BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

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

JANUARY, 1939.

(a) HISTOLOGY.

Simple inexpensive slide warmer. A. M. Schechtman (Stain. Tech., 1938, **13**, 137—138).—A long wooden box is covered with a sheet of ordinary window glass to carry the slides. The heat is derived from evenly-spaced 10-watt electric bulbs (1—6 in.); above these is a sheet of thin galvanised metal with a few perforations between the bulbs, to act as a baffle. A cover of wooden strips with Cellophane keeps the slides dust-free. Temp. ranges between 41° and 43°. E. E. H.

Method of eliminating the electrification of paraffin ribbons. R. J. Blandau (Stain. Tech., 1938, **13**, 139—141).—A device which aims at ionising the surrounding air, so that the electrified paraffin ribbon loses its charge, is described. E. E. H.

Application of electrophotometry to quantitative histology. H. Okkels (Compt. rend. Soc. Biol., 1938, **129**, 97—99).—Histological structures are measured by taking a photomicrograph, inking in the parts to be measured with Chinese ink, and removing the photograph surface with I and $Na_2S_2O_3$; the paper is then placed on a revolving disc and the amount of light reflected by it measured with a photometer. P. C. W.

Alizarin-Red S technique applied to elasmobranch integument. L. P. Sayles (Stain. Tech., 1938, **13**, 143—144).—Integument (free from subcutaneous tissue) is soaked in water for 1—3 days, and then immersed in 0·4% aq. alizarin-red S for 2—3 hr. Excess of stain can be removed with dil. aq. NH_3. After washing, the specimen is dehydrated up to 95% alcohol, and then cleared in methyl salicylate + 95% alcohol (5 : 1). The basal plate and pedicle of each scale are stained, the spine is unstained. E. E. H.

Staining of fungi and micro-organisms with azureosin–glycerin. E. Hoffmann (Klin. Woch., 1938, **17**, 1622—1623).—One drop of a mixture of azureosin and glycerin (2 : 3 or 2 : 5) stains clearly fungi in skin scales, other micro-organisms, blood films, and even frozen and paraffin sections. E. M. J.

Polychromatic vital staining of different gastropod cells with pyronine. L. Monné (Bull. Acad. Polonaise, 1938, **B**, 110—114).—A description of the staining of cells of *Helix lutescens* with pyronine and acridine-red, and the purification of the dyes. E. M. W.

Vital staining of fibroblast nuclei with crystal-violet. O. Bank and A. Kleinzeller (Arch. exp. Zellforsch., 1938, **21**, 394—399).—The nuclei of fibroblasts in culture can be stained with crystal-violet when electrolytes are added with the dye. Ca is the most effective. The staining is reversible and diminishes with the addition of NH_4CNS. It is also dependent on the physiological state of the cell, being increased in the telophase, when the cell contains fat granules, and in the older cultures. R. J. O'C.

Iron-hæmatoxylin staining technique. H. E. Shortt, H. Hawley, and C. S. Swaminath (Indian J. Med. Res., 1938, **26**, 259—260).—In staining protozoa by the Heidenhain Fe-hæmatoxylin process, it is unnecessary to use only violet crystals of Fe NH_4 alum as a mordant; solutions of the latter which give produced a ppt. on keeping are satisfactory. To make a permanently clear solution of Fe NH_4 alum, it is dissolved in 0·5% H_2SO_4. The only essential factor in producing a good Fe-hæmatoxylin stain is a good solution of hæmatoxylin. H. B. C.

New stain for mucin. E. H. Leach (J. Path. Bact., 1938, **47**, 637—639).—The new stain is derived from Sudan-black B and gives results superior to those obtained with mucicarmine. The times required for staining are longer, but the staining solution deteriorates more slowly and the sections do not fade. It has a special affinity for mucin, but also stains cartilage and sometimes elastic fibres. Improved preservation and staining of mucin and mast cell granules are obtained, whatever stain is used, if 96% alcohol is employed instead of water to flatten out the sections on the slide. Intracellular mucin is retained in the granular form and swelling of the cells is prevented. (5 photomicrographs.) C. J. C. B.

Fat staining with Sudan-black B. E. H. Leach (J. Path. Bact., 1938, **47**, 635—637).—Sudan-black B, dissolved in a 50% solution of diacetin in distilled water, stains lipin substances, including myelin, an intense blue-black. For a study of intestinal epithelium, it is particularly satisfactory after fixation with Zweibaum's method. C. J. C. B.

Permanent preparations from rapid cytological techniques. B. B. Hillary (Stain. Tech., 1938, **13**, 161—167).—Details are given of a method for rendering permanent certain types of smear and squash preps. It consists essentially of fixing, dehydrating, and clearing by the dioxan technique and mounting in dioxan–Canada balsam. E. E. H.

Staining paraffin sections with protargol. I. Experiments with Bodian's method. II. Use of *n*-propyl and *n*-butyl alcohol in Hofker's fixative. H. A. Davenport and C. L. Kline

(Stain. Tech., 1938, **13**, 147—160).—An improvement of the original Hofker's mixture as fixative is to use formic acid 5 c.c. and *n*-butyl alcohol 60 c.c. Fix 12—24 hr., take through alcohols to water, wash several hr., dehydrate, and imbed in paraffin wax. Cut, mount, and remove the wax: take down to water, impregnate 2—3 days at 27—30° in 0·5% aq. protargol. Rinse. Reduce with 0·5% amidol in 5% aq. Na_2SO_3. Wash. Tone with 0·1% $AuCl_3$, wash and reduce with 0·5% amidol, wash, dehydrate. The significance of the various steps was tested by variations of technique. E. E. H.

Review of the Golgi apparatus. I, II. H. Kirkman and A. E. Severinghaus (Anat. Rec., 1938, **70**, 413—431, 557—573).—I. The structure of the Golgi apparatus is discussed.

II. The identification, polarity, and origin of the Golgi apparatus are considered. H. L. H. G.

Golgi apparatus and other cytoplasmic bodies in *Spirostomum ambiguum*. K. M. R. Browne (J. Roy. Microscop. Soc., 1938, [iii], **58**, 188—199).—Centrifuging caused stratification of contents. Vacuoles were on top with Golgi bodies below; mitochondria, nuclei, and food vacuoles sank to the bottom. E. B.

Occurrence of metachromasia in growing tissue, and its significance. B. Sylvén (Klin. Woch., 1938, **17**, 1545—1547).—A metachromatic substance was found in normal tissues, granulation tissue, and most benign and malignant growths. Ulceration, infection, and *X*-radiation cause a diminution or disappearance of this substance. E. M. J.

Secretory forms of the modified chondriome. A. Dehorne (Compt. rend. Soc. Biol., 1938, **128**, 964—967).—Modifications of the mitochondria and Golgi apparatus during secretion in cells of *Nereis longissima* are described. P. C. W.

Properties of chromatic substance. P. von Lehotzky (Arch. exp. Zellforsch., 1938, **21**, 390—393).—Chromatin in the epidermis of plants coagulates at 45—68° and in a concn. of 4—10% alcohol. R. J. O'C.

Spiral structure of somatic chromosomes. L. von Geitler (Z. Zellforsch., 1938, **28**, 305—309).—Chromosomes of the anaphase in the integument and anlage of the testis of young *Paris quadrifolia* show a definite spiral structure; there is evidence that this occurs in all somatic chromosomes. R. J. O'C.

Nuclear control of cell activity. D. F. Jones (Science, 1938, **88**, 400—401).—It is suggested that external agents act by modifying nuclear constituents. These in turn produce the observed effects. W. F. F.

Fragmentation and alteration of form of nuclei. L. Monné (Arch. exp. Zellforsch., 1938, **21**, 387—389).—The salivary glands of *Helix lutescens*, *H. pomatia*, and *Tachea austriaca* were examined. The living cell nucleus is globular; hypotonic solutions produce lobulation and fragmentation of the nucleus. Acidification or alkalinisation of the solution does not affect the result. These changes are ascribed to a low viscosity of the nuclear substance and a low surface tension between nucleus and cytoplasm. R. J. O'C.

Intercellular substances formed in cultures *in vitro*. A. Litvac (Arch. Anat. micr., 1937, **33**, 151—166).—The formation of collagenous fibrils and an intercellular matrix was observed and all stages recorded in cultures of fibroblasts from the chick embryo were followed for 15—20 days. The intercellular matrix was laminated, the cells lying between lamellæ. The fibrils had all the characteristics of collagen fibres and no anastomoses. J. H. G.

Density of elastic fibres in the skin. T. Kato (Arb. med. Univ. Okayama, 1938, **6**, 141—147).—The elastic fibres are particularly dense in the superficial corium of the skin of the face in man; dense nets of longitudinally and transversally arranged elastic fibres are found in the skin of the back of the nose, chin, edges of the ear, olecranon, patella, and buttocks. Many elastic fibres were found in the skin of the newborn. A. S.

Keratin and cornification. J. C. Derksen, G. C. Heringa, and A. Weidinger (Acta Neerland. Morph., 1937, **1**, 31—37).—The tonofibrils found both in the epidermis and in the horny layer give the *X*-ray spectrum of keratin; cornification can be accounted for by the closer adherence of these fibrils. In hair, the micelles are arranged in the length of the hair (in the direction of growth). *X*-Ray examination of nails, however, shows that the micelles lie across the nail, at right angles to the direction of growth; this is also the case in the horny layer of the skin. H. L. H. G.

Glomus caroticum. J. Gosses (Acta Neerland. Morph., 1937, **1**, 38—42).—The sp. cells of the glomus form a syncytium *in vivo*; this only becomes vacuolated as a result of the collapse of the blood vessels. The appearance of separate cells is due to the effects of fixatives. A pronounced infiltration with round cells is infrequent. No evidence can be brought to support the opinion of Paunz that the arterioles are affected early in cases of primary hypertension. H. L. H. G.

(b) BLOOD AND LYMPH.

Tissue culture of bone marrow. L. van den Berghe, W. Gavrilov, and G. Bobkoff (Compt. rend. Soc. Biol., 1938, **129**, 51—52).—Bone marrow from the monkey *Cercopithecus mona* was cultured in a hanging drop. Two types of young cell develop rapidly: (1) a large cell with an irregular nucleus giving rise after 2—3 weeks to the normal monocytes of the blood, and (2) a small cell with little cytoplasm and a clear round nucleus that gives rise in the same time to polynuclears. P. C. W.

Oxygen uptake of bone marrow. L. Michelazzi (Arch. Fisiol., 1938, **38**, 101—116).—The O_2 uptake of guinea-pig's bone marrow *in vitro* increases after bleeding or on addition of cell-free extracts from liver; kidney extract is less active; spleen or muscle extracts are inactive. Serum from animals after repeated bleedings does not stimulate. The respiration of marrow is increased in serum from the right

heart as compared with portal serum, but the latter causes an increase, if liver tissue was previously placed in it. S. O.

Intravital examination of bone marrow. A. Vischer (Schweiz. med. Wschr., 1938, **68**, 1201—1206).—Bone marrow specimens were obtained from the 2nd—3rd intercostal level of the sternum, using a lumbar puncture needle. Marrow smears are of great diagnostic val. in cases of anæmia of doubtful origin, leukæmia, thrombopenic, leukopenic, and agranulocytic conditions, and in cases of bone-marrow tumours. A. S.

Sternal puncture in Boeck's disease. M. Dressler (Klin. Woch., 1938, **17**, 1467—1471).—A case of Boeck's disease with splenomegaly and pulmonary affection was proved histologically by sternal puncture. E. M. J.

Relations of the human reticulocytes in the bone marrow and in the peripheral blood. M. Ungricht (Folia Haemat., Lpz., 1938, **60**, 145—204).—A description of the nos. of reticulocytes in the blood and bone marrow in various blood disorders is given. The reticulocytes are divided into 5 classes with varying amounts of reticular material. Classes 2 and 3 can be washed out of the bone marrow; classes 1 and 2 are immature and remain in the bone marrow. C. J. C. B.

Lack of homogeneity in the sternal bone marrow. B. Reiter (Z. ges. exp. Med., 1938, **103**, 694—703).—63 out of 100 sternums showed fat deposits of varying no. and size in the marrow; in 20 cases they were situated in the manubrium; yellow marrow was also found in 41 cases in the body of the sterni in the region of the 2nd intercostal space. A. S.

Chronic intoxication with benzene and its action on the bone marrow. R. Stodtmeister (Dtsch. Arch. klin. Med., 1938, **182**, 459—466).—Report of a case of chronic benzene intoxication with hyperchromic anæmia, megalocyte- and megaloblast-like cells in blood films and bone-marrow smears, and normal acidity of the gastric juice. A severe granulopenia persisted for a long time. The anæmia responded to Fe treatment and blood transfusions. A. S.

Origin of bone marrow plasma cell associated with allergic and immune states in the rabbit. F. Kolouch, jun. (Proc. Soc. Exp. Biol. Med., 1938, **39**, 147—148).—Rabbits were made allergic to *Streptococcus viridans* by depot injections and showed a small increase in plasmacytic reticulum cells and plasma cells in bone marrow. An intravenous injection of streptococci now caused within 20 min. a great increase in both, involving the formation of many bone-marrow plasma cells from plasmacytic reticulum cells. V. J. W.

Nature of Gordon's encephalitic agent. D. G. ff. Edwards (J. Path. Bact., 1938, **47**, 481—487).—Unsuccessful attempts to protect rabbits against the encephalitogenic agent in normal human bone marrow by a series of intravenous injections of this agent are recorded. Neither this agent nor the lymphadenomatous agent could be sedimented by the high-speed centrifuge. C. J. C. B.

Seasonal variations in the normal polynuclear count in man. J. MacLeod (Amer. J. Physiol., 1938, **122**, 520—523).—In each of 20 normal persons in one locality a variation in the polynuclear count was found throughout the year. All of the subjects showed at times a significant shift to the left in the polynuclear mean. M. W. G.

Polynuclear count in the Australian aborigine. B. Maegraith (Austral. J. Exp. Biol., 1938, **16**, 241—244).—The average weighted mean of polynuclear counts on bloods obtained from Australian natives at Koonibba shows a marked lowering compared with the mean of whites living in England or Melbourne. This agrees with the results of other polynuclear counts done on both natives and white people living in hot climates. D. M. N.

Diurnal variations of eosinophils. W. Appel (Z. ges. exp. Med., 1938, **104**, 15—21).—The no. of eosinophil leucocytes in man decreases in the morning and increases in the afternoon and evening. These variations are independent of age, sex, diet, or disease; they were also found in dogs, but disappear if the animals are kept in a dark room for 24 hr. A. S.

White blood cells of the normal guinea-pig. A. L. Joyner (Amer. J. Anat., 1938, **62**, 497—506).—The morphological features of the white blood cells of the guinea-pig are described. An analysis of differential counts of these cells shows a wide range in all types of cell in apparently healthy animals. Kurloff bodies are found only in lymphocytes. The basophils have certain unusual characters. H. L. H. G.

Influence of phenols on the Sudan coloration of leucocytes. P. de Bruyn (Acta Neerland. Morph., 1937, **1**, 43—48).—Commercial Sudan III contains free β-naphthol as an impurity; this causes the formation of granules in leucocytes. Other members of the phenol group have the same property. Further factors influencing the appearance of granulation in leucocytes are discussed. Staining of the granules, once they are formed, can be brought about by many basic colouring agents other than Sudan III. The differences obtained by using the Sudan solutions of Daddi and of Romeis, as well as the marked variation in the effects of Romeis' solution, are explained. H. L. H. G.

Fat metabolism of human leucocyte cultures. G. Wallbach (Arch. exp. Zellforsch., 1938, **21**, 436—445).—Under normal conditions there is a small storage of fat, which is increased by the addition of fat or lipin to the culture. There is no correspondence between the amount of fat added and that taken up by the leucocytes. R. J. O'C.

Carbohydrate metabolism of cultures of leucocytes. G. Wallbach (Arch. exp. Zellforsch., 1938, **21**, 373—386).—The addition of a given carbohydrate to a culture of human leucocytes causes a characteristic change of p_H. The production of acid was altered by the addition to the cultures of substances known to affect carbohydrate metabolism,

but the results were not predictable from their known properties. R. J. O'C.

Hanging drop culture of human lymphocytes. L. van den Berghe, W. Gavrilov, and G. Bobkoff (Compt. rend. Soc. Biol., 1938, **129**, 53—55).—The lymphocytes were derived from the blood and bone-marrow of a patient with lymphadenoma (red count 1,200,000 per cu. mm.; white count, 205,000 per cu. mm.; 91% lymphocytes). During the first 2 days the lymphocytes migrated to the periphery of the drop where on the third day normal plasmocytes appeared. On the fifth day macrophages appeared. No polynuclears or monocytes appeared. P. C. W.

Phagocytic activity of human leucocytes with special reference to their type and maturity. A. J. Hertzog (Amer. J. Path., 1938, **14**, 595—603).—The phagocytic activity of leucocytes from cases of leukæmia, of infectious mononucleosis, and of eosinophilia were investigated using streptococci and staphylococci as test particles. The mature polymorphonuclear neutrophils were most active both as to no. of bacteria ingested and % of cells ingesting. Monocytes, eosinophils, and metamyelocytes were also active. With myelocytes, premyelocytes, and myeloblasts the activity was much less and was proportional to their degree of maturity. Histoid stem cells and the histoid monoblasts of leukæmic reticuloendotheliomas were active. A few mature lymphocytes showed phagocytosis, whilst the leucocytoid lymphocytes of infectious mononucleosis were more active. (6 photomicrographs.) C. J. C. B.

Culture of leukæmic cells *in vitro*. J. Bichel (Z. Krebsforsch., 1938, **48**, 92—98).—Myeloblasts from a tumour accompanying a mouse leucosis were cultured for 5 months by adding (after 3 weeks and then from time to time) actively growing fibroblast cultures from the heart of a 6-day chicken fœtus. The myeloblasts infiltrate the fibroblastic tissues and can reproduce the original leucosis at any time. E. M. J.

Phagocytosis of Leishman-Donovan bodies by leukæmic blood cells. C. Teng and H. Chung (Proc. Soc. Exp. Biol. Med., 1938, **39**, 156—159).—Neutrophils beyond the myeloblastic stage, and to a small extent eosinophils, ingest Leishman-Donovan bodies *in vitro*. V. J. W.

Phagocytosis of leucocytes in leukæmia. T. Tanabe (Nagoya J. med. Sci., 1938, **12**, 55—60).—Phagocytosis of monocytes and neutrocytes, using a Chinese ink emulsion, is eliminated in leukæmia. Myelocytes and myeloblasts also exhibit phagocytosis in chronic and subacute leukæmia which disappears, however, shortly before death. E. M. J.

Experimental therapy of acute leukæmia with extracts of bone marrow. J. V. Cooke (J. Pediat., 1938, **13**, 561—569).—Of 11 cases treated by injections of extracts of bone marrow, 4 had temporary remissions of the leukæmic state and in others there was increased maturation of the granular leucocytes. C. J. C. B.

A chronic myeloid leukæmia observed from the onset. W. Weitz (Klin. Woch., 1938, **17**, 1579—1580).—A case of myeloid leukæmia in a radiographer showed an increase in basophils and eosinophils one year before the first myelocytes were seen. The first subjective symptoms appeared 2 years later and death occurred 5 years after the appearance of the first myelocytes. E. M. J.

Blood-iodine in leukæmia. K. B. Turner, K. R. McAlpin, and A. De Lamater (Proc. Soc. Exp. Biol. Med., 1938, **39**, 55—56).—In 4 cases of myeloid leukæmia the blood-I was 1·3—3·8 μg.-% and in 12 cases of lymphatic leukæmia it was 4·3—17·9 μg.-%. V. J. W.

Leucocyte regulation. A. G. Beer (Klin. Woch., 1938, **17**, 1395—1397).—Air was introduced into the cerebral ventricles of one of a pair of rabbits joined in parabiosis by cœleostomy. This set up leucocytosis in both animals. E. J. M.

Leucopenia after intravenous administration of colloidal carbohydrates. H. Staub, K. Mezey, and G. Golandas (Klin. Woch., 1938, **17**, 1501—1506).—Intravenous injection of glycogen, sol. starch, or gum arabic in dogs and rabbits causes a leucopenia to attain its max. in 3 min.; full return to normal occurs in 3 hr.; granulocytes are more affected than lymphocytes. The phenomenon is attributed to agglutination of leucocytes which have phagocytosed the macromols. and thus lost their power of passing through the capillaries. E. J. M.

Leucopenia following intravenous injection of glycogen. H. Staub and K. Bucher (Klin. Woch., 1938, **17**, 1555).—Repeated injections of glycogen in rabbits produce a leucopenia. The leucocytes are retained in the lungs (cf. preceding abstract). E. M. J.

Agranulocytosis following the ingestion of causalin. H. Jackson, jun. (J. Amer. med. Assoc., 1938, **111**, 523).—Agranulocytosis in 2 cases, one fatal, followed the administration of causalin, which contains amidopyrine and hydroxyquinoline. R. L. N.

Transmission of mouse leucosis by cell-free solution. J. Engelbreth-Holm and O. Frederiksen (Compt. rend. Soc. Biol., 1938, **129**, 101—104).—Mice with spontaneous lymphatic leucosis or lymphosarcoma are killed by injection of $K_3Fe(CN)_6$, and the gland tumours removed and treated in an atm. of N_2. The tissue is macerated in 2% cysteine solution and centrifuged; the supernatant fluid is treated with $CoSO_4$ and re-centrifuged. The cell-free supernatant fluid obtained when injected into young mice produced generalised lymphomatosis and tumours at the point of injection in 5 out of 40 within 30 days while the animals were too young to develop the condition spontaneously. P. C. W.

Influence of transmitted leukæmia on metabolism of uninfiltrated lymphoid tissue. J. Victor and J. S. Potter (Brit. J. exp. Path., 1938, **19**, 227—238).—The intraperitoneal inoculation of a saline suspension of leukæmic spleen or lymph-nodes of two different transmission lines of mice depressed the anaërobic glycolytic rates, but not the respiratory or the aërobic glycolytic rates, of uninfiltrated lymphoid tissue. This response depended on the sp. response

to individual transmission lines, the interval after inoculation and/or quantity of leukæmic tissue in the host, and a humoral factor which was either a product of leukæmia cells or the resultant of a reaction between host and leukæmia cells. R. L. N.

Leukæmic lymphoblastoma in a calf: a hæmatologic and histologic study. J. Stasney and W. H. Feldman (Amer. J. Cancer, 1938, **34**, 240—247).—The calf was 3 months old and observations were made over 3 weeks. E. B.

Histiocyte reaction to experimental staphylococcal infections. A. Peyron, G. Ponmeau-Delille, and P. Mercier (Compt. rend. Soc. Biol., 1938, **129**, 370—372).—The abscess formed in normal rabbits following the subcutaneous injection of a staphylococcus emulsion is surrounded by a histiocyte reaction limited to fibroblast elements. In the immunised rabbit the no. of histiocytes is increased by transformation of monocytes derived from the blood by diapedesis. P. C. W.

Microchemical investigation on ascites cells in mice. P. G. Seeger (Arch. exp. Zellforsch., 1938, **21**, 308—372).—Cells from the ascitic fluid caused in mice by Ehrlich's mouse sarcoma can be divided histochemically into four groups. R. J. O'C.

Non-nucleated red blood cells in urodeles. F. Körner (Z. Zellforsch., 1938, **28**, 567—596).—The blood of urodeles contains varying nos. of non-nucleated red cells. These are more common in urodeles without lungs and are highest in *Batrachoseps attenatus* (90—98%). These cells are formed from nucleated cells by an intracellular degeneration of the nucleus. R. J. O'C.

Erythroblasts in the chorionic blood vessels of human embryos. B. Halpert and J. Stasney (Arch Path., 1938, **26**, 1045—1046).—The erythroblast content of chorionic blood vessels was investigated in placental tissue in 80 specimens, including 30 pregnant Fallopian tubes and 12 embryos. In the 70 cases in which the chorionic blood vessels contained only nucleated red blood cells the estimated max. duration of pregnancy was 2 months or less. In the remaining cases in which the erythroblast content of the chorionic blood vessels was not less than 10%, the estimated max. duration of pregnancy was 2—3 months. C. J. C. B.

Morphological studies on the physiology of the red cells and the genesis of the blood platelets. R. G. E. Ulpts (Folia Hæmat., Lpz., 1938, **60**, 205—221).—By special methods, the red cell showed 5 different component parts. Blood platelets are believed to arise from one special part. C. J. C. B.

Estimation of red cell size with Bock's halometer. E. Kirk (Klin. Woch., 1938, **17**, 1222—1225). E. M. J.

The size of the red blood corpuscle in diabetes mellitus. C. F. Mohr (Amer. J. med. Sci., 1938, **196**, 67—75).—The mean corpuscular vol. was 95 cu. μ. or above in 14·3% of 42 cases of uncomplicated diabetes mellitus and in 35% of 18 cases of diabetic acidosis. R. L. N.

Volume determinations of single red cells. E. Probst (Dtsch. Arch. klin. Med., 1938, **182**, 455—458).—The addition of oxalate or hirudin changes the refraction of plasma. A. S.

Errors in erythrocyte counts due to Hayem's solution avoided with Gower's solution. Y. Ch'u and C. E. Forkner (J. lab. clin. Med., 1938, **23**, 1282—1293).—Hayem's solution caused a coarse ppt. in the plasma and brought about clumping in some of the red cells, particularly in some cases of kala azar, cirrhosis of the liver, pneumonia, nephritis, and severe anæmia. Gower's solution was free from this defect and should be used in all cases. (6 photomicrographs.) C. J. C. B.

Blood picture of poultry and its diagnostic significance. S. F. Cook (Poultry Sci., 1937, **16**, 291—296).—Changes in red and white cell counts, clotting time, and hæmoglobin val. resulting from feeding 5 different diets are recorded. The use of the counts in diagnosis of dietary and pathological disorders is discussed. A. G. P.

Phytotoxic reactions of fresh, frozen, and dried blood. D. I. Macht and M. L. Grumbein (Arch. int. Pharmacodyn., 1938, **60**, 95—104).—Dried normal, menstrual, pernicious anæmia, and pemphigus blood, protected from light, retains phytotoxic properties for *Lupinus albus* for several weeks. Pemphigus blood is the least stable. Frozen blood after thawing is more toxic than other samples. Rapidly frozen specimens are less toxic than liquid blood. D. T. B.

Hypophysis and blood counts. G. A. Overbeek and A. Querido (Arch. int. Pharmacodyn., 1938, **60**, 105—114).—No change of leucocyte count was observed in peripheral blood after hypophysectomy, with or without splenectomy. The fragility of the red cells was not altered during the first month after hypophysectomy. Decreased erythrocyte (but not leucocyte) formation was noted in the bone marrow. D. T. B.

Blood reservoirs. B. Steinmann (Klin. Woch., 1938, **17**, 1641—1644).—A review. E. M. J.

Hæmatological findings in cases of acute poisoning. L. Mosonyi and C. Sellei (Klin. Woch., 1938, **17**, 1405—1407).—White cell and differential count and sternal puncture were performed in 26 cases of poisoning by barbiturates, $KMnO_4$, HCl, CO, and strong alkali. The findings resemble those of bacterial intoxication; clinically moderately severe cases show bone-marrow stimulation; in severe cases there is depression at first and a shift to the left in the leucocytosis occurs later. E. M. J.

Polycythæmia or physiologically high values? C. Humperdinck (Arch. Gewerbepath. Gewerbehyg., 1938, **8**, 120—123).—A blood count of over 5 millions per cu. mm. is often found in normal subjects and is therefore not a reliable indication of poisoning. M. A. B.

Increase of red cell count after exercise. S. Lang (Z. ges. exp. Med., 1938, **103**, 756—762).—The increase of the erythrocyte count in dogs after exercise or administration of adrenaline is abolished by injection of ergotamine, extirpation of the spleen,

section of the splanchnic nerves, extirpation of the adrenals (rats), or denervation of the spleen; atropine has no effect on the red cell count. A. S.

Treatment of polycythæmia with a diet poor in albumin. P. PAGNIEZ (Presse méd., 1938, **46**, 1227).—A review. A. J. B.

Effect of liver extract on polycythæmia vera. R. H. MAJOR (J. Lab. clin. Med., 1938, **24**, 65—67).—In 3 cases, liver extract was without effect on the blood picture. C. J. C. B.

Polycythæmia vera. S. M. GLASSER (J. Amer. med. Assoc., 1938, **110**, 2071—2072).—A case of severe polycythæmia vera, in which all male members of the patient's family died of hæmophilia, responded dramatically to phenylhydrazine hydrochloride therapy. R. L. N.

Treatment of essential hypochromic anæmia. W. THIELE and H. KÜHL (Klin. Woch., 1938, **17**, 1219—1221). E. M. J.

Anæmia in dogs. V. R. POTTER, C. A. ELVEHJEM, and E. B. HART (J. Biol. Chem., 1938, **126**, 155—173; cf. A., 1936, 1399).—Dogs, rendered anæmic by feeding on a milk diet with exclusion of Fe and Cu, were given various amounts of Fe and Cu (up to 30 and 2 mg. respectively, daily). The rate of hæmoglobin formation over 3 months indicated that the amounts of Fe and Cu were too small or that another and unknown factor was missing. When Fe was administered alone there was a temporary increase in blood-Cu and an associated hæmatopoiesis. After normal hæmoglobin levels had been attained, the Cu–Fe therapy was discontinued and some of the dogs were made anæmic by bleeding. These were depleted of Cu and Fe and could not form hæmoglobin on the milk diet alone. They responded poorly to a daily dose of 30 mg. of Fe, but when 4 mg. of Cu per day was also given hæmoglobin formation was rapid. Dogs were maintained for over a year in excellent condition on a diet of milk to which were added vitamin-*A* and -*D* and very small amounts of Fe and Cu. J. N. A.

Anæmia. I, II. K. SCHMIDU (Japan. J. Med. Sci., 1936, III, **3**, 247—268, 269—308).—I. Effects of hæmorrhagic anæmia on the circulatory and respiratory systems of rabbits are examined. Data showing changes in blood-vol., -pressure, and -η are recorded.

II. Anæmia causes diminution in O_2 consumption of the kidney but not of muscle and other tissue, and an increased coeff. of O_2 utilisation and blood flow. As anæmia progresses the alkali reserve of the plasma, tissues, and urine, and the plasma-protein decrease; plasma salts are unaffected. CH. ABS. (*p*)

Infection and intoxication: influence on hæmoglobin production in experimental anæmia. F. S. ROBSCHEIT-ROBBINS and G. H. WHIPPLE (J. Exp. Med., 1936, **63**, 767—787).—A disturbance of hæmoglobin formation occurs in states of infection and intoxication in anæmic dogs. CH. ABS. (*p*)

Hæmopoietic action of zinc, manganese, and nickel. M. POLONOVSKI and S. B. BRISKAS (Compt. rend. Soc. Biol., 1938, **129**, 493—496).—$ZnSO_4$ and $MnCl_2$, given by mouth (1—2 mg. per day) to rats on a milk diet, only arrest the fall in hæmoglobin and blood count slightly and temporarily. $NiCl_2$ has no action. Following the Mn treatment Fe has no curative effect; this is attributed to depletion of Cu stores. P. C. W.

Anæmia of pregnancy in gastrectomised and normal dogs. R. A. BUSSABARGER, F. P. CUTHBERT, and A. C. IVY (J. Lab. clin. Med., 1938, **24**, 24—33).—The blood picture of 5 gastrectomised dogs was followed through 15 pregnancies and showed a marked to severe anæmia in 11 pregnancies; blood vol. determinations in the 8 cases examined showed in all a decrease in total circulating hæmoglobin of 20—155 g. regardless of changes in blood vol. In 12 normal dogs observed through 12 pregnancies marked anæmia developed in only one; anæmia of the puerperium was more marked than anæmia of pregnancy, and hydræmia was found by blood vol. determinations in only 3 cases out of 8 examined. C. J. C. B.

Aplastic anæmia with complete recovery. T. H. BOON (Brit. Med. J., 1938, II, 1041—1042).—A case is described. C. A. K.

Absorption and excretion of iron following oral and intravenous administration. R. A. MCCANCE and E. M. WIDDOWSON (J. Physiol., 1938, **94**, 148—154).—Three men and three women were placed on diets containing 5·9—8·6 mg. of Fe per day and excretion (urine + fæces) of Fe balanced the intake. The oral intakes were then raised to 12—16 mg. of Fe per day and all the supplementary Fe was excreted. Finally 7 mg. of Fe were injected intravenously every day while intake by mouth of the same subjects was 7·6—11·7 mg. per day; none of the injected Fe was excreted into the gastro-intestinal tract. It appears that the intestine has no power of regulating by excretion the amount of Fe in the body. J. A. C.

Parenteral iron therapy. E. PÜTZ (Z. ges. exp. Med., 1938, **104**, 35—48).—Subcutaneous injection of Fe preps., containing 20 mg. of Fe per kg. body-wt., does not produce toxic effects in rats; 30 mg. of Fe produce slight, 50 mg. severe or lethal, intoxication. Hypochromic anæmia was produced by feeding rats exclusively on cow's milk. The severe symptoms were cured by parenteral administration of Fe^{II}; the curative dose is near that which produces slight toxic effects. Extensive necrosis was observed at the site of injection. A. S.

A new case of hæmolytic anæmia with hæmoglobinuria and hæmosiderinuria. M. BRULÉ, P. HILLEMAND, and R. GAUBE (Presse méd., 1938, **46**, 1329—1331).—A case is described of a patient suffering from repeated attacks of hæmoglobinuria with hæmolytic jaundice (occurring even during strict rest in bed) and never elicited by exposure to cold. Recovery after each attack became less complete, the red blood cells numbering 2,000,000 and hæmoglobin 40% after 2 years and not rising above that level in spite of all treatment. The jaundice had become const. though mild. Hæmosiderin was excreted constantly in the urine. The liver was slightly enlarged, and the spleen normal. The fragility of the red blood

cells was normal. 31 similar cases have been previously reported. G. Sch.

Effect on the blood cells of the fœtal rat of inhalation of carbon tetrachloride by the mother during gestation. E. Briese (Amer. J. med. Sci., 1938, **195**, 787—793).—The blood of 86 rats, born of mothers rendered anæmic by inhalation of the fumes of CCl_4 during gestation, was compared cytologically with that of 72 controls. Macrocytic anæmia developed in the fœtus during intra-uterine life. This was evidenced by a decrease in red blood count and an increase in diameter and mean corpuscular vol. of the erythrocytes. Increased hæmoglobin content, reticulocytosis, thrombocytosis, and leucocytosis were also observed. R. L. N.

Anti-pernicious anæmia principle. E Jéquier and G. R. M. Apsey (Brit. Med. J., 1938, II, 934—936).—Human urine, in health and in untreated pernicious anæmia, produces a reticulocytosis on subcutaneous injection in the white rat. Rectal administration of normal urine to a case of pernicious anæmia produced no reticulocyte response. There is thus no evidence for an anti-pernicious anæmia principle in urine. C. A. K.

Action of anti-anæmic principle on blood formation in chick embryo. L. Reimer (Arch. exp. Path. Pharm., 1938, **189**, 656—658).—Liver preps. are without effect on blood formation in the chick embryo. H. Bl.

The Jacobson method for assay of [anti-pernicious anæmia] liver extracts. R. Rodriguez-Olleros and R. Rodriguez-Molina (Proc. Soc. Exp. Biol. Med., 1938, **39**, 174—176).—1 c.c. of Lilly liver extract failed to give a satisfactory reticulocyte response in the majority of the guinea-pigs tested. V. J. W.

Pernicious anæmia in chronic carbon monoxide poisoning. W. Berger and H. Grill (Folia Hæmat., Lpz., 1936, **54**, 398—409).—Anæmia was due to an atrophic gastritis. CO interferes with the formation of the intrinsic factor, HCl, and pepsin. Ch. Abs. (*p*)

Organisation of blood transfusions in war. G. Henri (Presse méd., 1938, **46**, 1230—1231).—A review. A. J. B.

Therapy of the Cook County Hospital. Blood preservation technique. B. Fantus and E. H. Schirmer (J. Amer. med. Assoc., 1938, **111**, 317—321). R. L. N.

Blood transfusion and blood donor agency in the surgical clinic of Gottingen University. H. Wille-Baumkauff (Beitr. klin. chir., 1938, **168**, 23—32).—The desirable conditions for maintaining an efficient blood donor agency, and for transfusions, are given. H. B. C.

Severe reactions following transfusion in hæmolytic jaundice. H. H. Davis (J. Amer. med. Assoc., 1938, **110**, 2053—2056).—Two cases of hæmolytic jaundice showed unfavourable and dangerous reactions following whole blood transfusions. R. L. N.

Blood groups of anthropoid apes. P. Dahr (Dtsch. med. Wschr., 1938, **64**, 1576—1578).—Chimpanzees, orangs, and gorillas have 2 agglutinogens (in red cells) and 2 agglutinins (in serum). These cell and serum factors cannot be distinguished from the human agglutinogens and agglutinins. Factors *M* and *N* resemble the human factors *M* and *N*. Human serum contains hetero-agglutinins against monkey blood cells. A. S.

Blood groups in Madagascar. R. David (Compt. rend. Soc. Biol., 1938, **128**, 987—988).—Blood group determinations were made on 168 Mahafalys dwelling in the south west of Madagascar. The *R* gene was frequent and the no. of *B* groups suggested that certain regions of Madagascar should be added to the known centres of *B* gene. The results indicate that the inhabitants are serologically different from those of the central regions of the island. P. C. W.

Agglutinating power of the donor serum. Thiodet and Ribère (Compt. rend. Soc. Biol., 1938, **129**, 5—7).—The agglutinins in the plasma of all blood groups were tested on washed cells. Sera II and III contain agglutinins for the cells of all different groups except IV; serum IV contains agglutinins for all other groups. Serum I contains agglutinins for cells of groups II and III. All these agglutinins are present in low concns. except those for the antagonist group. Dilution of serum with antagonistic serum lowers its agglutinating activity. P. C. W.

Experiments with human agglutinating sera. C. R. Christian (J.R.A.M.C., 1938, **71**, 31—38).—The agglutinating power of serum can be raised about eightfold by alternate freezing and thawing to room temp. Serum may be preserved for several months by the addition of 10% of a 1% solution of H_2SO_4 or of acid salts. Other substances such as glycerin and $NaHCO_3$ gave cloudiness on mixing with blood or had no preservative effect. W. F. F.

Isoagglutinins are contained in the globulin fraction of blood-serum. S. Jacob (Compt. rend. Soc. Biol., 1938, **129**, 483—484).—The globulin fraction of the protein ppt. obtained by acetone at 0° contains the agglutinating power. H. G. R.

Agglutinins of the auto-isoagglutination syndrome. Thiodet and Ribère (Compt. rend. Soc. Biol., 1938, **129**, 3—4).—Washed erythrocytes from 3 cases of auto-isoagglutination were tested and found to belong to blood groups I, II, and III, respectively. The agglutinins responsible for the condition must therefore be present in the plasma. P. C. W.

Temporary agglutinability of red blood cells. P. Levine and E. M. Katzin (Proc. Soc. Exp. Biol. Med., 1938, **39**, 167—169).—A boy with measles and a type 1 pneumococcus infection developed for the duration of his illness an agglutinability of his red cells to about 15% of sera, irrespective of their blood group, his own group being *O*. The agglutinin was specifically absorbable by the cells of the patient. The peculiarity was not present in the red cells of either parent and disappeared on the patient's recovery. V. J. W.

Effect of injections of serum on hæmolytic complement, with particular reference to Bordet's anti-immune body effect. S. THOMSON (J. Path. Bact., 1938, **47**, 395—404).—The serum of a rabbit previously injected with horse serum cannot lyse red cells sensitised by a hæmolytic immune body from a horse. This is due to fixation of complement by the interaction of the horse serum-proteins (of the sensitising immune serum) with the antibodies present in the injected rabbit's serum. This phenomenon is essentially the same as Bordet's " anti-immune-body " effect, and does not run parallel to the amount of horse serum-proteins present in the rabbit serum. It was more difficult to wash red cells free from the proteins of a sensitising antiserum than from homologous serum. C. J. C. B.

Effect of Seitz filtration on hæmolysins and the components of a hæmolytic system. R. N. CHOPRA and A. C. ROY (Indian J. Med. Res., 1938, **26**, 303—309).—Dil. solutions of Merck's saponin, cyclamin, the saponin from *Baringtonia acutangula*, bacterial hæmolysins, diluted complement, and amboceptor were all inactivated by passing through a Seitz filter. Conc. solutions of the active substances are comparatively unaffected. H. B. C.

Red cell fragility in various blood conditions. D. A. K. CASSELLS (J. Path. Bact., 1938, **47**, 603—614).—The majority of anæmias show a shift to the left of the curve of red cell hæmolysis in hypotonic saline. The curve moves to the right as the anæmia improves. The shift to the left is partly dependent on the degree of anæmia. Some anæmias, particularly those associated with pregnancy, fall within normal limits or their curve of fragility lies at the extreme right of normal: these cases show microcytosis and usually a higher colour index. The latter is not the determining factor, since cases of pernicious anæmia have a curve to the left of normal; the cells are not necessarily thicker than normal. In the absence of anæmia the curve following splenectomy is shifted to the left. The only other abnormality in such cases is macrocytosis. C. J. C. B.

Modified Van Allen hæmatocrit tube providing for the automatic volume adjustment of the blood sample. G. M. GUEST (J. Lab. clin. Med., 1938, **24**, 75—77). C. J. C. B.

The sedimentometer. T. LEE (Amer. J. med. Sci., 1938, **195**, 729—733).—A new and compact apparatus, the sedimentometer, which gives a continuous photosedimentation curve conforming to recognised Cutter curves, is described. Essential modifications are given so that the sedimentometer may be used to record the suspension stability test in tubes of varying lengths. R. L. N.

Differential serum vanadate sedimentation reaction. H. B. HUNT and D. L. WOODHOUSE (J. Lab. clin. Med., 1938, **24**, 1—15).—The differential serum sedimentation figures were determined in 50 asthmatic patients, 50 patients with and 25 without malignant disease. The findings did not confirm those of Coke, but although the test could not give definite information of the clinical classification of the asthmatic patients, yet 30% of the asthmatical patients gave negative deviations, a feature not present in the other groups. There was no correlation between the sedimentation deviation, the red cell sedimentation rate, or the presence of eosinophilia. C. J. C. B.

Sedimentation rate after exercise. H. DEIST (Klin. Woch., 1938, **17**, 1607—1609).—No relationship was established. E. M. J.

Influence of anæmia on blood sedimentation. J. W. CUTLER, F. R. PARK, and B. S. HERR (Amer. J. med. Sci., 1938, **195**, 734—751).—Anæmia was found to have little to do with the phenomenon of blood sedimentation, rapid settling being the result of red cells forming large aggregates or rouleaux. If no aggregation took place, sedimentation was slow no matter how marked the anæmia. The ability of the red cells to form aggregates was sp. for the plasma and was little influenced by the size, shape, or no. of cells in suspension. The application of these findings to the usual methods is discussed. R. L. N.

