal of lipoid material from bones of chicks. I. Motzok, D. C. Hill, S. J. Slinger, and F. N. Marcellus (J. Assoc. Off. Agric. Chem., 1942, 25, 965—969).—Alcohol alone is a less efficient solvent than when followed by ether. Vac. drying lessened the efficiency of the alcohol-ether extraction and did not increase the solvent power of alcohol. The various extraction procedures did not affect the ash content of the paired bones.

A. A. E. **Determination of glycogen in organs.** H. Staudinger (Z. physiol. Chem., 1942, 275, 122—126).—Tissue (0.5—2.0 g.), cooled in solid CO_2 + acetone immediately after death of the animal, is heated with 30% aq. KOH for 2 hr. at 100° and impure glycogen is pptd. with methyl alcohol. After the ppt. has been dissolved in water and re-pptd., proteins are removed by adding conc. aq. MgCl₂ and warming. Glycogen (not less than approx. 1 mg.) is determined polarimetrically in the filtrate. W. McC.

Micro-determination of iodine in biological materials. B. K. Shahrokh (J. Biol. Chem., 1943, **147**, 109—113).—I in samples of dry material (e.g., thyroid gland) not over 30 mg. in wt. is rapidly determined by heating with $H_2SO_4 + KClO_3$, removing Cl_2 by boiling after diluting, adding KI, and titrating immediately with 0.001N-Na₂S₂O, using starch as indicator. A correction based on the result of determining I in iodoacetic or iodopropionic acid is applied. Accuracy at the end-point is increased, if desired, by ptg. salts with 85% alcohol before Cl_2 is removed. W. McC.

XXIX.—NEW BOOKS.

The vertebrate eye. G. L. Walls (*Cranbrook Inst. Sci. Mick.*, Bull. 19, 1942, pp. xiv + 785).—This is an exhaustive account of the structure, development, and functioning of the eye throughout the vertebrates. Part I, which the author calls "Basic," gives, first of all, an account of the perception of light which, although elementary, is very sound and well done and should be of great help to anyone who is not already an expert on optics. This is followed by an account of the structure, function, and development of the vertebrate eye (with an important chapter devoted to the retina) and of the visual processes. This part of the book is based on, but not confined to, the human eye, which has been taken as a typical example of the vertebrate eye, and is probably, on the whole, the best general account we have of the eye and the physiology of vision. Part II is called "Ecologic" and deals with the variations in structure and function of the eye throughout the vertebrates form the point of view of its adaptation to the habits (nocturnal, diurnal, or arhythmic, aquatic, terrestrial, or amphibious, etc.) of its different owners. Part III—" Synoptic"—traces the history of the eye, group by group, from the lowest living vertebrates to the highest.

It is difficult to overestimate the importance of this book, which should most certainly be read by everyone interested in vision. Perhaps the author's most valuable achievement is his convincing demonstration of the pitfalls that await those who consider the subject solely from the point of view of the human eye and human vision. The writing is clear and the style most refreshing. Walls is not afraid to put himself in the beginner's place and to try to tackle his difficulties—a task which has been most successfully accomplished. The book is full of original and stimulating ideas and although some of these will meet with disapproval from more conventional thinkers, they should nevertheless be valuable in evoking fresh thoughts on many subjects where traditional theories have been too readily accepted. This is particularly true of the discussion of the rôle of the partial decussation of the optic nerves in binocular fusion as well as of that of the significance of the retinal oil droplets in the colour vision of birds. The section on the relation between the photomechanical changes and pupil mobility in light and dark adaptation and the section dealing with the complicated subject of the visual control of dermal colour changes are especially well done. The treatment of such problems as the size of the eve, structure of the posterior chamber, size and mobility of the pupil, shape of the lens, etc., all dealt with from an evolutionary point of view, also deserves special mention.

INDEX OF AUTHORS' NAMES, A., III.

MAY, 1943.

ABRAHAMSON, R. H., 333. Abramson, D., 330. Ackerman, L. V., 301. Adair, F. L., 341. Adaires, C. O., 295. Adoigh, W. H., 337. Albert, S., 321, 322. Allen, F. A., 348. Allen, M. B., 362. Allen, P. R., 332. Allyn, W. E., 326. Allyn, W. E., 346. Alpatov, V. V., 343. Alvarez-Tostado, C., 303. Ambrose, A. M., 344. Anderson, T. F., 331. Andrews, H. L., 320. Andrews, H. L., 320. Andrews, H. L., 320. Andrews, H. L., 320. Andrews, H. J., 300. Andrews, H. J., 300. Andrews, H. J., 300. Andrews, H. J., 300. Andrews, W., 200. Andrews, W. & 200. Andrews, W. J. 200. Andrews, W. J. 200. Andrews, W. J. 200. Andres, L. J. 320. Arson, B. J., 318. Arey, L. B., 317. Ares, L. B., 317. Ares, L. J., 327. Asbhurn, L. L., 342. Ashworth, C. T., 306. Atkin, L., 335. Bace, S. J., 337. Bace, S. J., 337.