Value of sedimentation rate in the diagnosis of malignant transformation of a gastric ulcer. M. J. DEMOLE and P. E. PERRET (Arch. VerdauKr., 1938, **63**, 130—146).—Ulcer cases with a high sedimentation rate are less likely to become malignant than those with normal rate. A progressive rise in the rate suggests malignant transformation. E. M. J.

Synthesis and catabolism of hæmoglobin. R. DUESBERG (Klin. Woch., 1938, **17**, 1353—1359). —A review. E. M. J.

Hæmoglobin concentration and pallor. J. BROCK, A. ANZLINGER, and E. STAMER (Münch. med. Wschr., 1938, **85**, 1661—1663).—Children with extreme pallor of the skin and mucous membranes often have hæmoglobin concns. of 60—100% (16 g. of hæmoglobin % = 100%). A. S.

Mechanism of the peroxidase activity of hæmoglobin. M. POLONOVSKI, M. JAYLE, and G. GLOTZ (Compt. rend. Soc. Biol., 1938, **128**, 1072—1074).—The peroxidase activity is due to the reversible formation of an oxidised derivative of hæmoglobin. H. G. R.

Presence in blood plasma of a substance increasing the peroxidase activity of hæmoglobin. M. POLONOVSKI and M. JAYLE (Compt. rend. Soc. Biol., 1938, **129**, 457—460).—Human plasma contains a substance increasing the peroxidase activity of hæmoglobin at an optimum p_H of 4·2—4·5. It is not sp. towards the hæmoglobin and is not found in the plasma of all animals. H. G. R.

Purification of carboxyhæmoglobin by crystallisation. G. DELRUE (Bull. Soc. Chim. biol., 1938, **20**, 1115—1116).—Carboxyhæmoglobin may be crystallised from aq. NaCl by adding aq. K_2HPO_4 and KH_2PO_4 to p_H 6·8. A. L.

Methæmoglobin determination. Clinical method. W. B. WENDEL (J. Lab. clin. Med., 1938, **24**, 96—101).—A simple rapid direct spectroscopic method for the determination of methæmoglobin in blood is described. C. J. C. B.

Methæmoglobinæmia and its measurement. D. O. Hamblin and A. F. Mangelsdorff (J. Ind. Hyg., 1938, **20**, 523—530).—A General Electric automatic recording spectrophotometer was used, with a 0·5-cm. glass cell holding 2·5 c.c. of fluid; a 4% solution of blood was used. Composite curves were made for oxyhæmoglobin and methæmoglobin from the blood of 25 subjects; the greatest difference between the two curves was at 623 mμ., and the proportion of methæmoglobin in blood was therefore estimated from the position of the curve at this wave-length. Curves typical of methæmoglobinæmia were obtained from the blood of patients after absorption of nitrobenzene, dinitrobenzene, and aromatic amines; the % methæmoglobin found corresponded with the clinical state of the patient. E. M. K.

Alcohol and formation of methæmoglobin. W. Heubner and H. Möbus (Arch. exp. Path. Pharm., 1938, **190**, 223—224).—Blood was taken from cats and replaced by corpuscles containing methæmoglobin. Hæmoglobin reformation was unaffected by administration of alcohol. I. S.

Reaction of fulminate with methæmoglobin. R. D. Barnard and W. Neitzel (Proc. Soc. Exp. Biol. Med., 1938, **39**, 171—172).—If saturated Hg^{II} fulminate or 2% Na fulminate solution is added to methæmoglobin a red pigment is formed which has a spectrum like that of cyanmethæmoglobin but which is converted into alkaline methæmoglobin by alkali. In the case of methæmoglobin prepared by quinhydrone instead of ferricyanide, Hg^{II} fulminate gives a red ppt. V. J. W.

Blood-bilirubin and lipochromes. A. Gigon and M. Noverraz (Schweiz. med. Wschr., 1938, **68**, 1189—1191).—Serum-bilirubin is determined, using a Pulfrich photometer, by measuring the coloration of an acetone extract after removal of the carotenoids and xanthophyll by light petroleum. The lipochromes can be determined by the same method. A. S.

Blood volume changes in normal pregnant women. K. J. Thomson, A. Hirsheimer, J. G. Gibson, and W. A. Evans (Amer. J. Obstet. Gynec., 1938, **36**, 48—59).—Using the Congo-red method, blood vol. was determined ante- and post-partum in 14 patients whose pregnancies were normal. There is a progressive increase in the plasma and total blood vol. beginning early in pregnancy; these reach a max. during the 9th lunar month and then decrease to the average normal non-pregnant level by the end of the 2nd post-partum week. The total cell vol. during the latter months of pregnancy shows an abs. increase, less in proportion than the increase in plasma vol. The disproportionate increase in plasma vol. accounts for the "hydration" of the blood in pregnancy. M. H.

Effect of adrenaline on circulating blood volume. E. Levin (Rev. Soc. argent. Biol., 1934, **10**, 456).—Injection of adrenaline increased corpuscle-vol. and decreased plasma-vol. Ch. Abs. (*p*)

Technique of the thrombocyte count. H. Babnik (Klin. Woch., 1938, **17**, 1441—1444).—Thrombocytes were counted in blood obtained by venepuncture and after centrifugalisation. The normal range of 200,000—300,000 per cu. mm. is higher than when finger blood is used. The thrombocyte count falls to 50,000 during therapeutic malaria but not so low when hyperthermia is produced by pyrifer. E. M. J.

Agonal fall in thrombocytes. K. Koike (Nagoya J. med. Sci., 1938, **12**, 61—64).—The thrombocyte count falls to extremely low vals. before death and such fall is a bad prognostic sign (100 lethal cases). E. M. J.

Hypovitaminosis-*C* [and thrombopenia]. G. Gaethgens (Klin. Woch., 1938, **17**, 1389—1394).—A typical vitamin-*C* excretion curve was obtained in a case of essential thrombopenia. E. M. J.

Determination of coagulation time of blood. W. Schultz and H. Hilgenberg (Klin. Woch., 1938, **17**, 1288—1289).—Details of a capillary-tube method are given. E. M. J.

Reduced blood coagulation time by injection of sterol extract of liver. A. L. Lichtman and W. H. Chambers (Science, 1938, **88**, 358—359).—Liver contains a sterol which reduces the clotting time of blood in normal and jaundiced dogs and rats. A single intravenous or subcutaneous dose acts for several days. The extract resembles vitamin-*K* in correcting the hæmorrhagic tendency in -*K*-deficient chicks. In its sterol nature and alkali-stability it differs from -*K*. W. F. F.

Prothrombin in chickens. F. Schønheyder (Amer. J. Physiol., 1938, **123**, 349—358).—White Leghorn chicks were used; on the 8th day of life vitamin-*K*-deficient diet began. They developed hæmorrhagic phenomena in 2—4 weeks owing to a decrease of plasma-prothrombin. In such animals prothrombin is not present in an inactive form. A method for the determination of prothrombin in chicken plasma is outlined. Prothrombin and complement of chicks are not identical. Prothrombin content of -*K*-deficient chicks after transfusion with plasma of various species shows a species-specificity. M. W. G.

Clinical and experimental conditions associated with a deficiency of prothrombin. A. M. Snell (Proc. Staff Mayo Clin., 1938, **13**, 65—67).—Coagulation time was shortened, in a case of jaundice with almost uncoagulable blood, by lucerne meal and bile salts (per os). Prothrombin was deficient in the blood. A. J. B.

Coagulation of blood with special reference to prothrombin. T. B. Magath (Proc. Staff Mayo Clin., 1938, **13**, 67—69).—An improved method of estimating prothrombin by Quick's technique is suggested. A. J. B.

Prothrombin deficiency and the bleeding tendency in obstructive jaundice and in biliary fistula. K. M. Brinkhous, H. P. Smith, and E. D. Warner (Amer. J. med. Sci., 1938, **196**, 50—57).—In 27 cases of obstructive jaundice and 1 case of biliary fistula a deficiency in plasma-prothrombin was found. A definite bleeding tendency was present in 6 cases and in these the prothrombin level was usually less than 35% of normal. The deficiency was related

to the absence of bile in the intestine and was relieved by bile feeding. This was greatly enhanced by supplementing the bile with fat-sol. lucerne extract, rich in vitamin-*K*. R. L. N.

Quantitative relationships of calcium and kephalin in experimental thrombin formation. J. H. Ferguson (Amer. J. Physiol., 1938, **123**, 341—348).—A standardised technique has been developed for the quant. study of the factors involved in thrombin formation *in vitro*; the reagents are controlled for purity and stability. Both kephalin and Ca are essential for thrombin formation in the system studied; diminution of either results in a lessening of the rate of thrombin formation and the amount produced. Excess of either is inhibitory. Ca is the more fundamental determinant of thrombin formation from a fixed quantity of prothrombin. For any particular Ca concn. the activity developed is in turn controlled by the kephalin content, showing that the kephalin binds Ca to prothrombin. The Ca-containing "intermediary complex" in thrombin formation is a colloidal complex of prothrombin, Ca, and kephalin. M. W. G.

Determination of blood-clotting activity of thrombin surgical dressings. R. M. Savage and W. P. Chambers (Quart. J. Pharm., 1938, **11**, 543—561).—A method is described with a standard error of 8·5%, the optimum temp. being 25°. No significant differences occur when rabbit or sheep blood is used either immediately or after storage at 0° for 24—48 hr. The effectiveness of the dressings depends largely on the nature of the cloth, gauze being inferior, whilst lint gives the best results. A quant. relation exists between surface concn. of thrombin and the resulting clot. P. G. M.

Experimental thrombosis in the dog. J. D. E. Schmidt (Presse méd., 1938, **46**, 978).—In 3000 autopsies on dogs post-operative thrombosis occurred in 2 cases. Increased liability to thrombosis (and increase of sedimentation rate) was produced by subcutaneous or intraperitoneal injection of citrated blood or by pinching the skin. Thrombosis occurred spontaneously, following illness or parturition. A. J. B.

Fibrinogen in the non-coagulated blood of sudden death. K. Shimasaki (J. Chosen Med. Assoc., 1935, **25**, 1642—1653).—The non-coagulated blood is unaffected by thrombin and has no constituent precipitable in half-saturated NaCl. It contains antithrombin and normal amounts of fibrinogen coagulable at 56°. Ch. Abs. (*p*)

Heparin and thrombosis. C. H. Best (Brit. Med. J., 1938, II, 977—981).—A review. C. A. K.

Mode of action of heparin. J. E. Jorpes (Skand. Arch. Physiol., 1938, **80**, 202—208).—A review. A. S.

Purification of heparin. T. Astrup and H. B. Jensen (Skand. Arch. Physiol., 1938, **79**, 290—298).—The anticoagulant activity (*K*) was estimated using the method of Fischer and Schmitz and calc. from the formula $K = 25(\log t_1 - \log t_2)/(c - c_2) = 50(\log t_1 - \log t_2)/c$, where c and c_2 are concns. of the anticoagulant substance, and t_1 and t_2 are the coagulation times using those concns. c is expressed in mg.-% and t in 1/100 min. 1 unit is the quantity of anticoagulant substance in 1 g. of a prep. which gives the val. 1 for *K*. Crude heparin obtained from ox lung was purified by pptn. with alkali and acetone and the Ba and Na salts of heparin were prepared. A. S.

Antidiuretic effect produced by certain preparations of heparin. A. M. Walker (Proc. Soc. Exp. Biol. Med., 1938, **39**, 105).—Different samples of heparin had antidiuretic effects in diuretic rabbits. Antidiuretic and anticoagulating potencies were not correlated. V. J. W.

Coagulation defect in hæmophilia. The refractory phase following repeated injections of globulin substance derived from normal human plasma in hæmophilia. F. J. Pohle and F. H. L. Taylor (J. clin. Invest., 1398, **17**, 779—783).—In hæmophilia, repeated injections of lyophilised globulin substance as well as normal globulin substance produced a refractory period after the usual initial reduction in the coagulation time of the blood. Repeated injections of either normal or lyophilised human plasma produced a shortened coagulation time without refractory phase. The refractory phase can be abolished at its height by a single injection of plasma. C. J. C. B.

Mode of disturbance of blood coagulation in hæmophilia. H. Dyckerhoff and N. Goossens (Z. ges. exp. Med., 1938, **104**, 116—119).—No. and properties of the thrombocytes, fibrinogen content, and the coagulation of fibrinogen are normal in hæmophilic blood. The thrombin content of blood is considerably diminished in hæmophilia. A. S.

Hæmostatic effect of citrin (vitamin-*P*). M. Raunert (Z. Urol., 1938, **32**, 630—633).—Administration of 100 mg. of citrin (vitamin-*P*) daily, after all other methods failed, stopped hæmorrhage in non-sp. inflammation, temporarily influenced renal hæmorrhage, diminished hæmorrhage from tumours (within 3—7 hr.), stopped bleeding before and after cystoscopy, lithotripsy, and resection of the prostate within 1—2 days; when given before instrumental investigations it lessened subsequent hæmorrhage. -*P* also stopped bleeding in a case of hæmophilia and in several cases of gastric hæmorrhage. The action of -*P* coincides with a rise of 1·5 mg.-% in the serum-Ca. B. W.

Use of dilute venom of *Bothrops atrox* as hæmostatic. C. J. Hanut (Compt. rend. Soc. Biol., 1938, **128**, 1160—1163).—Dil. solutions (1 in 5×10^6) injected intravenously into rabbits (1 c.c. per kg.) do not shorten the bleeding time and may in some cases prolong it. Its use is thus contraindicated in hæmorrhagic conditions unless coagulation time is prolonged. P. C. W.

Changes in the viscosity of mixtures of specific serum and antigen during serum- and egg-anaphylaxis in rabbits. J. Loiseleur and W. Nyka (Compt. rend. Soc. Biol., 1938, **128**, 1103—1105).—An immediate and persistent increase in η of immunised serum when mixed with the antigen is described. H. G. R.

Impeding effect of diazotised gelatin on precipitation of human nitro- and diazo-serum by horse and anti-nitroserum. W. MUTSAARS (Compt. rend. Soc. Biol., 1938, **129**, 510—511).—Diazo- and nitro-gelatin specifically inhibit pptn. of human nitro- and diazo-serum by horse anti-nitroserum. H. G. R.

Impeding effect of diazotised gelatin on fixation of alexin by horse anti-nitroserum and the corresponding antigens. W. MUTSAARS (Compt. rend. Soc. Biol., 1938, **129**, 511—513).—The inhibiting effect is sp., diazo- and nitro-gelatin behaving as simple haptens. H. G. R.

Effect of sodium bromide on the preservation of guinea-pig alexin. L. STEEG (Compt. rend. Soc. Biol., 1938, **128**, 1047—1049).—The efficiency of NaBr as a preservative is greater in physiological saline than when added directly to the serum. H. G. R.

Choice of temperature for the inactivation [of the complementary power] of sera. L. NATTAN-LARRIER, L. STEEG, and J. DUFOUR (Compt. rend. Soc. Biol., 1938, **128**, 1044—1046).—The optimum temp. for inactivation of horse, new-born, pregnant woman, and cancer sera are 56—57°, 49°, 56—57°, and 54—55° or 60—62°, respectively. H. G. R.

Complement content of splenic "depot" serum. L. GORECZKY and G. V. LUDÁNY (Klin. Woch., 1938, **17**, 1444—1445).—Splenic "depot" serum in dogs contains 20% more complement than circulating serum. E. M. J.

Immunological behaviour of fractions of serum-globulin. J. MARRACK and D. A. DUFF (Brit. J. exp. Path., 1938, **19**, 171—178).—From quant. studies on the behaviour of the water-sol. and insol. fractions of serum-globulin with antiserum to whole serum-globulin it is suggested that these fractions are not present, as such, in the whole globulin. R. L. N.

Carotenoids and vitamin-*A* of blood. S. W. CLAUSEN and A. B. MCCOORD (J. Pediat., 1938, **13**, 635—650).—At birth the carotenoid pigments of plasma are lower than in later life and the xanthophyll concn. exceeds that of carotene; the reverse occurs later. Vitamin-*A* concn. is relatively low and carotene and xanthophyll higher in the blood of parturient women than in other adults. Infection causes a prompt considerable fall in the concn. of carotene, xanthophyll, and -*A* in the plasma; a few days after the temp. becomes normal, plasma-*A* content may rise considerably above normal. Xanthosis cutis is associated with an increased plasma-carotene, less often of xanthophyll. In nephrosis and in severe chronic nephritis, hypercarotenæmia may occur without xanthosis cutis. In hypothyroidism, plasma-carotenoids may be elevated and the -*A* may be low. Thyroid treatment corrects the anomaly. In cœliac disease the carotenoids and -*A* are not readily absorbed. C. J. C. B.

Unstable acetyl groups in the proteins of horse serum. G. SANDOR and J. TABONE (Compt. rend., 1938, **207**, 601—603).—Prolonged interaction of horse serum with 0·4N-NaOH at 37° yields acetic acid, 20—22% of which is very rapidly formed. Acidification of dialysed serum liberates no free acid. Hot alcohol and ether extract none of the acetic acid complex. Each protein mol. probably has 6—8 acetyl radicals present as acetamido- or acetoxy-groups. J. L. D.

Refractometric determination of serum-protein between 15° and 27°. M. PAÏC and V. DEUTSCH (Bull. Soc. Chim. biol., 1938, **20**, 1108—1111).—Using the expression developed by the authors (A., 1935, 230) for the serum-protein concn. in terms of n and temp., reference graphs are constructed using a serum of known concn. Knowing n and the temp. for any given serum the protein content can then be readily determined. A. L.

Blood plasma-proteins as influenced by liver injury induced by carbon tetrachloride and gum acacia. C. C. RICKSON, G. B. HECKEL, and R. E. KNUTTI (Amer. J. Path., 1938, **14**, 537—556).—In dogs with cirrhosis induced by CCl_4 the plasma-protein concn. falls slightly, the decrease being chiefly in the albumin. The continued injection of gum acacia together with CCl_4 orally causes the deposition of acacia in the liver cells, in the sinusoidal lining cells of the spleen, and in the large phagocytic mononuclear cells of the body. The animals remain well, and although their plasma-protein concn. may be below œdema level, there is no evidence of œdema. The bleeding time is prolonged and associated with the low fibrinogen concn. present, although the possibility of scanty prothrombin must also be considered. (2 photomicrographs.) C. J. C. B.

Bovine contagious abortion. II. Relation between plasma-proteins and agglutination titre. R. H. COMMON and W. R. KERR (Vet. Rec., 1938, **50**, 727—730).—A rise in agglutinin titre following either natural infection with *Br. abortus* or vaccination with a dead vaccine is associated with an increase in plasma-globulin. M. A. B.

Blood-proteins in delirium tremens. J. M. THOMAS, E. V. SEMRAD, and R. M. SCHWAB (Amer. J. med. Sci., 1938, **195**, 820—823).—The serum-albumin of 18 cases of delirium tremens during the acute phase was below 4 g.-%. In 12 of 22 cases serum-albumin was lower after the acute phase had subsided. There was no significant alteration in serum-globulin. R. L. N.

Takata reaction in serum and plasma. W. GROS (Dtsch. Z. VerdauKr., 1938, **1**, 59—66).—The Takata reaction was equal in serum and plasma in 15 cases of atrophic hepatic cirrhosis which also showed diminished plasma-fibrinogen. The reaction was stronger in the plasma in 15 miscellaneous diseases in which the fibrinogen content was increased. E. M. J.

Blood chemistry in protein-deficient and toxic pregnancies. M. H. BARKER (Amer. J. Obstet. Gynec., 1938, **35**, 949—952).—A series of women, from the early months of pregnancy onwards, showed generally a low urea-N and high blood-cholesterol during the second trimester of pregnancy. These findings were closely related to the total protein intake. It is suggested that blood chemistry tests may differentiate pregnant women into those benefit-

ing from a high-protein diet and those which are endangered by even small amounts of protein. M. H.

Determination of albumin and globulin in blood serum. II. Separation of fractions by centrifugation with angle centrifuge. III. Precipitation of globulin at 25° by sodium sulphate. H. W. Robinson, J. W. Price, and C. G. Hogden (J. Biol. Chem., 1938, **126**, 207—212, 213—216; cf. A., 1937, III, 411).—II. Pptd. serum-globulin can be separated from albumin in 1·5M-Na_2SO_4 by centrifuging with the angle centrifuge, the results agreeing with those obtained by filtration. The advantages of the method are greatly increased speed, elimination of the filter-paper and protein adsorption error, and use of smaller amounts of serum.

III. The separation of globulin from albumin in 1·5M-Na_2SO_4 can be carried out at 25°, the results being in good agreement with those obtained at 38°. J. N. A.

Euglobulin and pseudoglobulin in normal and pathological human serum. C. Hooft (J. Physiol. Path. gén., 1938, **36**, 652—668).—Euglobulin was separated by $\frac{1}{3}$ saturation with $(NH_4)_2SO_4$, and pseudoglobulin by raising the concn. to $\frac{1}{2}$ saturation in the centrifugate. The ppts. were redissolved in dil. saline after washing. The areas occupied by a unimol. layer were determined by Gorter's method, the vals. being 0·90 sq. mm. for 1 mg. of euglobulin and 1·07 for 1 mg. of pseudoglobulin, at p_H 1. Vals. were usually least between p_H 3 and 4. The vals. for euglobulin were lowered in tubercular and in most other infective conditions. The relative quantities of eu- and pseudo-globulin were generally altered in these conditions. (B.) C. A. A.

Isoelectric point of human serum-globulin. E. Kylin and A. Koranyi (Z. ges. exp. Med., 1938, **104**, 83—88).—Albumin was obtained from human serum by cataphoresis; pure globulin was recovered at the cathode. Below p_H 5, all globulin passes to the cathode; above p_H 6·3, the globulin migrates towards the anode. Globulin consists of various fractions, having isoelectric points between p_H 5 and 6·2. A. S.

Glutathione content of blood during the puerperium. J. F. Cadden (J. lab. clin. Med., 1938, **23**, 1266—1272).—During labour the blood-glutathione increased from 35·9 mg.-% in early labour to 39·0 mg.-% immediately after delivery, followed by a decrease, probably due to hæmorrhage, during the first 3 days of the puerperium. From the 3rd to 8th day post-partum there is a rapid increase in the glutathione content whilst between the 8th and 10th days the glutathione maintains a level about 1 mg.-% higher than that during early labour. C. J. C. B.

Glutathione content of preserved blood. E. C. S. Becker (Ukrain. Biochem. J., 1938, **11**, 435—447).—The glutathione content of dog's blood preserved with Na citrate falls gradually during the first 5 days, to 50—70% of the original level, and then falls abruptly, so that only traces remain after 13 days. R. T.

Protamine-splitting properties of serum. H. C. Hagedorn (Skand. Arch. Physiol., 1938, **80**, 156—164).—Normal human serum breaks down protamine; this effect remains const. several hr. after withdrawal of the blood and is not influenced by the presence of leucocytes or by meals. Prolonged treatment of diabetics with protamine–insulin does not influence the proteolytic action of serum on protamine. The serum has the same proteolytic effect as a solution of trypsin containing 1 μg. per c.c. (without diastase). The protaminolytic effect of serum of patients suffering from various diseases is not different from that of normal subjects. A. S.

Colorimetric determination of blood-sugar. S. Mihaéloff (J. Pharm. Chim., 1938, [viii], **28**, 293—296).—A simplification of the Folin–Wu method is described, whereby determinations can be made on 100 cu.mm. of blood or cerebrospinal fluid. P. G. M.

Blood-sugar and body temperature. R. de Marco and A. Imbesi (Arch. Fisiol., 1938, **38**, 79—88).—Blood-sugar and body temp. are raised in pigeons exposed to temp. of 40—50°. S. O.

Blood-sugar level before, during, and after hunger periods in man. W. W. Scott, C. C. Scott, and A. B. Luckhardt (Amer. J. Physiol., 1938, **123**, 243—247).—The balloon–water manometer method of recording hunger contractions was used; the micro-chemical method of Miller and Van Slyke was used for blood-sugar determinations and the Sahli method for hæmoglobin. The blood-sugar level is unaltered by states of quiescence or motility of the stomach, and there is no relationship between the blood-sugar level and the state of activity of the empty stomach. M. W. G.

Sugar, phosphorus, and creatine changes in dog's blood after exercise. G. Moruzzi (Arch. Fisiol., 1938, **38**, 186—199).—Inorg. P frequently falls but sugar rises; acid-sol. P always rises. Creatine and creatinine show no significant changes. S. O.

Sugar and ketone content of the blood of ewes and of their new-born lambs. L. C. Snook and W. Godden (Biochem. J., 1938, **32**, 2037—2039).—In healthy and hypoglycæmic ewes a marked rise in blood-sugar level occurs at parturition, the level being higher in the new-born lamb than in its dam bled at the same time. The level is much lower, at parturition, in the hypoglycæmic ewe and its lamb than in the healthy ewe and its lamb, respectively. The blood of new-born lambs of ketonæmic ewes is free from ketones. W. McC.

Hyperglycæmia in the diagnosis, prognosis, and treatment of the diabetic. H. Warembourg (Rev. Méd., 1938, **55**, 333—364).—A review. H. B. C.

Spontaneous hypoglycæmia. J. A. Price and A. B. Raper (Brit. Med. J., 1938, II, 987—989).—A case is reported. C. A. K.

Glycolytic power of blood. Y. Azuma (J. Chosen Med. Assoc., 1935, **25**, 1453).—The glycolytic power of blood is proportional to the no. of erythrocytes (within certain limits of glucose concn.), and during recovery from anæmia varies with the no. of

young blood cells. It is unrelated to the no. of leucocytes. Ch. Abs. (*p*)

Simplified determination of lactate in normal human blood. H. T. Edwards (J. Biol. Chem., 1938, **125**, 571—583).—The customary addition of $CuSO_4$–$Ca(OH)_2$, preliminary aëration, and cleaning of the apparatus between tests are shown to be unnecessary. E. M. W.

Determination of lactic acid in small amounts of blood. F. Lauersen and H. Wahlländer (Biochem. Z., 1938, **298**, 273—292).—A modification of the method of Lehnartz (A., 1929, 48) is described, the apparatus of Lauersen (A., 1935, 1552), the Folin–Wu procedure (A., 1919, ii, 308) for deproteinisation, and oxidation by H_2SO_4–MnO_2 being used. β-Hydroxybutyric acid, if present, is determined by using $K_2Cr_2O_7$ as oxidising agent, the val. obtained with MnO_2 being that for lactic + β-hydroxybutyric acid. W. McC.

Determination of blood-diastase. F. Rennkamp and B. Schuler (Klin. Woch., 1936, **15**, 1473—1477; Chem. Zentr., 1937, i, 110).—The Ottenstein method of determining blood-diastase by measuring the hydrolysis of glycogen is not recommended as the glycogen contains varying amounts of diastase which is susceptible to activating influences and cannot be completely irreversibly inactivated by heat. A. H. C.

Blood-catalase activity and hæmoglobin concentration in children. B. Andersen (Skand. Arch. Physiol., 1938, **79**, 240—257).—The catalase index (ratio catalase activity of blood/no. of erythrocytes) varies with the hæmoglobin content of red cells. Catalase activity was determined iodometrically by titration of H_2O_2. Catalase activity, related to certain hæmoglobin concns., was 25% lower in newborn infants than in children of 4 months—10 years old. A. S.

Action of fruit ingestion on the blood content of dichromate-reducing substances. O. Möller and E. M. P. Widmark (Skand. Arch. Physiol., 1938, **80**, 324—327).—Ingestion of large quantities of various kinds of fruit does not increase the blood content of $K_2Cr_2O_7$-reducing substances (Widmark's blood-alcohol determination). A. S.

Sustained hyperlipæmia of dietary origin in the dog. E. V. Flock, W. C. Corwin, and J. L. Bollman (Amer. J. Physiol, 1938, **23**, 558—565).—A sustained post-absorptive lipæmia was produced in dogs by feeding them daily phospholipins with diets consisting of 8%, 36%, or 73% fat. The phospholipin used was an acetone-insol. prep. from adrenal glands. Neutral fat of the serum was determined by the Allen volumetric method, lipin-P on an alcohol–ether extract of serum previously extracted with trichloroacetic acid, cholesterol by Liebermann–Burchard reaction. A greater lipæmia was observed with diets richer in neutral fat. The increase in blood-lipin is largely neutral fat and cholesterol with an increase also of phospholipins; when the latter are omitted from the diet the lipæmia subsides quickly. M. W. G.

Influence of diseases on total blood-fat and -lipins, and on their distribution between plasma, serum, and cells. S. Kozawa, R. Iwatsuru, and M. Tamara (Japan. J. Med. Sci., 1936, VIII, **4**, 1—22).—In normal individuals and in those with kidney, heart, or hookworm diseases of moderate severity, the fat and lipin contents of the corpuscles remain practically const. Fluctuations occur in the vals. for plasma and serum. Ch. Abs. (*p*)

Lipin–protein system of the serum of Equidæ in infectious anæmia and in dourine. B. Delage (Compt. rend. Soc. Biol., 1938, **128**, 985—986).—A decrease in the quantity of lipins extractible by ether in the presence of sufficient alcohol not to denature the protein was observed. H. G. R.

Diminution of blood-cholesterol by præhormone. E. Fenz and F. Zell (Z. ges. exp. Med., 1938, **104**, 138—145).—Intravenous injection of 2 c.c. of præhormone (gonadotropic substance obtained from pregnancy urine) lowers the blood-cholesterol by 20—30% in female rabbits; the effect is absent in the male. Subcutaneous injections of Na veronal or atropine have no effect. The diminution of blood-cholesterol is prevented by previous administration of ergotamine. Blood-cholesterol is diminished by large doses of follicular hormone. A. S.

Enzymic synthesis and hydrolysis of cholesterol esters in blood serum. W. M. Sperry and V. A. Stoyanoff (J. Biol. Chem., 1938, **126**, 77—89). Incubation of serum which has been heated at 55—60° for 1 hr. does not affect the ratio of free to combined cholesterol. Esterification of free cholesterol and hydrolysis of its esters are catalysed by different enzymes, both of which are present in dog serum, but only that responsible for esterification is present in human serum. P. G. M.

Blood-cholesterol and follicular hormone. B. Tanzi (Arch. Fisiol., 1938, **38**, 89—100).—Blood-cholesterol is increased in male chickens after gonadectomy, but is unaffected by removal of the spleen whether in normal or gonadectomised animals. Injection of large doses of follicular hormone increases blood-cholesterol in normal or castrated males but not in castrated–splenectomised animals. S. O.

Serum-cholesterol in rheumatic disease. F. Knüchel (Klin. Woch., 1938, **17**, 1617—1619).—Serum-cholesterol vals. are below normal in exudative rheumatic disease, the ester vals. being particularly reduced. E. M. J.

Blood-lipoid after ingestion of liver and other cell constituents. Y. Kitagawa (Jap. J. exp. Med., 1938, **16**, 183—185).—Intraperitoneal injection in rabbits of small quantities of liver cells (0·05 g. per kg. body-wt.) caused a marked diminution, injection of 1·09 g. per kg. body-wt. a marked increase, in the total blood-lipin, cholesterol, lecithin, and total fatty acid. Lung cells acted similarly; spleen cells had little effect. C. J. C. B.

Influence of cellular emulsions of lung and other organs of rabbits introduced parenterally on blood-lipase in the pulmonary circulation.

K. Nakagawa (Jap. J. exp. Med., 1938, **16**, 273—297).—The lipase content of the blood of the left ventricle of the rabbit is normally greater than in the right ventricle. Injection intraperitoneally of 0·05 g. per kg. body-wt. of lung cell constituents increased the lipase in the left ventricle but only slightly affected that in the right. With doses of cells of 0·5—1·0 g. the lipase diminished in both ventricles. Injection of cells of liver, spleen, bone marrow, and lymph glands had less marked and less sp. effect on the lipase, whilst pancreas, red cells, and plasma caused no effect. Cholesterol and wool fat increased left ventricular lipase; injection of adrenaline, atropine, pilocarpine, and insulin had no effect. Subcutaneous thyroxine or histamine diminished the lipase in both ventricles. C. J. C. B.

Destruction of acetylcholine in blood. J. Fegler, H. Kowarzyk, and J. Szpunar (Bull. Acad. Polonaise, Cl. méd., 1937, 517—538).—The distribution of choline-esterase in plasma and blood corpuscles differs in various species. Coagulation processes have no influence on choline-esterase activity. There is no choline-esterase activity in white blood cells, measured by colorimetric and gasometric methods. Oxidised and reduced red cells destroy acetylcholine with equal velocity. The cryst. oxyhæmoglobin of the dog does not destroy acetylcholine. Acetylcholine added to human or sheep blood is equally distributed between red cells and plasma, red cells being permeable to acetylcholine. After washing, red cells still possess choline-esterase activity, suggesting that the enzyme is inside the cell membrane, not merely adsorbed at the surface. With large concns. of acetylcholine the biological and gasometric methods for estimating choline-esterase activity give identical results; using small concns. of acetylcholine the gasometric method gives lower results. A. S.

Sodium cyanide and choline-esterase. J. Fegler and H. Kowarzyk (Bull. Acad. Polonaise, Cl. méd., 1937, 539—546).—NaCN has no influence on choline-esterase activity of human and horse serum, rat's muscle, rat's and cat's brain, tested colorimetrically and with biological methods (gut contractions of cat and rat, blood pressure in dogs under chloralose anæsthesia, eserinised leech). A. S.

Phosphatases of serum. R. Letulle and H. Higounet (Presse méd., 1938, **46**, 1055—1056).—A review. A. J. B.

Change of serum-phosphatase in cancer. D. Albers (Z. ges. exp. Med., 1938, **104**, 146—159).—Serum-phosphatase was determined using Jenner and Kay's method in 86 cancer patients and 41 controls. The average val. for the normals, expressed in mg. P_2O_5 per 100 c.c. of serum, was 12·9 (range 5—14); the phosphatase val. in cases of cancer without metastases averaged 15·4 (range 5·85—29·3), with metastases 22·3. The serum-phosphatase of cancer patients is more potentiated by 0·005M-$MgCl_2$ than that of normals. Cancer-positive sera have phosphatase vals. over 17 and a potentiation by $MgCl_2$ by at least 60%. A. S.

Simultaneous determination of total base and chloride on the same sample of serum by electrodialysis. N. R. Joseph and W. C. Stadie (J. Biol. Chem., 1938, **125**, 795—799).—A modification of the Adair–Keys method (A., 1935, 52) is described. P. G. M.

Fluctuations of calcium and inorganic phosphorus in blood of laying hens during the cycle of one egg. J. G. Feinberg, J. S. Hughes, and H. M. Scott (Poultry Sci., 1937, **16**, 132—134).—Serum-Ca remained const. during the 26-hr. period of a single egg cycle. Serum-inorg. P increased during the period of shell formation: in non-laying hens the val. did not change appreciably. A. G. P.

Acid-soluble phosphorus in blood. Corrections for the volume of the precipitate from trichloroacetic acid deproteinisation. L. Thivolle and P. Laugier (Compt. rend. Soc. Biol., 1938, **128**, 1210—1212).—The corrections for the vol. of ppt. obtained from blood made up to a vol. of 100 c.c. after deproteinisation are 0·45 and 0·25 c.c. per c.c. of whole blood and plasma, respectively. H. G. R.

Blood-phosphorus in (A) anæmia, (B) leukæmia. P. de Lucia and P. Russo (Boll. Soc. ital. Biol. sperim., 1938, **13**, 701—703, 703—704).—(A) In pernicious, hypochromic, and secondary anæmias in man, total, acid-sol., and lipin-P are diminished, whilst inorg. P increases. Successful therapeutic treatment is accompanied by a return to normal vals. (B) In leukæmia, the P constituents of the blood behave as in anæmia, excepting the inorg. P, the content of which remains const. F. O. H.

Changes in plasma-inorganic phosphate associated with endocrine activity in *Xenopus lævis*. V. Schrire and H. Zwarenstein (S. Afr. J. Med. Sci., 1938, **3**, 89—94).—Pancreatectomy in *X. lævis* raised plasma-inorg. PO_4; insulin injection in normal animals or removal of the anterior pituitary caused a fall. Anterior lobe extract in normal animals caused a rise followed by a fall to below normal level; in hypophysectomised animals a return to the pre-operative level followed by a fall below the normal hypophysectomised level occurred. A relationship between the anterior pituitary and phosphate metabolism is suggested. R. L. N.

Phosphate exchange between blood and tissues in experiments with artificially perfused livers and hind limb preparations. E. Lundsgaard (Skand. Arch. Physiol., 1938, **80**, 291—302).—The inorg. PO_4 content of plasma leaving an isolated perfused cat's or rabbit's liver increases during the first 3 hr. of the perfusion. If fructose is added to the blood, the R.Q. rises, glycogen is stored in the liver, blood-lactic acid rises, and a very marked initial fall, succeeded by a rise, of inorg. plasma-PO_4 occurs. Inorg. P content of the liver tissue changes in the same manner. Inorg. P content of plasma increases steadily in experiments on an isolated perfused cat's hind limb. If insulin is added to the perfusion blood, the inorg. plasma-P is diminished and glycogen is stored in the muscles. The interchange between liver and plasma-inorg. P was further studied, adding radioactive P to the perfusion fluid. A. S.

Non-protein-nitrogen in blood. II. Relation between the function of the reticulo-endothelial system and non-protein-nitrogen of blood. H. K. Lee (J. Chosen Med. Assoc., 1935, **25**, 1637—1641).—No relationship was apparent.

Ch. Abs. (*p*)

Permeability of reticulo-endothelial elements to colloids. E. Meneghetti (Boll. Soc. ital. Biol. Sperim., 1938, **13**, 749—751).—The accumulation of colloidal particles by reticulo-endothelial elements is not restricted to electronegatively charged particles; electropositively charged particles (*e.g.*, CuO) also produce certain typical reactions of the reticulo-endothelial system. With non-coagulability of the blood (which is accompanied by decreased fixation of colloids by the reticulo-endothelial system), the toxicity of large doses of injected colloidal CuO is increased. F. O. H.

Histological investigations on the blockade of the reticulo-endothelial system. S. Bagiński (Z. Zellforsch., 1938, **28**, 382—402).—A histological blockade can be produced by electronegative dyes. Hypofunction is not observed because of regeneration of cells from histiocytes and undifferentiated mesenchyme, and the stimulating effect of the substances taken up. R. J. O'C.

Corpus lymphaticum subdermale in the frogs : *Rana esculenta*, *R. temporaria*, and *R. terrestris*. H. Szarski (Bull. Acad. Polonaise, 1938, B, 79—87).—A subcutaneous lymphatic body, immediately behind the mandibular joint, is described; it is probably identical with the dorsal gill remnant described by Maurer. It is largest just before metamorphosis and consists of a mass of lymphocytes perforated by large blood capillaries. E. M. W.

Quantitative study of the lymphoid organs of the albino rat. J. E. Kindred (Amer. J. Anat., 1938, **62**, 453—473).—Lymph glands, Peyer's patches, spleen, and thymus were examined in rats; comparison was made with nodes from dog, cat, and man. Röhlich's differentiation of the secondary nodules into dark and light zones is substantiated. Lymph nodes from the same region in different rats vary greatly in vol.; there is no correlation between the size of the nodes in the same animal. Quant. analytical tables are given of the proportions of cell types and the no. of mitoses in the zones of the secondary nodules. Phagocytosis is almost confined to the nodules; phagocytic activity appears to be the same in the light and dark zones of the rat, but predominates in the dark zone in dog, cat, and man. Mitoses are more abundant in the dark zones; this is dependent on the preponderance of medium-sized lymphocytes in this zone. Small lymphocytes are more numerous in the light zone. Both zones are phagocytic but the dark zone is, in addition, lymphocytopoietic. Splenic nodules show no differentiation into zones. Peyer's patches, though showing dark and light zones, are not so mitotically active nor so phagocytic as the lymph nodes.

H. L. H. G.

Effect of acid and alkaline diets on the lymphatic tissues of the mouse. H. Hoepke, W. Hempfing, and H. Desaga (Z. ges. Anat., I, Z. Anat. EntwGesch., 1938, **108**, 644—685).—The spleen, thymus, and lymph glands were examined. The thymus was most affected by the dietetic changes, the lymph glands hardly at all. Acid nourishment favoured the production and elimination of the small lymphocytes; alkaline diet favoured the storage of lymphocytes in their sites of formation. These reactions in the white mouse are the opposite of those described for man and the hedgehog. W. B.

Lymphoid tissue and acid–base balance of the body. H. Hoepke (Klin. Woch., 1938, **17**, 1644—1647).—A review. E. M. J.

Lymphatic pathway from the nose and pharnyx. Absorption of dyes. J. M. Yoffey and C. K. Drinker (J. Exp. Med., 1938, **68**, 629—640).—Dyes such as trypan-blue, but not finely-divided graphite, permeate the nasal mucosa and enter the cervical lymphatic system. The time taken for the dye to reach the cervical lymphatic trunk was 15—30 min. in the cat and monkey, and 60 min. in the dog. There are 5 nodes in the cervical lymphatic chain in monkeys, 2 in rabbits, and 1 in cats and dogs. In no case did the dye pass through the cribriform plate into the skull, probably owing to the colloidal nature of the solutions used. A. C. F.

Effect of splenic function on blood constituents and blood-coagulation factors. (A) Erythrocyte, hæmoglobin content, leucocytes, blood platelets, and blood coagulation. S. Boku, I. Hirai, and K. Gon (J. Chosen Med. Assoc., 1935, **25**, 1660—1681).—During 3 weeks following splenectomy there was little variation in erythrocytes, hæmoglobin, or leucocytes in rabbit blood. Changes in blood platelets were paralleled by those in coagulability of the blood. Administration of splenic hormone to splenectomised animals restores normal coagulability without affecting the no. of platelets. Ch. Abs. (*p*)

Tissue reactions to natural oils and fractions thereof. G. M. Hass (Arch. Path., 1938, **26**, 956—965).—Olive oil subcutaneously injected in guinea-pigs, rats, or rabbits remains unchanged for 3 weeks; cod-liver oil, however, is partly transformed into an amorphous homogeneous semi-solid material, part of which is insol. in water, alcohol, and xylene and is acid-fast. Study of various fractions of the hydrolysed oils and methyl esters of the acid products of hydrolysis showed that the amorphous material is formed only in the presence of unsaturated fatty acids or their methyl esters. An increase in the amount of this material was related to an increase in the average unsaturation of the fractions employed. The intensity of the inflammatory response, and the degree of infiltration with eosinophils and multinucleated giant cells, depend on the amount of unsaturated fractions present. C. J. C. B.

(c) VASCULAR SYSTEM.

Studies on cardiac muscle cells, from chick embryos, grown in tissue culture. G. S. de Renyi and M. J. Hogue (Anat. Rec., 1938, **70**, 441—449).—By culturing in a special medium, the cells of embryonic cardiac muscle were maintained in a high state of differentiation for a month. The use of routine fixatives did not change the structure of the

myofibrillæ but caused a disappearance or fragmentation of many of the granular inclusions in the sarcoplasm. Stretching the cells with a micro-needle caused the formed elements to change position but no linear arrangement of the granules in the direction of stress was observed. Myofibrillæ are not artefacts. Both the sarcoplasm and the fibrillæ are contractile in the embryonic cell and normally work synchronously. Contraction of the myofibrillæ is demonstrated after paralysing the sarcoplasm. H. L. H. G.