BACH. S. J., 337. Bachrach. W. H., 328. Balley, P. 308. Balley, R. 308. Ball, M. R., 328. Bargen, J. A., 329. Barkan, G., 345. Barkan, G., 345. Barkan, G., 345. Barkan, A., 317. Barman, J. M., 306. Barnard, R. D., 310. Barmes, R. H., 337. Earrette, P. C., 340. Barmes, R. H., 337. Earrette, P. C., 340. Barmes, R. H., 337. Beard, D., 232, 358. Beard, J. W., 332, 355. Becker, R. F., 307. Behrman, H. T., 310. Belis, C. J., 329. Benedict, W. L., 310. Benesi, O., 318. Benedict, W. L., 310. Benesi, O., 318. Benedict, W. L., 310. Benesi, O., 318. Benson, R. C. S., 341. Bergold, G., 359. Berk, J. E., 327. Betriman, F., W., 307. Berinhard, C. G., 314, 315. Best, C. H., 314. Biggs, C. L., 301, 342. Biller, S. B., 323. Binkley, R. W., 320. Birthböfer, L., 356. Bisgard, J. D., 328. Binkley, R. W., 320. Birthböfer, L., 356. Bisgard, J. D., 328. Binkley, R. W., 320. Birthböfer, L., 356. Bisgard, J. D., 328. Binkley, R. W., 320. Birthböfer, L., 356. Bisgard, J. D., 328. Binkley, R. V., 320. Birthböfer, L., 356. Bisgard, J. D., 328. Binkley, R. J., 363. Bisgard, J. D., 328. Bisgard, J. D., 328. Binkley, R. J., 363. Bisgard, J. D., 328. Bisgard, J. C. M., 331. Book, M. H., 301. Born, H. J., 363. Bern, J. H., 303. Born, H. J., 363. Bern, 315. Book, M. H., 301. Born, H. J., 363. Bran, A. C., 337. Bran, M. C. S., 344. Brougher, J. C. 329. Brown, G. 346. Brown, G. 346. Brown, J. S. 905. Brown, G. 346. Brown, J. S. 905. Brown, G. 346. Brown, G. 346. Brown, J. S. 905. Brown, G. 346. Brown, J. S. 905 E (A., III.)

| Byrnes, V. A., 316. Cars, C. K., 333. Caldwell, M. L., 351. Callomon, F., 332. Callomon, F., 332. Campbell, D. H., 301. Canapbell, D. H., 301. Canapbell, D. H., 301. Cardon, B. P., 355. Carey, E. T., 310. Carson, I. D., 317. Casson, I. D., 317. Cassey, A. E., 359. Carson, I. D., 317. Cassey, A. E., 359. Carson, I. D., 317. Cassey, A. E., 359. Casida, I. E., 324. Casida, I. E., 324. Casida, I. L., 321, 322. Chapman, C. Y., 347. Chapman, C. Y., 347. Chapman, C. Y., 347. Chapman, C. Y., 347. Chapman, C. J., 347. Charger, F. S., 358. Chen, K. C., 343. Chornyak, J., 347. Chung, L., 331. Cherszko, I. S., 328. Clark, W. G., 339. Clausen, N. M., 317. Climenko, D. R., 325. Cobb, S. S., 359. Cobm, M. E., 328. Coben, M. E., 327. Compar, J., 351. Compere, E. L., 297. Compar, S. C., 306. Conway, E. J., 352. Cope, O., 205, 328. Copeland, L., 799. Copeland, L., 399. Corosta, A. C., 305. Corey, M., 335. Corey, M., 335. Corey, M., 335. Corers, M., 359. Corosta, J. F., 346. Cox, W. M., im., 333. Crabtree, E. G., 320. Cravens, W. W., 325. Crawford, R. C., 341. Critickshank, A. H., 301. Chibartson, J. T., 341. Cruickshank, A. H., 301. Chibartson, J. T., 341. Cruick, R. M., 335. DAFT, F. S., 342.
 Dalton, J. W., 396.
 Dameshek, W., 392.
 Dann, M., 337.
 Darling, I. A., 345.
 Davenport, D., 394.
 Davis, D. F., 337.
 Davis, D. F., 337.
 Davis, B. D., 338.
 Davis, E. W., 298.
 Davis, G. K., 334.
 Decker, R. M., 317.
 De Eds, F., 343, 344.
 Defter, M., 352.
 De Graft, A. C., 346.
 Deilhaut, A. B., 347.
 Delikat, E., 301.
 Derbes, V. J., 322.
 Dentsch, H. F., 334.
 Deysach, L. J., 321.
 Dick, L. A., 355.
 Dienes, L., 356.
 Dingle, J. H., 337.
 Dobbins, J. M., 330.
 Doisy, E. A., 358.
 Dorve, M. A., 325.
 Dorman, A., 328.
 Dorve, M. A., 325.
 Dorman, K. A., 358.
 Dove, M. A., 325.
 Dorman, F., 335.
 Dove, R. F., 325.
 Dowe, R. S., 308.
 Doyle, J. C., 329.
 Dragutsky, D., 297.
 Dragutsky, D., 297.
 Dragutsky, D., 297.
 Dragutsky, D., 297.
 Dragutsky, D., 307.
 Dubhin, T. D., 357.
 Dubyar, F., 359.
 Dyer, C. G., 303.