Chick heart muscle in tissue culture. E. P. Stilwell (Arch. exp. Zellforsch., 1938, **21**, 446—476).—Striated myofibrils are seen in cultures of the 8-day chick heart. During their differentiation there are alterations in the mitochondria. Differentiation of fibrils may take 48 hr. at 37·5°. No conclusive evidence was found regarding the effect of thyroxine or extracts of older embryos. It is suggested that physical forces play a part in maintaining histodifferentiation. R. J. O'C.

Purkinje tissue in the atria of domestic animals (especially the horse). H. ter Borg (Acta Neerland. Morph., 1937, **1**, 64—67).—Bundles of Purkinje fibres are found in the right atrium of the horse (animals of various ages were examined); they form a network which is const. in position and extent. Impregnation with Lugol's solution and injection with Gerota's mass were confirmed by microscopic examination. Purkinje fibres were also seen in the left atrium. H. L. H. G.

Distribution of glycogen in the dog's heart. R. W. Boyle and C. H. McDonald (Proc. Soc. Exp. Biol. Med., 1938, **39**, 14—15).—Average determinations on 12 hearts give rather higher % of glycogen in the right ventricle and left atrium than elsewhere. V. J. W.

Utilisation of β-hydroxybutyric acid by the isolated mammalian heart and lungs. R. H. Barnes, E. M. MacKay, G. K. Moe, and M. B. Visscher (Amer. J. Physiol, 1938, **123**, 272—279).—Heart–lung preps. of dogs and goats and isolated dog's lungs perfused with blood were used. Added β-hydroxybutyric acid (Na salt of racemic acid) disappeared from the blood of the heart–lung prep. but the rate of disappearance was not related to the blood-sugar level at the time. The rate of utilisation increased with increasing concn. in the blood up to 100 mg.-%. As much as 80% of the lung metabolism may be at the expense of β-hydroxybutyric acid. Acetone was not detected in the expired air from the heart–lung prep. after addition of β-hydroxybutyric acid and no acetoacetic acid was found in the blood. The oxidation of the acid may, in the heart–lung prep., account for over 80% of the total O_2 consumption when the concn. of the acid is 100 mg.-% in the blood. M. W. G.

Oxygen consumption in heart disease. C. Laubry, D. Routier, and Y. Bourrain (Arch. Mal. Cœur, 1938, **31**, 885—896).—The O_2 debt was measured after light standardised exercise in normal subjects, and in compensated and decompensated heart patients; patients suffering from mitral lesions were registered as a separate group. The O_2 debt was measured by determining the O_2 consumption during the 2nd to 4th and during the 5th to 7th min. after the exercise, and comparing these vals. with standard figures gained from normals. Compensated cardiacs of all types behaved like normals. Of all decompensated cardiac patients those suffering from mitral lesions showed the greatest O_2 debt. G. Sch.

Distribution of electrical potentials of the heart over the surface of the body. R. Sulzer and P. W. Duchanel (Arch. Mal. Cœur, 1938, **31**, 686—696).—A planogram is the registration of the excursion of the cathode ray during one cardiac cycle when it is under the influence of several (4) electrodes arranged in one of the planes of the body (horizontal, vertical, sagittal). The electrodes were first arranged in the natural axes in each single plane and then shifted by 45°. Before and after this shift the planograms were similar as long as no electrode in either derivation was near the heart. Whenever one electrode came close to the heart it resulted in a markedly different planogram, but when the amplification of the heart-near electrode was reduced this difference disappeared; it is therefore the result of the excentric position of the heart in the body. Beyond a certain point the exact distance of the electrode from the heart ceases to have any influence. G. Sch.

The vectogram. D. Routier (Arch. Mal. Cœur, 1938, **31**, 697—704; cf. preceding abstract).—A vectogram (planogram) is constructed by plotting synchronous points of the 3 leads of an electrocardiogram taken simultaneously by an amplifier instrument, after arranging the 3 electrocardiograms around the centre of an equilateral triangle. This construction corresponds with a vectogram taken from the 3 classical points of electrocardiographic deviation by a cathode-ray tube, making allowance for the sources of error inherent in both methods and in the actual plotting. The vectogram (planogram) being in theory no more than an electrocardiogram taken from 3 points simultaneously, no essentially new data can be expected from the method. G. Sch.

Three synchronised leads between fixed points on the heart projection on the chest wall. G. Nylin and T. Sällström (Acta med. scand., 1938, **96**, 1—27).—Chest leads were placed at points corresponding with the anatomical axes of the heart, the position being obtained by screening. Normal regular tracings were obtained from 46 individuals in addition to the usual extremity leads. In acute coronary occlusion and healed infarcts, abnormalities were evident in the chest leads while the extremity leads showed no change. In 3 cases of acute myocarditis, changes were visible in the chest leads earlier than in the customary extremity leads. (B.). C. A. A.

The body as a volume conductor and its influence on the electrical field of the heart. J. E. Benjamin, H. Landt, and L. R. Culver (Amer. J. med. Sci., 1938, **195**, 759—763).—None of the differences in electrical potential registered in the electrocardiograms obtained by surface leads were transmitted by the lungs. The lung pedicles act as the sole bridge for transmission and offer selective

pathways of conduction. The suggestion that the chest is not a vol. conductor is discussed in relation to the controversy regarding the position of electrodes in leads IV and V. R. L. N.

Law of cardiac stimulation. W. Burridge (Arch. int. Pharmacodyn., 1938, **59**, 450—456).—The stimulation of a beating heart by drugs causes it to develop more energy. D. T. B.

Limits of clinical electrocardiography. C. Korth (Arch. Kreislaufforsch., 1938, **3**, 42—94).—A review. G. Sch.

Analysis of the normal *QRS* deflexion. A. Hill (Lancet, 1938, **235**, 1110—1113).—It is shown from the use of multiple equidistant contacts on the chest wall that the *QRS* complex of the electrocardiogram has 5 distinct phases corresponding with stages of ventricular contraction. Charts of potential distribution suggest that the current runs around and not through the chest wall. C. A. K.

Changes of the electrocardiogram during the change from the recumbent to the vertical position. R. Janzen (Z. ges. exp. Med., 1938, **103**, 671—693).—The changes most commonly observed were: bigger *P* wave, smaller *R*, and larger *S*. *T* is diminished and may become negative. The electrocardiogram is normal again 1 min. after changing from the recumbent to the vertical position. The duration of *QRS* is shortened, in proportion to the increase in heart rate. A. S.

Electrocardiogram in infarction of the lateral wall of the left ventricle. F. C. Wood, C. C. Wolferth, and S. Bellet (Amer. Heart J., 1938, **16**, 387—410).—From electrocardiographic studies in 20 cases (including 3 necropsies) it is concluded that acute infarction of the left lateral wall of the heart produces a depression of *RS–T* interval in lead IV (usually also in leads I and II). The *QRS* complex is unaffected. Similar effects may be produced by digitalis. C. A. K.

Differentiation of left ventricular preponderance into cardiac hypertrophy and displacement. E. Dunis (Klin. Woch., 1938, **17**, 1476—1479).—Korth and Proger's rule (Dtsch. Arch. klin. Med., 1931, **170**, 516; **171**, 578) is verified from a study of 844 electrocardiograms in which there was over 90% correlation of electrocardiographic and clinical findings, except where T_1 was isoelectric. E. M. J.

***Q–T* interval in the electrocardiogram in diphtheria in children.** H. Boek (Z. Kreislaufforsch., 1938, **30**, 761—769).—Prolongation of electrical systole was observed in diphtheria. Its degree corresponded with the severity of the heart affection. G. Sch.

Evolution of ventricular electric complex in bloodless heart with apex removed. A. Clerc and A. Quinquaud (Compt. rend. Soc. Biol., 1938, **128**, 1026—1028).—The diphasic ventricular electric complex seen in the electrocardiogram of the dog following removal of 5 g. of the apex of the heart persists up to the onset of terminal fibrillation if the vena cavæ and azygos veins are ligatured. P. C. W.

Monophasic wave produced by cauterisation of the apex of the heart deprived of blood. A. Clerc and A. Quinquaud (Compt. rend. Soc. Biol., 1938, **128**, 1028—1030).—The cauterisation of the apex of the dog's heart gives rise to a monophasic ventricular wave in the electrocardiogram even after ligature of the vena cava and azygos veins. It is not therefore dependent on the presence of the coronary circulation. P. C. W.

Evaluation of precordial electrocardiograms. J. C. Edwards and J. B. V. Veer (Amer. Heart J., 1938, **16**, 431—448).—From a study of multiple precordial leads it is suggested that lead IV *R* (apex and right arm) is the most suitable for routine work; if there is cardiac enlargement to the left the precordial electrode should be medial to the apex. C. A. K.

Chest leads in electrocardiography. F. Grant (Dtsch. Arch. klin. Med., 1938, **182**, 440—450).—Chest lead electrocardiograms are of val. in cases of cardiac infarction where the peripheral leads do not show any typical changes. A. S.

Chest leads in diagnosis of myocardial infarcts. R. Langendorf and A. Pick (Acta med. scand., 1938, **96**, 80—100).—Infarcts of the anterior wall of the left ventricle (44 cases) are shown more significantly in the electrocardiogram by the use of chest leads, the extremity leads showing no abnormalities. In posterior wall infarcts (23 cases) the chest wall leads sometimes show significant changes and changes are also seen in the extremity lead records. (B.) C. A. A.

Electrodes for electrocardiographic leads from chest and œsophagus. R. Burger (Cardiologia, 1938, **2**, 208—235).—Two new types of suction electrodes are described. G. Sch.

Extracardiac causes of heart-block. I. V. Zárday (Klin. Woch., 1938, **17**, 1213—1215).—3 cases with severe sino-auricular and atrio-ventricular block (one in a new-born) were due to increased intracranial pressure and hormonal disturbances, respectively. E. M. J.

Respiratory arhythmia in silicosis. Schlomka (Z. Kreislaufforsch., 1938, **30**, 637—653).—With regard to respiratory arhythmia this group of cases does not differ markedly from others with lesions of the right heart. G. Sch.

Respiratory arhythmia in hypertensive patients. G. Schlomka and P. Overlack (Z. Kreislaufforsch., 1938, **30**, 721—734).—In arterial hypertension the degree of respiratory arhythmia depends on the age of the patient (as in normal subjects) but is generally more marked. G. Sch.

Amplification of fœtal heart sounds. W. T. Pommerenke and F. W. Bishop (Amer. J. Obstet. Gynec., 1938, **35**, 851—854).—An amplifying apparatus, with modified earphone, is described. M. H.

Rhythmic electrical stimulation of the human heart at its own rate. H. E. Hollmann (Z. tech. Physik, 1938, **19**, 155—158).—The human body is included in a push-pull circuit through the conventional lead III, the action potential of each heart beat initiating the generation of some damped low-

frequency oscillations or even of an amplified replica of the electrocardial wave. Such synchronised stimuli are supposed, without evidence, favourably to affect the heart and possibly other tissues.
H. Ro.

Effect of valvular heart disease on the dynamics of the circulation. H. J. Stewart, J. E. Deitrick, R. F. Watson, C. H. Wheeler, and N. F. Crane (Amer. Heart J., 1938, **16**, 477—500).—Cardiac output, circulation time, venous pressure, and other factors were measured in 40 cases of valvular heart disease. Functional defects occurred in the absence of heart failure, and increased with the no. of valvular lesions. The defects were more marked when failure supervened. C. A. K.

Period for attainment of equilibrium of acetylene in alveolar air and blood and the determination of cardiac output. G. Foffani (Boll. Soc. ital. Biol. sperim., 1938, **13**, 700—701).—With dogs inspiring a mixture of 20% of O_2 and 80% of acetylene, the concn. of acetylene in the blood after 30 sec. is significantly less than that after 3 min. Hence the use of an inert gas, viz., acetylene, to determine cardiac output is invalidated when instantaneous attainment of equilibrium between alveolar air and blood is assumed. F. O. H.

Nomogram for the calculation of the aortic measurements and stroke volume of the heart. F. Meyer (Klin. Woch., 1938, **17**, 1647—1649).
E. M. J.

Immediate effects of muscular work on stroke and heart volume in man. G. Liljestrand, E. Lysholm, and G. Nylin (Skand. Arch. Physiol., 1938, **80**, 265—282).—The minute vol. of the heart of 12 healthy subjects was determined with Grollman's acetylene method at rest and during exercise on a Krogh bicycle ergometer. The size of the heart was determined by simultaneous telerœntgen photography, in the anterior–posterior and oblique diameters. The heart vol. was calc. from Rohrer and Kahlstorf's formula. The stroke vol. was at rest 30—64 c.c.; it increased by 80—100% during exercise. The heart vol. increased during moderate exercise in 10 and decreased in 2 cases; it increased in all cases during severe exercise (by approx. 12·7%); it was diminished after the exercise in 8 cases (by 6%) and back to normal in 4 subjects. A. S.

Cardiac output in compensation and decompensation in the same individual. J. McGuire, R. Shore, V. Havenstein, and F. Goldman (Amer. Heart J., 1938, **16**, 449—461).—The cardiac output was measured in 4 patients during varying degrees of cardiac decompensation. In 3 cases the output was lower, in 1 case higher, the greater was the decompensation. C. A. K.

First contractions of the heart in rat embryos. C. M. Goss (Anat. Rec., 1938, **70**, 505—524).—Hanging drop cultures of rat embryos were used to observe the earliest contraction of the heart muscle. Contraction began in 9½-day embryos. In normally developing embryos, the first contractions were seen in the ventricular portion of the left heart tube, starting in the neighbourhood of the auriculo-ventricular constriction and passing towards the mid line. The right ventricular myocardium showed no activity until 2 hr. later. Contraction in both hearts was regular but independent, that on the left side being of higher frequency. At this time no contraction was seen in the venous part of the heart tubes. When the contraction waves met in the mid line, the independent activity of the right side was suppressed and waves passed from the left to the right auriculo-ventricular region. Circulation is not apparent until 12 hr. after the stage of the first contraction. These results support the findings of Sabin (chick) and Copenhaver (*Amblystoma*).
H. L. H. G.

Pace-maker of the heart of *Bufo vulgaris*. M. Mitolo (Boll. Soc. ital. Biol. sperim., 1938, **13**, 694—695).—The effects of heat, cold, chemical irritation, faradic stimulation, and drugs on the pace-maker of the toad's heart are described and discussed.
F. O. H.

Response of the oyster heart to electrical stimulation, and effect of calcium and potassium on its threshold of inhibition. E. M. Walzl (J. Cell. Comp. Physiol., 1938, **12**, 237—246).—Stimulation by d.c. or faradism always causes inhibition. Stimulation by condenser discharge, if applied between the beginning of contraction and half systole, causes summation or an extrasystole. If applied later it causes inhibition. Unipolar stimulation shows that the inhibitory effect is produced at the cathode. None of these effects is modified by atropine; added $CaCl_2$ raises the threshold whilst added KCl does not affect it. V. J. W.

Variations in the excitability and permeability of toad's heart to potassium, sodium, and calcium ions. V. H. Cicardo and A. D. Marenzi (Rev. Soc. argent. Biol., 1938, **14**, 59—73).—Toad hearts were perfused through the abdominal vein for 30 min.; a Stannius ligature was applied and the chronaxie determined. Perfusion with normal Ringer's fluid gave a normal average chronaxie (1·5 msec). When the K concn. was doubled the chronaxie increased to 2·93 msec.; removal of K from the solution diminished the chronaxie to 1·04 msec. The rheobase remained unchanged in both cases. Variations in Ca concn. gave inconstant results. Trebling or halving the NaCl concn. diminished cardiac excitability, owing to osmotic changes. Perfusion with high K concn. increased the electrical conductivity of the heart as determined by means of a Kohlrausch bridge. In hearts perfused for 30 min. with high K concn., the K content increased 20—40%; those perfused with no K lost 20% of their K. Ca concn. in the heart muscle did not increase on perfusion with Ca-rich fluids; it fell by 77% in 30 min. when perfused with Ca fluid. K thus diffuses into and out of the heart muscle, but Ca only outwards.
J. T. L.

Action of toad poison on the heart. R. Lutembacher (Presse méd., 1938, **46**, 1469—1471).—The secretion of the parotid gland of the Algerian toad, extracted in alcohol and cryst., was injected intravenously in rabbits. It causes bradycardia, arrest of the heart for several sec., ventricular extrasystoles of bigeminal type, and it prolongs atrio-ventricular

and intraventricular conduction, in doses of 5—8 mg. The action lasts on an average for 20 min. Clinically it was no substitute for digitalis. G. Sch.

Effects of drugs on the coronary circulation of the denervated heart. L. N. Katz, E. Lindner, W. Weinstein, D. I. Abramson, and K. Jochim (Arch. int. Pharmacodyn., 1938, **59**, 399—415).—Adrenaline causes coronary vasodilatation in the perfused fibrillating heart of the dog. This action is annulled by F. 933, not by ergotamine or atropine. In the cat's heart adrenaline frequently causes coronary vasoconstriction. Acetylcholine causes dilatation only in the dog, dilatation or constriction in the cat. Atropine abolishes both types of response. Nitrites and histamine cause dilatation, pitressin constriction. The sympathetic contains constrictor fibres and the vagus dilator fibres in the dog. The vagus contains both types in the cat. D. T. B.

Effect of calcium on the output of sympathin in the frog's heart. K. Lissák (Amer. J. Physiol., 1938, **123**, 256—259).—Hearts of winter frogs were perfused by Straub's method. Perfusion of a donor heart with Ringer's solution containing a Ca excess over K liberated a substance having a positive inotropic effect on a second heart. If the vago-sympathetic trunk of the donor heart was stimulated during the perfusion, atropine (dilution 1 : 100,000) being added, a greater positive effect ensued. The material is oxidisable, is destroyed by ashing or simple heating at near b.p. for a few min., and passes easily through a dialysis membrane. Its effect on a recipient heart is abolished by ergotoxin. It was concluded that Ca liberates sympathin from the frog's heart. M. W. G.

Coarctation of the aorta. J. S. McNair (Chinese Med. J., 1938, **54**, 331—340).—The appearance of this condition in a boy of 11 years is described. W. J. G.

Congenital idiopathic hypertrophy of the heart. G. F. Powers and P. M. LeCompte (J. Pediat., 1938, **13**, 760—771).—A case of idiopathic hypertrophy of the heart in a male aged 8 months is reported together with pathological and chemical studies. There was no evidence of glycogen storage disease. (B.) C. J. C. B.

Traumatic infarction of the posterior heart wall. F. Kienle (Z. Kreislaufforsch., 1938, **30**, 674—680).—The signs and symptoms of an infarct of the posterior wall of the left ventricle were produced by a heavy fall on the back. G. Sch.

Cerebral embolism from a "myxoma" of the left auricle. H. H. Kalbfleisch (Z. Kreislaufforsch., 1938, **30**, 625—632).—A cerebral embolus had its origin in a "myxoma" in the left auricle. Whether these rare tumours are true neoplasms or organised thrombi is still uncertain. G. Sch.

Rœntgenological studies on the action of baths on the heart of healthy subjects. G. Boehm and F. Ekert (Dtsch. Arch. klin. Med., 1938, **182**, 598—610).—Various changes of the kymogram of the heart under the influence of ordinary and therapeutic baths are described. The hydrostatic pressure on the abdomen and shifts of blood distribution are held responsible for the changes observed. A. S.

Morphological and functional changes of the heart during Valsalva's experiments in young athletes. I. E. J. Klaus and A. H. Albert (Dtsch. Arch. klin. Med., 1938, **182**, 477—505).—The intrathoracic increase of pressure during Valsalva's experiment produces altered pulsation of the left ventricle which is apparent in the kymogram. Subsequently the form of pulsation of the right ventricle changes. A. S.

Kymographic and electrocardiographic examination of the heart of athletes. II. H. Reindell (Dtsch. Arch. klin. Med., 1938, **182**, 506—545).—The atrio-ventricular conduction time and the *QRS* complex decrease on increasing the severity of exercise in trained subjects. Respiratory arhythmia is very marked 1—2 min. after exercise. The *P* wave is increased. The electrocardiogram resembles the right ventricular preponderance type. Fatigue symptoms are: no shortening of the atrio-ventricular conduction time or *QRS* complex, increased conduction time over the resting state in the recovery period, increased *T* in all 3 leads or a negative *T* or lowering of the *S–T* segment in the recovery period, or extra-systoles of varying origin. A. S.

***X*-Ray study of pulmonary arterial circulation in autopsy material.** C. C. Birkelo and W. L. Brosius (Radiology, 1938, **31**, 261—292).—Lungs removed post-mortem from normal and diseased persons were injected via the pulmonary artery with radio-opaque material. *X*-Ray appearances show impaired circulation in pulmonary tuberculosis. W. F. F.

***X*-Ray appearance of vena azygos in heart failure.** H. Durieu and J. Lequime (Arch. Mal. Cœur, 1938, **31**, 608—617).—The *X*-ray shadow of the vena azygos alongside the right border of the trachea often increases and decreases with heart failure and improvement. G. Sch.

Microscopic innervation of blood vessels. P. Stöhr (Ergebn. Anat., 1938, **32**, 1—62).

Blood vessels of the skin of *Myxine glutinosa*, L. M. Hans and Z. Tabencka (Bull. Acad. Polonaise, 1938, **B**, 69—77).—The vascular system of the skin of myxine is described. E. M. W.

Function of the blood vessels in the brain. Effect of sympathetic and vagal fibres of the neck. S. Koopmans (Arch. néerland. Physiol., 1938, **23**, 256—270).—The right sympathetic trunk contains vaso-constrictor fibres for the brain. The left sympathetic contains only vaso-constrictor fibres in 30% of the cases; in the remaining 70% there were vaso-dilator as well as vaso-constrictor fibres. Both vagi contain vaso-dilator fibres. H. E. R.

Effect of sympathectomy on the vasa vasorum of the rat. J. Q. Griffith, jun., C. J. Zinn, and B. I. Comroe (Arch. Path., 1938, **26**, 984—987).—The no. of open vasa vasorum in the femoral artery of the rat is increased 5 days after lumbar sympathectomy. (2 photomicrographs.) C. J. C. B.

Arterio-venous anastomoses in man and animal. L. Aschoff (Klin. Woch., 1938, **17**, 1497—1498).—A review. E. M. J.

Influence of physicochemical factors in perfusing fluids on contractility of blood vessels. T. Soji (Sei-i-Kwai Med. J., 1935, **54**, 2246—2280).—Effects of various concns. of NaCl and other salts on contractility of the arterioles and venules of frog web are examined. With perfusing fluids of p_H 7·6 the vessels showed normal dilatation; with higher or lower p_H contraction occurs. Ch. Abs. (*p*)

Influence of phosphate on contractility of blood-vessels. T. Soji (Sei-i-Kwai Med. J., 1936, **55**, 125—142).—The dilating effect of perfusion with Ringer's solution was counteracted by addition of PO_4''' buffer. Ch. Abs. (*p*)

Innocuous intravenous infusion. H. Thomas and L. C. Ting (Chinese Med. J., 1938, **54**, 358—366).—Solutions for infusion may be prepared from canal water if this is first treated with alum, filtered, chlorinated, and then distilled in a still of the enclosed vertical condenser type, steam-heated (diagram and description given). The distillate is collected in glass or enamel-ware containers and used immediately for the prep. of solutions, which are finally sterilised at 15—20 lb. for 30 min. The process from still to steriliser must not occupy more than 3 hr. The prep. of saline and glucose infusions and their administration are described. W. J. G.

Use of aluminium metal in contact with blood in perfusion systems. I. L. Beland, G. K. Moe, and M. B. Fischer (Proc. Soc. Exp. Biol. Med., 1938, **39**, 145—147).—The presence of small amounts of Al in perfusing fluid is highly toxic to mammalian hearts if the fluid also contains protein. Toxicity is much diminished if the fluid, after taking up the Al, passes through the lungs before reaching the coronary circulation, and may therefore be attributed to embolism. V. J. W.

Effect of coagulability of the blood on the permeability of the pulmonary alveoli and on the permanence of colloids in the circulation. A. Cestari (Boll. Soc. ital. Biol. sperim., 1938, **13**, 751—754).—Injection of novirudin into rabbits retards the passage of electro-negative (Ag) or -positive colloids (neutral-red, toluidine-blue) from the blood into reticulo-endothelial elements. F. O. H.

Gastro-diaphragmatic syndrome in coronary disease. C. Laubry, P. Soulié, and R. Heim de Balzac (Arch. Mal. Cœur, 1938, **31**, 583—592).—The possible causal relationship between antecedent coronary thrombosis and elevated left diaphragm and gaseous distention of the stomach is discussed. G. Sch.

Immediate effects of coronary sinus ligation on dynamics of coronary circulation. D. E. Gregg and D. Dewald (Proc. Soc. Exp. Biol. Med., 1938, **39**, 202—204).—Tying of cardiac veins reduces left coronary inflow and does not prevent failure of contraction in an ischæmic myocardial area. V. J. W.

Atherosclerosis of the coronaries in relation to age, disease, and constitution. E. Baehr (Arch. Kreislaufforsch., 1938, **3**, 95—124).—This study of the development and distribution of coronary atheroma is based on 308 consecutive autopsies of individuals of 4 months to 92 years. The earliest yellow stains, denoting lipoid deposits, situated in the aortic cusps, were found at the age of 18 months. From age 20 years onwards, connective tissue organisation of these deposits sets in; at age 40 calcareous degeneration begins. From age 25 onwards men show a lead of 7—8 years over women in the ageing of their coronaries, except at age 50 when the two sexes are equally affected. The descending branch of the left coronary is more affected than other branches until after age 70. Whenever, at an earlier age, the right coronary was more sclerosed than the left a condition was present (*e.g.*, mitral stenosis, emphysema) which throws a strain on the right heart, or the right coronary had supplied an unusually large area. The right coronary was exceptionally smooth when the right coronary ostium had become occluded. In these cases the atrio-ventricular node was supplied by the circumflex branch of the left coronary. Brain workers, the short and stout, show more rapid pronounced coronary sclerosis than manual workers and asthenic types. G. Sch.

Capillaries of the skin. E. M. Landis (J. invest. Dermatol., 1938, **1**, 295—311).—A review. (B.) C. J. C. B.

Capillaries and hæmorrhage. B. P. Silfverskiöld (Skand. Arch. Physiol., 1938, **79**, 231—239).—The blood vol. in the liver capillaries of mice is increased, and that of skeletal muscle capillaries is considerably diminished, after a severe hæmorrhage. A. S.

Measurement of capillary resistance. T. Jersild and A. Elmby (Klin. Woch., 1938, **17**, 1359—1360).—The suction method, using an ordinary 30-c.c. syringe and a suction bell of 20 cu. mm. as exhaust pump connected with a 300-mm. Hg manometer, is superior to the compression method. Appearance of 1—2 petechiæ at pressures over 150 mm. Hg is normal, at pressures of 30—100 mm. pathological. E. M. J.

New method for determining capillary resistance. G. Sack (Klin. Woch., 1938, **17**, 1539—1542).—Negative pressures of 100—700 mm. Hg were applied to the skin and the time (in sec.) in which 2—5 bleeding points appeared was noted. Capillary resistance does not return to normal in scurvy until 5 weeks after onset of treatment; it is lowered by histamine and raised by the application of leeches nearby. E. M. J.

Tonometer for measuring tissue turgor in the human finger tip. G. E. Burch and W. A. Sodeman (Proc. Soc. Exp. Biol. Med., 1938, **39**, 125—129).—The apparatus registers the extent to which pressure over a small area deforms the skin surface. It has been used in scleroderma, Raynaud's disease, and œdema. V. J. W.

Photo-electric plethysmography. K. Matthes and W. Hauss (Klin. Woch., 1938, **17**, 1211—1213).—The ear, finger, or toe is trans-illuminated and the light passing through is recorded with a photo-electric cell–galvanometer unit. E. M. J.

Plethysmographic method for the quantitative measurement of blood flow in the foot. E. A. Stead, jun., and P. Kunkel (J. clin. Invest., 1938, **17**, 711—714).—The data are given with diagrams. With a standard correction for the inertia of the plethysmograph bellows system, the instrumental error was ±3%. The plethysmograph is also useful in the study of the vasomotor reactions of the vessels of the foot. C. J. C. B.

Blood flow and vasomotor reactions in the foot in health, arteriosclerosis, and thromboangiitis obliterans. P. Kunkel and E. A. Stead, jun. (J. clin. Invest., 1938, **17**, 715—723).—Measurements were made under standard conditions by the plethysmograph method; the flow was recorded in c.c. per min. per 100 c.c. tissue. The blood flow reached a const. max. level after 30 min. at 43°, being 17·1 c.c. in 34 normals (range 11·1—25·9). The max. blood flow showed no decrease with age if the cardio-vascular system is normal. The average max. flow in the hand is twice that in the foot per equal vol. of tissue; when calc. in related to skin area it was 30% greater than in the foot. The vasomotor reactions of the hand and foot were qualitatively similar. The rhythmic respiratory waves observed during normal breathing result from changes in venous pressure and are not vasomotor in origin. A deep inspiration, however, induces constriction of vasomotor origin in both hand and foot. In arteriosclerosis and thromboangiitis obliterans the max. blood flow to the foot was reduced 50% without symptoms or trophic disturbances. When the flow was reduced to ⅓ the normal val., or 5 c.c. or less, symptoms or trophic disturbances usually occurred. In both diseases, severe intermittent claudication in the calf was in some cases incapacitating, although the blood flow in the foot was as great as in many normals. C. J. C. B.

Carotid blood flow in the dog determined with the electro-magnetic flow-meter. L. N. Katz and A. Kolin (Amer. J. Physiol., 1938, **122**, 788—804).—The flow-meter used is based on the principle that in blood moving through a magnetic field at right angles to the magnetic lines of force an induced e.m.f. will be established perpendicular to the magnetic field and at right angles to the direction of flow. This induced voltage is proportional to the velocity of blood flow and can be tapped by placing non-polarisable electrodes on the unopened vessel wall. By recording the amplified voltage by means of an oscillograph an undistorted record of the cyclic variations in flow can be obtained. By planimetry of the records the mean rate of flow can be determined. M. W. G.

Errors in blood pressure readings. I. S. Wright, R. F. Schneider, and H. E. Ungerleider (Amer. Heart J., 1938, **16**, 469—476).—Investigations on the criteria for human systolic and diastolic blood pressure readings (auscultatory method) showed that in many American hospitals discrepancies were beyond the regular limits of error. The importance of a standard technique in life insurance work is emphasised. C. A. K.

New method of blood pressure determination in rabbits. E. Fahr (Z. ges. exp. Med., 1938, **104**, 201—209).—The blood pressure of unanæsthetised rabbits was determined in the central artery of the ear, using Grant and Rothschild's method. The animals were kept at const. temp. in a specially constructed chamber; the changes of pulsation in the artery were observed through the glass wall of the chamber. A. S.

Normal venous pressure as determined by a direct method. A. A. Holbrook (Amer. J. med. Sci., 1938, **195**, 751—759).—The venous pressure, determined by a direct method, in 35 patients was from 10 to 100 mm. of normal saline solution (average 65 mm.). The older age group tended to have lower levels than the younger. Results were more consistent and more accurate when the arm was abducted. This modification of technique is discussed. R. L. N.

Relations between vasomotor and humoral reactions following injection of protein substances. A. Hustin and R. Reding (Compt. rend. Soc. Biol., 1938, **128**, 1188—1190).—7 patients were given intravenous injections of gonovaccine containing 0·06 mg. of polypeptides. 6 showed a fall in alkali reserve and p_H of the blood which was closely paralleled by a fall in skin temp. due to vasoconstriction; 1 showed a rise in alkali reserve and p_H and a parallel rise in skin temp. due to cutaneous vasodilatation. P. C. W.

Tobacco allergy and thromboangiitis obliterans. F. H. Westcott and I. S. Wright (J. Allergy, 1938, **9**, 555—564).—35 cases of thromboangiitis obliterans did not show a higher proportion of positive results to tobacco than 35 controls. The high no. of positive results found by other observers are probably non-sp. chemical reactions. C. J. C. B.

Ætiology of arteriosclerosis. I. A. von Albertini (Schweiz. Z. allg. Path. Bakt., 1938, I, 3—22.—5 cases of mesaortitis "en plâques" resulted from bacterial inflammatory lesions; these in turn may lead to arteriosclerosis. E. M. J.

Changes in blood pressure produced by prostatic massage. H. J. Hammer and T. L. Schulte (J. Amer. med. Assoc., 1938, **111**, 308—309).—Syncope and vasomotor collapse occurred in 1% of 378 cases following prostatic massage. Analysis of blood pressure changes in these cases is reported. R. L. N.

Simple method for physiologic stimulation of the carotid sinus. H. Brüner (Z. Kreislaufforsch., 1938, **30**, 653—654).—A thin catheter capped by a small bag of thin rubber is introduced into the carotid artery and pushed up until its end reaches the carotid sinus. Saline is pumped into the catheter under pressure and distends the rubber bag and the carotid sinus, making stimulation without damage possible. G. Sch.

Carotid and aortic reflexes in adrenalectomised animals. S. J. G. Nowak (Arch. int. Pharmacodyn., 1938, **60**, 129—145).—The carotid sinus pressor responses are normal in adrenalectomised cats surviving 26 days on cortical extract. With insufficiency of extract these reflexes are abolished. The pressor response may remain in severe insufficiency in cats,

before and after vagotomy. The threshold of sensitiveness in the cat is low. With moderate insufficiency in the dog the reflex becomes brisk after vagotomy. The depressor (aortic) reflex is well marked in the adrenal-deficient cat. D. T. B.

Effect of various drugs on carotid sinus reflexes. L. Donatelli and T. C. R. Shen (Compt. rend. Soc. Biol., 1938, **129**, 37—39).—The continuous, slow intravenous injection of adrenaline (1/500,000) or tyramine (1/50,000) has no effect on the vasomotor carotid sinus reflexes in the chloralosed dog. Eserine (0·18 mg. per kg.) augments the reflexes but in higher dosage (0·5 mg. per kg.) depresses them. Ascorbic acid (0·1 g. per kg.) has no effect. Picrotoxin (0·5 mg. per kg.) has no effect in the normal dog but stimulates the reflexes when they are depressed by barbiturates. Gravitol depresses the reflexes. Ergobasine–ergometrine suppresses the reflexes owing to central and peripheral inhibition of the vasomotor mechanism. P. C. W.

Relationship between blood pressure and tonic regulation of the pial arteries. M. Fog (J. Neurol. Psychiat., 1938, **1**, 187—197).—The systemic blood pressure in cats was changed by alteration of the total blood vol. Rise in systemic blood pressure caused contraction of the pial arteries, fall in pressure caused dilatation. This response remained the same when the sinus and aortic nerves, the cervical sympathetic trunk, and the vagi were cut. K. Stern.

Abnormalities of the urinary tract in "essential hypertension." H. A. Schroeder and J. M. Steele (Proc. Soc. Exp. Biol. Med., 1938, **39**, 107—108).—In 71 hypertensive subjects, aged 18—62, the urinary tract was investigated by per-abrodil. Abnormalities were found in 50 cases, the majority forming some obstruction to urinary flow. V. J. W.

Case of essential hypertension of more than 25 years' duration showing no renal arteriolar changes. S. Shapiro (J. lab. clin. Med., 1938, **24**, 60—64).—The hypertension was complicated by Graves' disease. The blood pressure varied from 200 to 220 systolic and 110 to 100 diastolic over the period. The kidneys showed no pathological changes at autopsy. (2 photomicrographs.) C. J. C. B.

Supposed rôle of the adrenals in hypertension. J. M. Rogoff and E. Marcus (J. Amer. med. Assoc., 1938, **110**, 2127—2132).—The intravenous injection of adrenaline did not modify the rate of secretion of adrenaline from the adrenal gland in 11 dogs. In 32 experiments on 15 dogs, injected adrenaline disappeared rapidly from the circulation, even when large amounts were given over long periods. The significance of these findings is discussed in relationship to the supposed rôle of the adrenals in hypertension. R. L. N.

Production by a new method of renal insufficiency and hypertension of the rabbit. D. R. Drury (J. Exp. Med., 1938, **68**, 693—702).—A loop is placed around the left renal artery of an immature rabbit so that with growth of the animal there is limitation of blood supply and development in this kidney. The other kidney, which shows a compensatory hypertrophy, is later removed, giving rise to renal insufficiency without gross kidney damage. Moderate hypertension occurs with restriction of the blood flow in one renal artery and this increases in severity by removing the other kidney. A. C. F.

Effect of measured obstruction of the renal artery on blood pressure. R. Enger, F. Linder, and H. Sarre (Z. ges. exp. Med., 1938, **104**, 1—9).—The blood flow in the renal vein in dogs under morphine-pernocton anæsthesia was determined with a thermostromuhr after renal ischæmia had been produced by obstructing the renal artery to various degrees. There is no definite relation between rise of blood pressure and the degree of unilateral ischæmia. The hypertension is greater if both renal arteries are obstructed, or if one renal artery is obstructed after extirpation of the second kidney. Even slight interference with renal blood flow produces hypertension. A. S.

Effect of healthy kidney on hypertension produced by renal ischæmia. J. C. Fasciolo (Compt. rend. Soc. Biol., 1938, **128**, 1129—1130).—The presence of healthy kidney tissue renders the hypertension produced by renal ischæmia in the dog slower in onset, less marked, and less persistent. When unilateral ischæmia produces no blood pressure change removal of the other kidney causes a rise in pressure. The rise produced by grafting an ischæmic kidney into the neck of a dog with normal kidneys is less than that produced by grafting into a dog with kidneys removed. P. C. W.

Renal hypertension in dogs following extirpation of the pituitary and the adrenals. R. Enger, F. Linder, and H. Sarre (Z. ges. exp. Med., 1938, **104**, 10—14).—Renal ischæmia produces arterial hypertension in dogs following extirpation of the pituitary and both adrenal glands. A. S.

Unusual hypertensive renal disease. L. Leiter (J. Amer. med. Assoc., 1938, **111**, 507—510).—In 2 cases with occlusion of the renal arteries due to vascular disease and in 1 case showing anomalies of the urinary tract, there was associated hypertension. These findings are discussed in relation to experimental hypertension. R. L. N.

Arterial hypertension with renal ischæmia. P. Vallery-Radot, S. Blondin, R. Israel, and C. Cachin (Presse méd., 1938, **46**, 969—971).—Experiments were carried out on 7 dogs, compressing the renal artery before and after denervation of the renal pedicle. Blood pressure was measured by femoral puncture. Blood pressure rose to 175—200 mm. Hg, and was maintained until the death of the animal. Blood-urea rose, albuminuria occurred, and glomerular and interstitial lesions appeared. The adrenals were normal. A. J. B.

Eye lesions in dogs with arterial hypertension produced by renal ischæmia. J. C. Fasciolo and F. K. Cramer (Rev. Soc. argent. Biol., 1938, **14**, 383).—In 8 out of 14 dogs with arterial hypertension induced by partial occlusion of the renal artery ocular lesions were observed. They appeared 8 to 10 days after operation and consisted in: iritis (1 case); hæmorrhages (subconjunctival, into the anterior

chamber, or into the vitreous humour) sometimes coinciding with hæmaturia, hæmatemesis, and melæna; in 5 cases there was retinal detachment. These alterations are not related to urea retention and may occur when blood-urea is normal. In 3 dogs observed for several months these lesions gradually receded and chronic changes appeared, tortuosity of the blood vessels, and a yellowish-white macula (possibly exudative in nature).

J. T. L.

Renin and pathogenesis of renal hypertension. G. HESSEL (Arch. exp. Path. Pharm., 1938, **190**, 180—184).—Hypertension was produced in rabbits by renal ischæmia. Intravenous injection of blood from the renal artery had no effect. Blood transfused from the renal vein of a dog with experimental hypertension raised the blood pressure in a normal dog. Fall of pressure in the donor dog occurred during the transfusion. A sustained hypertension was produced by injections of renin into rabbits. There is decreased flow in the splanchnic and renal areas (Rein's thermostromuhr) after injection of renin.

I. S.

Vasoconstrictor properties in blood of hypertensive dogs. C. HEYMANS and J. J. BOUCKAERT (Proc. Soc. Exp. Biol. Med., 1938, **39**, 94—95).—Dogs were made hypertensive either by section of the cervical sympathetic with most of the vagus and excision of the carotid sinus or by renal ischæmia. Their arterial blood was tested for hypertensive activity by injection into the splenic artery of a normal dog and recording spleen vol. The blood of the first group contained hypertensive substances but not the blood of the "renal" group. V. J. W.

Site of action of the renal pressor substance. A. MERRILL, J. R. WILLIAMS, T. R. HARRISON (Amer. J. med. Sci., 1938, **196**, 18—23).—The renal pressor substance (renin) caused a rise in blood pressure after destruction of the spinal cord, and after exclusion of the hypophysis, adrenals, pancreas, liver, and kidneys from the circulation. A vasoconstrictor effect was produced in the isolated leg. The height and duration of the rise in blood pressure were increased in animals nephrectomised 2 or 3 days previously. R. L. N.

Effect of the pulse (I) on the formation and flow of lymph, (II) on the spread of substances through the tissues. R. J. PARSONS and P. D. MCMASTER (J. Exp. Med., 1938, **68**, 353—376, 377—400; cf. A., 1938, III, 717).—The difference between pulsatile and non-pulsatile perfusion with defibrinated blood on the formation and flow of lymph was studied in the rabbit's ear by observation of the rate of travel of pontamine-sky-blue introduced into the lymphatic channels by intradermal injection. With a pulsating pressure of 60—141 mm. Hg the lymph flow was 20 times that obtained with a const. perfusion pressure of 141 mm. Hg, although the actual rate of blood flow in the pulsatile perfusion was only $\frac{1}{3}$ of that in the const. pressure experiment. With pulsatile pressure the dye always reached the base of the ear in 7—8 min. but with const. pressure it never reached the base at all (except in one experiment in 45 min.). Interstitial spread of dyes and their rates of absorption from the tissues were studied after injection into the tissue spaces of the sub-papillary layer of the corium, and were found to vary in a similar manner, being markedly increased by pulsation. The development of œdema was detected by weighing the ear before and after each experiment. In œdema, lymph formation and interstitial spread are increased in both const. and pulsatile perfusion experiments but much more markedly in the latter. A. C. F.

(d) RESPIRATION AND BLOOD GASES.