Dyke, S. C., 301.

Dyke, S. C., 301. E ATON, M. D., 359. Edwards, O. F., 353. Eggenberger, H., 321. Eilert, M. L., 341. Eilen, J., 344. Elvehjem, C. A., 334. Endres, G. A., 347. Enders, R. K., 298. Endicott, K. M., 342. Endres, G., 354. Engelbardt, W. A., 307. Entenman, C., 322. Eschweiler, P. C., 323. Euler, U. S., 306. Evans, W. E., jun., 347. Ewing, D. T., 336. Facer, G. H., 341.

FAGET, G. H., 341.
FAT, L. E., 330.
Fauteux, M., 304.
Feenloov, P. P., 316.
Ferguson, M. S., 331.
Ferguson, M. S., 331.
Fischer, F. G., 349.
Fitzgratick, L. J., 307.
Fickas, D., 333.
Findlay, F. M., 306.
Findlay, G. M. 302.
Finland, M., 339.
Flandlay, G. M. 302.
Finland, M., 339.
Flaraman, N., 343.
Fleischauer, G., 344.
Fleine, R. B. L., 346.
Flower, E. P. 317, 318, 319.
Flynn, J., 315.
Fogelson, S. J., 328.
Fooley, J. C., 330.
Forster, C., 338.
Frankel-Conrat, H., 322.
Frankel-Conrat, H., 324.
Frankel-Conrat, J., 324.
Frankel-Conrat, J., 324.
Frankel, M., 335.
Freed, A. H., 337.
Freed, S. C., 337.
Freed, S. C., 337.
Freed, S. C., 338.
Freed, S. C., 337.
Freedman, W. B., 339.
Friedman, W. B., 339.
Friedemann, U., 350.
Friedemann, W. B., 339.
Friedemann, U., 350.
Friedemann, W. B., 338.
Freedman, W. B., 338.
Freedman, B., 344.
Fries, E. F. B., 324.
Frolova, S. L., 349.
Foolow, S. L., 349.
Foolow, S. L., 349.
Foolow, S. L., 349.
Foolow, J. J., 353.
Gallagher, J. R., 314.
Gallagher, J. R., 314.
Gardiner, J., 323.
Gardiner, J., 323.
Gardiner, J., 323.

Friedfald, L., 346. Friedman, B., 344. Fries, E. F. B., 324. Frolova, S. L., 349. Fugo, N. W., 233. Fuhr, I., 335. GABAY, W. L., 353. Gallagher, C. D., 314. Gallagher, J. R., 314. Gardner, J., 328. Gardner, J., 328. Gardner, L. U., 347. Gaston, E. A., 333. Gatenby, J. B., 327. Gauze, G. F., 344. Geiger, A. J., 304. Gengerelli, J. A., 308. Gerber, I. E., 356. Giles, G. H., 309. Gillman, J., 325. 328. Glenn, F., 333. Glyer, N. M., 343. Gold, H., 340. Goldberg, A., 344. Golden, M., 329. Goldsmith, G. A., 334. Goldstein, M. R., 347. Goldstein, M. R., 347. Goldban, H. B., 329. Goldsmith, G. A., 334. Goldber, M., 843. Goldber, M., 343. Goldban, J., 1., 346. Goodrich, H. B., 299. Goodwin, R. A., jun., 339. Goodwin, R., 317. Granit, R., 312, 313, 314. Graves, F. W., 357. Graydon, J., 340. Garaves, T. C., 317. Gray, P., 352. Graydon, J., 342. Graydon, J., 343. Graydon, J., 343. Graydon, J., 343. Graydon, J., 345. Green, M. N., 358. Green, T. W., 343. Greene, H. H., 306. Greene, H. S. N., 331. Greenheld, S. S., 362. Greinheiter, E. M., 333. Griffiths, J. T., jun., 357. Griffiths, M., 326. Groot, H., 356. Gross, E. G., 323, 345. Gross, M., 356. Grossman, L., 297. Grubb, T. C., 340, 342 Guest, H. L., 342. Gutman, A. B., 303. Hac, L. R., 341. Hafkesbring, R., 339. Haler, G. P., 342. Halden, W., 335. Hale, E. B., 334. Hallinan, F. J., 354. Hallinan, F. J., 354. Hallinan, F. J., 354. Hallinan, J. G., 325. Hastead, W. C., 317. Hamilton, J. E., 304. Hamilton, N. E., 344. Hamilton, N. E., 344. Hamilton, R. H., 358. Hamilton, R. H., 343. Harme, D. M., 361. Harkness, D. M., 323. Harris, L. J., 335. Harris, L. J., 335. Harris, L. J., 335. Harris, N. H., jun., 332. Harrison, F., 309. Harrison, H. C., 335. Hartzel, A., 347. Harvey, A. M., 307. Havkinson, L. F., 229. Heidelberger, M., 360. Heinemann, M., 339. Hende, W., 358. Hende, W., 358. Hende, W., 358. Henz, J. J., 333. Heuser, G. F., 333. Hitchoock, F. A., 345. Hoogland, C. L., 359. Hobby, G. L., 360. Hilmenn, H. M., 299. Hinman, F., 298, 333. Hintchoo, Y. M., 330. Hodge, H. C., 347. Hoerr, S. O., 344. Hoffmann, W. F., 310. Holdender, A., 359. Hobby, G. L., 360. Holmes, J. R., 341. Holdender, A., 359. Hobby, G. L., 360. Holmes, J. R., 341. Holdender, A., 359. Hobby, G. L., 360. Holmes, J. R., 341. Hold, P. F., 303. Honder, A., 355. Hompesch, H., 344. IDZKOWSKY, H. J., 322. Irichimovitsch, A. L., 323. Isberg, E. M., 301.

JACKWAN, R. J., 329. JACQUAR, 334. Janueson, E., 303. Jenkins, J. A., 327. Jennings, P. A., 340. Jensen, H., 349. Jerome, J., 297. Jervis, G. A., 333. Johansen, F. A., 341. Johansen, H. W., 363. Jones, D. B., 337. Jones, H., 354. Jones, L. R., 358. Jukes, T. H., 336. Kamm, O., 336. Kapp, E. M., 360. Karel, L. 340. Katz, L. N., 338. Katzman, P. A., 353. Katzman, P. A., 354. Kaufman, M., 342. Kazal, L. A., 328. Keller, H. M., 357. Kenmerer, A. R., 334. Kendall, B. S., 339. Key, J. A., 297. Khanolkar, V. R., 333. Kiese, M., 302. Kirkpatrick, H. F. W., 335. Kirsner, J. B., 303, 345. Kirsner, J. B., 303, 345. Kirsnier, M., 346. Kitzmiller, K. V., 346. Kietisch, W. P., 328. Kine, B. E., 331. Klose, F., 355. Knoefel, P. K., 344. Knowlton, K., 301. Koerber, W. L., 358. Kolb, E. M., 301. Kolmer, J. A., 358. Kolb, E. M., 301. Komweig, A. L., 309. Koset, S. A., 338, 352. Koster, H., 305. 344. Koyenuma, N., 299. Krampitz, L. O., 350. Kranetz, J. C., jun., 347. Krebs, H. A., 337. Krebs, H. A., 336. Kroner, W., 363. Kuhn, H. S., 314. LAFFERTY, C. R., 333. Lalich, J. J., 303. Lancaster, W. B., 316. Landsberg, L. W., 344. Lang, R., 361. Lang, P., 347. Langendorf, R., 304. Lanier, L. H., 320. Larsen, W. P., 329. Larson, C. L., 356. Larson, C. P., 329. Larson, C. P., 321. Leach, B. E., 330. Leblond, C. P., 321. Lee, M., 343. Lee Grand, Y., 312. Leeman, R. A., 346. Leiter, E., 302. Lemere, F., 345. Leonard, S. L., 322. Lerman, J., 322. Lerman, J., 322. Lerwan, J., 322. Levy, S. R., 337. Levine, P. P., 341. Leonard, S. L., 322. Liebow, A. A., 326. Lewis, M. T., 363. Li, C. H., 324. Liang, C. C., 337. Liebow, A. A., 346. Limheld, J. L., jun., 307. Lindberg, H. A., 346. Linchfield, H. R., 304. Little, J. E., 351. Livingston, P. C., 315. Locke, R. B., 331. Longley, B. I., 317. Locke, R. B., 331. Locke, R. B., 332. Lown, W. R., 324. (3175