Structure of the respiratory portion of the mammalian lung; lining of the frog lung. C. G. LOOSLI (Amer. J. Anat., 1938, **62**, 375—425).—The lungs of various mammals and of frogs were examined after intratracheal or intravascular injection of $1\frac{1}{2}\%$ $AgNO_3$. The continuous epithelial lining of the alveolar walls in the frog is easily differentiated from the endothelial cells of the capillary network. In mammals, the mosaic pattern seen in the alveolar walls is formed by the capillary endothelial cell boundaries; no epithelial mosaic is seen in the alveoli. Outlines of the epithelial cells lining the bronchi and bronchioles can be seen; these terminate abruptly at the alveolar ducts in rabbits where no respiratory bronchioles are present; in the monkey, dog, opossum, guinea-pig, and rat, the epithelial lining of the respiratory bronchioles breaks up into small, separated islands of cells. Occasional nucleated ("septal") cells are found in the inter-capillary spaces of the alveoli; the cytoplasm of such cells does not extend as a thin membrane over the capillaries. In unsilvered mammalian lungs the discontinuity of the respiratory bronchiolar epithelium is seen; these cells differ cytologically from the septal cells seen in the alveolar walls. The blood in the capillaries is only separated from the air spaces by endothelium and the circular pericapillary fibre network. Histological examination of pre- and post-natal lungs suggests a mesenchymal origin for the septal cells; nevertheless, some of the nucleated cells in the alveolar walls near the bronchi are endodermal in dogs. (B.)

H. L. H. G.

Plethysmograph recording of respiration. J. A. GREENE, L. W. SWANSON, and R. H. HEEREN (Arch. intern. Med., 1938, **62**, 593—596).—The accuracy of plethysmographic records of respiration in man was confirmed by comparison with spirometer records during voluntary hyperpnœa. C. A. K.

The pulmonary diagraph. G. POLLITZER (Presse méd., 1938, **46**, 1092—1094).—The diagraph and its mode of use are described, especially in the study of respiratory diseases. A. J. B.

Tomography. H. ROCHE (Brit. J. Tuberc., 1938, **32**, 236—242).—Cases are described illustrating the val. of tomography in disease of the lung, particularly in the demonstration of tuberculous cavities when ordinary radiograms are observed by pleural thickening, fluid, or the thoracic cage.

F. J. S. G.

Respiration of crickets. R. CHAUVIN (Compt. rend. Soc. Biol., 1938, **128**, 1065—1067).—The respiration of the adult is slower and of greater amplitude

than that of the larva. O_2 reduces the frequency; pure N_2 causes apnœa. 50% CO_2 with 50% air causes a slow diminution of both frequency and amplitude until respiration is completely stopped; 30% CO_2 does not cause complete cessation. P. C. W.

Blood supply of abnormal tissues in the lungs. R. D. Wright (J. Path. Bact., 1938, **47**, 489—499).—Lungs from human cadavers were injected to show the distribution of the pulmonary and bronchial arteries and their branches in various pathological lesions. If, in the adult lung, tissue develops that is usually supplied from the systemic arterial circulation, the vessels which grow with it can be injected from the bronchial artery. This development of new vessels from the systemic arteries may be closely linked with the stimulation of collagenous tissue to further development, irrespective of the nature of the causative agent of collagenous proliferation. (5 colour photographs.) C. J. C. B.

Effect of hæmolysis on the affinity of fish blood for oxygen. E. C. Black and L. Irving (J. Cell. Comp. Physiol., 1938, **12**, 255—262).—The O_2-combining power of fish blood is greatly decreased by the presence of CO_2. This effect is practically abolished by saponin hæmolysis and may therefore be attributed to the corpuscle membrane. V. J. W.

Transport of oxygen in human blood. I, II. C. Isac, K. Matthes, and T. Yamanaka (Arch. exp. Path. Pharm., 1938, **189**, 606—614, 615—627).—O_2 and CO_2 dissociation curves were determined in normal and diseased subjects. In anæmic subjects and in patients with cardiac disease a shift in the O_2 dissociation curve occurs which prevents a change of blood-p_H during O_2 transport. H. Bl.

Oxygen capacity of blood of rheumatics. W. Fehlow, K. Wolff, and F. Steinkamp (Klin. Woch., 1938, **17**, 1435—1437).—The O_2 capacity of the blood of severe rheumatic cases is lower than that calc. from hæmoglobin or Fe determinations. E. M. J.

Central control of respiration. G. Mansfeld and A. Hámori (Arch. int. Pharmacodyn., 1938, **60**, 179—194).—On removal of the high pontine respiratory centre in dogs, the inhibitory centre (from mid-pons to *N.* VIII) becomes active. Section $\frac{2}{3}$ mm. above *N.* IX abolishes the carotid sinus reflex. Chemo-receptors are left but do not affect medullary centres, the CO_2 effect being almost annulled. D. T. B.

Respiration in a case of induced carotid sinus syncope. H. L. Smith and E. J. Baldes (Proc. Staff Mayo Clin., 1938, **13**, 311—312).—A series of 100 cases was studied. Stimulation of a sensitive carotid sinus produces slow deep and laboured breathing but no apnœa. A. J. B.

Blood gases and expired air in decerebrate dogs. H. Enghoff, K. Liedholm, and E. Spiegel (Skand. Arch. Physiol., 1938, **80**, 80—93).—Blood-CO_2 concn. and CO_2 capacity in dogs are greatly diminished after decerebration. A. S.

Researches on respiration and gas metabolism under conditions of oxygen lack and low barometric pressure. T. Benzinger (Ergebn. Physiol., 1938, **40**, 1—52).

Individual variations in ability to acclimatise to high altitude. A. Keys, B. H. C. Matthews, W. H. Forbes, and R. A. McFarland (Proc. Roy. Soc., 1938, **B**, **126**, 1—29).—There is marked variation in the abilities of normal men to acclimatise at high altitudes. Acclimatisation is favoured by youth (10 subjects, age 29—44), slow pulse, low-normal blood-O_2 capacity, high alveolar CO_2 tension, and high alkali reserve at sea-level. At high altitudes acclimatisation of good degree is associated with a slow basal and standing pulse, a small increase of pulse-frequency on rising from the prone position, and an O_2 dissociation curve of the blood differing little from that at sea-level. The various measurements were made at 5 altitudes from 9000 to 20,000 ft. In a short appendix, R. A. Fisher treats the data statistically. F. B. P.

Increase of respiratory minute volume during exercise and at low oxygen pressure. F. Kürten (Z. ges. exp. Med., 1938, **103**, 622—626).—The respiratory vol. of normal subjects was determined during exercise, breathing normal air and air containing 14% of O_2. 3 types of respiratory response were distinguished: (1) a steady respiratory vol. is reached in both conditions; (2) a steady respiratory vol. is reached during exercise breathing normal air, but not with O_2 lack; (3) the respiratory vol. is continuously increased, breathing normal air and with O_2 lack. A. S.

Changes in dead space of respiratory tract under low barometric pressure. J. Fegler (Bull. Acad. Polonaise, Cl. Méd., 1937, 509—516).—Under conditions of low barometric pressure (267 mm. Hg) with normal partial pressure of O_2 the functional dead space of the respiratory tract is diminished in man and dog, in consequence of accelerated diffusion of CO_2 out of the alveoli. This may account for the low alveolar pressure of CO_2 under those conditions. The dead space was measured by the ratio CO_2 in expired air/CO_2 in alveolar air. A. S.

Changes in blood flow through brain and muscles during arrest of breathing. L. Irving (Amer. J. Physiol., 1938, **122**, 207—214).—Musk-rats, beavers, cats, dogs, and rabbits were anæsthetised with chloralose and urethane. Changes in the blood flow in the tissues were recorded simultaneously by 2 electrical resistance wire flow-meters. The instruments operated on the principle of the hot-wire anemometer. When the lungs are inflated the blood flow through the muscle rapidly decreases and through the brain increases. The vascular "shift" is independent of the coincident change in blood pressure. No afferent path was demonstrated. CO_2 has the same effect on the circulation but is slower and less effective than the arrest of breathing. M. W. G.

Oxygen poisoning. G. Orzechowski and K. Holste (Arch. exp. Path. Pharm., 1938, **190**, 198).—An atm. of pure O_2 killed white mice in 5—8 days and rats in 2—3 days. Rats could resist a concn. of 96% O_2 under diminished pressure, 90—95% in an O_2 and N_2 mixture, and 76% if under increased pressure. I. S.

Oxygen and Carbon Dioxide Therapy. 2nd Edition. Argyll Campbell and E. P. Poulton (Oxford University Press, London, 1938, pp. 202, 49 figs.).—The first edition of this book won immediate and widespread recognition as a clear, authoritative, and practical account of this important branch of therapeutics. The new edition contains two addenda on the O_2 tent and nasal catheter and an additional list of 65 recent references bringing up the total to 445. The book thus becomes more indispensable than ever to both physiologists and scientifically-minded physicians. S. W.

Two methods of administering oxygen. B. Scherstén (Skand. Arch. Physiol., 1938, **80**, 369—374).—Nasal catheter and face mask methods are described. A. S.

Oxygen therapy in phosgene poisoning. E. Dumoulin and R. Charlier (Compt. rend. Soc. Biol., 1938, **129**, 500—501).—Rats poisoned by exposure for 3—5 min. to an atm. containing 1·143 g. of phosgene per cu. m. were placed in atm. containing 90% or 50% of O_2. The exposure to 90% O_2 increased the mortality; 50% had no effect. The concn. of CO_2 did not affect the results. P. C. W.

Emotional component of bronchial asthma. C. H. Eyermann (J. Allergy, 1938, **9**, 565—571).—A general discussion. C. J. C. B.

Treatment of bronchial asthma with ascorbic acid. D. Hagiesco, G. Bazavan, M. Criscota, and M. Cioranesco (Presse méd., 1938, **46**, 1435—1438).—Of 20 patients suffering from bronchial asthma of long standing 8 showed an excellent, and 7 a good, response to intravenous injections of 100—200 mg. of ascorbic acid, given daily for two weeks, and then at various intervals. Attacks were interrupted and recurrence was prevented, in many cases for a period of months. G. Sch.

Sulph-hæmoglobin.—See A., 1939, II, 42.

Effect of artificial pneumothorax on anoxæmia of pneumonia. D. Goldstein, M. Block, and M. Rosenbluth (J. clin. Invest., 1938, **17**, 659—666).—6 cases of early pneumococcus pneumonia were given pneumothorax to a final extent of 30% to 90% of the amount necessary to produce total collapse of one lung; 5 of these showed diminished O_2 saturation at the outset. Separation of the pleura (initial pneumothorax) produced variable changes in O_2 saturation. Cases with raised saturation had the most severe pleural pain and the greatest relief after pneumothorax. Further collapse of the lung in no case caused an increase of O_2 saturation, but in 4 cases the O_2 saturation fell. C. J. C. B.

Pleural perforation in pulmonary tuberculosis. [Composition of air in pneumothorax.] H. Harpöth and U. Gad (Brit. J. Tuberc., 1938, **32**, 228—235).—Two samples of pneumothorax air were analysed at an interval of ½ hr. If the pneumothorax is closed the composition (O_2 and CO_2) is about the same. If a fistulous opening in the lung is present, there is a fall of CO_2 and a rise of O_2. This test is more delicate than measuring the pleural pressure at intervals. F. J. S. G.

(e) MUSCLE.

Striped frog muscle investigated by micromanipulation. H. Ensinger (Z. Zellforsch., 1938, **28**, 614—616).—The muscle fibres are of a tough, sticky consistency and optically homogeneous. Single fibrillæ were isolated and found to be firmly bound to the surrounding sarcolemma. R. J. O'C.

Golgi apparatus and vacuoma in striped muscle fibres. P. Rojas and L. S. Resta (Rev. Soc. argent. Biol., 1938, **14**, 353—356).—The Golgi apparatus visualised by the Kolatschev–Nassonow technique consisted of two small bodies impregnated by the osmic acid placed near the poles of the nucleus. Faradic stimulation of the muscle for 30—60 sec. split these bodies into fragments; stimulation for 3—5 min. caused the osmophil substance to diminish or disappear almost completely. When stimulation was continued for 10 min. the Golgi apparatus reacquired its original aspect; recovery was also observed after 1—2 min. rest. The vacuoma (Chlopin's krinoma) could be differentiated from the Golgi apparatus. It appeared on intravital staining with neutral-red as granules placed within and without the fibrils; faradic stimulation caused its disappearance and no recovery was observed by prolonging stimulation for 10 min. J. T. L.

Cytological study of fatigued muscle. E. Adelhelm (Anat. Rec., 1938, **70**, 473—481).—The Golgi material becomes fragmented and dispersed in fatigued muscle fibres of rats; the mitochondria remain unchanged. H. L. H. G.

Junction of striated muscle fibres and tendons in mammalian embryos. R. Conteaux (Compt. rend. Soc. Biol., 1938, **128**, 990—993).—Examination of the development of the secondary myotubes into muscle fibres in the embryos of guinea-pig, mouse, and human shows that the fibres are at first shorter than those derived from the primary myotubes and have to grow in length to effect contact with the tendon fibres. The function of the two is therefore not primary. P. C. W.

Relation of capillaries to the skeletal musculature in Amphibia. W. Steudel (Zool. Jb. [Anat. Abt.], 1938, **65**, 63—122). W. J.

Muscle-glycogen. P. Rojas and L. S. Resta Rev. Soc. argent. Biol., 1938, **14**, 350).—Glycogen in the muscle fibre was found as small granules in the isotropic disc, immediately contiguous to the *Z* band; no glycogen was found in this band. J. T. L.

Fumaric, succinic, and lactic acids in muscle during glycolysis. G. van Grembergen (Arch. int. Pharmacodyn, 1938, **60**, 230—237).—Lactic and succinic acids accumulate during autoglycolysis of muscle. Fumaric acid is slightly increased. D. T. B.

Action of allyl formate on frog muscle. B. Zawadzki (Acta Biol. Exp., 1938, **12**, 90—92).—Low concns. or short applications of higher concns. of allyl formate increase the excitability of curarised frog's semimembranosus to direct stimulation. Concns. above 0·125% diminish excitability and

contractility, if applied longer than 10 min. (Cf. A., 1938, III, 793.) A. S.

Carnosine and anserine in mammalian muscle. I. Determination of carnosine and anserine. II. Distribution of carnosine and anserine in various muscles of different species. J. A. Zapp, jun., and D. W. Wilson (J. Biol. Chem., 1938, **126**, 9—18, 19—27).—I. Fresh muscle is minced and extracted at 60—70° and p_H 5—6 and the combined extracts are conc. Addition of 5 parts of 95% alcohol ppts. traces of protein and glycogen. The filtrate is neutralised to p_H 7 and excess of Hg acetate is added to ppt. carnosine and anserine. After removal of Hg, carnosine is determined by the diazo-method, and anserine by the increase in amino-N after hydrolysis.

II. Variations in the carnosine of the muscles of the cat reported by other workers are confirmed and similar variations demonstrated in the muscles of other animals. The amounts of carnosine and anserine in red muscle are lower than in white muscle in the same animal. P. G. M.

Rapid changes in the transparency of active muscle. E. Boeri (Boll. Soc. ital. Biol. sperim., 1938, **13**, 719—720).—The phenomenon (frog's muscle), studied by means of a photo-electric cell and cathode-ray oscillograph, is described. F. O. H.

Effect of training on skeletal musculature. A. Hoffmann (Z. mikr.-Anat. Forsch., 1938, **43**, 595—622).—Male animals from a pure stock of Russian rabbits were trained under controlled conditions in fast and slow running for 5 months. There were 4—5 animals in each group and a similar no. were given caffeine (0·1 g. per kg. body-wt. daily) during the training. Slight differences in muscle wt. were found in the trained animals, those running fast being slightly heavier, and those running slowly slightly lighter, than the control muscles. Increased diameter of muscle fibres was found in those with heavier muscles. Caffeine caused the animals to run faster, but they tired more quickly. The fast-running group with caffeine were feebler throughout in their total efforts than those without caffeine. The slow-running group were not affected by caffeine. J. H. G.

Nature of the staircase effect [in muscle]. R. Margaria and P. Fornaroli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 678—679).—The effect is max. in muscle (frog's gastrocnemius) poisoned with iodo-acetate and perfused with isotonic 0·025M-PO_4''' buffer at p_H 4·8; with a perfusing fluid of p_H 6·8 or higher, the effect is negligible. Hence the effect is due to an alkalisation of the muscle at each stimulation. F. O. H.

Muscle contraction without tension. J. Lindhard (Skand. Arch. Physiol., 1938, **80**, 283—290).—The heat production of a frog's gastrocnemius during isometric tetanus and during tetanic stimulation without development of mechanical energy (one end of the muscle loose) was determined with a Cu-constantan thermoelement. No increase in the heat production or O_2 consumption of the muscle (Krogh's micro-respiratory apparatus) was found. A. S.

Heat of shortening and the dynamic constants of muscle. A. V. Hill (Proc. Roy. Soc., 1938, **B**, **126**, 136—195).—A coupled galvanometer system is described, sensitive enough for muscle-heat measurements, with a deflexion time of 30—50 msec. The "shortening-heat" during a tetanus is proportional to the shortening and independent of the work done and of the speed of shortening. The rate of energy liberation, heat + work, at any moment is a linear function of the load. Muscle shortening at a speed v under load P obeys the equation $(P + a)(v + b) =$ const., where a is the shortening heat per cm. of shortening and b is the increase of energy rate per g. wt. decrease of load. When a contracting muscle is stretched under certain conditions a negative heat of lengthening is observed. The total energy rate of the muscle remains positive; there is a slowing, not a reversal, of the processes associated with activity. That an active muscle shortens more slowly under a greater force is due to a lowering of the rate of energy liberation and not to "viscosity." F. B. P.

Contraction of striated muscle following thermal stimulation. T. Feyel (Compt. rend. Soc. Biol., 1938, **129**, 362—366).—Histological examination of frog's striated muscle when contracted following immersion in Ringer's solution at 38—42° shows the contraction to be entirely similar to that elicited by faradic stimuli. The contraction is reversible if the stay in the warm bath is not too prolonged. The excitability of the muscle increases for the first few stimuli but then falls off rapidly until completely fatigued. Glycogen is still present in the fatigued muscle. Muscle in rigor mortis still responds to thermal stimulation; this suggests that the stimulation is direct and not through the nerves. P. C. W.

Capacity of skeletal muscle of castrated female rats for sustaining work output. D. J. Ingle (Proc. Soc. Exp. Biol. Med., 1938, **39**, 150—151).—In rats under medinal, there is no difference between castrates and non-castrates in the capacity of the gastrocnemius to respond to stimulation. V. J. W.

Capacity of skeletal muscle of castrated male rats to sustain work output. D. J. Ingle (Proc. Soc. Exp. Biol. Med., 1938, **39**, 221—222).—No significant difference was observed between normal and castrated rats. V. J. W.

Propagation of veratrine contracture. T. P. Feng (Chinese J. Physiol., 1938, **13**, 239—246).—The toad's nerve–sartorius prep. was stimulated through its nerve with single shocks and veratrine was applied at one end. The heat production at the 2 ends was similar, and an after-discharge of action currents appeared at the unpoisoned end. After prolonged soaking in veratrine, the contracture was not accompanied by propagated action currents. N. H.

Effects of the chlorides of potassium, calcium, and sodium on the α-excitability of muscle. B. H. Carleton, H. A. Blair, and W. B. Latchford (J. Cell. Comp. Physiol., 1938, **12**, 223—236).—In the absence of K, excitability and rheobase decrease but recover in 1—2 hr. Up to 75 mg.-% of KCl they

decrease for a short time, after which the excitability increases rapidly and declines while the rheobase increases slowly and later more quickly. With increased $CaCl_2$ the excitability first increases and then declines, while the rheobase oscillates and finally reaches infinity. Excess of Na resembles excess of K. V. J. W.

Sensitiveness to acetylcholine and neuromuscular excitability of the toad's gastrocnemius perfused with various concentrations of sodium, potassium, and calcium ions. V. H. CICARDO (Rev. Soc. argent. Biol., 1938, **14**, 370—376).—The hind limbs were perfused with Locke's solution for 1—2 hr. The various ions were increased, diminished, or suppressed, the osmotic pressure being kept const. when necessary with glucose. Before and after perfusion excitability of muscle and nerve was determined by the condenser discharge method, measuring rheobase and chronaxie. Acetylcholine was injected into the sciatic artery in doses up to 1 mg. Increase in concn. of NaCl to 1·8% produced inexcitability of muscle and nerve; the response to acetylcholine was normal or slightly decreased; suppression of NaCl produced inexcitability in muscle and nerve and no response to acetylcholine. Increase of KCl to 0·06% did not modify nerve excitability; it decreased slightly the excitability of muscle and decreased sensitivity to acetylcholine; suppression of K had no influence on the neuromuscular excitability, nor on the response to acetylcholine. Increase of $CaCl_2$ to 0·1% diminished the excitability of muscle and nerve. Decrease in $CaCl_2$ after a period of fibrillar contractions produced curarisation with marked decrease in muscle excitability; the response to acetylcholine was not altered. It is deduced that the muscular contraction in response to acetylcholine is produced by a mechanism different from that responsible for electrical stimulation. J. T. L.

Effect of intra-arterial acetylcholine on the gastrocnemius of the toad curarised by various drugs. V. H. CICARDO (Rev. Soc. argent. Biol., 1938, **14**, 331—338).—Intra-arterial doses of 0·2—0·5 μg. produced muscular contracture; 1 μg. in 0·1 c.c. gave a twitch, but injected in 1 c.c. only a contracture was observed. Muscles curarised with curare, sparteine, atropine, strychnine, eserine, and F. 933 (drugs that decrease the electrical excitability of the muscle fibre) showed diminished sensitivity to acetylcholine. Large doses were necessary to obtain a muscular twitch; subsequent contracture was much prolonged. Muscle curarised by cobra venom, in doses that did not modify the electrical excitability of the muscle fibre, did not respond to acetylcholine even when large doses were injected. Muscle curarised by veratrine (which diminished electrical excitability of the muscle fibre) responded with large twitches to doses of 1 μg. of acetylcholine. It is supposed that these different reactions to acetylcholine are due to modifications produced by the curarising drugs in a mediator substance. J. T. L.

Reactions of avian muscle to acetylcholine and eserine. G. L. BROWN and A. M. HARVEY (J. Physiol., 1938, **94**, 101—117).—The injection (close arterial) of acetylcholine evokes a double mechanical response (gastrocnemius) consisting of a quick initial response followed by a contracture; the quick response is associated with an outburst of action potentials, which are stopped by, and at the onset of, contracture. Denervation increases sensitivity (×10), and response remains almost as before. Eserine enhances the quick phase and prolongs the contracture; it produces a potentiation of the tension response to max. motor nerve stimuli, smaller and more transient than that in mammalian muscle. The responses of a muscle under eserine to single max. nerve volleys are not depressed by the interpolation of a tetanus J. A. C.

Diminution of muscular function in myasthenia gravis. W. BIRKMAYER (Dtsch. Z. Nervenheilk., 1938, **147**, 177—195).—In 3 out of 5 patients examined, muscular fatigue could be produced by local faradic stimulation as well as by voluntary movement. Faradic stimulation had no effect on a muscle which was already fatigued by voluntary movement. A muscle exhausted by voluntary movements regained its faradic excitability earlier than its response to voluntary innervation. A muscle exhausted by faradic stimulation regained its response to voluntary innervation earlier than its faradic excitability. In 3 cases the reflex ocular movements were not fatigued as rapidly as the voluntary ocular movements. K. STERN.

Prostigmine in myasthenia gravis. M. TARLAN (J. nerv. ment. Dis., 1938, **88**, 330—336).—One of the two cases described showed an increasing tolerance to the drug so that a short time before her death a daily dose of 240 mg., given subcutaneously, was required in order to enable her to eat. K. STERN.

Familial occurrence of progressive muscle dystrophy. A. ROTTMANN (Wien. med. Wschr., 1938, **88**, 1193—1195).—Progressive muscle dystrophy developed in 3 sisters (15, 14, and 11 years). A. S.

Case of progressive muscle dystrophy. R. STÄHLI (Schweiz. med. Wschr., 1938, **68**, 1226—1228).—Creatine and creatinine metabolism was normal in a severe case of progressive muscle dystrophy. A. S.

Muscular syncytium in *Lumbricus*. M. BARGETON (Compt. rend. Soc. Biol., 1938, **128**, 1070—1072).—Sections stained by the triple methods of Masson or Curtis show the longitudinal muscle layer in the earthworm to be a syncytium intimately interpenetrated by a connective tissue network. P. C. W.

Properties of tonic contractions produced by electrical stimulation of anterior retractor of byssus of *Mytilus edulis*. I. SINGH (J. Physiol., 1938, **94**, 1—12).—Properties of the a.c. off-contracture are those of the K contraction; characteristics of the tonic part of the d.c. contraction are those of the Na contraction; substances that produce contracture prolong the relaxation of an a.c. contraction in K-sensitive muscles. J. A. C.

Visco-elastic behaviour of caoutchouc and smooth muscle, controlled by metabolism of the foot of the snail. J. A. MASS (Arch. néerland. Physiol., 1938, **23**, 141—218).—The visco-elastic

properties of specially prepared indiarubber agree with those of denervated smooth muscle. Central tonus of the foot of the snail is a " catch tonus " as there is no increased metabolism; contracture is like tetanus in that there is increased metabolism. The resistance and slow extension on loading of the ganglion-free foot of *Helix pomatia* is neither a tetanus nor a slow decrease in a tonic contraction, but is related to static influences of a visco-elastic nature. When the foot is unloaded it does not maintain its length but shortens owing to a delayed elastic activity. The recovery of the foot (like that of indiarubber) depends on the temp. The stretched and completely unloaded muscle reacts to mechanical stimuli by a tonic contraction. The stretched foot containing the ganglion shows after unloading an irregular and not reproducible recovery, which is a physiological process of a dynamic nature. (B.)

H. E. R.

(f) NERVOUS SYSTEM.

Subthreshold potentials in a crustacean nerve fibre. A. L. Hodgkin (Proc. Roy. Soc., 1938, **B**, **126**, 87—121).—In a single fibre subthreshold shocks set up two processes which have different properties. An anodic or weak cathodic stimulus produces a polarisation potential. A nearly threshold stimulus causes an additional wave of negativity with the characteristics of a subliminal action potential; it continues to grow after the shock, is abolished when the nerve is refractory and increased during the supernormal phase. It may spread much further than the polarisation potential. The concept of subliminal action potential agrees with the local circuit theory of nervous transmission. F. B. P.

Myelin degeneration [of nerve] in polarised light. M. V. R. Rao (Indian J. Med. Res., 1938, **26**, 103—106).—The progress of myelin degeneration in experimentally produced Wallerian degeneration was clearly seen when frozen sections of the nerves, cut longitudinally and mounted in glycerin, were observed in polarised light between crossed Nicol prisms. H. B. C.

Establishment of electrotonic potential differences in nerve. A. Strohl and A. Djowino (Compt. rend. Soc. Biol., 1938, **128**, 1088—1091).—P.d. between both electrodes and a point midway between them on a nerve stimulated by make shocks were recorded. The results show that the electrodes have different effects on the conductivity of the nerve and that the state of the nerve at the time of stimulation largely affects the potentials formed. P. C. W.

Factors in the action of concentrated sodium chloride solutions on nerve. M. Ozorio de Almeida, H. Moussatché, and M. V. Dias (Compt. rend. Soc. Biol., 1938, **129**, 422—424).—The muscular contractions produced by placing the nerve of a frog nerve–muscle prep. in hypertonic saline solution are not elicited if the solution is cold (0—10°) or if the frog has previously been dehydrated. P. C. W.

Chronaxie and resistance of isolated nerves under local anæsthetics. I, II. J. Regnier and A. Quevauviller (J. Physiol. Path. gén., 1938, **36**, 629—640, 641—652).—A review and mathematical considerations. C. A. A.

Cutaneous histamine reaction as a test of peripheral nerve function. L. H. Loeser (J. Amer. med. Assoc., 1938, **110**, 2136—2138).—Clinical conditions, in which the cutaneous histamine reaction was of val. as a test of peripheral nerve function, are discussed. R. L. N.

Auto-anastomoses in peripheral cerebrospinal nerves. C. Hirschlaff (Anat. Anz., 1938, **87**, 161—176).—Such nerve anastomoses are loops around a blood vessel which has undergone enlargement from being originally a small vas nervorum. J. H. G.

Cause of latent period in stimulation of electric organ. D. Auger and A. Fessard (Compt. rend. Soc. Biol., 1938, **128**, 1067—1070).—The electric organ of *Torpedo marmorata* when stimulated through its nerve or directly has an unexplained latent period of 5×10^{-3} sec. If the direct stimulus is in a direction at right angles to that of the individual elements of the organ the latent period is less than 1×10^{-3} sec. The terminal branches of the nerve supply lie in this plane and must have a slower rate of conduction than the main trunk. P. C. W.

Anastomoses of nerve cells in the brain of *Scyllium canicula*. P. Glees (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 426—430).—By the Bielschowsky method anastomoses between the ganglion cells of the trigeminus nucleus in the mesencephalon were demonstrated. The fibrillar structure is peculiarly clear and fibrillæ can be traced continuously from one cell to another. A. D. H.

Glycolysis of nervous tissue. F. P. Mazza and C. Lenti (Boll. Soc. ital. Biol. sperim., 1938, **13**, 656—659).—Pulped brain (rabbit) (freed from the phosphorylation–glycolysis system by extraction at 0° with Ringer's solution) in 0·03M-$NaHCO_3$–H_2CO_3 buffer at p_H 7·4 and 37° and in an atm. of N_2 containing 5% of CO_2 produces lactic acid from glucose, mannose, and, to a much smaller extent, fructose; production from *dl*-glyceraldehyde is 30—40% of that from glucose whilst glycogen, galactose, and dihydroxyacetone are unattacked. Only traces of lactic acid are yielded by fructofuranose diphosphate or 6-glucopyranose phosphate, the production being unchanged by addition of phloridzin or pyridine di- or triphosphonucleotide (alone or with yellow enzyme or adenylic acid). Lactic acid formation from glucose or glycogen is not affected by codehydrogenase, yellow enzyme, adenylic acid, reduced glutathione, muscle extracts, PO_4''', or $Mg^{..}$. Dismutation between pyruvic and α-glycerophosphoric acids does not occur. Glycolysis is totally inhibited by 0·024M-F' or 0·005M-iodoacetate; malonate has an inhibitory action which is abolished by addition of an equiv. amount of fumarate. Methylglyoxal forms lactic acid 3—4 times as rapidly as does glucose. The enzyme systems involved are discussed. F. O. H.

Primary reticulum cell sarcoma of the brain. Relationship of microglia cells to histiocytes. C. L. Yuile (Arch. Path., 1938, **26**, 1036—1044).—A case of primary tumour of the brain of mesenchymal

origin is described which was morphologically a reticulum cell sarcoma. In sections stained with Ag_2CO_3 the tumour cells displayed the histological characteristics of transitional forms of microglia cells. This case presents further evidence of the histiocytic nature of the microglia. (5 photomicrographs.)
C. J. C. B.

Nissl granules in "fatigued" nerve cells. E. M. Scarborough (J. Physiol., 1938, **94**, 184—185).—Prolonged stimulation of cœliac ganglion (decerebrate cat) produces no change in the appearance of the Nissl granules of its nerve cells.
J. A. C.

Volume of ganglionic cells. T. Pèterfi and O. Maleci (Boll. Soc. ital. Biol. sperim., 1938, **13**, 708—709).—Measurements of cells of the 3rd spinal nerve of frogs by means of a calibrated micro-pipette give vols. mainly within the range of 2—10 × 10^4 cu. μ.
F. O. H.

Artificial changes in the central nervous system due to fixation. F. Tebelis (Z. ges. Neurol. Psychiat., 1938, **162**, 767—774).—The brain of a decapitated man, fixed by injection into the carotid of a mixture of 96 parts of 96% alcohol, 2 parts of $CHCl_3$, and 2 parts of conc. acetic acid, showed foci of perivascular demyelination which were due to the fixation. Fixation of brains in formalin for a long period may cause ppts. which probably consist of cholesterol.
K. Stern.

Changes of the living nerve cell caused by alterations of the p_H. S. Huszak (Z. ges. Neurol. Psychiat., 1938, **162**, 789—793).—Portions of the spinal cord of a rat were treated with solutions of various p_H. Almost normal histological pictures were obtained at p_H 7·3. Changes towards the acid reaction caused "clumping together" of Nissl bodies; alkaline solutions at p_H 7·7 caused vacuolation and Nissl's "severe cell change."
K. Stern.

Rate of adaptation of cutaneous nerve endings in frog. F. Dun and C. B. Finley (J. Physiol., 1938, **94**, 170—176).—The discharges produced in sensory nerve fibres of the frog by stretching the skin differ very little from those produced in the same fibres by touch or pressure; endings which give a brief discharge to moderate and strong pressure give an equally brief discharge when stimulated by stretching the skin. The rate of adaptation to the stimulus expresses some genuine constitutional property of the nerve ending. The duration of discharge may be increased by a reduction of Ca (confirming Talaat) and normally long durations can be reduced by an excess of Ca. The two types of response in the tactile endings form two distinct groups: (1) the rapidly adapting type (total duration 0·1 sec. or less) and (2) the slowly adapting (duration longer than 10 sec.).
J. A. C.

Temperature sensation. IV. Stimulation of cold sensation by radiation. J. D. Hardy and T. W. Oppel (J. clin. Invest., 1938, **17**, 771—778).—Using the radiation technique previously described (*ibid.*, 1937, **16**, 517) the cold end organs in the skin were stimulated in 6 subjects. The cold radiation was from a block of CO_2 snow. Cold end organs per unit area are more numerous than heat endings and are nearer to the skin surface. On the forehead, spatial summation of cold sensation follows the same pattern as for heat sense but is poorer. The threshold of thermal stimulation for a cold end organ is a fall in skin temp. of 0·004° per sec. Cold radiation produces twice the rate of change in skin temp. (calorie for calorie) as does heat radiation. Temp. sensation does not depend on vascular changes in the skin.
C. J. C. B.

Proprioceptive innervation of the tongue. A. Carleton (J. Anat., Lond., 1938, **72**, 502—507).—No muscle spindles were found in the tongue (rabbit, chameleon, anteater). All nerve endings in relation to muscle fibres degenerate after section of the hypoglossal nerve, so that if there are any proprioceptive fibres they must run in this nerve, but no ganglion cells along the course of this nerve were found. In 7 out of 8 individuals there was loss of sense of position of the tongue after cocainisation of the mucous membrane of the tongue and mouth. Possibly the tongue has no proprioceptive innervation.
E. E. H.

Innervation of the human gum. W. Lewinsky and D. Stewart (J. Anat., Lond., 1938, **72**, 531—534).—Using a Cajal technique the gum is shown to be richly innervated. There are two chief types of nerve endings: close coils near the apex of a papilla, some twisted and some branching, and loose coils filling the papilla and giving rise to fine intra-epithelial fibres.
E. E. H.

Early movements of the oppossum with special reference to the walking gait. G. E. Coghill (Proc. Soc. Exp. Biol. Med., 1938, **39**, 31—35).—In the new-born opossum there is a functional motor path as far down the cord as the lower thoracic level and an ascending path from the lumbo-sacral region. The hind legs only become motile on the 7th day.
V. J. W.

Induced increase in muscle tone in a case of flaccid hemiplegia. W. Birkmayer (Wien. klin. Wschr., 1938, **51**, 1191).—A girl of 13 suffered from a flaccid hemiplegia of the right arm and leg, following an accident. Dorsal flexion of the left foot and extension of the left knee increased muscle tone in the paralysed right limbs.
A. S.

Influence of motor, sensory, psychic, and vegetative mechanisms on spastic torticollis. M. Monnier (Schweiz. Arch. Neurol. Psychiat., 1938, **40**, 345—361).—It was shown in 6 patients that some factors aggravate and others improve torticollis. Alleviating factors are: recumbent positions, rhythmic movements of the arms, gentle friction of the occipital area and neck, local and general warmth, perception of green and blue colours, calm music or complete silence, pleasant psychological experiences, sleep, digestion, and menstruation. Aggravating factors are: upright posture, marching, sensation of cold, galvanic stimulation, perception of red colour, dissonant music, noise, disagreeable psychological experiences.
K. Stern.

Double cerebrospinal innervation of striated muscle. G. Häggqvist (Z. mikr.-Anat. Forsch., 1938, **43**, 491—508).—From a statistical survey of

nerve fibre diameter and from Bielschowsky stained sections of muscles (nerve and muscle being removed together and cut serially as a complete unit) in the macaque it is concluded that there are two varieties of skeletal motor nerves: thick fibres (8—11 μ.) responsible for "plastic" tone and possessing "plaque-like" endings on coarse muscle fibres (*e.g.*, the whole abducens nerve in the macaque); and thin nerve fibres (3—4 μ.) possessing "grape-like" endings on fine muscle fibres responsible for "contractile" tone (*e.g.*, the whole N. facialis and N. to external sphincter ani in the macaque). It is held that most motor nerves possess these two kinds in different proportions. J. H. G.

Connexions of the posterior commissure. M. F. L. Keene (J. Anat., Lond., 1938, **72**, 488—501).—The connexions of the posterior commissure are described in man and in certain vertebrates, together with the dates of myelination of its fibres (man), and the degeneration following its experimental section (monkey). A survey of all the data suggests that the commissure is associated with posture and the integration of body movement rather than with movements of the eyes and visual influences as is usually stated. E. E. H.

Use of hypertonic saline solution in production of epileptiform attacks by rapid cooling of the spinal cord. M. Ozorio de Almeida, H. Moussatché, and M. V. Dias (Compt. rend. Soc. Biol., 1938, **129**, 424—426).—By the use of 20% NaCl solution the spinal cord of the frog can be rapidly cooled to −6°. The epileptiform attacks thus produced have a shorter latent period, and are more pronounced and of longer duration than those produced by cooling in normal saline to 0°. P. C. W.

Action of nicotine on spinal cord. A. Schweitzer and S. Wright (J. Physiol., 1938, **94**, 136—147).—Nicotine inhibits spinal reflexes (cat) by a direct action on the spinal cord. J. A. C.

Tonic neck reflex in the human infant. Morphogenetic and clinical significance. A. Gesell (J. Pediat., 1938, **13**, 455—464).—The tonic neck reflex is the normal characteristic of the human infant during the first 12 weeks of waking life and at 20 weeks is normally supplanted by symmetrical head and arm postures. Marked persistence beyond the first ½ year is indicative of retarded, arrested, or defective development, and in association with basal ganglia lesions is a sign that the child will not learn to walk. C. J. C. B.

Connexions of the phrenic ganglion. Tudor Jones (Anat. Anz., 1938, **87**, 135—146).—From dissection and histological study of a post-mortem adult human and of fœtuses the main sympathetic ganglion associated with the phrenic nerve is found to lie within the diaphragm; its post-ganglionic fibres pass into the subphrenic, pericardial, and atrial branches of the phrenic nerve. They run to the sino-atrial region of the heart in the embryo. Methylene-blue vital staining of guinea-pigs showed that these nerves ascend to derivatives of the sinus venosus. Negative results in an electrocardiogram made during an operation of phrenic avulsion is evidence that the preganglionic fibres do not descend in the phrenic nerve. J. H. G.

Oscillographic demonstration of synergism of cortical masticatory centres. G. Moruzzi (Compt. rend. Soc. Biol., 1938, **129**, 32—37).—Oscillograph records were taken from the masticatory area in the cerebral cortex of each hemisphere in the unanæsthetised rabbit following faradic stimulation of one. Subliminal stimuli had little effect. With just supraliminal stimulation there were no motor effects but there was an after-discharge of epileptic form on the stimulated side, and augmentation of the normal spontaneous waves on the contralateral side. With stronger stimuli the muscles contracted and the epileptic form of after-discharge was present on both sides; epileptiform waves may appear before the end of stimulation, suggesting that Jacksonian epilepsy is an exaggerated facilitating after-discharge. Cocainisation of the cortex abolished all after-discharge and motor effects, and masticatory movements obtained by buccal stimulation caused no electric cortical changes. Section of the corpus callosum abolished all contralateral effects. P. C. W.

Origin of the hypoglossal nerve and its descending ramus. H. Kanatsu (Arb. med. Univ. Okayama, 1938, **6**, 103—108).—By studying chromatolysis following various nerve sections it was found (rabbit, dog) that the hypoglossal nerve originates on the homolateral side in the hypoglossal nucleus and contains a few fibres from the cells of the upper continuation of the spinal anterior horn. The fibres of the ramus descendens originate in the lower third of the hypoglossal nucleus and (in dogs) in the continuation of the anterior horn. A. S.

Localisation of nerve centres of the extrinsic ocular muscles in the oculomotor nucleus. S. Abd-el-Malek (J. Anat., Lond., 1938, **72**, 518—523).—A description is given of the parts of the nucleus (cat) with evidence as to muscular representation deduced from experiments of enucleation of the eyeball and avulsion of individual ocular muscles. Decussation of nerve fibres is confirmed. E. H. H.

Ocular rotation. Influence of anæsthetics and operations on various parts of the central nervous system. D. A. Collins and E. A. Spiegel (Proc. Soc. Exp. Biol. Med., 1938, **39**, 100—102).—Barbiturate anæsthesia in cats is accompanied by a greater degree of rotation of the eyeball than can be elicited by surgical interference with or electrical stimulation of the brain. V. J. W.

Nystagmus. A. M. Di Giorgio and G. Castelli-Borgiotti (Arch. Fisiol., 1938, **38**, 117—185).—The relation, existing in adults, between the plane of rotation and that of nystagmic movements is not present in new-born babies. S. O.

Sensory fibres in the ocular nerves. S. Abd-el-Malek (J. Anat., Lond., 1938, **72**, 524—530).—A reflex rise of blood pressure follows stimulation of afferent nerve fibres. Using this method it was shown (dogs) that the 3rd, 4th, and 6th cranial nerves are sensorimotor. E. E. H.

The nucleus ruber magnocellularis and its efferent pathway in man. K. STERN (Brain, 1938, **61**, 284—289).—Near the caudal tip of the human red nucleus there are a few large motor cells which because of morphological similarities were regarded as a residuum of the large-celled red nucleus of the vertebrates, and hence as the origin of the rubrospinal tract. In a case of spinal transverse lesion at a high thoracic level these cells showed retrograde degeneration on both sides; in a case of softening in the dorsolateral area of the medulla oblongata they showed retrograde degeneration on the side opposite to that of the lesion. K. STERN.

Electrical activity of cerebellum and its functional significance. R. S. DOW (J. Physiol., 1938, **94**, 67—86).—A more complete account of work previously reported (A., 1938, III, 889). J. A. C.

Cerebellar lesions following hyperglycæmia in a depancreatised dog. L. HÉDON, A. LOUBATIÈRES, and J. BRONSSY (Compt. rend. Soc. Biol., 1938, **128**, 1009—1011).—A depancreatised dog maintained on protamine–Zn–insulin suffered from a hypoglycæmic crisis from which it did not recover in spite of glucose administration. It appeared blind and was ataxic. It was killed 3 days later and the brain was examined histologically. No lesions were found in the cerebrum but cerebellar lesions were widespread. P. C. W.

Efferent fibres of the thalamus of *Macacus rhesus*. R. L. CROUCH and J. K. THOMPSON (J. comp. Neurol., 1938, **69**, 255—271).—Circumscribed lesions in the thalamic nuclei of *Macacus* were produced by means of Horsley and Clark's stereotactic instrument. After 2 weeks the Wallerian degeneration of thalamo-cortical fibres was studied in Marchi preps. Contrary to previous findings by the method of retrograde degeneration, a connexion was found between the lateral nucleus and the post-central gyrus; the ventral nucleus was found to project on to an area larger than that adjoining the central sulcus. K. STERN.