McBain, E. H., 314. MacCarty, W. C., 333. McChesney, E. W., 325. McCord, C. P., 345. McCoy, K. M., 346. McCullough, N. B., 355. McDevitt, E., 325. McEachern, D., 334. McFarland, W. J., 302. McGeorge, M., 327, 344.

INDEX OF AUTHORS' NAMES, A., III.

McGinnis, J., 333. McGinty, D. A., 302. McGovern, F. H., 315. McKee, C. M., 338, 354. McKee, S. H., 311. McNealy, R. W., 320. McPhail, F. L., 326. McPhail, M. K., 322. Mache, W., 346. Macht, D. I., 341. Madonick, M. J., 308. Maegraith, B., 302. Maier, V. A., 314. Marcellus, F. N., 364. Marine, D., 321. Marples, E., 337. Marquez, M., 309. Martus, J., 344. Martin, N. H., 302. Matrin, N. H., 302. Matrin, N. H., 302. Matrin, N. H., 302. Matrin, N. H., 303. Matrin, N. H., 304. Matrin, N. H., 302. Matrin, N. H., 302. Matrin, N. H., 303. Matrin, N. H., 304. Matrin, N. H., 305. Matrin, N. H., 328. Matrin, N. H., 321. Medeney, F. L., 345. Meichers, G., 361. Meleney, F. L., 345. Merkel, W. C., 341. Merten, R., 350. Meyer, R. K., 321. Meyer, H., 300. Meyer, R. K., 321. Meyer, H., 300. Meyer, R. K., 321. Meyer, M. A., 327. Miller, H. G., 301. Miller, J. W., 346. Miller, J. W., 346. Miller, J. W., 346. Moore, C. H., 303. Moore, P. H., 328. Morbammed, A. H., 300. Morgan, K. J., 333. Morton, M. E., 333. Mort

NALBANDOV, A., 323: Nathan, P. W., 311. Nathanson, M. H., 343. Naumann, H. N., 304. Necheles, H., 328. Neten, E., 342. Nickel, W. F., 340. Nickel, W. F., 340. Niemann, C., 344. Nordby, H. P., 357. Nortis, L. C., 333. Norris, T. H., 362.

Novak, C. R., 336. Nutini, L. G., 303. Nuzum, F. R., 306. Nye, D., 328. OBER, F. R., 297. Obiditsch, R. A., 297, 298. O'Brien, J. P., 299. Ogden, E., 310. Okkels, H., 300. O'Malley, E., 352. Oppenheimer, B. S., 344. Oppenheimer, M. J., 343. Orgain, E. S., 340. Osmun, P. M., 318. Oster, K. A., 343. Otero, P. M., 357. Ott, G. L., 334. PAGE, A. H., 305. Page, C. W., 326. Page, I. H., 351. Painter, B. T., 298. Palmer, W. L., 303. Parsons, P., 332. Paschkis, K. E., 326. Paterson, O. L., 339. Patterson, W. B., 320. Patterson, W. H., 340. Pattry, F. A., 347. Payne, B. F., 311. Payne, M. A., 324. Pearce, S. J., 347. Pearlman, W. H., 326. Pearson, O. P., 298. Pearson, O. P., 298. Perex, R. L., 342. Peller, S., 332. Perek, R. L., 342. Perez, G. A., 307. Perez, H. V. Z., 300. Perlman, E., 356. Perkins, J. J., 363. Perkins, J. J., 363. Perkins, J. J., 363. Petrie, A. H. K., 362. Petrie, A. H. K., 362. Petries, M., 322. Peterson, R. E., 353. Petrie, A. H. K., 362. Pincus, G., 326. Pines, B., 328. Pittman, M., 340. Pilagge, D. W., 325. Pilotz, M., 304. Polderman, H., 305. Pollack, M. A., 354. Polderman, H., 305. Pollack, M. A., 354. Polder, S., 331. Potts, W. J., 305. Powers, W. L., 307. Powers, W. L., 307. Powers, W. J., 305. Powers, W. J., 305. Powers, W. J., 307. Powers, W. J., 307. Powers, W. J., 305. Powers, W. J., 307. Powers, W. J., 305. Powers, W. QUIMBY, E. H., 348. Q стийу, Е. Н., 348. R ланочитен, J., 328. Rakoff, A. E., 326. Rammelkamp, C. H., 334. Rappaport, H., 330. Rauch, K., 349. Ray, T. W., 321. Raymond-Hamet, 347. Read, H. C., 322. Reagan, R. E., 329, 358. Redish, J., 305. Reed, A. F., 297. Reed, C. I., 336. Reich, C., 301. Reich, N. E., 304. Reich, N. E., 304. Reich, F. L., 330. Reinhardt, W. O., 323. Reitman, F., 345. Richards, A. G., jun., 331.

Richards, C. H., 305. Richards, L. G., 317. Riddle, O., 327. Rinzler, S. H., 333. Riordan, J. T., 358. Riskind, L. A., 306. Riskind, L. A., 306. Riskind, L. A., 306. Riskind, L. A., 306. Roberts, E. C., 353. Robins, S. H., 330. Rocha e Silva, M., 302. Rocha e Silva, M., 302. Rocha, C. F., 301. Rochina, M. L., 325. Roedig, A., 349. Rogers, E. F. H., 357. Rogers, E. F. H., 357. Rosenow, E. C., 357. Rosenow, E. C., 357. Rosenthal, S. M., 339. Ross, H., 304, 341. Ross, W. F., 322. Rossman, J. I., 298. Rothchild, S. R., 357. Rothchild, S. R., 357. Rothchild, S. R., 357. Rothchild, H., 352. Rothchild, H., 359. Rowe, L. W., 343. Ruben, S., 362. Rubensein, H. S., 327. Ruchman, I., 37. Rusch, H. P., 331. Rusch, H. P., 331. Rusch, H. G. B., 317. SABIN, A. B., 359, 360. SABIN, A. B., 359, 360.
Sachs, E., 311.
Salas, E., 348.
St. John, J. L., 363.
Saksema, R. D., 297.
Salle, A. J., 342.
Samson, P. C., 307.
Sandstead, H. R., 310.
Saposhnikov, D. I., 362.
Sarnoff, S. J., 305.
Sartory, A., 354.
Sochaeffer, M., 258.
Schenther, J. E., 321.
Schert, D., 304.
Scheiter, A. E., 305.
Scheeter, A. E., 305.
Schenthal, J. E., 321.
Schert, D., 304.
Schleifstein, J. I., 354.
Schmidt, L. H., 355.
Schenthes, F. C., 340.
Schnitt, A., 350.
Schrift, A., 350.
Schenter, R., 363.
Scholl, F., 302.
Schridt, A., 350.
Schrift, A., 350.
Schreitz, A., 350.
Schnitt, A., 355.
Schnitt, A., 355.
Schnitt, A., 355.
Schnitt, A., 356.
Schulz, A., 357.
Schulz, A. S., 335.
Schulz, J.

Singer, K., 302. Singleton, A. C., 327. Sise, L. F., 344. Sjostrand, T., 306. Skinner, H. G., 340. Skoglund, C. R., 314. Sloan, L. J. 316. Sloan, L. J. 316. Sloan, C. A., 306. Smith, C. A., 306. Smith, C. A., 306. Smith, C. A., 306. Smith, D., 333. Smith, G. S., 341. Smith, W. E., 356. Snidt, R. S., 300. Snyder, G. A. C., 323. Solandt, D. Y., 314. Soley, M. H., 321. Soley, M. H., 321. Soley, M. H., 323. Sparrow, A., 347. Spirate, K. S., 303. Sparrow, A., 347. Spirate, K. S., 303. Sparrow, A., 347. Spirate, M. H., 321. Soleway, S., 344. Sortor, H. H., 303. Sparrow, A., 347. Spirate, M., 298. Sprunt, D. H., 359. Stacy, R., 346. Stalker, L. K., 329. Star, C., 323. Startey, W. F., 322. Starling, J. H., 363. Statudinger, H., 365. Statenines, S., 312. Stewart, S. F., 308. Stillman, N., 322. Stove, W., 349. Studdert, T. C., 301. Subramanian, K. S., 345. Sugar, H. S., 311. Summers, R. D., 319. Sussman, R. M., 346. Swayne, V. R., jun., 346. Sussman, R. M., 346.
Swayne, V. R., jun., 346.
TAGNON, H. G., 302.
Talbot, S. A., 307.
Tatum, A. L., 317.
Tauber, O. E., 357.
Taylor, A. R., 332, 358.
Taylor, F. H. L., 302.
Taylor, R. E., 353.
Taylor, S. G., 320.
Teenplam, J. E., 349.
Tenenbarm, L. E., 349.
Tenenbarm, L. E., 349.
Tenenbarm, L. E., 349.
Tenenbarm, L. E., 349.
Tenenbarm, J. E., 348.
Thomas, G., 346.
Thomas, J. O., 343, 344.
Thomas, J. O., 343, 344.
Thompson, J. U., 321.
Thompson, J. U., 321.
Thompson, W. O., 320.
Thoms, H., 325.
Tiffin, J., 314.
Timoféeff. Ressovsky, N. W., 363.
Tomb, J. W., 306.
Tonkins, F. S., 336.
Tomb, I. W., 318.
Tomb, J. W., 306.
Tonkins, F. S., 336.
Tomp, C., 349.
Traub, E. F., 341.
Trelease, S. F., 362.
Trinkaus, J. B., 299.
Tropp, C., 349.
Trowbridge, E. H., 345.
Turmer, C. W., 326.
Turner, J. W. A., 311.
Tuttle, W. W., 304.
Uhlenbuth, E., 321.