Thalamus of the cat after hemidecortication. W. H. WALLER (J. Anat., Lond., 1938, **72**, 475—487).—Details are given of the distribution of degeneration in the various thalamic and subthalamic nuclei following nearly complete removal of the cerebral cortex of one side. A single thalamic cell may have axon branches going to different parts of the brain, and the extent of cell reaction following a cortical lesion may be used as a measure of the relative importance of the ascending cortical connexion in the activity of the cell. On this basis the nuclei of the dorsal thalamus are classified into 4 groups. E. E. H.

Thalamus of the chimpanzee. III. Metathalamus, normal structure, and cortical connexions. A. E. WALKER and J. F. FULTON (Brain, 1938, **61**, 250—268).—The projection from the lateral and geniculate bodies to the cortex was studied in 2 animals by means of cortical ablation and consequent retrograde degeneration. The medial half of the lateral geniculate body projects to the upper lip, the lateral half to the lower lip, of the calcarine fissure. The posterior parts of the lateral geniculate body project to the posterior part of the striate cortex. A small localised lesion of the superior temporal convolution produces a widespread retrograde cell degeneration in the medial geniculate body. K. STERN.

Experiments on cerebral diabetes. F. STRIECK (Z. ges. exp. Med., 1938, **104**, 232—242).—The grey matter around the third ventricle of a dog was destroyed by $AgNO_3$. The animal showed signs of severe pancreatic diabetes. The pituitary gland and the pancreas were, microscopically, normal. A. S.

Cerebrospinal fluid pressure on simultaneous ventricular and lumbar punctures. G. E. SMYTH and W. R. HENDERSON (J. Neurol. Psychiat., 1938, **1**, 226—237).—In 6 patients without gross intracranial disease the lumbar and ventricular pressures were identical when measured separately, simultaneously, on bilateral jugular compression, and after withdrawal of lumbar fluid. The same was observed in 24 cases of intracranial tumours. 8 cases of intracranial tumour, however, showed an initial difference between the ventricular and lumbar pressure, the former being 20—100 mm. higher. These were cases of high operative mortality and with post-mortem evidence of herniation of the temporal lobe through the incisura tentorii. Tonsillar herniation through the foramen magnum did not produce any difference of pressures. K. STERN.

Passage into the brain of urea injected into the blood. M. RISER, P. VALDIGUIÉ, and J. GUIRAUD (J. Physiol. Path. gén., 1938, **36**, 694—705).—Dogs under chloralose anæsthesia received 2—3 g. of urea per kg. intravenously. The concns. rose rapidly in the blood, brain, and muscles, reaching a max. in 15 min., but the concn. in the cerebrospinal fluid only rose to a max. in 2—2½ hr. Afterwards it followed the other concns. closely. This lag occurred also if the ureters were tied and the variations in the blood, brain, and muscles were similar. It is not a special property of the membranes but is due to the small interchange surface. Derrien's law is applicable only after equilibrium has been attained. C. A. A.

Dyes as test for the blood–cerebrospinal fluid barrier. T. BROMAN (Skand. Arch. Physiol., 1938, **80**, 59—79).—Bromophenol-blue or trypan-blue was intravenously, intra-arterially, or subcutaneously injected into guinea-pigs which received previously injections into the carotid artery of Forssman serum, starch, C particles, or fat emulsions. The central nervous system was stained by the acid dyes; it did not take up the dyes in control animals. A. S.

Function of ascorbic acid in human cerebrospinal fluid. C. G. HOLMBERG (Skand. Arch. Physiol., 1938, **80**, 193—201).—The ascorbic acid content of cerebrospinal fluid was determined in 60 neurological patients, using a modification of Martini and Bonsignore's method. The ascorbic acid deficit was determined by administering orally 300 mg. of ascorbic acid per day until the reducing power of the urine increased (Harris and Ray). There are no sp. changes of ascorbic acid content

of the cerebrospinal fluid in disease. "Age" variations disappear if the patients are saturated with ascorbic acid. A. S.

Estimation of tryptophan in the cerebrospinal fluid (c.s.f.). M. Kraus and K. Mezey (Schweiz. Archiv. Psychiat. Neurol., 1938, **42**, 77—87).—A simple method of estimating tryptophan in the c.s.f. is described. Tryptophan was found in the c.s.f. in cases of syphilitic diseases of the central nervous system. It was found only in those cases in which other signs of syphilis were present in the c.s.f. K. Stern.

Occurrence of a lipase hydrolysing tributyrin in cerebrospinal fluid. H. Sussner (Klin. Woch., 1936, **15**, 1490; Chem. Zentr., 1936, ii, 3919).—Examination of 113 healthy and pathological fluids showed the presence of the lipase. No connexion between the surface tension and protein content was found. A. H. C.

Catatonic action of cerebrospinal fluid in dementia præcox. A. Le Grand and P. Année (Compt. rend. Soc. Biol., 1938, **128**, 1139—1141).—Cerebrospinal fluid from patients with dementia præcox when conc. and injected into rats causes them within ½ hr. to become apathetic and sleepy; movement causes fixation in a catatonic attitude. The causal agent is thermolabile and is not present in normal fluids. P. C. W.

Diagnosis of schizophrenia by Lehmann–Facius cerebro-lipoid reaction. A. Jacobi (Klin. Woch., 1938, **17**, 1583—1585).—The reaction is valueless. E. M. J.

Weltmann's coagulation test in psychiatry and neurology. F. K. Redlich (Z. ges. Neurol. Psychiat., 1938, **162**, 802—814).—A solution of $Ca(ClO_3)_2$ in a series of decreasing concns. is brought in contact with the patient's serum. The series of tubes in which coagulation occurs is normally const. Investigations on 530 patients showed that the series is "short" in diseases connected with necrosis or inflammation, such as infarction, malignant tumours, encephalitis, and meningitis; it is "long" during therapeutic malaria, in pernicious anæmia, and in Wilson's disease. The test did not prove to be of val. in the diagnosis of psychoses. K. Stern.

Simple test for the differential diagnosis of meningitis and encephalitis. P. Ujsághy (Klin. Woch., 1938, **17**, 1656—1657).—0·1 c.c. of cerebrospinal fluid is added to a mixture of 2 c.c. of conc. H_2SO_4 and 0·1 c.c. of 10% alcoholic α-naphthol solution. In normal cases and in meningismus a bluish colour develops; in meningitis the colour remains greenish-yellow; in encephalitis it is more intense and becomes finally wine-red. The reaction depends on the varying proportions of lactic acid and sugar in the fluid. E. M. J.

Examination of spinal fluid for the diagnosis of general paresis. H. Hecht (J. lab. clin. Med., 1938, **23**, 1301—1304).—Colloidal Au curves show a more marked reaction if examined after 48 hr. instead of 24 hr. C. J. C. B.

Physiology of the Nervous System. J. F. Fulton (Oxford University Press, 1938, 675 pp., 94 figs.).—This volume forms a worthy successor to the author's earlier work "Muscular Contraction and Reflex Control of Movement," which it largely replaces or supplements and brings up to date. A full and carefully documented account is given of practically all aspects of central nervous activity, special attention being paid to publications since 1925. The bibliography (1361 titles) cites most of the important contributions to the experimental anatomy and physiology of the nervous system that have appeared since this date. The 26 chapters into which this book is divided open with a short historical survey of the subject, follow with a detailed discussion of the relevant papers, and close with a judicial summary. Considerable attention is paid to clinical syndromes and to the borderland between clinical neurology and experimental physiology. About one third of the text is devoted to consideration of structure. Particular attention is paid to evidence derived from observations on primates and man. Professor Fulton has rendered an invaluable service to his colleagues in the laboratory and the clinic by providing such a reliable and lucid review of the present state of our knowledge of the central nervous system. S. W.

The neurone theory in the light of recent work. J. Nageotte (Anat. Anz., 1938, **87**, 49—53).—An exposition of the evidence for the neurone theory, dealing particularly with errors of interpretation of histological appearances. J. H. G.

Transmission of the nervous impulse in the central nervous system. D. Nachmansohn (Presse méd., 1938, **46**, 942—943).—A review. A. J. B.

Cortical facilitation and chemical mediation. G. Moruzzi (Compt. rend. Soc. Biol., 1938, **129**, 27—32).—In the unanæsthetised rabbit stimulation of the motor ear area lowers the threshold for the neighbouring masticatory area; stimulation of the latter area lowers the threshold of the contralateral similar area (secondary facilitation). After stimulation of a motor area its threshold is lowered (primary facilitation). Secondary facilitation is abolished by cocainisation or cutting the intervening cortex; primary facilitation withstands cocaine, proving it to be partly subcortical in origin. Similar lowering of cortical threshold can be produced by injection of acetylcholine into the carotid artery after denervation of the carotid sinus. Facilitation is attributed to liberation of acetylcholine in the cortical synapses. P. C. W.

Ontogenetic development and phylogenetic significance of the cortex telencephali in the chick. H. Kulhenbeck (J. comp. Neurol., 1938, **69**, 273—295).—The telencephalon of the chicken shows typical avian structure between the 8th and 10th day of incubation. This is preceded by periods in which features common to both reptile and bird are to be seen. K. Stern.

The tonic foot response to stimulation of the sole. K. Goldstein (Brain, 1938, **61**, 269—283).—The "tonic foot response" is a slow tonic plantar-flexion and adduction movement of the toes, with hollowing of the sole and some wrinkling of the skin. It is obtained by touch or pressure (not stroking) of

the sole of the ball of the foot. Case histories with anatomical findings show that it is a sign of involvement of the anterior, and especially the medial part of the contralateral frontal lobe. It appears earlier than the Babinski sign or other pyramidal tract signs. K. Stern.

Physiological properties of the cerebral cortex of *Mansonia altissima*, A. Chev. A. Clerc and R. Paris (Compt. rend. Soc. Biol., 1938, **128**, 1006—1008).—An extract of the cortex (0·1—1 mg. per kg. body-wt.) is toxic to guinea-pigs and dogs. It has a hypertensive action on the dog which is unaffected by the previous injection of 883 F. The force of the heart beat is increased and the rate diminished. The latter effect is annulled by atropine or vagus section. A second injection is more toxic than the first, causing tachycardia, hypertension of 220 mm. Hg, and finally complete stoppage of the heart in diastole. The action is chiefly on the auricles and there may be complete auriculo-ventricular dissociation. The renal vessels are constricted but the flow of urine is unaltered; the spleen vessels are dilated. Respiration is increased in amplitude and diminished in frequency. P. C. W.

Acquired reflexes in dogs after bilateral removal of the occipital cortex. J. Ten Cate (Arch. néerland. Physiol., 1938, **23**, 219—253).—After bilateral removal of the area striata, animals seemed blind and disoriented in space. Orientation was recovered by the use of smell, taste, and hearing. The light reflex was retained. No acquired reflexes were developed to form or to movement but they could be established to great differences in illumination. Removal of large parts of the adjoining cortex did not alter the power of forming acquired reflexes to differences in intensity. The acquired reflexes to differences in brightness are attributed to subcortical connexions. (B.) H. E. R.

Depth and nerve cell content of the supragranular cortex in normal and mentally defective persons. M. Fog (J. Neurol. Psychiat., 1938, **1**, 198—210).—In 30 brains from normal individuals and 30 from mentally defective persons, measurements of the combined layers II and III and cell counts were carried out in corresponding cortical areas. There was no difference as regards the depth of layers or average density of ganglion cells. In the visuopsychic area the amount of ganglion cells was even greater in defectives than in normal individuals. The distribution of ganglion cells was, however, more irregular in defectives than in normal brains. K. Stern.

Process of retroactive facilitation in tactile stimulation. H. Piéron and J. Segal (Compt. rend. Soc. Biol., 1938, **129**, 438—439).—The threshold val. and reaction time are both diminished when two electric stimuli of duration equal to the chronaxie are applied to a cutaneous sensory nerve at an interval of 30—80 msec. The two shocks are felt separately. It is suggested that the response to a threshold stimulus only occurs when the indirect volleys through many synapses in the cortex are added to the direct stimulus. With a double stimulus the second direct impulse arrives at the centre before the indirect ones, causing a response with facilitation sufficient to cause the indirect impulses that arrive later to effect a response. P. C. W.

Conditioned reflexes. G. Martino and A. Alibrandi (Arch. Fisiol., 1938, **38**, 200—219).—Various factors affecting the conditioned closure of the eyelids to optical stimuli are described. S. O.

Hunger as a determinant of conditional and unconditional salivary response magnitude. G. Finch (Amer. J. Physiol., 1938, **123**, 379—382).—Six dogs with a satisfactory parotid fistula and relatively stable, active conditioned response were used. The unconditioned stimulus was the presentation of 2 dog biscuits. The conditional stimulus was sound of doorbell, electric sound hammer one beat per sec., and sound of air bubbling through water. Food deprivation affects both the conditional and unconditional salivary responses similarly; vol. of salivary secretion increases from min. at 0-hr. deprivation (food satiation) to max. at 72 hr.; at 96 hr. the vol. of secretion falls to near the 24-hr. level. The coincidence of min. secretion with min. hunger and of max. secretion with near max. hunger indicates that the strength of the "drive" stimulus is an important determinant of conditioned and unconditioned response magnitude. M. W. G.

Active part played by the inborn afferent path in mechanism of conditioned reflexes. A. Alibrandi (R. C. Atti Acad. Lincei, 1938, [vi], **27**, 479—481).—A conditioned blinking reflex to sound was established in a dog by striking a note 2 sec. before faradic stimulation of the reflexogenous skin area of the face. Intradermic injection of 10% stovaine into this area temporarily abolished both the unconditioned and the conditioned reflex. It is concluded that in conditioned reflexes there is not a substitution of the new afferent path for the inborn one: the conditioned stimulus acts simply by raising the reflex excitability of the centre to afferent impulses from the inborn path. G. S.

Action of liver extract in ascending paralysis. K. Debler (Dtsch. Z. Verdaukr. Stoffw., 1938, **1**, 56—59).—A case of acute anterior poliomyelitis (in a girl, age 8) with spinal bulbar involvement and Hunter's glossitis without anæmia, improved rapidly on injections of liver extracts. E. M. J.

Ætiology of chorea minor. G. Edgren (Acta med. scand., 1938, **96**, 43—55).—A review and discussion of possible hereditary factors, illustrated by cases involving 3 generations. The sedimentation rate of the blood is increased in some cases. C. A. A.

Pathogenic and experimental views of cerebral emboli. M. Villaret and R. Cachera (Rev. Méd., 1938, **55**, 420—430).—A review of previous experimental work on solid and gaseous cerebral emboli. H. B. C.

Crossed hypertrophy in syringomyelia. U. Maerten (Dtsch. Z. Nervenheilk., 1938, **147**, 196—202).—A case of syringomyelia is described which showed (apart from typical symptoms) a true hypertrophy (muscles and bones) of the left arm and right leg. K. Stern.

Neurological complications following serum treatment of tetanus. H. SPROCKHOFF and I. ANSORGE (Dtsch. Z. Nervenheilk., 1938, **147**, 163—176).—5 patients developed symptoms of neuritis some days after prophylactic serum treatment against tetanus. In 4 of these cases the brachial plexus was affected; in one case there was a peroneal paresis combined with pyramidal signs. In some cases part of the symptoms remained stationary. In 2 cases there was a positive Citochol and Meinecke test in the cerebrospinal fluid without signs of luetic infection.
K. STERN.

Experimental allergic reactions of the brain. R. GRISONI (Mem. R. Accad. Ital., 1938, **9**, 77—115).—In rabbits sensitised with horse serum or with bacterial suspensions (*B. Danysz*), the injection of the antigen (or of hypertonic NaCl solution) into the brain gives rise to necrotic foci with a marked neuroglial reaction around them, these effects being smaller in non-sensitised animals. The intensity of the reaction is proportional to the concn. of antibodies in the blood. If after injecting various substances (saline, hypertonic NaCl solution, serum) in one region of the brain, the injection is repeated into another, the second injection produces a different and more intensive reaction with bleeding around the necrotic foci. After intravenous injection of brain suspensions, a second injection of the suspension into the carotid artery (some days later) produces hæmorrhagic foci mainly in the basal ganglia. A modification of Rio Hortega's Ag_2CO_3 method for staining neuroglia is given.
S. O.

Nervous system in acrodynia. A. J. LUBIN and H. K. FABER (J. Pediat., 1938, **13**, 515—526).—No pathological changes were found in serial sections through the diencephalic nuclei but degenerative changes were present in the anterior horn cells of the lumbo-sacral region and in the intermedio-lateral cell column of the spinal cord.
C. J. C. B.

Technique and application of electro-encephalography. W. G. WALTER (J. Neurol. Psychiat., 1938, **1**, 359—385).—Crit. review with comprehensive bibliography.
K. STERN.

Interpretation of the electrocorticogram. J. G. DUSSER DE BARENNE and W. S. MCCULLOCH (Z. ges. Neurol. Psychiat., 1938, **162**, 815—824).—The "electrocorticogram" was recorded in the *Macacus* from a normal area, and from the same area after destruction of the superficial 3 layers by thermocoagulation. Histological controls were carried out. There was no difference between the 2 "electrocorticograms." An analysis of curves obtained by similar experiments combined with strychninisation is given.
K. STERN.

The electro-encephalogram in myxœdema. I. BERTRAND, J. DELAY, and J. GUILLAIN (Compt. rend. Soc. Biol., 1938, **129**, 395—398).—7 myxœdematous patients showed diminution in amplitude and frequency of the electro-encephalographic waves; large amplitude waves of low frequency (3—4 per sec.) were present. The α-waves were absent. Light stimuli had no effect on the waves. The wave picture from frontal, parietal, and occipital derivations was the same. The most abnormal results were obtained in cases of congenital myxœdema with mental deficiency. There was some correlation between lowering of the frequency of the large amplitude waves and lowering of the basal metabolic rate.
P. C. W.

Electro-encephalograms of epileptics. P. PAGNIEZ, W. LEBERSON, and A. PLICHET (Compt. rend. Soc. Biol., 1938, **128**, 1084—1088).
P. C. W.

The electro-encephalogram in convulsions induced by cardiazol. L. C. COOK and W. G. WALTER (J. Neurol. Psychiat., 1938, **1**, 180—186).—14 schizophrenic patients treated with cardiazol were studied. When the intravenous injection of cardiazol produced a convulsion the diffuse discharge was interrupted by a focal outburst coincident with the tonic phase. The focus was always in the region of the superior frontal gyrus. After the fit the electro-encephalogram soon resumed its normal character. In cases in which the injection failed to produce a fit an abnormal discharge was found in all areas of the cortex. This lasted for some hr. and corresponded with a period of mental confusion.
K. STERN.

Effect of insulin hypoglycæmia on electric activity of cerebral cortex. G. MORUZZI (Compt. rend. Soc. Biol., 1938, **128**, 1181—1184).—Rabbits with the cortex exposed under ether or local anæsthesia and allowed to recover were injected with convulsant doses of insulin. When the blood-sugar falls to 60—70 mg.-% the small irregular waves of the normal discharge give way to slow (2—3 per sec.) regular waves of large amplitude (500—1000 μv.). When the blood-sugar is 35—50 mg.-% all cortical electrical activity disappears; this precedes and is independent of circulatory disturbances. The response of the auditory cortex to sounds is inhibited in the cat. All the changes are immediately abolished by injection of glucose but not of Na lactate or pyruvate.
P. C. W.

Cerebral disturbances as results of insulin shock treatment. C. PALISA (Arch. Psychiat. Nervenkr., 1938, **108**, 633—659).—In a case of schizophrenia the patient showed focal cortical symptoms such as hemiplegia, hemianæsthesia, aphasia, and apraxia, after awaking from the insulin coma. The symptoms lasted from a few min. up to 12 hr. Hemiplegia and hemianæsthesia affected the right or left side without particular predilection.
K. STERN.

Amnesic syndrome after insulin–cardiazol treatment. P. PLATTNER (Z. ges. Neurol. Psychiat., 1938, **162**, 728—740).—Among 7 schizophrenic patients treated with insulin and cardiazol 3 developed slight impairment of intelligence after the treatment and 4 developed a severe retrograde amnesia. 5 other cases treated with insulin only did not show any of these after-effects.
K. STERN.

Schizophrenia and recoveries after insulin treatment. M. L. PRESS (Schweiz. Arch. Psychiat. Neurol., 1938, **42**, 165—186).—32 female cases are described. 10 chronic and 3 acute cases were not influenced by the treatment. 9 cases showed partial recovery; apart from 2 cases they all relapsed after weeks or months. 10 cases showed recovery with

social adaptation; 8 of these 10 cases were treated during their first psychotic crisis. K. STERN.

Blood-sugar and cerebrospinal fluid-sugar during insulin shock treatment of schizophrenia. V. SCHRETZENMAYR (Arch. Psychiat. Nervenkr., 1938, **108**, 680—693).—3 cases of schizophrenia already under insulin treatment for some time showed high readings of blood-sugar and cerebrospinal fluid-sugar before breakfast and while not under treatment. After insulin coma the blood-sugar returned more quickly than the fluid-sugar to the normal. K. STERN.

Changes in blood-lipins during insulin treatment of schizophrenia. L. O. RANDALL, D. E. CAMERON, and J. M. LOONEY (Amer. J. med. Sci., 1938, **195**, 802—809).—5 schizophrenic patients who showed a good remission during insulin treatment developed a significant rise in whole blood-phospholipin, total cholesterol, and total lipin. In 9 of 11 patients who failed to respond to treatment a transitory mild lipæmia occurred. Insulin did not significantly affect the postabsorptive level of the blood-lipins. R. L. N.

Hippuric acid synthesis in schizophrenia. R. STRÖM-OLSEN, G. D. GREVILLE, and R. W. LENNON (Lancet, 1938, **235**, 995—996).—Contrary to the recent claim of Quastel and Wales (A., 1938, III, 892) no impairment of hippuric acid excretion occurred following benzoate administration in catatonic schizophrenic patients. C. A. K.

Actions of camphor–tetrazole and metrazol in schizophrenic pyschoses. D. E. JACKSON and H. L. JACKSON (J. lab. clin. Med., 1938, **23**, 1240—1248).—The pharmocological action of camphor–tetrazole is discussed and compared with that of metrazol, with particular reference to the treatment of schizophrenia. C. J. C. B.

Traube–Hering blood pressure waves in man [schizophrenia]. B. STOKVIS (Acta brev. neerl. Physiol., 1938, **8**, 74—76).—Traube–Hering variations of blood pressure were recorded by means of a tensograph in schizophrenic patients during cardiazol shock treatment. A. S.

Cerebrospinal fluid (c.s.f.) during convulsions due to cardiazol. B. NIKETIC and Z. SUSIC (Arch. Psychiat. Nervenkr., 1938, **108**, 562—571).—In 15 patients treated with cardiazol lumbar puncture was performed during the convulsion. The lumbar c.s.f. pressure increases during the initial "myoclonic" phase, reaches its peak of over 100 cm. of water during the tonic phase, and decreases again. The c.s.f. is chemically normal. K. STERN.

Use of histamine phosphate and peptone solution in the treatment of neuroses and psychoses. W. MARSHALL and J. S. TARWATER (J. nerv. ment. Dis., 1938, **88**, 36—41).—35 patients with various forms of schizophrenia and manic-depressive psychoses were treated with increasing doses of histamine phosphate. Improvement was observed in 51%. K. STERN.

Glycolysis and glycogenolysis in brain and blood of normal and psychotic persons. H. MARUYAMA (Fukuoka Acta Med., 1938, **31**, 145—147). —Glycolysis and glycogenolysis in brain tissue from psychotic patients are accelerated. Glycolysis in the blood of such patients is within normal limits. Glycogenolysis in the blood is within normal limits, save in cases of mania, in which it is somewhat accelerated. W. D'A. M.

Double nucleate sympathetic ganglion cells of the puppy. K. HARTIG (Z. Zellforsch., 1938, **28**, 457—484).—Various structures in the binucleate cells are described and their significance is discussed. R. J. O'C.

Significance of multinuclear nerve cells in the sympathetic ganglia. Z. SZANTROCH (Arch. Anat., Strasbourg, 1938, **25**, 307—327).—From an examination of human sympathetic ganglia and observations on tissue culture of such ganglia from the chick it is concluded that the multinucleated cells found are "symplastic elements" formed in association with the syncitial plexus of outgrowing processes from the cells. J. H. G.

Rôle of the sympathetic system in the physiopathology of pain. A. SALMON (Presse méd., 1938, **46**, 939—941).—A review. A. J. B.

Liberation of acetylcholine by perfused superior cervical ganglion. F. C. MACINTOSH (J. Physiol., 1938, **94**, 155—169).—The cat's superior cervical ganglion when specially perfused with dil. blood remains in excellent condition, physiologically and histologically. The ganglion does not liberate acetylcholine spontaneously, or on stimulation of either the vagus or postganglionic sympathetic fibres, but it does so promptly on stimulation of the preganglionic nerve. (Cf. A., 1938, III, 724.) J. A. C.

Responses of the superior cervical ganglion to single and repetitive activation. A. ROSENBLUETH and F. A. SIMEONE (Amer. J. Physiol., 1938, **122**, 688—707).—In cats under dial anæsthesia the superior cervical ganglia were isolated by removal of the adjacent cranial nerves, care being taken to preserve intact their circulation. Rubber-shielded Ag–AgCl electrodes were applied to the ganglion for recording purposes; records were also taken from the post-ganglionic fibres. Single shocks, two shocks at variable intervals, and repetitive stimulation at various frequencies were used. The electrical responses were recorded with a cathode-ray oscillograph or a string galvanometer. At least 4 groups of elements were recognised in the ganglion, distinguished by their latency and by the threshold of the preganglionic fibres which activate them. The ganglionic spike potentials are succeeded first by a negative and later by a positive after-potential. The after-potentials sum during repetitive stimulation at adequate frequencies. Repetitive discharges of ganglion cells to single preganglionic volleys may occur during faradic stimulation or during the post-tetanic period. M. W. G.

Action of eserine or prostigmine on the superior cervical ganglion. A. ROSENBLUETH and F. A. SIMEONE (Amer. J. Physiol., 1938, **122**, 708—721).—In cats under dial anæsthesia records were made from the ganglion or from the post-ganglionic fibres (as described in the preceding abstract).

The doses of eserine and prostigmine were respectively 4—8 and 0·3—3 mg. per kg. injected intravenously after atropine. The following effects were studied: responses to single preganglionic volleys; responses to two shocks applied to preganglionic nerve trunks; responses to two shocks applied to one and the other of the two branches of the annulus of Vieussens and responses to repetition stimulation. The drugs diminished the rate of decline of the mediator of the nerve impulses, which supports the chemical theory of transmission. The drugs have also a depressant action on the ganglion cells. M. W. G.

Sensitised pupillary dilator and facial muscles as indicators of sympathetic and parasympathetic substances in blood. M. B. Bender (Proc. Soc. Exp. Biol. Med., 1938, **39**, 62—65).—Section of the cervical sympathetic or of the facial nerve renders the dilator pupillæ or the facial muscles sensitive to adrenaline or acetylcholine respectively. It is thus possible to detect 0·25 μg. of adrenaline acting on a 3·2-kg. cat, or 0·2 μg. of acetylcholine on a 2·4-kg. monkey. V. J. W.

Caffeine and cholinergic nerves. H. Fredericq and Z. M. Bacq (Bull. Acad. Méd. Belg., 1938, **3**, 341—367).—Caffeine (0·5%) increases the inotropic and chronotropic effects of vagal stimulation on the tortoise auricle. In higher concns. (5%) it reduces these effects. These sensitising and desensitising effects are completely reversible. In the cat, caffeine increases the inhibiting action of excitation of vagal fibres. In the dog, the drug increases the vasodilator action of acetylcholine and the action of the n. erigens. Caffeine does not potentiate the response of frog skeletal muscle to max. indirect stimulation and delays relaxation; it has only a slight potentiating action in the cat. In the cat, the drug transforms an acetylcholine contraction of muscle into a contracture, and this latter is succeeded by non-responsiveness to nerve stimulation. H. B. C.

Vagal influence on reflexes of somatic musculature. W. Kaufman (Proc. Soc. Exp. Med. Biol., 1938, **39**, 10—11).—Temporary blocking of the vagus was induced by cold in dogs anæsthetised with morphine and urethane. Stimulation of the posterior tibial nerve caused reflex contractions of the tibialis anticus when the vagus was blocked but not when it recovered. V. J. W.

Experimental production of lipomatosis. K. Kuré, T. Sahara, and S. Okinaka (Klin. Woch., 1938, **17**, 1366—1370).—Unilateral excision of the sympathetic trunk and daily injection of pilocarpine or acetylcholine in dogs leads to lipomatosis of the muscles affected by dystrophy. E. M. J.

Influence of denervation of the hilus of liver and kidney on local abscess formation. U. Kawabata (Arch. klin. Chir., 1938, **192**, 595—603).—In the dog the denervated liver is less susceptible to abscess formation from infection induced by bacterial suspension of *Staphylococcus pyogenes aureus* than the non-denervated liver. Denervation of the kidney has no effect. B. W.

Autonomic control of the retractor penis in the cat. M. J. Oppenheimer (Amer. J. Physiol., 1938, **122**, 745—752).—The retractor penis of the cat has a sympathetic and parasympathetic nerve supply. With the animal under dial, isotonic records were made from the tip of the intact penis. With both types of stimulation, temporal summation obeys a hyperbolic law, similar to that which occurs in other simpler autonomic effectors. Evidence is presented that the sympathetic fibres are adrenergic and the parasympathetic cholinergic. The two mediators act independently on the effector: one does not prevent the action of the other; simultaneous stimulation gives the arithmetic sum of the two opposing influences. M. W. G.

Does resection of the nerves supplying the mandible affect tooth development? L. F. Edwards and P. C. Kitchen (J. dent. Res., 1938, **17**, 115—124).—Resection of the superior cervical ganglion in kittens accelerates the growth of tooth germs on the operated side in all cases. Resection of the inferior alveolar nerve gave inconsistent results. The increase of growth in the first case is attributed to increased vascularity due to vasodilation, whereas in the second case the results may be due to the inferior alveolar nerve containing few if any vasoconstrictor fibres. A. MacG.

(g) SPECIAL SENSES.

Accuracy of single and double observations in the physiology of sensory organs. Y. Renqvist-Reenpää (Skand. Arch. Physiol., 1938, **80**, 348—360).—A crit. survey of the psychological factors influencing the accuracy of observations in sense-physiology. A. S.

Nature of paragenoses. A. Müller (Perf. Essent. Oil Rec., 1938, **29**, 230—231).—An attempt to explain on physicochemical grounds the phenomenon of paragenoses (defined as substances which added to perfumes influence olfactive effects). T. F. W.

Comparative cytological study of the sense organs in insects. F. Hsü (Cellule, 1938, **47**, 1—60).—Types of sense organs are described in several orders. The varieties of receptor cells and their peripheral and central processes are detailed. Olfactory and gustatory functions are ascribed to certain types. Others are probably sensitive to atm. pressure or to water currents, or may serve to regulate wing rhythm during flight. The origin, significance, and relationship to the central nervous system of these organs are unknown. W. F. H.

Tissue implants in the eye of the guinea-pig. I. Implants of epithelial tissue in the anterior chamber. II. Behaviour of connective tissue in implants in the anterior chamber. III. Paired implants of endocrine organs in the anterior chamber. IV. Tissue implants in the posterior chamber. C. Koch, B. Schreiber, and G. Schreiber (Boll. Soc. ital. Biol. sperim., 1938, **13**, 669—670, 670—672, 672—673, 673—674).—I. Corneal, uterine, and seminal epithelia actively proliferate in the anterior chamber whilst other

epithelia, *e.g.*, of the fœtal œsophagus and trachea, show degenerative tendencies.

II. The changes in implanted connective tissue are described. Implanted iris and ciliary processes retain their histological structure for 22 days; if pigmented, they do not lose pigment when implanted in the albino eye.

III. Successful implantations of anterior pituitary–thyroid gland or –testis tissues are described.

IV. Successful implantations with tissue of mammary gland and uterus are described.

F. O. H.

Inducing capacity of the embryonic eye. M. W. Woerdeman (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 336—343).—The material used was mainly embryos of axolotl and also larvæ of *Triton tæniatus*. Extirpated optic vesicles were (1) placed in the blastocoels of young gastrulæ or (2) grafted into the abdominal wall and covered with ectoderm of varying age and origin. Lens formation was induced whether the ectoderm had previously undergone gastrulation and neurulation or not. The whole ectoderm is capable of lens formation. Nasal pits were also often induced. This only occurred with the younger inductors and was probably due to small fragments of brain tissue and not to the optic vesicles. Older implants sometimes induced the formation of ear vesicles and in some cases this was certainly due to the optic cup and not to brain tissue introduced with it. A. D. H.

Behaviour of a rabbit's lens and iris in a perfused culture. A. Bakker (Acta Neerland. Morph., 1937, **1**, 97—114).—By using de Haan's perfusion method the explanted lens, iris, and ciliary body of adult rabbits were cultured. When first placed in the perfusion fluid there is an inexplicable and max. contraction of the sphincter pupillæ; after a day or two, gradual dilatation occurs. The iris and lens retain a normal histological appearance but the ciliary body atrophies. Apart from the rods and cones and the outer nuclear layer, the retina remains well preserved. The chromatophores maintain their vitality for several weeks. The muscle cells of the iris react to drugs after a month's culture so that smooth muscle fibres are independent of a nerve supply for their function. H. L. H. G.

Histogenesis of the lens. J. Nordmann (Arch. Anat., Strasbourg, 1938, **25**, 175—182).—The histogenesis of the lens and its capsule is described for the chick and the rabbit; it is the same in both. The lens capsule is developed entirely from the overlying ectoderm; there are no mesenchymatous elements in it. J. H. G.

Action of some drugs on Ehrlich's line. H. Asakawa (Arb. med. Univ. Okayama, 1938, **6**, 11—30).—3 c.c. of a 10% aq. solution of Na fluorescein per kg. body-wt. was injected into the ear vein of rabbits. A vertical green line is visible in the anterior chamber of the eye within 3—5 min. (Ehrlich's line); this line disappears after a few sec. and the fluid of the anterior chamber is stained homogeneously green. Subcutaneous injection of adrenaline or coramine delay and injections of Ba, atoxyl, sinomenine, urethane, chloral hydrate, veronal, luminal, caffeine, and theobromine accelerate the onset of the phenomenon. A. S.

Chloride content of blood serum and aqueous humour. Its relation to glaucoma and to formation of intra-ocular fluid. T. H. Hodgson (J. Physiol., 1938, **94**, 118—123).—The Cl contents (ultra-micro-Ag iodate method) of the aqueous humour and serum of non-glaucomatous humans average 124·3 and 105·1 millimols. per l. respectively; in cases of primary chronic glaucoma with high intra-ocular tension the vals. are 126·3 and 106·5 respectively. For normal unanæsthetised dogs the vals. are 127·6 and 109·1. There is no Donnan equilibrium for this ion between blood and aqueous humour; the latter is not a dialysate. The concn. of Cl′ in the aqueous humour requires the expenditure of 4·3 g.-cal. of energy per l. J. A. C.

Relation between area and intensity of light and the size of the pupil, with formulas for pupillary reactions. C. A. Elsberg and H. Spotnitz (Bull. neurol. Inst., N.Y., 1938, **7**, 160—164).—Some figures are quoted in support of the thesis that with relatively intense stimuli of const. size, the product of the diameter of the pupil and the cube root of the intensity of the stimulus is a const. With weaker stimuli the 9th root or the 27th root must be used instead of the cube root. R. S. Cr.

Selective effects of different adapting wave lengths on the dark-adapted frog's retina. R. Granit, P. O. Therman, and C. M. Wrede (Skand. Arch. Physiol., 1938, **80**, 142—155).—Dark-adapted excised frog's eyes were exposed to λ of 0·500 μ.; the size of the *B*-wave of the electrical retinal potential was determined before and after exposing the eye for 5 min. to another λ. Adaptation to light of 0·600—0·500 μ. depresses the response to the test light more than adaptation to λ of 0·500—0·400 μ. Recovery after exposure to long λ is linear for the first 4 min., if calc. from the size of the potential after the test light and expressed in terms of concn. of visual purple. Recovery after bleaching with short λ follows complicated curves. The spectral distribution curve of the bleaching effect coincides neither with the rod nor with the cone spectrum of the frog's eye. The selective action of different λλ on the retina can be used for colour differentiation. A. S.

Neural components of light and dark adaptation and their significance for the duration of the foveal dark-adaptation process. C. A. Elsberg and H. Spotnitz (Bull. neurol. Inst., N.Y., 1938, **7**, 148—159).—It is argued that in foveal dark adaptation the process of recovery of the visual centres from the effects of previous exposure of the eye to light is slower than the regeneration of photosensitive pigment in the retina. For details the original must be consulted. R. S. Cr.

Subsequent effect of application of prisms on the evaluation of the apparent optical vertical. A. Zalla (Boll. Soc. ital. Biol. sperim., 1938, **13**, 650—652).—Variations in the apparent optical vertical, due to previous, temporary deviation of direc-

tion of vision by means of prisms (2—5°), are described and discussed. F. O. H.

Improving the blackboard. W. D. Seymour (Nat. Inst. Industr. Psychol., Rep. 7, 1938).—Experiments showed that dark blue chalk (ultramarine) on yellow boards gives greater facility of seeing both to children and adults than white paint on a black surface. T. C. A.

Industrial eye injuries. J. Minton (Industr. Welfare, 1938, **20**, 265—271).—Most of these injuries were due to corneal foreign bodies. In removing steel from the eye care must be taken to remove any rust. Corneal abrasions are the next common cause of injury. Chemical injuries are treated by thorough irrigation with a neutralising solution or normal saline, and lime burns are treated by washing out with 10—15% glucose. T. B.

Action of the larynx. J. Pressman (Proc. Roy. Soc. Med., 1938, **31**, 1179—1182).—The cinematograph shows that the trained vocal cords undergo more than 16 cycles of abduction and adduction per sec. with violent contacts. The false vocal cords protect the larynx from the invasion of food and when the true cords are destroyed by disease they assume the function of phonation. Normally phonation is accomplished by vibration of the true cords, brought together in the mid-line under tension, by a blast of air from below; movement is practically confined to the anterior $\frac{2}{3}$ of the cords. Tone level is changed (1) by increased tension in the cords, (2) by functional shortening or "damping" of the cords one against the other, and (3) by narrowing the orifice through which air escapes, automatically resulting from (2). Separately or in combination these phenomena result in increased pitch. W. J. G.

Paralysis of the vocal cords: review of 36 cases. J. H. Liu and Y. H. Hsü (Chinese Med. J., 1938, **54**, 315—330).—The commonest causes of recurrent laryngeal nerve paralysis are cardiac enlargement, mediastinal neoplasm, and pulmonary tuberculosis. Owing to its peculiar anatomical situation the left nerve is more frequently affected than the right. Usually the paralysed cord assumes the post-mortem position and changes from this position to median, or vice versa, were not observed to occur. Paralysis of the recurrent laryngeal nerve commonly indicates a serious condition; bilateral paralysis with dyspnœa demands tracheotomy. In toxic conditions the chances of recovery of function are good. W. J. G.

A *Triton* labyrinth with only one semicircular canal. H. M. de Burlet (Acta Neerland. Morph., 1937, **1**, 49—57).—A description of the phylogenetic evolution of the labyrinth is given. In an embryo of *T. tæniatus* the anterior half of the right labyrinth primordium and the whole of the labyrinth area on the left side were removed. Examination of the right labyrinth 4 months later showed a well-developed saccule and its derivatives, together with a posterior semicircular canal; the lateral and anterior semicircular canals and the utricle were absent. Experimental support is thus found for the thesis that the complicated labyrinth of higher animals is developed phylogenetically from the almost symmetrical anterior and posterior halves found in *Petromyzon*. H. L. H. G.

Circulation of the inner ear. S. Takahara (Arb. med. Univ. Okayama, 1938, **6**, 148—155).—Obstruction of the vertebral arteries does not produce ischæmia of the inner ear in rabbits. Injection of Indian ink into the internal carotid, after obstruction of the vertebral arteries, shows that the labyrinthine artery obtains blood from the circle of Willis. A. S.

Ionisation into the ear of salts of choline. M. Aubry, H. Olivier, and S. Oumikov (Presse méd., 1938, **46**, 1043—1044).—The technique of treatment by auricular ionisation of choline salts is described. Ménière's syndrome and labyrinthine deafness (especially if of recent origin) are benefited. Buzzing in the ears is not so amenable to treatment. A. J. B.

Hearing by bone conduction. G. E. Coleman (J. Amer. med. Assoc., 1938, **111**, 198).—A review of recent developments. R. L. N.

Audiometry in routine practice. I. H. Jones and V. O. Knudsen (J. Amer. med. Assoc., 1938, **111**, 597—605).—The practical benefits for the oto-laryngologist derived from recent advances in audiometry are discussed. R. L. N.

Hearing aids from otologists' audiograms. A. A. Hayden (J. Amer. med. Assoc., 1938, **111**, 592—596).—The val. of audiograms is discussed. R. L. N.

(h) DUCTLESS GLANDS, EXCLUDING GONADS.

Endocrine therapy of parodontosis. F. Boenheim (J. dent. Res., 1938, **17**, 107—113).—A review. A. M.

***In-vitro* serum reaction.** G. Mall (Z. ges. exp. Med., 1938, **103**, 717—724).—If a hormone is added to normal serum *in vitro* sp. anti-bodies are formed which destroy the proteins of the organ which naturally forms the hormone. The protein degradation products dialyse and can be tested, using the ninhydrin reaction. A. S.

New syndrome of infancy: disturbance of water metabolism and hypertension. J. Kramár and S. Blazsó (Klin. Woch., 1938, **17**, 1508—1510).—This syndrome occurs in certain cases of pneumonia or dysentery in infants. The cerebrospinal fluid contains an antidiuretic substance which also causes hypertension in the dog; it is not vasopressin. E. M. J.

Syndrome of infantilism, congenital webbed neck, and cubitus valgus. H. H. Turner (Endocrinol., 1938, **23**, 566—574).—7 cases, in females of 15—23 years, are described. Pituitary growth hormones were ineffective. Gonadotropic hormone caused improvement in 2 cases. V. J. W.

Combined thyroidectomy and gonadectomy on compensatory adrenal hypertrophy [and pituitary cytology] in unilaterally adrenalectomised rats. I. T. Zwecker (Amer. J. Physiol., 1938, **123**, 266—271).—Thyroidectomy, gonadectomy, and combined thyroidectomy and gonadectomy were carried out on

male and female rats at 5 weeks of age. The ratio of adrenal to kidney wt. is increased in the male after these operations. After the combined operation 90% of all cells of the pituitary are "thyroidectomy" or "castration" cells. As compensatory adrenal hypertrophy bears no relation to the no. of these cells neither forms the adrenocorticotropic hormone. The acidophil cell is also excluded. The non-vacuolated basophils (which do not react to thyroidectomy or gonadectomy) control adrenal growth. These cells function independently of gonads or thyroid. When less compensatory adrenal hypertrophy is found it may be due to the crowding of the pituitary by pathological types of cells. M. W. G.

Structure of the mammalian pineal gland. G. Godina (Arch. ital. Anat., 1938, **40**, 459—489).—The pineal gland of various mammals (ox, sheep, goat, horse, ass, pig) contains two kinds of cells, pineal cells proper and neuroglia cells. The former are larger epithelioid elements with abundant, finely granular cytoplasm and a large vesicular nucleus. The cytoplasm has neither expansions nor secretion granules. The neuroglia cells are astrocytes with long processes (mostly short in the horse). The stroma is exclusively neuroglia. No signs of involution were found in glands even from aged animals. The secretory hypothesis is not favoured. S. O.

Morphogenesis and histogenesis of the thymus gland in man; origin of the Hassal corpuscles. E. H. Norris (Contrib. Embryol. Carneg. Inst., 1938, **27**, 191—207).—The epithelial components of the human thymus are derived from two sources: (1) that portion of the 3rd endodermal branchial pouch which remains after parathyroid III has been demarcated, and (2) the ectodermal cervical sinus. These two structures come into contact and fuse between the stages of 4 and 9 mm. The stalks of the cervical sinus and of the 3rd pharyngo-branchial duct then break. Proliferation of the cells of the sinus results in disappearance of its lumen and the cells then migrate so as almost completely to cover the endodermal thymus, thus forming a primitive thymic cortex (20—30 mm. stages). Capillaries and connective tissue cells migrate into the epithelial thymus about the 24 mm. stage and just after this time lymphocytes are first seen in the sub-cortical zone. They are considered to be mesenchymal in origin. During the formation of lobules in the gland some ectodermal cells from the cortex are carried into the medulla (35—40 mm. stages). When the embryo is 50—60 mm. in length these cells show transformation into young Hassall corpuscles. The fibrous reticulum of the thymus is derived from the blood vessels. J. S. B.

Preparation of thymus extract. A. Steinberg (Endocrinol., 1938, **23**, 581—583).—Fresh thymus is extracted with 1% HCl in the proportion of 15 g. of gland to 10 c.c. of acid. The extract is heated to 68° and strained or centrifuged. 0·2% of chlorobutanol is added as a preservative. V. J. W.

Certain iodine-reducing substances of thymus extract. L. G. Rowntree, A. Steinberg, N. H. Einhorn, and N. K. Schaffer (Endocrinol., 1938, **23**, 584—592).—Glutathione, ascorbic acid, and cysteine resemble thymus extract in accelerating growth, but the I-reducing substances of the extract are not responsible for all its effects because they do not yield accruing effects through successive generations, they do not overcome the results of thymectomy, and the extracts retain their activity on keeping, when the I-reducing power has almost disappeared. V. J. W.

Certain iodine-reducing substances of thymus extract; chemical analysis. N. K. Schaffer, W. M. Ziegler, and L. G. Rowntree (Endocrinol, 1938, **23**, 593—597).—The I-reduction of fresh extracts is due entirely to ascorbic acid, glutathione, and cysteine, their respective % of I-reduction being 55, 37, and 7. V. J. W.

Growth and maturation of anuran larvæ on thymus extracts. R. G. Janes and A. Segaloff (Proc. Soc. Exp. Biol. Med., 1938, **39**, 172—174).—One group of tadpoles was supplied with Asher's thymocrescin and another with Hanson's thymus extract. Neither showed any modification of growth or development as compared with controls. V. J. W.

Effects of Hanson's thymus extract on growth and development of 5 successive generations of albino rats. H. Chiodi (Rev. Soc. argent. Biol., 1938, **14**, 326—330).—Rats received an extract of calf thymus (prepared weekly according to Hanson's technique and kept frozen) in doses of 1 c.c. daily intraperitoneally. The wt. at birth and wt. curves up to 40 days of life did not vary from that of normal controls in the 5 generations treated with this extract, neither was there any significant difference in the age of opening of the eyes, eruption of teeth, growth of hair, or puberty. J. T. L.

Effects of thymectomy on growth and development of albino rats. H. Chiodi (Rev. Soc. argent. Biol., 1938, **14**, 383—390).—The thymus was removed from rats 20—30 days old. Litter mates were operated on similarly but the thymus was left intact. Wt. curves up to 250 days showed no significant difference in thymectomised and controls. At 120 and 200 days there were no significant variations in wt. of lungs, heart, kidney, liver, ductless glands, and gonads. The bones were unaltered. In 5 successive generations the thymus was removed at an early age, but no variation from the normal was observed in the growth curve, nor in development of teeth, hair growth, opening of eyes, or descent of testicles. J. T. L.

Effect of antuitrin-S on the thymus of the young albino rat. E. O. Butcher and E. C. Persike, jun. (Endocrinol., 1938, **23**, 501—506).—Daily injections of 20 units of antuitrin-S caused arrest of the growth of the thymus in young rats provided that they were at least 18 days old and were not castrated. Growth was not affected. V. J. W.

Effects of thymus removal in chickens. G. H. Maughan (Amer. J. Physiol., 1938, **123**, 319—325).—The effects of removal of the chicken thymus on reproduction and Ca metabolism were studied. Rate of growth and time of maturity were unaffected.

Experimental rickets occurred at the same time with the same severity in both groups. At 22 weeks of age average blood-Ca in the operated birds was 11·3 mg.-% (range 10·3—13·0) and 11·5 in the controls (range 10·8—12·7). *X*-Ray studies of bone structure of mature chickens thymectomised were normal. Egg production began at the same time and the "egg envelope" was unaffected. M. W. G.

Metabolism of nitrogen, calcium, magnesium, and phosphorus in thymectomised rats. M. Sandberg, D. Perla, and O. M. Holly (Proc. Soc. Exp. Biol. Med., 1938, **39**, 44—45).—30 rats were thymectomised at 7 weeks of age. In the following 10 weeks their urea-N increased from 13% to 40% of their N intake. In 12 controls the urea-N increased to only 25% of their intake. There was no change in the metabolism of Ca, Mg, or P. V. J. W.

Effect of thyroxine on the growth of fibroblasts *in vitro*. J. S. Latta and J. Z. Davis (Arch. exp. Zellforsch., 1938, **21**, 427—435).—Thyroxine in 1 : 74,500 concn. inhibits fibroblastic growth; 1 : 150,000 stimulates it temporarily, producing stellate cells with large vesicular nuclei which ultimately revert to fibroblasts. Thyroxine accelerates the transformation of fibroblasts into macrophages. R. J. O'C.

Assay of thyroid on tadpoles. F. Wokes (Quart. J. Pharm., 1938, **11**, 521—531).—A method based on the average decrease in length of groups of tadpoles gave results which were more parallel with total org. I than thyroxine-I. P. G. M.

Influence of fixation on colloid of the thyroid gland. O. Bucher (Z. Zellforsch., 1938, **28**, 359—381).—Various fixatives produce a characteristic form of shrinking. The majority of vacuoles seen in fixed preps. are due to the fixative, and only small unstainable vacuoles near the border of the vesicle are secretory. Both the isoelectric point and staining reactions vary with the fixative. R. J. O'C.

Fluorine content of the thyroid gland in hyperthyroidism. R. J. Evans and P. H. Phillips (J. Amer. med. Assoc., 1938, **111**, 300—302).—In cases of hyperthyroidism, F occurred in the gland in widely varying amounts. There was no correlation between F content and I content or the patient's basal metabolic rate. R. L. N.

Action of ethers of thyroxine, di-iodothyronine, and di-iodotyrosine. A. Loeser (Arch. exp. Path. Pharm., 1938, **190**, 208).—*ON*-Dimethyldi-iodotyrosine compared with di-iodotyrosine had little effect on O_2 consumption and body-wt. of growing guinea-pigs. *ON*-Dimethyldi-iodothyronine caused a smaller increase in metabolism than di-iodothyronine. The action of thyroxine *O*-methyl ether on body-wt., gaseous exchange, and carbohydrate metabolism of the liver was more marked than that of thyroxine. I. S.

Thymol and thyroid action. H. Möller (Arch. exp. Path. Pharm., 1938, **190**, 216—217).—Thymol caused histological activation of the thyroid gland in guinea-pigs. O_2 consumption was not increased. T. S.

Relation of environmental temperature to action of thyroxine. L. H. Schmidt and I. G. Schmidt (Endocrinol., 1938, **23**, 553—558).—Guinea-pigs kept at 32° and fed with thyroxine lost more wt. and developed more gastric ulcers than similar guinea-pigs kept at 20°. V. J. W.

Variations in the structure of adrenals and thyroids produced by thyroxine and high environmental temperatures. I. G. Schmidt and L. H. Schmidt (Endocrinol., 1938, **23**, 559—565).—Guinea-pigs kept in a moist atm. at 32° did not show the hypertrophy of the adrenal cortex caused by thyroxine under ordinary conditions. Males recovered the power to react to thyroxine after 4 weeks' exposure to heat but not after 6 weeks. Females were less resistant. V. J. W.

Effect of hyperthyroidism on growth and chemical composition of bone. E. E. Smith and F. C. McLean (Endocrinol., 1938, **23**, 546—552).—Excessive thyroid feeding caused no lack of Ca in the bones of growing or adult rats. Epiphyseal growth in the femur and tibia was stopped or delayed. V. J. W.

Reversal of thyrotropic action by previous injection of thyroxine and thyrotropic hormone. J. Mahaux (Compt. rend. Soc. Biol., 1938, **129**, 39R 42).—After the basal metabolic rate had returned to normal in rabbits following a series of injections of thyroxine alone or in association with thyrotropic hormone, injection of thyrotropic hormone lowers the basal metabolic rate though exophthalmos is produced as usual. It is suggested that the hormone does not act directly on the thyroid but on a nerve centre regulating the production of thyroxine, this centre being affected by the previous thyroxine injections so that its reaction to the thyrotropic hormone is reversed. P. C. W.

Effect of thyrotropic hormone on action of thyroxine. J. Mahaux (Compt. rend. Soc. Biol., 1938, **129**, 42—45).—Following the injection of thyroxine in the rabbit, injection of thyrotropic hormone lowers the basal metabolic rate (see preceding abstract). During this period the effects of thyroxine are more persistent. The uterus of a virgin guinea-pig injected with serum from the rabbits with lowered metabolic rate did not give an anaphylactic reaction with thyrotropic hormone. The presence of exophthalmos during the period of hypometabolism suggests that antihormones are not responsible. P. C. W.

Influence of the thyroid gland on absorption in the digestive tract. T. L. Althausen and M. Stockholm (Amer. J. Physiol., 1938, **123**, 577—588).—Rats fasted for 24 hr. were given various substances by stomach tube in amounts calc. to exceed capacity for absorption. After a given period the animals were killed and the unabsorbed residues in the gut determined. Normal, hyperthyroid, and hypothyroid animals were used. Hyperthyroidism (B.M.R. + 50) was induced by intraperitoneal injections of 0·1 mg. of thyroxine per 100 g. body-wt. daily for 12 days. Hypothyroidism was induced by thyroidectomy 3 weeks prior to the experiment (B.M.R. −43). Hyperthyroidism markedly increased

absorption of glucose, galactose, xylose, and oleic acid but not of alanine. Thyroidectomy reduced the absorption of glucose. The following were ruled out as factors accelerating absorption of glucose in hyperthyroid rats: depletion of carbohydrate, increase in B.M.R., rise in velocity of blood flow, hyperperistalsis of intestine, shortened emptying time of the stomach, and increased permeability of mucosa. The view is put forward (supporting Verzár) that the thyroid hormone influences absorption mainly by increasing phosphorylation and stimulating gastric emptying. M. W. G.

Relation of vitamin-B_1 and thyroid gland. G. Gentzen and T. Moir (Klin. Woch., 1938, **17**, 1243—1245).—Premedication with vitamin-B_1 lessens the metabolic effect of thyrotropic hormone on guinea-pigs. E. M. J.

Vitamin-*C* metabolism and impaired thyroid function. S. Thaddea (Arch. exp. Path. Pharm., 1938, **190**, 227—229).—The amount of ascorbic acid in the liver and adrenals of rabbits and guinea-pigs was decreased by administration of thyroid or thyrotropic hormone; it was increased after extirpation of the thyroid. This was restored to normal by hormone treatment. I. S.

Thyroid gland and pernicious anæmia. G. Mansfeld (Presse méd., 1938, **46**, 993—994).—10 thyroidectomised dogs and 10 normals were kept under similar conditions for 3 months and then killed by bleeding. Extracts of liver from these 20 dogs identically prepared had identical anti-pernicious activity as measured by effects on rabbits treated with saponin–collargol. The liver extracts injected into thyroidectomised and normal rabbits were active in the latter but not in the former. Stomach extracts were universally active. In thyroidectomised animals an aq. extract of thyroid, total extract of thyroid, and acid-insol. extract (but not thyroxine or acid-sol. extract) rendered the liver again efficacious. A myelotropic hormone was eventually separated from the thyroid. A. J. B.

Hyperparathyroidism secondary to experimental renal insufficiency. W. J. Highman, jun., and B. Hamilton (Arch. Path., 1938, **26**, 1029—1035). Increased activity of the parathyroid glands as measured by the parathyroid hyperfunction test is detectable within the first month of experimental renal insufficiency in dogs. Hyperplasia appears at the same time. The renal insufficiency was produced by a heminephrectomy at one operation followed by a contralateral nephrectomy later. (2 photomicrographs.) C. J. C. B.

Action of the thyroid gland in epileptiform conditions. H. Reiners and A. Watterott (Z. ges. exp. Med., 1938, **103**, 750—755).—The threshold dose of cardiazol which produces convulsions on intravenous injection in rats (average 20 mg. per kg. body-wt.) is lowered by previous injections of 1 mg. of thyroxine (total dose 16 mg.). No change of the threshold convulsant dose of cardiazol was observed after thyroidectomy. A. S.

Case of heart failure treated by complete thyroidectomy. R. Froment and M. Jeune (Arch. Mal. Cœur, 1938, **31**, 593—608).—A case report. G. Sch.

Subthyroidism with defective dental development. C. G. Kerley (Arch. Pediat., 1938, **55**, 548—552).—A case report. C. J. C. B.

Extracutaneous localisation of myxœdema. G. Maranon (Presse méd., 1938, **46**, 1417—1419).—Myxœdematous swelling may occur not only in the skin, but also in the mucous membranes of the mouth, tongue, larynx, inner ear, vulva, and anus. Its presence may be the cause of the cardiac and intestinal changes frequently met with. G. Sch.

Effect on growth-rate of thyro-parathroidectomy in newborn rats and of subsequent administration of thyroid, parathyroid, and anterior hypophysis. T. N. Salmon (Endocrinol., 1938, **23**, 446—457).—Removal of thyroids and parathyroids caused cessation of growth at 25—35 g. and increased susceptibility to infection. Normal growth took place if thyroid was given by mouth and parathyroid by injection but neither was effective separately. V. J. W.

Idiopathic tetany. M. Saegesser (Schweiz. med. Wschr., 1938, **68**, 1265—1267).—Epidemic tetany was observed in a Swiss district during June and July, 1937. 212 cases were observed. The patients were treated with a Ca prep. and vitamin-*D*. A. S.

Sodium chloride deficiency and tetany. G. Moschinski (Dtsch. med. Wschr., 1938, **64**, 1579—1581).—2 cases are reported in which excessive vomiting (from pyloric stenosis and gastritis) produced tetany. Blood-Cl′ was reduced to 257 mg.-%, and non-protein-N was increased to 59 mg.-%. Parenteral administration of 14 g. of NaCl abolished the tetany. A. S.

Effect of parathyroid hormone on diffusion of calcium, magnesium, and phosphorus into the peritoneum. I, II. A. Cantarow, V. G. Haury, and C. G. Whitbeck (Proc. Soc. Exp. Biol. Med., 1938, **39**, 15—17, 18—20).—After injection of 500 units of parathyroid hormone in the dog, Mg vals. were little changed in serum but slightly raised in peritoneal fluid. P vals. fell in serum and were inconsistent in peritoneal fluid. Ca increased by the same amount in both serum and peritoneal fluid. In two other dogs, which had undergone repeated filling and emptying of the peritoneal cavity with glucose–Ringer's solution for 3 weeks, parathyroid hormone caused a slight fall in serum-Ca. V. J. W.

Treatment of parathyroid tetany with dihydrotachysterol. C. M. MacBryde (J. Amer. med. Assoc., 1938, **111**, 304—307).—7 patients with chronic parathyroid tetany were maintained symptom-free over long periods by dihydrotachysterol by mouth. Small doses of Ca salts by mouth caused a marked and rapid rise in blood-Ca when the patient was receiving dihydrotachysterol. Such therapy was the only one to yield satisfactory results. R. L. N.

Morphology of adrenal gland in *Bufo arenarum*. O. Fustinoni and J. Porto (Rev. Soc. argent. Biol., 1938, **14**, 315—320).—Three types of

cells were found: cortical, chromaffin, and Stilling's cells; the last were found in the vicinity of hæmatopoietic nodules in all seasons. Three types of cortical cells were found, distinguished from each other by the appearance of the fatty inclusions (vacuoles) and the chondrioma; the differences were attributed to different stages of activity. There were two types of chromaffin cells (young and old). J. T. L.

Golgi apparatus of the cells of the adrenal cortex after hypophysectomy and on administration of adrenocorticotropic hormone. J. D. Reese and H. D. Moon (Anat. Rec., 1938, **70**, 543—556).—The distribution of Golgi material in the cells of the adrenal cortex of normal male rats, both immature and mature, is described. After hypophysectomy, the Golgi apparatus in many cells of the zona fasciculata contracted into a finely granular knot near the nucleus. A single dose of adrenocorticotropic hormone given to normal immature males caused, within 24 hr., hypertrophy of the Golgi mass and its extension around the nucleus in the cells of the zona fasciculata. Administration of the hormone to hypophysectomised animals prevented the usual post-operative changes in the Golgi material. The Golgi apparatus of the senescent cells in the juxtamedullary, cortex remains unaffected by these procedures. Da Fano's technique was used. H. L. H. G.

Representation of the adrenal *X* zone in rats, in the light of observations on *X* zone variability in mice. E. Howard (Amer. J. Anat., 1938, **62**, 351—373).—The *X* zone in mice is very variable in the extent of its development. In young rats an inconspicuous layer is present between the cortex and medulla, which differs both from the zona reticularis and also the *X* zone of mice; it is called the juvenile zone. Its appearance corresponds in age with that of the *X* zone. The cells of this zone start to disappear during the 4th week by transformation and incorporation into the cortex rather than by the degeneration and removal found in the mouse *X* zone. No sex difference was seen in the duration of the juvenile zone in rats. Unlike the mouse, the rat's adrenal cortex does not undergo any structural alteration after castration. In rats castrated at birth, the height of prostatic development coincides with the period of max. development of the juvenile zone. Any such andromimetic activity of the juvenile zone would correspond with the tentative suggestion that similar activities are largely confined to the *X* zone in mice. H. L. H. G.

Influence of genetic relationship on the success of homœoplastic transplants of adrenal glands in albino rats. D. J. Ingle and G. M. Higgins (Proc. Soc. Exp. Biol. Med., 1938, **39**, 165—166).—Female rats were used in pairs, the adrenals of each being removed and sutured to the ovaries of the other. They received cortin for 10 days, and after 120 days the grafts of the survivors were removed and examined. The greatest proportion of successful grafts was between sisters, less between first cousins, and least among more distant cousins. V. J. W.

Homoplastic transplantation of suprarenal glands of rat into the anterior chamber of the eye. C. D. Turner (Proc. Soc. Exp. Biol. Med., 1938, **39**, 133—135).—Cortical grafts may persist for 5 months and regeneration is increased by adrenalectomy or by pituitary grafts. Survival of medullary grafts is much less common. V. J. W.

Circulation in the adrenals. M. G. Caussade (Presse méd., 1938, **46**, 1083—1084).—Serial sections of the adrenals from 30 cases dying of infections or vascular or endocrine diseases were examined. The blood vessels are muscular, the fibres being disposed variously. Lasuror systems, bulbar enlargements, and sphincters occur. The vessels are innervated from large ganglia. A. J. B.

Adrenals in cancerous mice. N. Drobovolskaïa-Zavadskaïa and P. Zéphiroff (Compt. rend. Soc. Biol., 1938, **128**, 971—974).—Characteristic histological changes are seen in the adrenals of all mice of a strain that develops spontaneous cancer of the breast. In mice with cancer induced by carcinogenic agents the adrenal changes are only seen in a proportion of cases. The changes are thus regarded as primary in the cancer-susceptible strain. P. C. W.

Tumours of the adrenal cortex. E. J. Kepler, W. Walters, and M. C. Piper (Proc. Staff Mayo Clin., 1938, **13**, 353—361).—A review and a case report. A. J. B.

Potassium balance in adrenalectomised rats. A. D. Marenzi (Rev. Soc. argent. Biol., 1938, **14**, 357—363).—Rats (120—150 g. wt.) given a standard diet containing 172·6 mg. of K %, increased in wt. and retained 40% of K ingested. After a week they were adrenalectomised. The appetite diminished and ingestion of food and K decreased by 43%. The retention of K decreased both totally and relatively to that ingested; in some cases a negative balance was observed. The wt. of fæces was reduced by 35%; urine flow increased (up to 33%); both in fæces and in urine the % of K fell. The evidence supports the theory of alteration in renal excretion. Cortico-adrenal extract administered to adrenalectomised rats corrected these alterations to a certain extent. The loss of wt. was less marked, appetite improved though food ingestion still remained subnormal, excretion of fæces and urine returned to normal, and the retention and elimination of K approximated to normal. J. T. L.

Tolerance of adrenalectomised rats to intraperitoneal injections of potassium. A. D. Marenzi (Rev. Soc. argent. Biol., 1938, **14**, 370—376).—Female rats (120—160 g. wt.) were adrenalectomised and 8 days later injected intraperitoneally with 10 c.c. of a solution of NaCl 0·7% and KCl 0·1%; others received NaCl 0·8%. The urine was collected and K concn. determined during 10 hr. following. Normal rats excreted twice the vol. of urine excreted by adrenalectomised rats. Adding K to the NaCl solution increased diuresis by 30% in normal, and only 10% in adrenalectomised, rats. In rats treated with cortico-adrenal extract since operation, diuresis was almost of the same magnitude as in normal ones; the increase produced by K was 22%. K injected was retained by normal and adrenalectomised rats, more completely by the latter; an increase in

blood-K was seen. Adrenalectomised rats treated with cortico-adrenal extract eliminated more K in higher concn. than normal and untreated adrenalectomised rats. Large doses of K (20 mg.) were toxic for adrenalectomised rats and suppressed urine excretion. J. T. L.

Metabolic processes influenced by ductless glands [cortin]. E. C. KENDALL (Proc. Staff Mayo Clin., 1938, **13**, 379—384).—Intravenous injection of a 10% solution of glucose was given to normal dogs for 3 hr. at a rate of 1 g. per kg. body-wt. per hr. K excretion increased. In adrenalectomised dogs the results depended on the degree of cortico-adrenal insufficiency, the presence or absence of NaCl, the glucose solution, and the injection of cortin. A. J. B.

Action of adrenal cortex extracts and ascorbic acid in malignant diphtheria. H. OTTO (Klin. Woch., 1938, **17**, 1653—1656).—Death is not prevented. E. M. J.

Effect of adrenal cortical extract and vitamin-*C* on calcium and phosphorus balance. H. LUCKE and J. WOLF (Arch. exp. Path. Pharm., 1938, **189**, 628—636; cf. A., 1938, III, 573).—Cortical hormone and vitamin-*C* lead to retention of Ca and P. H. BL.

Effect of histamine pretreatment on adrenalectomised rats. E. M. MACKAY and W. G. CLARK (Proc. Soc. Exp. Biol. Med., 1938, **39**, 56—58).—Daily injections for 14 days of 10—20 mg. of histamine cause, in the rat, hypertrophy of the adrenal cortex, and greatly prolong the survival time after subsequent removal of both kidneys and adrenals; after subsequent adrenalectomy they increase tolerance to K salts. V. J. W.

Subcutaneous administration of cortin compounds in solid form to the rat. D. J. INGLE and H. L. MASON (Proc. Soc. Exp. Biol. Med., 1938, **39**, 154—156).—Various cortin compounds were made up into pellets with cholesterol and implanted under the skin in adrenalectomised rats. These compensated for adrenal insufficiency and also caused cortical atrophy in the normal rat. V. J. W.

Effect of adrenalectomy during gestation on size of adrenal glands of newborn rats. D. J. INGLE and G. T. FISHER (Proc. Soc. Exp. Biol. Med., 1938, **39**, 149—150).—Newborn rats of which the mothers were adrenalectomised on the 14th day of pregnancy had adrenal glands nearly 50% heavier than controls. V. J. W.

Effect of cortin on survival and work capacity of rats after removal of intra-abdominal organs. D. J. INGLE (Proc. Soc. Exp. Biol. Med., 1938, **39**, 151—153).—Survival time of eviscerated rats was raised from 17 to 28 hr. by administration of cortin, and their muscles had more capacity for work. V. J. W.

Effect of previous castration on weight loss and survival of adrenalectomised rats. R. L. KROC (Endocrinol., 1938, **23**, 524—526).—Castration had no effect on wt. loss or survival in the female. In the male the castrates lost 3% more wt. and lived 3 days longer than the normals. V. J. W.

Therapeutic effect of adrenal cortex extract on the psychotic patient. C. A. LOEHNER (Endocrinol., 1938, **23**, 507—520).—9 out of 11 patients suffering from various psychological disorders showed mental and physical improvement under treatment with eschatin and regressed when the treatment was withheld. V. J. W.

Effect of adrenal cortical extract on the oxygen consumption of isolated organs of fatigued rats. H. KAUNITZ and L. SELZER (Z. ges. exp. Med., 1938, **103**, 664—670).—No increase of O_2 consumption of liver and muscle slices of fatigued animals was observed if the animals were repeatedly treated before the exercise with adrenal cortical extracts. A. S.

Adrenal hypertrophy in long-distance runners and in animals. O. RIML (Arch. exp. Path. Pharm., 1938, **189**, 659—663; cf. A., 1938, III, 191).—Intraperitoneal injection of dialysate of serum, obtained from runners immediately after a run of 16 km., into guinea-pigs increases adrenal wt. by 50%. Serum of adrenalectomised rabbits, which were stimulated to exhaustion with galvanic currents, injected into guinea-pigs, leads to histological signs of overactivity in the adrenal cortex. H. BL.

Subclinical adreno-genital syndrome. S. J. GLASS and H. C. BERGMAN (Endocrinol., 1938, **23**, 625—629).—Androgen and œstrogen of urines were determined by Koch's method. In 10 women having symptoms of virilism the ratio of androgen to œstrogen was increased as compared with the normal, and in 2 men with gynecomastia it was diminished. V. J. W.

Effect of thyroxine on the extent of regeneration in the enucleated adrenal gland of the rat. D. J. INGLE and G. M. HIGGINS (Endocrinol., 1938, **23**, 419—423).—After enucleation of one adrenal, injection of thyroxine causes cortical proliferation in the remaining gland and proliferation of zona glomerulosa cells in the remnants of the enucleated gland. If the other adrenal is removed thyroxine administration causes greatly increased regeneration in the enucleated gland as compared with untreated controls. V. J. W.

Effect of administration of carbon tetrachloride on the extent of regeneration in the enucleated adrenal gland of the rat. G. M. HIGGINS and D. J. INGLE (Endocrinol., 1938, **23**, 424—428).—One adrenal gland was removed and the other enucleated. Daily inhalations of CCl_4 caused an increase in the amount of cortical tissue regenerated as compared with controls. V. J. W.

Renal function in Addison's disease. A. MARGITAY-BECHT and P. GÖMÖRI (Z. ges. exp. Med., 1938, **104**, 22—30).—The creatinine clearance after administration of 5 g. of creatinine in cases of Addison's disease was approx. 100 c.c. (control, 170 c.c.). This is attributed to loss of Na and water, which increases the colloid osmotic pressure of the plasma-proteins and inhibits glomerular filtration. A. S.

Hormone and electrolyte studies of patients with hyperadrenocortical syndrome (Cushing's syndrome). E. ANDERSON, W. HAYMAKER, and M. JOSEPH (Endocrinol., 1938, **23**, 398—402).—

Benzene extracts of the blood of 3 patients prolonged life in adrenalectomised rats as compared with untreated controls. The blood-serum of these patients showed increase of Na and decrease of K, while their urine showed decrease of Na and increase of K. V. J. W.

Hypertrophy of the breast due to injections of adrenal cortex extract in a man with Addison's disease. R. A. EDWARDS, M. B. SHIMKIN, and J. S. SHAVER (J. Amer. med. Assoc., 1938, **111**, 412—414).—A man (37 years) with Addison's disease of 8 years' duration developed gynecomastia after treatment with adrenal cortex extract. The changes in the mammary glands subsided when the extract was omitted and recurred when treatment was resumed. R. L. N.

Concentrations of sodium, chloride, and potassium in the plasma and urine of Addison's disease: diagnostic significance. H. H. CUTLER, M. H. POWER, and R. M. WILDER (Proc. Staff Mayo Clin., 1938, **13**, 244—249).—8 subjects with adrenal insufficiency and 28 controls were studied. A diet low in Na and high in K was administered for 3 days and urine and blood were analysed. A concn. of more than 225 mg.-% of Cl′ in the 3rd-day specimen suggests adrenal insufficiency; with less than 125 mg.-% insufficiency is unlikely. A. J. B.

Oral therapy in adrenal insufficiency. The efficacy of a concentrated adrenal cortical extract preserved in glycerol. G. W. THORN, K. EMERSON, jun., and H. EISENBERG (Endocrinol., 1938, **23**, 403—418).—Oral administration of this extract to 3 patients with Addison's disease caused a decrease in urinary Na and Cl′ and increase in K. In adrenalectomised dogs the same results were obtained and they were maintained in health for up to 56 days. The ratio of oral to subcutaneous dose is about 2·5 : 1. V. J. W.

Adrenal rest in the kidney containing ganglionic nerve cells. R. D. WRIGHT (J. Path. Bact., 1938, **47**, 640). C. J. C. B.

Adrenaline inactivation by succinic acid. P. MARQUARDT (Klin. Woch., 1938, **17**, 1445—1446).—Solutions of adrenaline in succinic acid turn red in a few min.; clear yellow solutions are obtained if adrenaline ascorbate is used, no redness developing even after 2 weeks. E. M. J.

Action of adrenaline after oral administration. S. ROSENKRANZ (Arch. exp. Path. Pharm., 1938, **189**, 568—575).—The min. lethal dose of adrenaline after oral administration in rabbits is 150 times that after intravenous injection. Death is due to alterations in the digestive tract. H. Bl.

Skin temperature following intradermal adrenaline injection. G. LAROCHE, J. SAIDMAN, T. BARTOSZEK, and BOISMOREAU (Compt. rend. Soc. Biol., 1938, **128**, 1014—1016).—The changes in skin temp. following intradermal injections of adrenaline and histamine are described in patients with hyperthyroidism, diabetes, hemiplegia, liver disorders, and febrile conditions. P. C. W.

Action of adrenaline on the intestine. G. H. W. LUCAS and D. D. BONNYCASTLE (Arch. int. Pharmacodyn., 1938, **60**, 195—205).—Higher concns. of adrenaline have a persistent effect on the isolated gut. Complete recovery of activity does not occur. The products of adrenaline destruction act deleteriously. D. T. B.

Amphomimetic action of adrenaline. D. DANIELPOLU and J. MARCOU (J. Physiol. Path. gén., 1938, **36**, 681—693).—A detailed account of work already noted (A., 1938, III, 900). C. A. A.

Effects of intra-arterial epinephrine on blood flow in an extremity. N. W. ROOME (Amer. J. Physiol., 1938, **123**, 543—549).—The effects of small intra-arterial doses of adrenaline were studied by means of a stromuhr in dogs. The cannulæ of the stromuhr were inserted into the femoral artery; the doses varied from 0·025 to 2·0 × 10 μg. The limb was prepared by skinning or by acute or chronic denervation. The blood flow changes were classified into 3 types: (i) dilatation followed by constriction, (ii) constriction only (increased incidence after denervation), (iii) constriction with superimposed dilatation. The most frequent type of response was (i). These 2 phases varied in their time relationship according to the rate of flow. This correlation indicates that the site of the dilatation is in the capillary and that the constriction is in artery and arteriole. No pure dilator effects were observed. M. W. G.

Blood vascular system of the hypophysis of *Amblystoma tigrinum*. P. G. ROOFE (J. comp. Neurol., 1938, **69**, 249—254).—The buccal portion of the pituitary gland in *Amblystoma* is supplied by a posterior division of the arterial ramus hypothalamicus; the nervous portion is supplied either from the dorso-lateral branches of the ramus hypothalamicus or from the superior hypophyseal branches of the posterior communicating artery. There is no evidence for a "hypophysio-portal system," *i.e.*, for a second capillary network of the pituitary veins within the hypothalamus. (Cf. A., 1938, III, 393.) K. STERN.

Vascularisation of the hypophysis in tailed amphibians. E. H. CRAIGIE (Trans. Roy. Soc. Canada, 1938, [iii], **32**, V, 43—50).—Histological study of the pars nervosa of the hypophysis in various amphibians showed that no capillaries penetrated its tissue, but that the blood supply was from a superficial vascular net. The pars tuberalis was similarly vascularised. The pars distalis had a spongy capillary network throughout its substance. No sexual or significant seasonal differences were detected. R. L. N.

Pathway of nerve fibres to the hypophyses. C. UNGAR (Ann. Anat. path. méd-chir., 1938, **15**, 815—817).—Electrical stimulation of the superior cervical sympathetic ganglion of the cat increased the concn. of follicle-stimulating hormone in the cerebrospinal fluid. A similar effect was obtained after stimulation of the posterior nerve root of the second cervical nerve. Stimulation of nerves furnishing afferents to the superior cervical and stellate ganglion was also negative. W. F. H.

Infection with *Trypanosoma lewisi* in the hypophysectomised rat. J. T. CULBERTSON and

N. Molomut (Proc. Soc. Exp. Biol. Med., 1938, **39**, 28—30).—19 hypophysectomised rats were infected with this organism and all died. 14 others were treated with anterior pituitary extract and 8 died. In the normal rat the infection is not fatal.

V. J. W.

Histological changes in the pituitary gland of subtotally hypophysectomised rats. A. C. Crooke (J. Path. Bact., 1938, **47**, 545—552).—In 5 such rats basophil and chromophil cells were alone present; the basophil cells were increased. Nevertheless considerable somatic growth occurred in 3 compared with totally hypophysectomised animals. One rat killed 27 days after operation showed in the basophil cells the "spongy" vesicular change seen in ovariectomised rats, while the other 4 killed 100 days after operation also showed a signet ring and hyaline change. These 3 types of change in the basophils represent secretory over-activity. In a 6th rat the hypothalamus was injured. There was gross obesity, no somatic growth, and atrophy of the adrenal, thyroid, and testicles. The pituitary remnant consisted of chromophobe cells only. (2 colour photomicrographs.)

C. J. C. B.

Origin of the pars intermedia of the hypophysis. P. J. Gaillard (Acta Neerland. Morph., 1937, **1**, 3—11).—Explants were taken from the anterior and posterior lobe of the hypophysis of rabbits 3—5 months old. When they were cultured together, changes occurred in the anterior lobe explant along the surface of contact of the tissues with each other; for some depth the chromophil elements disappeared and cysts were formed. A tissue is thus produced which resembles in its essential structure the pars intermedia. The changes were observed in 15 out of 20 experiments; in all cases the modification of structure appeared only where the pars nervosa was in contact. It was never seen in control explants, nor were such changes induced by contact with explants of other tissues. It is suggested that the pars intermedia is dependent for its formation on contact of the oral part of the gland with the pars nervosa; similarly the pars tuberalis results from contact between the anterior lobe and nervous tissue.

H. L. H. G.

Topography of the hypophysis in the Xenarthra. G. B. Wislocki (Anat. Rec., 1938, **70**, 451—471).—The adult armadillo has a well developed pars tuberalis but no pars intermedia. Adult specimens of two- and three-toed sloths have a well developed pars intermedia but no pars tuberalis. In the anteater (*Tamandua tetradactyla*) the pars intermedia is extensive and a pars tuberalis, though not in its customary position, is recognisable histologically. The subarachnoid space does not extend around the pituitary body as the latter lies in the sella turcica.

H. L. H. G.

Microscopic changes in the hypophysis of the albino rat following exposure to cold, and their relationship to the physiology of secretion. R. N. Baillif (Amer. J. Anat., 1938, **62**, 475—495). Adult male rats were exposed to temp. between 0° and −7° for 9—56 hr. and the effects on the hypophysis were examined. There is an increase in the size of the gland, most marked in the anterior lobe and due to the engorgement of the sinuses. The pars distalis shows (1) degranulation and the formation of small secretion vacuoles in the α cells, (2) great vacuolation of the β cells, the secretion first appearing near the Golgi apparatus, (3) the chromophobes are unchanged. The pars intermedia shows increase in vacuolation if the cold stimulus is sufficiently strong; there is no evidence of secretory discharge into the pars nervosa. The pars nervosa shows an accumulation of intercellular fluid and an increase in the no. of "Schaumzellen." In severe exposure to cold much of the anterior lobe disintegrates and a stainable colloid appears in the disintegrating regions. Colloid is not associated with the sp. secretion of the gland.

H. L. H. G.

Morphological basis of pituitary function in pigeons. J. P. Schooley and O. Riddle (Amer. J. Anat., 1938, **62**, 313—349).—Pigeons show a period of intense body growth after hatching during which the reproductive organs remain infantile, followed by a phase of active growth of the reproductive organs. The usual three types of cell occur in the pituitary. The acidophils become granular just before hatching, the basophils not until sexual maturity approaches. The acidophils show a decrease in no. of the granules and in the intensity of their staining during the rapid growth period and during the period of feeding the young (crop gland activity). The basophils reach their greatest size in the pre-ovulation period, when they become lightly granular, with small and widely scattered mitochondria and a diffuse Golgi apparatus. In the later stages of ovulation and during incubation and feeding, the basophils show a greater granular condensation with clumping of the mitochondria. Implantation of pituitary glands from donors in various stages of immaturity and sexual activity gave results which were closely correlated with the cytological observations. The results accord with a conception of two main hormone complexes from the anterior lobe of the pituitary produced respectively by the two cell types: acidophils produce prolactin ("growth," ? adrenotropic), basophils produce a gonadotropic hormone (? thyrotropic also).

H. L. H. G.

Effect of hypophysectomy on the growing rat; histological changes in adrenal, thyroid, and testicle. A. C. Crooke and J. R. Gilmour (J. Path. Bact., 1938, **47**, 525—543).—114 immature rats were subjected to hypophysectomy and killed 2—102 days afterwards. Complete hypophysectomy resulted in almost total arrest of growth, and slight atrophy of the adrenal and testicles and thyroid; these glandular changes were in 14, 28, and 7 days respectively. When hypophysectomy was incomplete, regeneration of the anterior lobe sometimes produced recovery. Abnormal obesity was associated with accidental injury penetrating the floor of the 3rd ventricle in 5 out of 11 rats. One of these obese rats showed the gland changes as above, although 2 large remnants of anterior pituitary were found microscopically containing no chromophil cells. After complete hypophysectomy the testicles showed reduction of spermatocytes, cessation of spermato-

genesis, proliferation of basal cells, and reduction in the no. and size of interstitial cells. In the adrenals the cells of the inner layer of the cortex were greatly reduced in no.; lymphocytic infiltration and pigmentation were slightly increased in the inner part of the inner cortical layer and lipin was less in the inner cortical layer. In the thyroid the signs of active normal secretion and excretion were replaced by those of colloid storage. (8 photomicrographs.)
C. J. C. B.

Blood-sugar changes in hypophysectomised rats during adaptation to various stimuli. H. Selye and V. G. Foglia (Proc. Soc. Exp. Biol. Med., 1938, **39**, 222—226).—Hypophysectomised rats react like adrenalectomised rats to cold or fatigue. Both show during the 1st day of exposure a marked hypoglycæmia, followed by a temporary adaptation during the 2nd and 3rd day with hyperglycæmia, passing by the 6th day to hypoglycæmia and death.
V. J. W.

Pituitary gland and fat metabolism. G. L. Bertram (Acta brev. neerl. Physiol., 1938, **8**, 67—70).—Hypophysectomy does not alter the fat content of fasting rats. The fatty degeneration of the liver after P poisoning was not observed in hypophysectomised rats.
A. S.

Vasopressor and gonadotropic pituitary hormones in hypertension. A. van Bogaert and F. van Baarle (Acta med. scand., 1938, **96**, 56—74).—The cerebrospinal fluid of 19 patients with hypertension uncomplicated by renal lesions showed no difference in vasopressor content from controls. In only 3 out of the 19 was "prolan" detected (by the rat technique) and these cases showed sexual disorders. (B.)
C. A. A.

Hypophysis implantation in the treatment of leanness in delayed puberty. E. Kylin (Acta med. scand., 1938, **96**, 75—79).—Implantation of fresh living calves' hypophysis was carried out in 31 cases of girls between the ages of 13 and 20 years. In 20 the wt. reached normal and the girls became capable of work; 2 were better but not capable of work; 4 were failures and 2 died after operation. The period of observation extended from 1 to 3½ years, 3 cases being too recent for inclusion. In 13 cases the menses recommenced.
C. A. A.

Pathogenesis of disease of the pituitary-diencephalic system. W. Berblinger (Schweiz. Z. allg. Path. Bakt., 1938, **1**, 72—93, 136—162).—A review.
E. M. J.

Pituitary cachexia. E. E Osgood (Endocrinol., 1938, **23**, 656—660).—A patient having every symptom of pituitary cachexia died of tuberculosis and was found to have a normal pituitary.
V. J. W.

Juvenile adiposo-genital dystrophy. B Mittelmann (Endocrinol., 1938, **23**, 637—655).—16 cases are described, of which some derived benefit from treatment with thyroid or pregnancy urine extract.
V. J. W.

Hyaline change in the basophil cells of the pituitary not associated with basophilism. A. D. Ecker (Endocrinol., 1938, **23**, 609—617).—721 pituitary glands were examined post-mortem. Marked hyaline charge was present in 8. 54 of them contained basophil adenomata and out of these, together with 18 from other sources, 4 showed hyaline change. None of the subjects had shown during life any symptoms of Cushing's syndrome of pituitary basophilism.
V. J. W.

Failure of the anterior pituitary to produce hormones in tissue culture. W. C. Cutting and M. R. Lewis (Arch. exp. Zellforsch., 1938, **21**, 523—524).—No evidence was obtained of the formation of thyrotropic, adrenotropic, or gonadotropic hormones in tissue cultures of the rat anterior pituitary.
R. J. O'C.