UHLEY, M. H., 338. Uhlenbuth, E., 321.

VAN BRUGGEN, J. T., 353. Van der Horst, C. J., 325. Vansell, G. H., 361. Vaughan, W. T., 322. Vaughan, J., 346. Verhoeft, F. H., 316. Vidgoft, B., 320. Viergiver, E., 326. Voegtlin, W. L., 345.

WAREFIELD, E. G., 298. Waksman, S. A., 342. Waksman, J., 311. Walker, A. E., 317. Walker, R., 820. Walking, C. W., 326. Walking, C. W., 326. Walking, C. W., 326. Walking, C. W., 326. Walter, C. W., 326. Warten, Y., 331. Warten, J., 360. Warten, S., 348. Wartel, R., 333. Warten, J., 360. Warten, S., 344. Wasley, W. L., 331. Warten, J., 360. Warter, J., 360. Warter, J., 360. Warter, J., 360. Wavira, C. Z., 350. Weber, H. H., 348. Webb, L. J., 350. Weber, H. H., 348. Webster, D. R., 327. Webster, J. E., 361. Weener, H. M., 344. Weiser, R. S., 361. Weiser, M. A., 350. Werner, H. A., 359. Werken, J. A., 302. Wenter, H. R., 329. Westial, R. J., 328. Westfall, S., 336. White, P. R., 332. Williams, M. J., 330. Williams, M. J., 335. Wolff, J. B., 321. Woolf, N., 305. Wolff, J. B., 321. Woolf, N., 305. Wolff, J. B., 321. Woolf, M. G., 305. Wolff, J. S., 357. Williams, M. J., 335. Wolff, J. S., 357. Williams, M. J., 335. Wolff, J. S., 357. Williams, M. J., 335. Wolff, J. S., 357. Wolff, J. S., 357. Woolf, M. S., 357. Wolff, J. S., 357. Woolf, M. S., 357. Wolff, J. S., 357. Woolf, M. S., 357. Woolf, M.

YANT, W. P., 347. Yudkin, J., 310.

ZAHL, P. A., 339. Zamenhof, S., 347. Zewi, M., 312. Ziff, M., 307. Zimmer, K. G., 363. ZoBell, C. E., 354. Zurett, S., 311. Zurrow, H., 327.

ERRATUM.

Abstracts A., III, 1943.

Page 228

Line

For " whole " read " white " 12

LIST OF ABBREVIATIONS ETC. USED IN ABSTRACTS.