Effect of adrenal cortical hormone and anterior pituitary extract on carbohydrate levels in fasted hypophysectomised rats. J. A. Russell and J. M. Craig (Proc. Soc. Exp. Biol. Med., 1938, **39**, 59—62).—Fasting in the adrenalectomised rat causes a severe fall of carbohydrate in the blood, liver, and muscle. Cortical extract prevents this fall in the blood and liver, while anterior pituitary extract prevents it in the muscles.
V. J. W.

Relationship between anterior pituitary and carbohydrate metabolism. M. Reiss, S. Kusakabe, and J. Budlowsky (Z. ges. exp. Med., 1938, **104**, 55—70).—O_2 consumption and CO_2 output were determined in normal and hypophysectomised fasting rats after oral administration of 0·4—0·8 g. of glucose. Intact animals burn max. 36% of the sugar. 60% or more of the sugar is metabolised after extirpation of the pituitary; if corticotropic anterior pituitary substance is given, the amount of sugar metabolised falls to 27% and larger amounts of sugar are transformed into fat. The basal metabolic rate of hypophysectomised rats may be lowered by 40%. The blood-sugar is lowered by 10—35% 4—8 hr. following a subcutaneous injection of corticotropic substance in rabbits and dogs.
A. S.

Influence of glycotropic (anti-insulin) factor of anterior hypophysis on insulin-sensitivity of hypophysectomised rabbit. W. H. Newton and F. G. Young (J. Physiol., 1938, **94**, 40—46).—Administration to such rabbits of preps. of prolactin containing the glycotropic factor, but almost free from gonadotropic and thyrotropic factors, results in a diminution of the hypoglycæmic action of 0·1 unit of insulin. The preps. of glycotropic factor used are more effective in normal rabbits.
J. A. C.

Diabetogenic activity of anterior pituitary extract in adrenalectomised dogs. B. A. Houssay and A. Biasotti (Rev. Soc. argent. Biol., 1938, **14**, 308—314).—Anterior pituitary diabetogenic extracts produced diabetes in toads after removal of the pancreas and the adrenals (with hypophysis intact or extirpated). In adrenalectomised dogs, with subtotal pancreatectomy, maintained in good condition by an appropriate salt diet and daily injections of cortico-adrenal extract, the blood-sugar remained normal until a diabetogenic anterior pituitary extract was injected intraperitoneally, when diabetes occurred. Therefore the diabetogenic action of the extract is not exercised through the adrenals.
J. T. L.

Diabetogenic activity of various hypophyseal hormones. B. A. Houssay and A. Biasotti (Rev. Soc. argent. Biol., 1938, **14**, 297—307).—The diabetogenic activity of an extract can be accepted only if the fasting blood-sugar is raised at least to 150 mg.-%. Transitory hyperglycæmia is of no significance. Subtotal extirpation of the pancreas (leaving 3—4 g. of pancreatic tissue) increases the sensitivity of dogs to the diabetogenic action of anterior pituitary extracts; very small doses are effective and prolonged treatment produces permanent diabetes. Occasionally extracts of other tissue produce diabetes; this prep. does not react in as strictly sp. a way as intact animals. The hypophysectomised dog with subtotal pancreatectomy is very sensitive to anterior pituitary lobe extract; 20—40 mg. per kg. per day of fresh bovine anterior lobe intraperitoneally produces an intense diabetes with blood-sugar levels of 180—250 mg.-%. 1—3 days after discontinuing the injections the blood-sugar returns to normal. In this type of dog and in the hypophysectomised pancreatectomised toad, Riddle's prolactin (with and without adrenotropic activity) and Collip's adrenotropic extract had no diabetogenic action. Follicle-stimulating hormone prepared according to Fevold and Hisaw was diabetogenic in the toad; the luteinising hormone had slight diabetogenic activity in the toad but none in the dog. Præphyson (weak gonadotropic and ketogenic activity, moderately strong thyrotropic activity) had no diabetogenic activity in the normal dog and a slight diabetogenic activity in the subtotally pancreatectomised hypophysectomised dog. J. T. L.

Antithyrotropic activity of blood in health and disease. H. Ettel (Klin. Woch., 1938, **17**, 1465—1467).—The serum of 60% of carcinomatous patients and 25% of normal subjects contains antithyrotropic substances as shown by its antagonistic action when injected into guinea-pigs together with 5 mouse units of thyrotropic hormone. E. M. J.

Action of corticotropic anterior pituitary substance on blood iodine. M. Reiss and F. Peter (Z. ges. exp. Med., 1938, **104**, 49—54).—The normal I content of dog's blood, determined with Leipert's method, is 17—19 μg.-%. Administration of corticotropic anterior pituitary substance lowers the blood-I by 50—75%. The thyroid is, at that stage, histologically inactive. Administration of adrenal cortex substance has no definite influence on the blood-I. Cortin inhibits the increase of blood-I produced by thyrotropic anterior pituitary substance. A. S.

Changes in the melanophoric hormone content of the pituitary in carcinoma cases. W. Rodewald (Z. Krebsforsch., 1938, **48**, 161—164).—There is an increase of melanophoric hormone in the pituitary of carcinoma cases. The total increase is due to the inactive form (activated by NaOH), the other two forms (which are extracted by acetic acid and Ringer's solution) being diminished. E. M. J.

Melanophoric hormone in mice and rats affected with malignant tumours. W. Rodewald (Z. Krebsforsch., 1938, **48**, 165—168).—The melanophoric hormone content of pituitary and blood is normal in mice and rats inoculated with tumours; it is increased in mice with spontaneous mammary carcinoma, even before the tumour is manifest. E. M. J.

Cytological relationship between the hypophysis and the germinal epithelium of the testis. A. J. Gatz (Anat. Rec., 1938, **70**, 619—641).—Adult male rats were subjected to gonadectomy, vasectomy, artificial cryptorchidism, and *X*-ray treatment of the testes. Cytological examination of the anterior hypophysis at varying intervals after operation showed that the acidophil cells decrease in size (not marked except after gonadectomy), while the basophil cells in all cases increase in size, no., and secretory activity. This increase in size of the basophils involves the nucleus, cytoplasm, and Golgi apparatus. Secretory droplets are found either in or at the margin of the Golgi apparatus. The large vacuolated cells, which appear as an end phase of this secretory activity, are seen typically 2 months after the loss of the germinal epithelium, whether this resulted from castration or not; hence it is suggested that "sterility cells" is a more appropriate name for them than "castration cells." H. L. H. G.

Species-specificity of the anterior pituitary gonadotropic hormone. M. Benazzi (Boll. Soc. ital. Biol. sperim., 1938, **13**, 720—721).—A review of published work indicates that the evidence of specificity is inconclusive. F. O. H.

Effect of trypsin and ptyalin on the gonadotropic activity of pituitary extracts. W. H. McShan and R. K. Meyer (J. Biol. Chem., 1938, **126**, 361—365).—The luteinising effect of extracts of sheep's pituitary is almost completely destroyed by commercial trypsin preps. of high activity and by cryst. trypsin, but is only slightly diminished by ptyalin. The follicle-stimulating activity of the extracts is destroyed by ptyalin but not by trypsin. W. McC.

Prolan metabolism after splenectomy. B. Rarei and H. Gummel (Arch. exp. Path. Pharm., 1938, **190**, 197).—70 mouse units of prolan were found in the urine of splenectomised men or rabbits. The formation of gonadotropic hormone in the pituitary of splenectomised rats was not increased. I. S.

Gonadotropic activity of pituitary following insulin injections. M. Herlant (Compt. rend. Soc. Biol., 1938, **129**, 57—58).—10 daily injections of 1 unit of insulin increase the no. of eosinophil cells in the rat anterior pituitary. These pituitary glands implanted once daily for three days into immature rats cause the ovaries to grow much bigger than with normal pituitary implants and with a greater degree of luteinisation. P. C. W.

Gonadotropic activity of the pituitary in Addison's disease. M. Herlant (Compt. rend. Soc. Biol., 1938, **129**, 55—57).—The basophil cells were considerably reduced in the anterior pituitary glands in 2 women with Addison's disease, but the gonadotropic activity of these glands was only slightly reduced. P. C. W.

Selective neutralisation of the luteinising activity of gonadotropic extracts of pituitary

by anti-sera. I. W. Rowlands (Proc. Roy. Soc., 1938, B, **126**, 76—87).—Suitable doses of anti-sera to ox pituitary extracts will neutralise the luteinising ability of horse pituitary extracts in the immature female rat, leaving the follicle-stimulating action intact. Larger doses will also inhibit follicular stimulation. F. B. P.

Chick thyroid responses as a basis for thyrotropic hormone assay. G. K. Smelser (Endocrinol., 1938, **23**, 429—438).—The thyroid of the day-old chick is 10 times more sensitive in response to anterior pituitary administration than that of the guinea-pig. The normal and hypertrophied glands are of const. wt. and administration gives the best results in divided doses. V. J. W.

Urinary thyrotropic hormone. K. Emerson, jun., and W. C. Cutting (Endocrinol., 1938, **23**, 439—445).—Urine extracts were injected into guinea-pigs and their thyroids examined after 5 days. Hormone was found in the urine of one hyperthyroid patient out of 6 and one cretin out of 13 examined. It was usually present after thyroidectomy. V. J. W.

Morphological changes in the thyroid gland after injection of thyrotropic anterior pituitary hormone. H. J. Kummer (Endokrinol., 1938, **20**, 326—333).—A single intraperitoneal injection of 2 mg. (20 mouse units) of the hormone produces a definite enlargement of the epithelium of the thyroid follicles in immature male guinea-pigs. A. S.

Changes in the anterior pituitary gland of rats with experimental goitre. R. C. Nelson and J. Warkany (Proc. Soc. Exp. Biol. Med., 1938, **39**, 66—71).—After 2 months on a goitrogenic diet rats show in the anterior pituitary groups of large pale cells resembling those appearing after thyroidectomy. V. J. W.

Effect of anol and dihydrotheelin on mammogenic activity of pituitary gland of rabbits. E. T. Gomez and C. W. Turner (Proc. Soc. Exp. Biol. Med., 1938, **39**, 140—142).—Rabbits were injected for 25 days with anol or dihydrotheelin or both, and their pituitaries were then assayed for mammogenic hormone by injection into male mice. Comparable effects were produced by 12 mg. of pituitary from the rabbits receiving anol only, 20 mg. from those receiving dihydrotheelin only, 7 mg. from those receiving both, and 60—80 mg. from controls. V. J. W.

Effect of anterior pituitary extracts on established lactation in the cow. S. J. Folley and F. G. Young (Proc. Roy. Soc., 1938, B, **126**, 45—76).—Various extracts increase the milk yield to different degrees. Their relative lactogenic activities correspond with their relative glycotropic activities rather than with their relative abilities to stimulate the pigeon crop-gland. There is no satisfactory evidence for a single "lactation hormone." F. B. P.

Chromatophore expansion as functional test for posterior pituitary. J. Lambillon and A. Lejeune (Compt. rend. Soc. Biol., 1938, **128**, 1158—1160).—Urine from normals and patients with non-pituitary diseases injected into frogs gave chromatophore expansion in over 50% of cases. The negative urines when conc. were also found to be positive. It is assumed that the reaction is non-sp. P. C. W.

Experimental gastric ulcer (pitressin episodes). A. J. Nedzel (Arch. Path., 1938, **26**, 988—1008).—Injections of pitressin readily produced gastric and duodenal ulcers in dogs; these were situated in places common to the same lesions in man. Direct observations and histological examination showed the rôle of vascular dysfunction in ulcer formation. Functional spasm (as in these experiments) if prolonged and repeated leads to the development of ulcers in animals which do not normally suffer from them. (18 photomicrographs.) C. J. C. B.

Vagus–post-pituitary reflex. III. Oxytocic component. H. C. Chang, R. K. S. Lim, Y. M. Lü, C. C. Wang, and K. J. Wang (Chinese J. Physiol., 1938, **13**, 269—284; cf. A., 1938, III, 376, 888).—Serum from the isolated dog's head tested on the virgin guinea-pig's uterus, *in vivo* and *in vitro*, was generally inactive, except after central stimulation of the vagus or sympathetic or injection of adrenaline. The vagus effect was abolished by hypophysectomy. An oxytocic principle was extracted from the blood after vagal stimulation. N. H.

Effect of the oxytocic hormone on blood-sugar. A. Simon, A. Vidos, and P. Weiner (Arch. exp. Path. Pharm., 1938, **189**, 732—736).—Oxytocic hormone has a hyperglycæmic effect in man. In rats, large doses of insulin do not affect the amount of oxytocic substance in the pituitary gland. H. Bl.

[Pituitary and] water metabolism. G. Kuschinsky (Arch. exp. Path. Pharm., 1938, **190**, 208—209).—The antidiuretic activity of the posterior pituitary lobe of normal male rats was determined by Burn's method. Daily administration of water ($\frac{1}{20}$ of body-wt.) for one week did not alter the hormone content. Decrease of hormone content was caused by the same vol. of fluid given as a 4% NaCl solution. The hormone content was diminished 24 hr. after intravenous injection of 10—16 mg. of novasurol per kg.; it was increased if the novasurol injection was accompanied by peroral administration of 7—10 c.c. of water. No such effect was obtained with theophylline. The ratio of antidiuretic and oxytocic activity was always const. I. S.

Water balance and blood changes following posterior pituitary extract administration. E. C. Dodds, S. H. Liu, and R. L. Noble (J. Physiol., 1938, **94**, 124—135).—A small % of rabbits develop severe anæmia following subcutaneous injections of this extract, but mild or moderate anæmia is frequently produced. Diet is not an important factor here. A reduction in urine output follows the injections but the fluid intake falls correspondingly. No positive increase in water balance or blood vol. is observed. The anæmia is not the result of blood dilution due to water retention. J. A. C.

Effect of light on uptake of water by frogs injected with posterior pituitary extract. E. M. Boyd and A. E. Smith (Proc. Soc. Exp. Biol. Med., 1938, **39**, 216—218).—The apparent increased uptake

of water in the dark is due to bad ventilation of the dark room and lessened evaporation, and not, as Boyd and Brown believed, to any relation between light and the pituitary gland. V. J. W.

Urea clearances of cats with diabetes insipidus. L. E. Farr, R. Hare, and R. A. Phillips (Amer. J. Physiol., 1938, **122**, 288—295).—A persistent polyuria was produced in cats by damage to the hypothalamico-hypophyseal complex. Urea clearance was unchanged. Diuresis was increased in these cats by the intraperitoneal injection of a saline suspension of anterior pituitary (6 g.). Urea clearance during this exaggerated diuresis showed higher vals. Normal cats were refractory to the diuretic action of anterior pituitary injections but the urea clearances were elevated. Pitressin had no effect on the vol. of urine excreted by normal cats but the urea clearances of both normal and diabetic groups were increased. Pitressin given to diabetic cats after anterior pituitary suppressed the marked diuresis and the urea clearance dropped significantly; when given to normal cats after similar treatment with anterior pituitary it failed to alter the urine flow and was followed by a further increase in the urea clearance. M. W. G.

Diabetes insipidus in a case of fibrous atrophy of the neurohypophysis after an accident. W. Berblinger (Endokrinol., 1938, **20**, 305—325).—A patient developed diabetes insipidus after a severe accident which led to osteomyelitis of the sphenoid bone. Careful histological examination showed a fibrous atrophy of the pars nervosa of the posterior pituitary. The pars intermedia and the anterior pituitary were intact. A. S.

Diabetes insipidus. M. Balado (Zbl. Neurochir., 1938, **3**, 257—289).—The myelinated fibres in the pituitary stalk do not represent connexions between the hypothalamus and pituitary; destruction of the hypothalamic nuclei produces no changes in the pituitary gland. Destruction of the pituitary stalk results in diabetes insipidus. The anterior lobe secretes a diuretic principle. G. C. K.

Dystocia in diabetes insipidus; relation of pituitary oxytocin to parturition. C. Fisher, H. W. Magoun, and S. W. Ranson (Amer. J. Obstet. Gynec., 1938, **36**, 1—9).—In 7 cats in various stages of pregnancy experimental diabetes insipidus was produced by lesions in the anterior hypothalamus, interrupting bilaterally the supra-optic component of the hypothalamico-hypophyseal tract. These animals all carried litters to term but showed disturbances of parturition. They were totally or partially unable to deliver their young or only succeeded after a greatly prolonged labour. It is suggested that the disturbance noted was due to deficiency in pituitary oxytocic hormone. M. H.

Diabetes insipidus from metastatic involvement of the supraoptico-hypophyseal system. M. Bernstein, M. T. Moore, and D. B. Fishbach (Arch. intern. Med., 1938, **62**, 604—617).—Metastases (from primary bronchogenic carcinoma) in the posterior lobe of the pituitary and infundibulum caused diabetes insipidus in a man aged 64 years. C. A. K.

Insensible loss of water in diabetes insipidus. A. H. Bryan and M. A. Metzger (Amer. J. med. Sci., 1938, **196**, 23—27).—The daily insensible water loss, in 2 cases of diabetes insipidus in which the water exchange was subjected to large fluctuations by the administration and withdrawal of pituitrin, was of approx. the same magnitude whether or not pituitrin was injected. In diabetes insipidus it maintained its usual close relationship to the total metabolism. Estimated water balances were calc. from the metabolic data. One case showed a very labile balance with a tendency to dehydration while the other was more stable. R. L. N.

Hyperinsulinism and adenoma of the pancreas. J. Hermannsen and Nestman (Klin. Woch., 1938, **17**, 1589—1591).—A case is described. E. M. J.

Martino's sugar-raising (glucagetic) pancreatic hormone. G. Aragona (R.C. Atti Acad. Lincei, 1938, [vi], **27**, 481—485).—An extract of dog pancreas which was made by Martino in 1927 and when injected in the rabbit had then caused definite hyperglycæmia, instead of hypoglycæmia, was found to have preserved its activity completely after being kept in sealed glass phials for 10 years. The active principle is thought to be identical with Murlin's and Burger's "glucagon." G. S.

Physiological significance of glucagon. G. Martino (Z. ges. exp. Med., 1938, **103**, 771—774).—Glucagon is identical with a hyperglycæmic substance found in the pancreas and in the pancreatic juice (cf. preceding abstract). A. S.

Insulin, its Chemistry and Physiology. H. F. Jensen (London, Humphrey Milford. Oxford University Press, 1938, 252 pp.).—The author, who worked with Abel for some years, gives a comprehensive review of the literature of the subject to Jan., 1938. 1300 references are included. The book deals successively with the history of the subject, prep. and chemistry of cryst. insulin, standardisation and methods of administration, and insulin substitutes. The physiological action of insulin is fully and critically discussed. The book is clearly writtenand will be of great service to all workers in this field. S. W.

Preparation of insulin. D. A. Scott and A. M. Fisher (Trans. Roy. Soc. Canada, 1938, [iii], **32**, V, 59—63).—The present method used in the large-scale prep. of insulin at the Connaught Laboratories is described. R. L. N.

Effects in man and dogs of massive doses of insulin on the composition of the blood-serum. A. Keys (Amer. J. Physiol., 1938, **123**, 608—613).—6 physically normal males with schizophrenia were studied fasting in bed. Venous blood was taken immediately before the insulin injections and again at the height of the insulin reaction. In one case blood was taken during convulsions and after convulsions had been stopped by injection of glucose. Insulin dosage was 20—130 units. The changes observed in the composition of the blood-serum at the height of the reaction were: a moderate increase (4·2%) in serum-proteins; a marked decrease (average 18·4%) in K; non-protein-N fell by 12·4%; serum-

Na rose slightly. Studies on dogs gave similar results. The changes in serum-K are attributed to the secondary release of adrenaline. M. W. G.

Response of diabetics to a standard test dose of insulin. G. KLATSKIN (J. clin. Invest., 1938, **17**, 745—750).—In 50 diabetics the response of the fasting blood-sugar to a standard test dose of insulin varied greatly; the division of them into relatively insulin-sensitive and relatively insulin-resistant groups is an artificial one. No difference was seen in the reaction of the two groups in changing from a low- to a high-carbohydrate diet. C. J. C. B.

Analysis of insulin response of rabbits after injection of diabetic serum. F. C. DOHAN (Proc. Soc. Exp. Biol. Med., 1938, **39**, 24—28).—Injection into rabbits of 10 c.c. of serum from diabetic patients caused no significant modification in their blood-sugar response to insulin whether the patients were over or under 49 years of age. V. J. W.

Insulin-insensitivity: its possible relation to the pituitary gland. G. FLAUM (Endocrinol., 1938, **23**, 630—636).—Glucose tolerance tests on normal, diabetic, and 2 diabetic acromegalic subjects, with and without insulin, showed that in the subjects with acromegaly the blood-sugar was very little affected by large doses of insulin. V. J. W.

Oral administration of hormonal proteins. Thyroid protein and insulin. H. WILSON, T. S. SAPPINGTON, and W. T. SALTER (Endocrinol., 1938, **23**, 535—545).—Insulin treated with pepsin and HCl at p_H 3·7 loses its activity but regains it at p_H 6·8. Insulin–HCl (du Vigneaud) given by mouth caused hypoglycæmic convulsions in mice with doses of 20 I.U. If this compound was prepared by addition of hydrated $FeCl_3$ instead of HCl, convulsions were caused by 5·5 I.U. in black mice and 1·1 I.U. in albino mice. V. J. W.

Local atrophy of fat tissue after insulin injections. L. CORNIL (Presse méd., 1938, **46**, 1282—1283).—A review. G. SCH.

Dietetic treatment of diabetes mellitus with special reference to high blood pressure. D. EMBLETON (Proc. Roy. Soc. Med., 1938, **31**, 1183—1204).—The carbohydrate tolerance of obese diabetics may be improved by a high-protein diet, which in some cases renders the use of insulin unnecessary. In the absence of gross renal damage a similar diet lowers the blood pressure of hypertensives. W. J. G.

Diabetes and pregnancy. Observations on the offspring. F. S. SMYTH and M. B. OLNEY (J. Pediat., 1938, **13**, 772—786).—The infant showed post-mortem relative macrosomia, advanced bone age, and more mature genital tract suggesting a pituitary disturbance. There were hypertrophy and hyperplasia of the islets of Langerhans, cystic degeneration of the ovaries, and excessive development of the pituitary, thyroid, and endometrium. The blood-sugar at death was 38 mg.-%. C. J. C. B.

Treatment of insulin cases by one daily injection. R. D. LAWRENCE (Acta med. Scand., 1938, Suppl. 90, 32—53).—Mild cases of diabetes mellitus, requiring 10—30 units of insulin in two injections of 5—15 units, are satisfactorily controlled by 1 injection of protamine–Zn–insulin per day. The risk of hypoglycæmic reactions is slight. In severe cases with greater insulin want, large doses of protamine–Zn–insulin have to be given and extra sol. insulin should be added before breakfast. Protamine–Zn–insulin should not be given in diabetic coma. A. S.

Ash content of nickel–insulin crystals. A. M. FISHER and D. A. SCOTT (Trans. Roy. Soc. Canada, 1938, [iii], **32**, V, 55—57).—Ni–insulin crystals containing 0·41% of Ni were prepared from highly purified ash-free preps. of insulin. In appearance they were identical with Zn–insulin, Co–insulin, or Cd–insulin crystals. R. L. N.

Insulin and zinc content of normal and diabetic pancreas. D. A. SCOTT and A. M. FISHER (J. clin. Invest., 1938, **17**, 725—728).—14 normal and 18 diabetic pancreases were obtained at autopsy; the insulin and Zn content of each was determined. The insulin content of the diabetic pancreas was only ¼ of that in the normal pancreas. The Zn of the diabetic pancreas was only ½ the normal. There was no marked difference in Zn concn. in livers of diabetics and non-diabetics. Zn may aid in the storage of insulin. C. J. C. B.

Experimental and clinical studies on new insulins. F. STRIECK (Dtsch. Arch. klin. Med., 1938, **182**, 373—401).—Depancreatised dogs were treated with protamine–insulin and protamine–Zn–insulin. The action on the blood-sugar lasts 3—4 times as long as that of standard insulin. Hypoglycæmic reactions were not observed at low blood-sugar level, at which, after standard insulin, severe symptoms occurred. Carbohydrate tolerance is improved and the amount of insulin required can be reduced. Similar experiences with depot insulin were obtained in 87 diabetics. The transfer from standard insulin to one of the depot insulins has to be done gradually. (B.) A. S.

Discussion on the value of zinc–protamine–insulin in treatment. (Proc. Roy. Soc. Med., 1938, **31**, 1217—1218).—R. D. LAWRENCE. Mild cases are controlled by a daily injection of 20—30 units of protamine–insulin before breakfast. More severe cases require the addition of sol. insulin to the protaminate, or even a second dose of sol. insulin in the evening. R. S. AITKEN. Rate of absorption affects the action of protaminate and is roughly proportional to the dose. A moderate dose given in the morning usually exerts its effect over 24 hr. or longer and the carbohydrate should be spread over the day, and graded from a large amount in the forenoon to relatively little in the evening. Cases which cannot be kept out of hypoglycæmia are better treated with sol. insulin. W. J. G.

Carbohydrate tolerance after protamine–insulin. H. T. RICKETTS (J. clin. Invest., 1938, **17**, 795—801).—In severe diabetes, with the fasting blood-sugar brought to normal by protamine–insulin, post-prandial hyperglycæmia is not controlled without extra insulin; under similar conditions the blood-

sugar curves of mild diabetics approach normal. These facts do not support the contention that the liver operates to reduce hyperglycæmia without the aid of extra insulin. C. J. C. B.

Continued use of protamine–zinc–insulin in severe diabetes mellitus. E. P. Ralli, H. D. Fein, and F. J. Lovelock (Amer. J. med. Sci., 1938, **196**, 28—36).—Of 20 patients with severe diabetes mellitus who had been observed for 3 to 72 months on regular insulin and were transferred to protamine–Zn–insulin, only 3 could be adequately controlled on the new treatment alone. Protamine–Zn–insulin had to be stopped at the end of 1—2 months in 4 cases, and after 8 months or more in 5 cases because of alternating periods of uncontrolled glycosuria and insulin shock. Sol. insulin as well as protamine–insulin was required to control 8 cases. The 3 successfully treated patients had low basal metabolic rates. R. L. N.

Experiences with depot insulin. D. Maier-Weinertsgrün (Dtsch. Z. Verdaukr. Stoffw., 1938, **1**, 13—20).—Protamine– and protamine–Zn–insulin were used in 50 cases of diabetes; one daily injection sufficed in all but 3 cases. This type of insulin is not well suited for the severe case of diabetes. E. M. J.

Treatment of diabetes with protamine–insulin. G. Stötter (Dtsch. Arch. klin. Med., 1938, **182**, 413—439).—The advantages and disadvantages of the diabetes therapy with protamine–Zn–insulin are discussed and detailed therapeutic schemes are given. A. S.

Treatment of diabetes mellitus with deposulin. R. Schramm (Dtsch. Arch. klin. Med., 1938, **182**, 402—412).—Satisfactory results were obtained in mild and moderately severe cases of diabetes. Deposulin has to be injected subcutaneously. It was successfully used, in cases of liver disease, when it was necessary to put on wt. and when standard insulin produced hypoglycæmic reactions. A. S.

Depot insulin therapy in children. F. Linneweh and M. Eitel (Klin. Woch., 1938, **17**, 1507—1508).—Depot insulin is especially valuable in the treatment of diabetes in children, as it evens out the blood-sugar day curve and allows easier addition of carbohydrates. Hypoglycæmic symptoms are different from those observed with ordinary insulin (diminished concentration and drowsiness). E. M. J.

Effect of protamine insulinate on the œstrous cycle of white rats. J. R. Williams (J. lab. clin. Med., 1938, **23**, 1237—1240).—In therapeutic doses neither protamine insulinate nor pure protamine had any effect on the œstrous cycle of white rats. C. J. C. B.

(j) REPRODUCTION, HEREDITY, AND EXPERIMENTAL EMBRYOLOGY.

Physiological response of ocular transplants of the seminal vesicle in female rabbits. R. H. Melchionna and S. Flanders (Endocrinol., 1938, **23**, 468—475).—These transplants into the anterior chamber of the eye show the same normal daily changes as in the male. In either sex the transplant increases in size on administration of either œstradiol or testosterone. V. J. W.

Cytology of prostatic secretion. K. Röhlich (Z. mikr.-Anat. Forsch., 1938, **43**, 451—465).—A description of some of the cytological details of secretion by the prostate of man, the cat, and the rat is given from sections stained by ordinary methods. The apocrine nature of this gland is established and accounts for the varying epithelial height. J. H. G.

Contractility and reactions of prostate from normal and castrated rats. T. Martins (Compt. rend. Soc. Biol., 1938, **129**, 71—74).—The lobe of the prostate adherent to the concave surface of the seminal vesicles is removed from normal and castrated rats and castrated rats treated with sex hormones. It is placed in Locke's solution and the reactions are noted when adrenaline, nicotine, acetylcholine, pilocarpine, eserine, ergotamine, yohimbine, atropine, pituitrin, and $BaCl_2$ are added. The prostate from the castrated animal exhibits rhythmic contractions and reacts to the added drugs by tonic contractions and increased rhythmicity. The normal prostate is quiescent and less sensitive to added drugs. Testosterone injected into the castrated rat abolishes the abnormal prostatic behaviour. Œstradiol and progesterone have no effect. P. C. W.

Treatment of prostatic hypertrophy by testicular extract. B. Cunéo and J. Jomain (Presse méd., 1938, **46**, 913—916).—Total testicular extract was used and gave results equal to those with synthetic hormone. The functional disturbance is diminished; prolonged treatment modified the prostatic hypertrophy. Hormone treatment may prevent recurrence after endoscopic resection. A. J. B.

Mechanism of action of male hormones on prostatic hypertrophy. C. Champy, Heitz-Boyer, and R. Conjard (Presse méd., 1938, **46**, 1097—1101).—A review. A. J. B.

Hormonal treatment of prostatic hypertrophy with testosterone propionate. Zehn (Münch. med. Wschr., 1938, **85**, 1712—1714).—Testosterone propionate (10 mg. per day) was intramuscularly injected; excellent results were obtained. A. S.

Relationship between dosage of prolan and weight response of testes and accessory sex organs in the immature rat. R. C. Li (Chinese J. Physiol., 1938, **13**, 323—336).—Six different subcutaneous doses of prolan, totalling 0·01—0·2 mg. per rat, were given twice daily over 4 days; the animals were killed on the 5th day and the testes, epididymes, seminal vesicles, prostate, and coagulating glands weighed. 0·02 mg. increased the wt. of the testes and epididymes, 0·04 that of the seminal vesicles, coagulating glands, and prostate; the wts. of the last 3 increased with the dosage over the range tested. N. H.

Hormone treatment of imperfect descent of the testis. A. W. Spence and E. F. Scowen (Lancet, 1938, **235**, 983—987).—Gonadotropic hormone extracted from the urine of pregnant women was given intramuscularly (not less than 500 rat

units twice a week) to 65 cases of undescended testis. The best results were obtained in boys aged 10 to 14 years; bilateral cases responded better than unilateral. If descent has not occurred after 6 months' treatment anatomical abnormalities are probable. There were no signs of degenerative testicular changes, and no undue enlargement of the penis occurred. C. A. K.

Effect of synthetic male hormone substance on descent of testicles in human cryptorchidism. J. B. Hamilton and G. Hubert (Proc. Soc. Exp. Biol. Med., 1938, **39**, 4—5).—Testosterone propionate caused some improvement in 8 cases of bilateral true cryptorchidism and in 1 case out of 9 of unilateral cryptorchidism. V. J. W.

Effect of male hormone on descent of the testes. J. B. Hamilton (Anat. Rec., 1938, **70**, 533—541).—A cryptorchid condition is normal in *Macacus rhesus* until the age of 3 or 4 years. Injections of testosterone during this immature period caused a descent of the testes to a scrotal position; enlargement of the prostate, seminal vesicles, penis, cord elements, and scrotum preceded the descent. H. L. H. G.

Form and behaviour of the Sertoli cell nucleus. E. Froriep (Anat. Anz., 1938, **86**, 356—365).—Histological study of the testes of guinea-pigs, oxen, and pigs shows that the Sertoli cell nuclei possess projecting processes and folds, at the bases of which lie nucleoli associated with one or two "juxta-nucleolar" bodies. From the latter, granules containing thymonucleic acid are extruded into the substance of the nucleus. J. H. G.

Does compensatory hypertrophy of the adult human testis occur? H. A. Zide (Proc. Staff Mayo Clin., 1938, **13**, 268—269).—19 adult patients in whom unilateral testicular abnormality occurred after puberty were studied. Testes of 29 normal adults were studied as controls. No compensatory hypertrophy had occurred. A. J. B.

Reproductive organs and semen of the boar. F. F. McKenzie, J. C. Miller, and L. C. Bauguess (Missouri Agric. Exp. Sta. Res. Bull., 1938, No. 279, 122 pp.).—Analytical and physiological data are presented. Seminal vesicles contain a viscid fluid of p_H 6·7 and contribute 15—25% of the total vol., most of the K, P, and N, and all the glucose in the semen. Cowper's glands secrete a white waxy material, p_H 7·2, comprising 10—20% of the total vol. of the semen, and contributing most of the Na, Ca, and Mg and a considerable portion of the N. Epididymal fluid is rich in P and N. Prostatic and urethral secretions provide most of the Cl′ in the semen. A. G. P.

Antigenic structure of mammalian spermatozoa. W. Henle, G. Henle, and L. A. Chambers (J. Exp. Med., 1938, **68**, 335—352).—The heads and tails of mammalian spermatozoa, broken by ultrasonic vibrations, contain separate heat-labile antigens which give rise to two types of agglutination reaction. A heat-stable species-sp. antigen is common to both heads and tails. A. C. F.

Influence of serum on motility of spermatozoa of the domestic cock. Z. Grodzinski and J. Marchlewski (Bull. Acad. Polonaise, 1938, **B**, 55—68).—The motility of cocks' spermatozoa is preserved for very variable periods (24—192 hr.) in the serum of hens, pheasants, guinea-fowl, capons, and certain fish and amphibians; it quickly ceases in serum from pigeons and various mammals and reptiles. The serum of cocks (and of one hen showing masculine behaviour) agglutinates the spermatozoa but this can be prevented by heating either the serum or semen. E. M. W.

Nutrient media and equilibriated salt solutions as diluents for semen. A. Bernschtein (Orenburg Vet. Inst. U.S.S.R., Physiology of Spermatozoa, 1933, 116).—Presence of nutrients in the medium does not prolong the survival of spermatozoa. Spermatozoa have high resistance to solutions containing a single neutral salt or sugar. Ch. Abs. (*p*)

(A) Glucose metabolism in semen. A. Bernschtein. **(B) Lactic acid content of semen.** A. Bernschtein and I. Slovotschtov. **(C) Decomposition of hexosephosphoric acid in semen.** A. Bernschtein and N. Scheruigin (Orenburg Vet. Inst. U.S.S.R., Physiology of Spermatozoa, 1933, 9, 26, 36).—(A) Bull, dog, and stallion semen contained 0·300, 0·116, and 0·082% of glucose respectively. The concn. in spermatozoa is substantially const.; that in seminal fluid varies. Outside the body the glucose concn. in fluid, but not in spermatozoa, diminishes unless spermatozoa are separated by centrifuging.

(B) Fresh semen contains 0·04—0·05% of lactic acid, which increases on storage outside the body. Cessation of motility of stored spermatozoa is not associated with a particular level of acid concn.

(C) Hexosephosphoric acid contents of semen vary with species and among animals of the same species. Changes in hexose phosphate concn. in surviving semen are unrelated to the disappearance of glucose or to the formation of lactic acid. Ch. Abs. (*p*)

Creatine, creatinine, and phosphagen contents of seminal fluid. I. Ilasov (Orenburg Vet. Inst. U.S.S.R., Physiology of Spermatozoa, 1933, 48).—The acid-labile, ortho- and pyro-phosphate contents of semen of man, bull, dog, and stallion decreased in the order named. Semen contains creatinine 13·9 and creatine 3·22 mg. per 100 g. The phosphagen content diminishes during storage of semen outside the body. No relation was apparent between the duration of motility of spermatozoa and the decomp. of creatinephosphoric acid in the fluid. Ch. Abs. (*p*)

p_H of human seminal fluid at different temperatures and dilutions. V. Zagami (R. C. Atti Acad. Lincei., 1938, [vi], **27**, 488—492).—The p_H of human seminal fluid collected anaërobically was determined electrometrically by the Mislowitzer quinhydrone syringe-electrode, using for reference a calomel electrode. Raising the temp. from 20° to 38° lowers the p_H from 7·46 to 7·19. Dilution of the fluid up to 10 times with 0·9% neutral saline at 20° only lowered the p_H by 0·04, indicating a good buffering power. G. S.

p_H of the seminal vesicles content of white rats. V. Capraro (R. C. Atti Acad. Lincei, 1938, [vi], **27**, 486—488).—Under local anæsthesia the seminal vesicles were punctured and the contents aspirated anaërobically with the Mislowitzer quinhydrone syringe-electrode. The p_H determined electrometrically at 18—20° was 6·51. It was unaffected by previous sexual activity. G. S.

Effect of androgenic substances on the growth of the teat and mammary gland in the immature male guinea-pig. A. C. Bottomley and S. J. Folley (Proc. Roy. Soc., 1938, **B**, **126**, 224—241).—In the young male guinea-pig teat growth ceases after castration. Teat growth is stimulated by certain unsaturated androgens, including testosterone, but not by the saturated androgens or Δ^4-androstenedione. Some androgens stimulate mammary duct proliferation, but produce little alveolar development. The most potent substance investigated, both on teat growth and mammary duct development, was *trans*-Δ^5-androstenediol. F. B. P.

Induction of premature puberty with androgenic substance. R. H. Kunstadter (Endocrinol., 1938, **23**, 661—665).—Administration of testosterone propionate (5 mg. twice weekly) caused premature puberty and genital hypertrophy in two boys of 11. V. J. W.

Effect of testosterone treatment in embryo on sexual development. V. Dantchakoff (Compt. rend. Soc. Biol., 1938, **128**, 1116—1119).—Guinea-pig embryos were injected with testosterone *in utero* and the young pigs injected regularly after birth. The animals develop a complete set of male accessory sex organs but some time after birth in spite of continued treatment the vas deferens and epididymis regress while the uterus develops rapidly. As there is no vagina the uterus develops a connexion into the urethra to get rid of its secretions. P. C. W.

Effect of testosterone on growth of sexual organs in the embryo. V. Dantchakoff (Compt. rend. Soc. Biol., 1938, **128**, 1119—1123).—The technique for injecting guinea-pig embryos *in utero* is described. Results are based on the injection of 468 embryos of which 288 survived. 32 days after insemination no change is obtainable beyond hypertrophy of the clitoris in the female and of the secondary sex glands in the male. 26—28 days after insemination the sexual organs are differentiating and injections at this time cause irregular results. Injection before the 24th day results in development of male organs in the female embryo, the seminal vesicles alone developing irregularly. No matter how early the injection the structure of the ovary is unaffected. P. C. W.

Effect of male hormone on birth and prenatal development in the rat. J. B. Hamilton and J. M. Wolfe (Anat. Rec., 1938, **70**, 433—440).—Daily injections of testosterone propionate were given to rats between the 10th and 17th days of pregnancy. The effect on the mother was to prevent birth if injections occurred before the 15th day. The effect on the fœtus was two-fold; (1) arrest of development and lack of viability in those injected early in pregnancy, and (2) abnormal development, as all the female offspring appeared superficially to be rather masculine in their perineal characters. On growth to maturity, nevertheless, the reproductive system of such young became functional. H. L. H. G.

Oral administration of male sex hormones. K. Miescher and E. Tschopp (Schweiz. med. Wschr., 1938, **68**, 1258).—The action of orally administered methyltestosterone, testosterone, 3-*cis*-17-*trans*-androstanediol, androstenedione, testosterone propionate, and androsterone was tested on the wt. of the seminal vesicles and prostate of castrated rats. Methyltestosterone is the most potent. A. S.

Cutaneous absorption of sex hormones. C. R. Moore, J. K. Lamar, and N. Beck (J. Amer. med. Assoc., 1938, **111**, 11—14).—Testosterone or testosterone propionate when applied as an ointment on the skin of guinea-pigs and rats was readily absorbed and produced the typical effects on the accessory reproductive organs. Œstradiol in a face cream applied similarly produced the typical effects of the female sex hormone. R. L. N.

Colorimetric assay of urinary androgens. R. B. Oesting (Proc. Soc. Exp. Biol. Med., 1938, **39**, 76—77).—One of the author's colour units corresponds with 90 μg. of pure androsterone in solution, but one colour unit of urine extract is equiv. in activity to 10 μg. of androsterone. V. J. W.

Urinary excretion of testis hormone during treatment of dystrophia adiposo-genitalis with gonadotropic hormone. K. Sand and P. Plum (Endokrinol., 1938, **20**, 333—343).—3 cases of dystrophia adiposo-genitalis were treated with gonadotropic hormone (chorion hormone obtained from pregnancy urine; 5000—6000 mice units were given) and thyroidine. The urinary excretion of testicular hormone was increased in 2 cases, coinciding with clinical improvement. A. S.

Excretion of sex hormones in urine of adult male monkeys. R. I. Dorfman and G. van Wagenen (Proc. Soc. Exp. Biol. Med., 1938, **39**, 35—36).—In 3 monkeys the œstrogenic excretion was 1·1—2·5 units, and the androgenic 1—4·7 units, per 24 hr. V. J. W.

Excretion and fate of androgens. II. Conversion of androgens into œstrogens. C. D. Kochakian (Endocrinol., 1938, **23**, 463—467).—A no. of testosterone derivatives were injected into dogs. No œstrogens could be detected in their urine. V. J. W.

Male sex hormones of human urine and blood. D. R. McCullagh and W. O. Osborn (J. Biol. Chem., 1938, **126**, 299—303).—The androgenic material present in male human blood and fresh urine is inactive but can be activated by boiling with acid. E. M. W.

Use of male sex hormones. O. Lippross (Münch. med. Wschr., 1938, **85**, 1668—1672).—Repeated intramuscular injections of male sex hormone lower the blood-sugar in diabetics; carbohydrate tolerance increases and the administration of insulin can be restricted. A. S.

Effect of male hormone on oxygen consumption and fat metabolism. W. HOFFMEISTER (Arch. exp. Path. Pharm., 1938, **189**, 637—655).—The basal metabolic rate (in cal. per sq. m. per 24 hr.) in male rats is decreased if they are castrated while still growing. This is due to the increased deposition of fat. H. BL.

Effect of high doses of androgenic substances on weights of testes, accessory reproductive organs, and endocrine glands of young male guinea-pigs. A. C. BOTTOMLEY and S. J. FOLLEY (J. Physiol., 1938, **94**, 26—39).—*cis*-Androstanediol, Δ^5-*trans*-androstenediol, Δ^4-androstenedione, *cis*-androsterone, dihydrotestosterone, 17-methyltestosterone, testosterone, and testosterone as propionate administered in daily doses of 2 mg. for about 30 days cause atrophy of the testes. Testosterone propionate (2·36 mg. daily) does not produce such atrophy if suitable doses of horse anterior lobe extract be given simultaneously. Δ^4-Androstenedione, dihydrotestosterone, 17-methyltestosterone, and testosterone given to intact guinea-pigs and Δ^5-*trans*-androstenediol given to castrated animals cause significant growth of the prostate, but not of the vesicles. None of the androgens causes significant changes in wts. of the hypophysis, thyroid, or adrenal. J. A. C.