absolute .	abs.	electrocardiogram	e.c.g.	parts per million	p.p.m.
alternating current .	a.c.	electromotive force	e.m.f.	per cent	%
ampere .	, amp,	electron-volt(s)	e.v.	potential difference .	p.d.
Angstrom unit	. A.	equivalent	equiv.	precipitate	ppt.
anhydrous .	anhyd.	feet, foot	ft.	precipitated	pptd.
approximat-ely	approx.	for example	e.g.	precipitating	pptg.
aqueous .	ad.	freezing point	f.p.	precipitation	pptn.
Assignor) in patent	titles (Assr.	gallon(s).	gal.	preparation	prep.
Assignee only	LAssee.	gram(s),	g.	qualitative	qual.
atmosphereesic .	, atm.	horse power	h.p.	quantitative	quant.
atomic	. at.	hour(s)	hr.	recrystallised	recryst.
atomic weight .	at. wt.	hydrogen-ion concentration	[H']	refractive index	n
boiling point	. b.p.	inch(es)	in.	relative humidity	R.H.
British thermal unit .	B.Th.U.	inorganic	inorg.	respiratory quotient .	R.Q.
calculated .	, calc.	insoluble	insol.	revolutions per minute .	r.p.m.
Calorie (large)	kgcal.	kilogram(s)	kg.	Roentgen unit	r.
calorie (small)	. gcal.	kilovolt(s)	kv.	saponification value .	sap. val.
candle power	. C.D.	kilowatt(s)	kw.	second(s) (time only) .	sec.
centimetre	cm.	litre(s)	1.	tsecondary	sec.
cerebrospinal fluid	. c.s.f.	maximum	max.	soluble	sol.
coefficient	coeff.	melting point	m.p.	specific	sp.
concentrated	conc.	metre(s)	m.	specific gravity	sp. gr.
concentration .	concn.	micron(s)	μ.	square centimetre(s) .	sq. cm.
constant	const.	milliampere(s)	ma.	temperature(s)	temp.
corrected	COTT.	milligram(s)	mg.	tertiary	tert.
critical	crit.	millilitre(s)	ml.	vacuum	vac.
crystalline		millimetre(s)	mm.	value	val.
crystallised (adjective	only) } cryst.	millivolt(s)	mv.	vapour density	v.d.
cubic centimetre(s)	C.C.	minimum	min.	vapour pressure	v.p.
cubic metre(s)	cu.m.	minute(s)	min.	viscosity	η
current density	c.d.	molecul-ear	mol.	volt(s)	v.
decimetre(s)	dm.	molecular weight	mol. wt.	volume	vol.
decomposing -ition	decomp.	namely	viz.	watt(s)	w.
density	o. d.	normal	N.	wave-length	λ
dilute	dil	number .	no.	weight	wt.
direct current	d.c.	organic	org.	The second se	

† The abbreviations for secondary and tertiary are used only in connexion with organic compounds.

In addition, elements, groups, and easily recognised substances are denoted in the text by symbols and formulæ. The groups are as follows: methyl, Me; ethyl, Et; *n*-propyl, Pr^{a} ; *iso*propyl, Pr^{β} ; *n*-butyl, Bu^a; *iso*butyl, Bu^{β}; *tert*.-butyl, Bu^{γ}; phenyl, Ph; acetyl (CH₃·CO), Ac; benzoyl (C₆H₅·CO), Bz. (In Section A., III this applies only to inorganic compounds, excluding water, and to chloroform and carbon tetrachloride.) "Oleum" is allowed to describe fuming sulphuric acid and "room temp." for "the ordinary temperature." The symbol for 10 A. is mµ. (not µµ.) and for the International X-ray unit it is X, not XU. The symbol for 10^{-6} g. is µg. (not γ).

The following symbols are used except in Section A., III : >, greater than; \gg , much greater than; \Rightarrow , not greater than (and <, \ll , \ll conversely); \propto , (is) proportional to; \sim , of the order of, or approximately.

The principal Pharmacopœias are denoted by B.P., U.S.P., and D.A.B., followed in each case by the identifying numeral.

Members who have difficulty in obtaining access to Journals abstracted are invited to apply to the Editor for information.

BRITISH CHEMICAL ABSTRACTS Quinquennial Index, 1932-1937

The complete Index (Authors' names, 1964 pages; Subjects, 1584 pages) is now ready for distribution. The price of the whole work is $\pounds 4 - 3 - 6$ post free to members of the Society of Chemical Industry or Fellows of the Chemical Society ($\pounds 4 - 10 - 0$ for those residing abroad) or $\pounds 10$ to non-members. Subscriptions should be sent to

THE BUREAU OF CHEMICAL ABSTRACTS

56 Victoria Street, London, S.W.1

Cheques should be crossed "a/c Quinquennial Index." Remittances from abroad must be made by cheques drawn on a Registered Account.

JUDACTAN

ANALYTICAL REAGENTS WITH ACTUAL BATCH ANALYSIS



You are invited to compare the above actual batch analysis with the purities

guaranteed by the specifications of any competing maker in this Country or abroad

THE GENERAL CHEMICAL & PHARMACEUTICAL CO. LTD. Chemical Manufacturers, Judex Works, Sudbury, Middlesex

PRINTED IN GREAT BRITAIN-BY RICHARD CLAY AND COMPANY, LTD., BUNGAY, SUFFOLK.