Effects of testosterone propionate. A. PERALTA RAMOS and E. O. COLOMBO (Bol. Acad. Nac. Med. Buenos Aires, 1938, 211—223).—Injections of 5—100 mg. of testosterone propionate previous to or simultaneously with 100 R.U. of gonadotropic extract (prolan) did not prevent ovulation in the virgin rabbit. Ovarian hormones (œstrone and progesterone) neutralised the ovulatory effect of prolan; inhibition of ovulation was complete when the ratio œstrone : prolan was 18 : 1. Injection of 5—20 mg. of testosterone propionate daily beginning 4 days after copulation did not prevent proliferation of the uterine mucosa and implantation of the embryo. The vitelline sac developed normally, but the fœtus suffered necrobiosis. This contrasted with the effect of œstrone, which prevented development of the vitelline sac and so killed the fœtus, because the enlargement of the uterus was insufficient. J. T. L.

The nipple test. Studies in the local and systemic effects on topical application of various sex hormones. W. JADASSOHN, E. UEHLINGER, and A. MARGOT (J. invest. Dermatol., 1938, **1**, 31—43).—Testosterone propionate, androsterone, Δ^4-androstenedione, androstanedione, adrenosterone, and corticosterone when applied in an aq. solution to the nipples of male guinea-pigs caused an enlargement of of the treated nipple; anol, œstrone, equilin, and equilenin caused a greater enlargement. Oily solutions of testosterone propionate and androsterone applied in a similar manner were without effect. A hæmatogenous effect of percutaneously absorbed sex hormone (enlargement of the untreated nipple) was found only with œstrone and equilin. C. J. C. B.

Action of *X*-substance and testosterone on separate injection. J. J. POLAK (Acta brev. neerl. Physiol., 1938, **8**, 65—67).—Separate subcutaneous injections into castrated rats of testosterone and "*X*"-substance, obtained from testis or male urine, have considerably less effect on the seminal vesicles and on the prostate gland than simultaneous injections. It is concluded that the absorption of testosterone is delayed or that esterification takes place under the influence of "*X*"-substance. A. S.

Comparison of the activity of androsterone and testosterone. L. A. VAN DER WOERD and S. E. DE JONGH (Acta brev. neerl. Physiol., 1938, **8**, 80—82).—420 μg. of androsterone has the same action as 6 μg. of testosterone in castrated male mice. A. S.

Influence of testis on sexual plumage in the domestic fowl. A. W. GREENWOOD and J. S. S. BLYTH (J. Genet., 1938, **36**, 501—508).—Introduction of testicular substance from 6 similar males into the abdominal cavity of a young Brown Leghorn male induced typical female plumage. This supports the hypothesis that female feathering in male birds depends on the gynæcogenic action of the testis, on the level of functional activity of the gonads, and on the sensitivity (which may vary in different birds) of the epidermal structures. F. B. P.

Differential sensitivity of the somatic tissues to the male sex hormone in two Br. Leg. × R.I. hens. C. J. BOND (J. Genet., 1938, **36**, 367—371.)—Male secondary sex characters were limited to the comb and wattles in each bird. Each had a single small quiescent ovary containing an encapsulated mass of cells resembling interstitial testicular cells. It is suggested that the comb has a lower threshold of sensitivity to the male hormone than have the feathers, and that this differential sensitivity depends on a genetic factor. F. B. P.

Dose of testosterone necessary to maintain comb size in castrated cocks. F. CARIDROIT and V. REGNIER (Compt. rend. Soc. Biol., 1938, **129**, 445—447).—A daily dose varying between 0·3 mg. and 1·7 mg. of testosterone propionate is necessary in different individuals. The min. dose producing comb growth when the comb has regressed is much less. P. C. W.

Influence of testosterone propionate on vaginal opening in the immature albino rat. H. S. RUBINSTEIN, A. R. ABARBANEL, and D. N. NADER (Proc. Soc. Exp. Biol. Med., 1938, **39**, 20—22).—Injections of 1 mg. daily caused vaginal opening to take place in both castrate and non-castrate animals about 11 days earlier than in non-castrate controls. V. J. W.

Gonadotropic action of testosterone propionate on the immature mouse ovary. W. F. STARKEY and J. H. LEATHEM (Proc. Soc. Exp. Biol. Med., 1938, **39**, 218—220).—Single doses of 0·5—2 mg. cause follicle stimulation and uterine growth. V. J. W.

Effect of long-term injections of testosterone on the guinea-pig endometrium. D. PHELPS, J. C. BURCH, and E. T. ELLISON (Endocrinol., 1938, **23**, 458—462).—Castrates were injected daily for up to 34 days with either 1 mg. of testosterone propionate or 2 rat units of theelin. Both series shewed cystic dilatation of the uterine glands, proliferation of

surface and glandular epithelia, and growth of stroma, but these reactions were more marked in the theelin-treated animals. V. J. W.

Inhibition of lactation during the puerperium by testosterone propionate. R. KURZROTE and C. P. O'CONNELL (Endrocrinol., 1938, **23**, 476—478).—25 mg. administered twice daily inhibited lactation in 48 hr. in 21 cases tried. V. J. W.

Biochemical transformation of dehydroandrosterone into testosterone. L. MAMOLI (Ber., 1938, **71**, [*B*], 2278—2280).—Dehydroandrosterone is added to buffered, sterile yeast water and the mixture is sterilised after cooling, a mixture of oxidising bacteria (cf. A., 1936, 77) is added, and the liquid is shaken for 48 hr. at 32° under O_2. The suspension is then filtered and the residue is treated with alcohol and freed from bacteria by filtration. The alcoholic solution is added gradually to highly active baker's yeast, the activity of which is prolonged by further addition of sucrose. Testosterone is obtained in 81% yield by extracting the mixture with ether. H. W.

Effect of triphenylethylene on capons. A. M. HAIN (Brit. Med. J., 1938, II, 1043).—Triphenylethylene, like œstrin and diethylstilbœstrol, causes hen-feathering in the brown Leghorn capon, but has no effect in old English game bantams, which have a low sensitivity to œstrin. C. A. K.

Preparation of concentrated antigonadotropic factor (antiprolan). B. ZONDEK, F. SULMAN, and A. HOCHMAN (Biochem. J., 1938, **32**, 1891—1896).—The highest degree of purity is attained by isoelectric pptn. from dil. antiserum followed by dissolution of the ppt. in Locke's solution and removal of hydrophobic material by dialysis against running water or by shaking with aq. $(NH_4)_2SO_4$ (25% saturated) and dialysing against running water. Purification cannot be achieved by common methods of adsorption and elution or by direct or fractional pptn. The purified material, which is similar to an antibody and is not a hormone, contains 10 antiprolan units per mg. W. McC.

Androgenic activity of ovarian grafts in castrated male rats. R. DEANESLY (Proc. Roy. Soc., 1938, **B**, **126**, 122—135).—Most functional grafts caused secretion and growth in the prostate. Since the response of the seminal vesicles is much slighter, the androgenic substance is not testosterone, but is similar to androsterone. Androgenic activity is associated with luteinisation of the theca interna in the graft. Luteinisation of the granulosa in the graft by gonadotropic extracts does not increase the androgenic activity. F. B. P.

Masculinising elements in the ovary. R. A. REIS and O. SAPHIR (Amer. J. Obstet. Gynec., 1938, **35**, 954—959).—Three instances of foreign cell structures in the ovaries, morphologically resembling both lutein and adrenal cortical cells, are reported. The accompanying symptoms of interrenalism suggest the adrenal cortical origin of these tumour cells. M. H.

Homology of the vesicular ovarian follicles of the mammalian ovary with the coelom. H. W. MOSSMAN (Anat. Rec., 1938, **70**, 643—655). H. L. H. G.

Ovary, tube, and uterus as a functional unit. A. LOESER (Arch. exp. Path. Pharm., 1938, **190**, 225—226).—Structural changes in the thyroid glands of rats after castration could not be brought back to normal by follicular and corpus luteum hormone. The same changes were produced by tying the fallopian tubes or hysterectomy. Intrauterine injections of follicular hormone, œstrone, œstradiol, or œstradiol monobenzoate in castrated rats, rabbits, and guinea-pigs inhibited the thyroid changes. I. S.

Glycogen in the rat's ovary. W. BRANDENBURG (Z. mikr.-Anat. Forsch., 1938, **43**, 581—593).—Sections of the ovary of rats of various ages were stained by Best's method to show glycogen, which was found in the ova of normal and atretic follicles. It first appears in the ova 7 days after birth, being most abundant there while the follicle is growing, and is only small in amount in ova of ripe follicles. Primordial follicles contain glycogen only from the 2nd to the 4th week. The hilus tissue of the ovary contains glycogen only in the first 4 days, and it is present in the media of small arteries at the 3rd week. J. H. G.

(A) Ketonic œstrogen of sow ovaries. (B) Theelin from human placenta. W. W. WESTERFELD, S. A. THAYER, D. W. MACCORQUODALE, and E. A. DOISY (J. Biol. Chem., 1938, **126**, 181—193, 195—200).—(A) The ketonic fraction consists of theelin. The actual concns. of theelin and dihydrotheelin per kg. of ovaries are 20 and 220 rat units respectively, these being equiv. to 0·01 mg. of theelin and 0·014 mg. of dihydrotheelin.

(B) The isolation of theelin from human placentæ is described. It is the principal ketonic œstrogen in the placenta. J. N. A.

Comparison of pregnancy urine injection and coitus as stimuli for ovulation in the rabbit. B. B. RUBENSTEIN (Proc. Soc. Exp. Biol. Med., 1938, **39**, 191—194).—O_2 consumption of slices of rabbit tissues was measured for 5 hr. after death. The O_2 consumption of the anterior pituitary was trebled in the 7th to 12th hr. after injection of pregnancy urine but was not affected by coitus. V. J. W.

Experimental production of ovulation, luteinisation, and cysts by the corpus luteum in adrenalectomised anœstrus cats. H. B. FRIEDGOOD and M. A. FOSTER (Amer. J. Physiol., 1938, **123**, 237—242).—The ovarian follicles of normal, anœstrus cats and adrenalectomised anœstrus cats were matured and ovulated by the administration of follicule-stimulating hormone and luteinising hormone by the method of Foster and Hisaw. Ovulation and functional luteinisation are delayed in the adrenalectomised cats. Corpus luteum cysts were found in the ovaries of both normal and operated animals but were larger in the latter. These cysts (5—7 mm. diameter) were observed in the ovaries of cats with

adrenal insufficiency as well as of those adequately supported by cortin. M. W. G.

Experimental transplantation of the ovaries. Autotransplants of dog ovary into omentum. G. H. ROMBERG (Amer. J. Obstet. Gynec., 1938, **35**, 834—838).—Varying-sized autotransplants of dog ovary into the omentum, using a varying no. of fixation sutures, showed after 8 and 9 months histological evidence of functioning tissue; with more handling of ovarian fragments there was less evidence of functioning ovarian tissue in the transplants. M. H.

Mechanism of human fertilisation. Progression of the sex cells in the ovarian-tubular tract. M. H. KEIFFER (Bull. Acad. Méd. Belg., 1938, **3**, 435—444).—The nerve supply of the mucous membrane and other tissues of the human Fallopian tube is described, and their probable function in the movements of the ovum from the ovary discussed. Radiographic pictures after lipiodol suggest that the sex cells follow a straight fold in the centre of the tube. A comparison between the physical properties of lipiodol and spermatozoa show that the results found for lipiodol probably can be applied to spermatozoa. H. B. C.

Comparative effects of light stimulation and administration of gonadotropic hormones on female sparrow. G. M. RILEY and E. WITSCHI (Endocrinol., 1938, **23**, 618—624).—Artificial light is unable to cause ovarian development in autumn and winter. Gonadotropic hormones cause very little effect in October, slightly more up to February, and full effect later. V. J. W.

Disgerminoma of the ovary. E. NOVAK and L. A. GRAY (Amer. J. Obstet. Gynec., 1938, **35**, 925—936).—17 cases of ovarian disgerminoma were studied. The clinical and pathological characteristics and histogenesis of the tumour are given. M. H.

Innervation of the ovary, uterine tube, testis, and epididymis. G. A. G. MITCHELL (J. Anat., Lond., 1938, **72**, 508—517).—Dissections and clinical observations show that nerves for the ovary and uterine tube arise from 3 sources: superior, from the intermesenteric nerves and renal plexus, middle, from the superior hypogastric plexus and hypogastric nerve, and inferior from the inferior hypogastric plexus. The ovarian supply may be chiefly sympathetic and is from the first 2 sources; the inferior supply is probably only to uterus. The parasympathetic supply for the uterus emerges in the pelvic splanchnic nerves. Testicular afferent fibres enter the cord at a level above the ninth thoracic segment. E. E. H.

Vegetative nervous system of the human uterus (the uterine horn). M. H. KEIFFER (Bull. Acad. Méd. Belg., 1938, **3**, 419—434).—Various types of sensory receptors are described, which are found scattered throughout the tissue. H. B. C.

Hyperplasia in the epithelium of the uterine tubes. E. ALLEN (Amer. J. Obstet. Gynec., 1938, **35**, 873—875).—Using colchicine, which arrests dividing cells in metaphase, it was shown that cell divisions are most numerous in the uterine tubes of the normal animal (mouse, rat, and monkey) when large follicles are present in the ovary; they are induced by follicular hormone in ovariectomised animals. This is similar to and coincident with the hyperplasia in the vagina and uterus. M. H.

Effect of an anterior pituitary sex fraction on the development of the human uterus. S. A. PAYNE and E. K. SHELTON (Endocrinol., 1938, **23**, 598—608).—10 patients with small uteri and atrophic endometrium were treated with gonadotropic anterior pituitary extract. In 4 cases the endometrium became secretory and a 5th became pregnant. In 3 more some improvement resulted. V. J. W.

Determination of the œstrogenic substance in blood serum by estimation of the antiproteolytic power of the serum. E. SHUTE (Amer. J. Obstet. Gynec., 1938, **35**, 970—977).—The concn. of œstrogenic substance in serum of animals and man is measured by estimating the antiproteolytic power of 1 c.c. of the serum when treated with trypsin under standard conditions. The test is completed in 1½ hr. Its clinical significance is discussed in view of the accumulation of œstrogenic substance in the serum in cases of deficiency of vitamin-*E*. M. H.

Effect of œstradiol on the male cat and monkey. R. COURRIER and G. GROS (Compt. rend. Soc. Biol., 1938, **129**, 8—10).—Œstradiol was injected into normal and castrated immature male monkeys and cats. In the cat there was enlargement of the accessory glands but in the monkey the development was confined to the interglandular tissue. P. C. W.

Effect of œstrogenic hormone on contractility of the Fallopian tubes. S. H. GEIST, U. J. SALMON, and M. MINTZ (Amer. J. Obstet. Gynec., 1938, **36**, 67—77).—In 6 patients after menopause, kymographic records were made of the tubular contractions before and after intramuscular injections of œstradial benzoate in sesamé oil. Total dosage varied from 120,000 to 650,000 I.U. over a period of 10—14 days at intervals of 2—3 days. Results showed that the œstrogenic hormone is responsible for the production of the normal rhythmic tubular contractions. M. H.

Sterilisation of white mice by instillation of follicular hormone into the vagina. A. I. KROUPSKY and A. A. BLONSKAIA (Gynéc. Obstét., 1938, **38**, 182—185).—Follicular hormone was instilled 3 times a day for 7 days into the vagina of white mice, after which males were introduced into the cages. Of 30 mice receiving folliculin, 39% became pregnant (5 deaths during the experiment). Of 30 mice receiving a proprietary prep. (néovariocrine) 42% became pregnant (2 deaths during the experiment). 15 control mice, receiving instillations of saline, all became pregnant. W. D'A. M.

Hyperplasia and hypertrophy of the uterine musculature in ovariectomised rats following œstrone injections. O. L. BARKS and M. D. OVERHOLSER (Anat. Rec., 1938, **70**, 401—411).—Injections of theelin into castrated rats resulted in both hypertrophy and hyperplasia of the uterine muscle. The

amount of œstrone given and the period of uterine atrophy following castration (above 1 month) caused no obvious difference in the results obtained. H. L. H. G.

Prevention and abolition of lactation with follicle hormone. G. LEHMANN (Münch. med. Wschr., 1938, **85**, 1781—1783).—Intramuscular injection into women of 100,000—150,000 units of œstradiol benzoate (progynon-B) or oral administration of 24 mg. of progynon-C prevents the onset of lactation. Lactation can be arrested with 200,000 units of progynon B oleosum. A. S.

Suppression of lactation by oral œstrogen therapy. G. L. FOSS and P. PHILLIPS (Brit. Med. J., 1938, II, 887—890).—Œstradiol benzoate given by mouth in doses of 20,000—30,000 I.U. over a period of 2—6 days suppressed lactation satisfactorily in 62 women. C. A. K.

Effect of œstrogen injections on lactogen content of female rat pituitary. R. P. REECE (Proc. Soc. Exp. Biol. Med., 1938, **39**, 77—80).—Injection of progynon-B into normal rats increased the lactogen content of the pituitary. In the case of ovariectomised rats, similar injections caused hypertrophy of the pituitary which had the same total content of lactogen. V. J. W.

Endocrine control of lipin metabolism in the bird. I. Effects of pregnant mare serum on blood- and liver-lipins of domestic fowl. C. ENTENMAN, F. W. LORENZ, and I. L. CHAIKOFF (J. Biol. Chem., 1938, **126**, 133—139; cf. A., 1938, III, 371, 508).—Prolonged injections of pregnant mare serum into immature female birds cause a very large increase in blood-lipins similar to that observed in normal laying birds. Liver-lipins are not affected and, although the birds develop severe lipæmia, abnormal amounts of fat are not deposited in the liver. The formation of yolks is not the stimulus for the rise in blood-lipins. There is a relation between the rise in blood-lipins and size of oviduct. Under the conditions studied a min. of ovarian activity sufficient to cause an oviduct growth of at least 10 g. must be produced by injections before there is a rise in blood-lipins. J. N. A.

Effects of œstrogenic hormone on the sex cycles of normal rats. J. K. DONAHUE (Endocrinol., 1938, **23**, 521—523).—Mature female rats were given 50—500 international units of theelin daily. Those receiving 500 units remained in dicœstrus for 18 days, and then went into procœstrus till they were killed on the 27th day. Those receiving smaller doses remained in dicœstrus up to the 10th day, when they were killed. In all the corpora lutea were enlarged. V. J. W.

Effect of œstrin on the gonad-stimulating complex of the anterior pituitary of parabiotic rats. E. BUNSTER and R. K. MEYER (Endocrinol., 1938, **23**, 496—500).—Castrated male and female rats were united in parabiosis with immature females. The quantity of œstrin necessary to inhibit ovarian hypertrophy was determined to be about 0·125 rat unit when the castrated partner was female and about 1 rat unit when male. V. J. W.

Skeletal changes and blood serum-calcium level in pigeons receiving œstrogens. C. A. PFEIFFER and W. U. GARDNER (Endocrinol., 1938, **23**, 485—491).—Male and female pigeons were given daily doses of 0·00001 unit of œstradiol benzoate for up to 69 days. The serum-Ca became increased from 8·8 to 16 mg.-% and hypercalcification took place in the long bones which was chiefly endosteal and caused the medullary cavity to become filled with spongy bone. V. J. W.

Effect of œstrone on p_H of the blood. R. REDING (Compt. rend. Soc. Biol., 1938, **128**, 1185—1187).—Large doses of œstrone injected into ovariectomised or post-menopausal women for 4 days raise the blood-p_H; this does not occur in normal women. P. C. W.

Inadequacies of œstradiol substitution in ovariectomised albino rats. H. LAUSON, C. G. HELLER, and E. L. SEVRINGHAUS (Endocrinol., 1938, **23**, 479—484).—Doses of 0·25, 0·5, and 5 μg. of œstradiol were given daily for 20 days to 50 ovariectomised rats. No dosage was able to reduce the gonadotropic hormone content of the pituitary to the non-castrate level. In all cases the pituitary hypertrophied and the thymus became smaller. V. J. W.

Occurrence of cancer in rats treated with œstrone. C. S. MCEUEN (Amer. J. Cancer, 1938, **34**, 184—195).—Rats were treated with œstrone over long periods, and most were subjected to various local irritations, such as silk threads imbedded in the uterus or injections of kieselguhr. Controls were similarly treated without application of œstrone, or left untreated. Of the 12 experimental rats living 500 days, 4 developed malignant tumours, and of 18 controls living 500 days one had cancer. E. B.

Functional impairment of anterior pituitary gland produced by synthetic œstrogenic substance 4 : 4′-dihydroxy-αβ-diethylstilbene. R. L. NOBLE (J. Physiol., 1938, **94**, 177—183).—Injection into rats of large doses of this substance (in oil solutions) is followed by atrophy of the testes, prostate, and seminal vesicles in the male, ovarian atrophy in the female, and increase in wt. of adrenals and pituitary of both sexes. Female rats after the treatment respond by an increase in ovarian wt. to pregnant mare serum and pregnancy urine extracts. The changes produced in water balance do not indicate that any alteration in the secretion of the diuretic principle of the anterior pituitary has occurred. J. A. C.

Œstrogenic power of polypeptides. H. BULLIARD and I. GRUNDLAND (Compt. rend. Soc. Biol., 1938, **128**, 997—999).—The effect of an aq. extract of polypeptides from human muscle on the genital tract of mice is similar to that of folliculin except that keratinised cells are not formed. H. G. R.

Life period of corpus luteum and influencing factors. S. SKOWRON and Z. WICINSKI (Bull. Acad. Polonaise, 1938, **B**, 47—54).—The corpus luteum of dogs remains active for 17 days in pseudopregnancy and for not less than 17 days after coitus when the uterus is removed during pregnancy. The development of a new corpus luteum due to injection of

urine of pregnancy (life about 15 days) has no effect on the life period of one already present. E. M. W.

Effects on ovary and pregnancy in the rabbit of introducing luteinising substance into the Graafian follicles. M. KLEIN and G. MAYER (Compt. rend. Soc. Biol., 1938, **128**, 1218—1220).—The luteinising fraction from pregnancy urine was introduced into 5—6 Graafian follicles in the rabbit between the 9th and 13th day of pregnancy. 8 days later these follicles are fully luteinised, the corpora lutea of pregnancy are degenerated, and the fœtuses are resorbed but the placenta is normal. Introduction into only 1 follicle does not affect the course of the pregnancy. P. C. W.

Technique for introducing luteinising substance into the Graafian follicle. M. KLEIN and G. MAYER (Compt. rend. Soc. Biol., 1938, **128**, 1215—1217).—The luteinising fraction from pregnancy urine is extracted, suspended in water and gelatin, and dried. The gelatin (cut very fine), introduced into the follicles of a rabbit, produces luteinisation. P. C. W.

Action of corpus luteum hormone on the anterior pituitary. K. EHRHARDT and R. FUNKE (Klin. Woch., 1938, **17**, 1588—1589).—The gonadotropic action of the pituitary of female rabbits is increased by administration of corpus luteum hormone. E. M. J.

Corpus luteum hormone and hair growth. G. HENSEL (Z. ges. exp. Med., 1938, **104**, 182—187).—Guinea-pigs were depilated with $BaSO_4$. The growth of hair is inhibited at the end of pregnancy and several weeks after parturition. Injections of corpus luteum hormone inhibit the growth of hair in non-pregnant animals. Follicle hormone or anterior pituitary substance has no influence. A. S.

Corpus luteum hormone in early pregnancy. H. W. JONES and P. G. WEIL (J. Amer. med. Assoc., 1938, **111**, 519—521).—Removal of the corpus luteum in a pregnant woman 58 days after the last meustrual period did not produce abortion. The daily excretion of pregnanediol fell to zero post-operatively but reappeared after 12 days in increasing amounts. R. L. N.

Treatment of toxæmias of pregnancy by corpus luteum hormone. H. VAN DER HÆVEN (Gynéc. Obstét., 1938, **38**, 172—181).—Three cases of toxæmia of pregnancy are reported in which corpus luteum hormone improved the condition. It is suggested that the hormone antagonises an excess secretion of a principle from the posterior lobe of the pituitary and the placenta, which causes the symptoms of toxæmia of pregnancy. W. D'A. M.

Œstrogenic content of the tissues in pregnancy. F. PARKER, jun., and B. TENNEY, jun. (Endocrinol., 1938, **23**, 492—495).—Various organs and placentas of 5 pregnant women and 6 fœtuses were extracted with acetone and ether and their content of œstrogens determined on mice. The largest amount was in the liver in each case and the adrenal and placenta were about equal. Decomp. causes an increase in the amount recovered from the placenta and a decrease in that from the liver. V. J. W.

Response of the immature female fowl to injections of mare gonadotropic hormone and œstrin. V. S. ASMUNDSON, C. A. GUNN, and A. A. KLOSE (Poultry Sci., 1937, **16**, 194—206).—Effects on comb and reproductive organs of Leghorn and cross-bred fowls are recorded. A. G. P.

Changes in the uterine mucosa and ovaries of dogs during œstrus, induced by pregnancy urine. K. NISHIDA (Arb. med. Univ. Okayama, 1938, **6**, 93—100).—Repeated subcutaneous injections of pregnancy urine produce histological changes in the uterine mucous membrane and in the ovaries which are identical with those occurring during natural œstrus. A. S.

Duration of excretion of gonadotropic substance after delivery of near-term abdominal pregnancy with retained placenta. H. H. WARE, R. J. MAIN, and I. TALIAFERRO (J. Amer. med. Assoc., 1938, **111**, 524).—In a case of near-term abdominal pregnancy following delivery but with retained placenta, the urinary gonadotropic substance gave a positive ovulation test on rabbits for 47 days after delivery. R. L. N.

Non-protein-, urea-, and rest nitrogen of the blood during labour and the puerperium. J. F. CADDEN and A. M. FARIS (Amer. J. Obstet. Gynec., 1938, **36**, 77—84).—40 cases examined during labour showed that the non-protein- and urea-N of the blood increases and continues to increase during the puerperium until normal non-pregnant vals. are reached approx. by the 10th day. It is suggested that these changes may be due to a process of dehydration of the blood, particularly during labour. M. H.

Determination of the date of parturition. A. WIESSMANN (Klin. Woch., 1938, **17**, 1613—1615).—Calculations based on 280 days are reliable with a menstrual cycle of 28 days (4000 cases). The figure should be lower for shorter and higher for longer cycles. The actual duration of pregnancy is the same (265 days on an average) for all cycles. E. M. J.

Ætiology of toxæmias of pregnancy. M. B. STRAUSS (Amer. J. med. Sci., 1938, **195**, 723—728).—Water retention, up to 10% of body-wt., was present in 20 women during the last trimester of pregnancy whether manifest œdema was present or not. The amount of water retained was in inverse proportion to the osmotic pressure of the plasma-proteins. Unless the plasma-proteins were below a certain level a milk diet low in Na but relatively high in Ca and P resulted in elimination of retained water. R. L. N.

Chemical test for pregnancy applied to the determination of œstrin in urine of normal and toxæmic patients in the last trimester of pregnancy. J. E. SAVAGE, H. B. WYLIE, and L. H. DOUGLAS (Amer. J. Obstet. Gynec., 1938, **36**, 39—47).—52 cases of toxæmia of late pregnancy showed a lowered level of œstrin excretion in the urine from

that of normal cases of late pregnancy. 9 of these patients receiving 10,000 I.U. of theelin intramuscularly on each of 3 successive days showed no improvement. M. H.

Biological test for pregnancy. B. Babudieri (R. Ist. San. pubbl., 1938, 1, 343—349).—The appearance of round basophilic granules (Foà–Kurloff bodies) in the cytoplasm of the larger lymphocytes on injection of follicular hormone or pregnancy urine into immature guinea-pigs may be used as a test for pregnancy. S. O.

Effect of pregnancy and lactation on growth in the rat. H. H. Cole and G. H. Hart (Amer. J. Physiol., 1938, **123**, 589—597).—The effect on growth of repeated pregnancy and of repeated pregnancy and lactation was examined in young rats. Pregnancy stimulates skeletal and tissue growth in the rat beyond that found in controls. The excess gains made by the pregnant rats remain fairly const. for the first 6 pregnancies, after which further pregnancies have less effect. The excess growth during pregnancy is accompanied by increased food consumption. The theory is put forward that copulation stimulates the anterior pituitary which liberates one or more hormones involved in inducing an increased appetite. M. W. G.

Birth weights of European infants born at the Moedersbond Maternity Hospital, Pretoria, during 1933—1935. H. Le Riche (S. Afr. J. med. Sci., 1938, **3**, 79—85).—The mean birth wt. of a group of 942 European infants was 3383 g.; the males were heavier by 140 g. The mean wt. of infants born of healthy and sick mothers, as well as illegitimate infants, is recorded. R. L. N.

Apparatus for procuring essential data in differential diagnosis of pelvic pathology in the female. G. Lyford (Amer. J. Obstet. Gynec., 1938, **35**, 842—850).—An apparatus is described which permits an automatic control of the max. pressure of gas within the uterus. It can also be used for controlled instillation of opaque oils for *X*-ray study of pelvic pathology. M. H.

Menstruation in a child aged nineteen months as the result of an adrenal cortex tumour. E. J. Kepler, W. Walters, and R. K. Dixon (Proc. Staff Mayo Clin., 1938, **13**, 362—366).—A case report. Surgical treatment was successful. A. J. B.

Cyclic treatment of case of secondary amenorrhœa of 10 years' duration. M. Vesell (Amer. J. Obstet. Gynec., 1938, **35**, 1067—1069).—A patient with amenorrhœa for 10 years, showing no œstrone in blood and urine, received 25,500 rat units of gonadotropic hormone ("antophysin") over a period of 11 months. 1 c.c. of antophysin (100 rat units per c.c.) was given intramuscularly daily for 5 days. This procedure was repeated at 30-day intervals using antophysin containing 500 rat units per c.c. After 7 months of treatment the patient had 4 pseudomenstrual periods, and finally conceived and gave birth to a living child. M. H.

Endocrine theories of dysmenorrhœa. C. F. Fluhmann (Endocrinol., 1938, **23**, 393—397).—Determinations of œstrogenic substances in the blood of 19 patients with dysmenorrhœa gave normal results in 18 cases. V. J. W.

Menopausal syndrome. L. F. Hamkinson (J. Amer. med. Assoc., 1938, **111**, 390—393).—Œstrogen therapy was used for the treatment of 1000 cases showing the menopausal syndrome. Of these, 69% were relieved of the majority of symptoms and only 5% obtained no relief. The val. of œstrogen therapy is discussed. R. L. N.

Histological correlationship of endometrial and cervical biopsies. A. Wollner (Amer. J. Obstet. Gynec., 1938, **36**, 10—21).—Comparative histological studies of cervical and endometrial mucosa removed at the same time from 35 cases, covering the entire intermenstrual period, showed a synchronous hormonal change in both structures. M. H.

Growth, desquamation, and involution of the vaginal epithelium of fœtuses and children, and related hormonal factors. L. Fraenkel and G. N. Papanicolaou (Amer. J. Anat., 1938, **62**, 427—451).—Vaginal smears were taken from children of various ages from birth to puberty. The new-born child (mature or premature) constantly shows a mass of uncornified cells of squamous type with small, pyknotic nuclei; a considerable amount of mucus is present, but no bacteria or leucocytes. Leucocytes and bacteria appear within a few days of birth, and after the first week there is a change to the smaller, compact type of cell with large nucleus typical of the deeper layers of the vaginal epithelium. Later stages to sexual maturity show that leucocytes are constantly present and that the vaginal cells vary between small and large types, though the latter were not similar to the ones found at birth; mucus is scanty. Histologically the vaginal epithelium shows a great hypertrophy at birth (20—40 cells deep), but degeneration and massive denudation occur a few days after birth. The hypertrophy is explained by the transmission of œstrogenic hormones from the mother. Gonadotropic hormones were similarly transmitted; milk could be expressed from the breast of every normal full-term baby of either sex. (5 plates.) H. L. H. G.

Blood-sugar and liver- and muscle-glycogen after removal of mammary glands in the lactating guinea-pig. M. Cahane (J. Physiol. Path. gén., 1938, **36**, 679—680).—Extirpation of the mammary glands 1—9 days after copulation in the guinea-pig leads to a hyperglycæmia (mean 134 mg.-%) in 24—48 hr., which may last for 12 days. Hepatic glycogen is increased about twice, but muscle-glycogen is slightly lowered. C. A. A.

Comparative morphological study of the mammary gland in a high- and a low-tumour strain of mice. E. Fekete (Amer. J. Path., 1938, **14**, 557—578).—The mammary glands of the Little–Murray dil. brown high-tumour strain and the C.57 black low-tumour strain of mice were compared. The glands of the former did not respond so uniformly to the endocrinal influences that regulate the progressive functioning and regressive changes of the gland, as do those of the latter. In the high-tumour

strain groups of cells may persist in cell division while the others are already functioning, or fail to regress, sometimes keeping on functioning while all the other cells have undergone regression. (20 photomicrographs.) C. J. C. B.

Factors in sexual-skin œdema. O. E. Aykroyd and S. Zuckerman (J. Physiol., 1938, **94**, 13—25).—When the sexual skin (rhesus monkey) is active and swollen the intercellular accumulation of fluid is associated with an increase in the size of the connective tissue elements of the skin; the swelling of the cells may partly be ascribed to the taking up of water. The vessels of the sexual-skin area are more dilated and numerous than the vessels of other parts of the body surface; hyperæmia of the former occurs during phases of œstrogenic stimulation. Trypan-red passes more rapidly through the subcutaneous tissue of the swollen sexual skin than through that of unswollen skin. The mast cells discharge granules during swelling; the protein concn. of the interstitial fluid of the swollen skin is relatively high. J. A. C.

Sexual skin of the rhesus monkey. S. Zuckerman, G. van Wagenen, and R. H. Gardiner (Proc. Zool. Soc., London, 1938, **108**, A, 385—401).—The maturation of the sexual skin in the female rhesus monkey occurs in three phases: (1) pubertal, where there is a blister-like enlargement of the pubic lobes; (2) adolescent, during which the central swelling disappears and lobulated swellings spread peripherally; (3) mature, in which there is no coloration of the sexual skin area unaccompanied by swelling. These three phases are an expression of the extent to which the sexual skin is subjected to the influence of œstrogenic hormone. Excessive sexual skin changes may be associated with cystic ovarian follicles. The behaviour of sexual skin transplanted to the abdominal wall suggests that histo-chemical differentiation of the skin and subcutaneous tissues is responsible for the specialisation and that the latter is not due to peculiarities in neurovascular supply. The sexual skin responses of the rhesus monkey are compared with those of other species of Primates. J. S. B.

Effect of castration and sex hormones on experimental tuberculosis. P. Bourgeois and M. Boquet (Compt. rend. Soc. Biol., 1938, **128**, 983—984).—Castration increases the survival period of infected male guinea-pigs. Male and gonadotropic hormones augment the resistance. In the female, œstrone or gonadotropic hormone favours the course of the infection. P. C. W.

Gynandromorphism and lateral asymmetry in birds. F. A. E. Crew and S. S. Munro (Proc. Roy. Soc. Edin., 1938, **58**, 114—134).—From a consideration of 4 new cases of lateral colour asymmetry and 4 of gynandromorphism, it is concluded that gynandromorphism in birds is always the result of aberrant chromosome distribution and always associated with lateral size differences. Plumage characters are of 3 types. In the sparrow-type, they depend on aberrant lateral chromosome distribution. In the fowl-type they are chiefly determined by hormonal factors. In the pheasant-type, the plumage is of a nearly normal sex type on one side and of an intersexual type on the other. Heteroploidy is held to explain completely gynandromorphism in the fowl. F. B. P.

Determination of bilateral symmetry. J. Pasteels (Compt. rend. Soc. Biol., 1938, **129**, 59—61).—The position of the grey crescent and the plane of bilateral symmetry in eggs of *Rana esculenta* are determined by the eccentric position of the maturation spot together with the plane of rotation in the perivitelline liquor following fertilisation. P. C. W.

Factors in the determination of bilateral symmetry in Amphibia. J. Pasteels (Compt. rend. Soc. Biol., 1938, **129**, 62—64). P. C. W.

Familial intersexuality. D. R. Mishell (Amer. J. Obstet. gynec., 1938, **35**, 960—969).—A report is given of 3 sisters having male gonads with complete absence of ovaries, tubes, and uterus. Before operation œstrogen was present in the urine. Several months after the operation gonadotropic substance only was found in the urine. It is concluded that the testes produced the female sex hormone in these cases, and that after operation the pituitary gland (uninhibited by the gonads) produced amounts of gonadotropic substance usually found in castrates. M. H.

Statistical studies on prematurity. I. Incidence of prematurity and effect of certain obstetrical factors. II. Mortality of prematurity and effect of certain obstetrical factors. C. H. Peckham (J. Pediat., 1938, **13**, 474—483, 484—497).—I. In 38,944 deliveries 9·19% weighed less than 2500 g. at birth while only 5·55% were under 15 cm. in length. For multiple births, the figures were 53% and 28·1%, respectively. No correlation was present between maternal age and the true incidence of premature births except that small infants were more frequently born to primiparas. The incidence of small babies was almost twice as great in the black as in the white race.

II. Decreasing still-born and neonatal mortality rates were noted with increasing wt. and length. Still-born rates were higher and deaths per 100 live births were lower in black than in white infants. Mortality rates increased with the age of the mother and with increasing parity and were higher with male than with female infants. A high mortality during the first year was found in premature babies who survived the first few weeks of life. C. J. C. B.

Rare defects in human populations with particular regard to inbreeding and isolate effects. G. Dahlberg (Proc. Roy. Soc. Edin., 1938, **58**, 213—232).—Contraception and sterilisation are of little importance in reducing rare recessive characters. The extension of isolates by improvement of communications or removal of social taboos diminishes the frequency of consanguineous unions, but growth of isolates by increase of population within the isolates does not. F. B. P.

The freemartin compared with the intersex and gelding. W. S. Marsman (Acta Neerland. Morph., 1937, **1**, 115—128).—16 freemartins were examined. The gonads are usually sterile testes but may show an ovarian stroma with differentiating

testis ducts; the uterus is poorly developed; abnormal development of the male accessory reproductive apparatus is rare. The external appearance of a freemartin is that of a female gelding. There is no sexual urge. Sex hormones are practically absent from the urine. It is suggested that the male hormone of the bull twin is sufficient to obstruct the development of the female genital apparatus, but is insufficient to stimulate the production of male hormone in the recipient. The freemartin is not an intersex, and though resembling a gelding, it differs from it in being sexless. H. L. H. G.

Factors of unity and individuality of the germ plasm in the development of amphibians. P. Wintrebert (Compt. rend. Soc. Biol., 1938, **129**, 366—370). P. C. W.

Sexual differences of the growth-rate of mature mice based on the daily variations in weight. S. Kopeć (Arch. EntwMech. Org., 1938, **138**, 259—270). W. J.

Influence of the gonads on the daily variations in the weight of mice. H. Adamska (Arch. Entw-Mech. Org., 1938, **138**, 271—280).—Castration of the female mouse suppresses the periodic variations in wt. Œstrus coincides with the end of the min. of the wave. The irregular increase and loss in wt. in the male is only to a certain degree due to the presence of the gonads. W. J.

Factors affecting hatching weight of brown Leghorn chickens. N. Galpin (Proc. Roy. Soc. Edin., 1938, **58**, 98—113).—Dependence of hatching wt. on egg wt. varies during the laying year, being greatest in March and April and least in July. Increase in egg wt. during the spring produces a greater rise in hatching wt. than a corresponding increase in egg wt. during the summer. Analysis of seasonal changes in thyroid wt. indicates that the varying ability of the embryo to utilise the nutriment provided in the egg is chiefly due to variations in maternal thyroid activity. F. B. P.

Distribution of carbon dioxide in the hen's egg. J. Brooks and J. Pace (Proc. Roy. Soc., 1938, **B**, **126**, 196—210).—The buffer val. of egg-white per g. of protein, assuming combined CO_2 is present as bicarbonate, is $4{\cdot}8 \times 10^{-5}$ for the p_H range 6·6—7·8. The amount of carbamino-CO_2 present is small. The solubility of CO_2 in egg-white at 25° is 8% greater than expected from the salt and water content, probably owing to the presence of a trace of lipins. The fats and lipins in yolk probably account for the greater solubility of CO_2 in yolk than in white. Shell does not adsorb CO_2 at 25° between 0·014 and 0·99 atm. pressure. F. B. P.

Phosphorus distribution in the grasshopper embryo. V. Thompson and J. H. Bodine (J. Cell. Comp. Physiol., 1938, **12**, 247—254).—Inorg. and protein-P increase greatly during development though keeping almost const. during the diapause. Pyrophosphate falls rapidly during the first 7 days and lipin-P falls throughout the pre-diapause, both remaining const. thereafter. V. J. W.

Nature of the staining of unfertilised *Chætopterus* eggs by neutral-red. B. Commoner (J. Cell. Comp. Physiol., 1938, **12**, 171—182).—Eggs are stained with neutral-red and excess of dye is washed away with sea-water; the dye remaining is washed out with acid alcohol and determined colorimetrically. The staining rate is proportional to the amount of unstained, stainable, material in the eggs and to the dye concn. The amount of dye fixed is proportional to dye concn. below 10 mg. per l. Staining does not occur and colour is discharged at 20° or over. V. J. W.

(k) DIGESTIVE SYSTEM.

Removal of the superior cervical ganglion on lachrymal secretion. J. P. Maes (Amer. J. Physiol., 1938, **123**, 359—363).—Cats were used under nembutal anæsthesia. To detect lachrymal secretion strips of white, smooth blotting paper were used. The vol. of secretion present under the eyelids when no drugs were injected is 6—20 mg. Intravenous injection of 0·1 mg. of pilocarpine per 12 g. body-wt. increases the secretion 3—6-fold. 0·5 mg. of acetylcholine or 50—70 mg. of adrenaline per kg. body-wt. intravenously gave a definite increase. Removal of the superior cervical ganglion causes no immediate change in the response of the denervated gland to these drugs but if tests were made 11 days or more after the operation the denervated gland invariably showed increased responsiveness to the injected drugs. The results were unaffected by acute or chronic adrenalectomy. M. W. G.

Human saliva. III. H. Becks and W. W. Wainwright. **IV.** H. Becks. **V.** W. W. Wainwright (J. dent. Res., 1938, **17**, 197—215, 217—234, 235—250).—III. A summary of previous work on P vals. of saliva. Through lack of adequate data no definite evidence exists as to normal vals. The importance of the following factors is emphasised: examination of general health and metabolic state, whether saliva is resting or activated, and rate of flow at time of sampling.

IV. Inadequacy in defining and estimating the various P fractions by previous writers accounts for the variation in the figures obtained. No adequate data exist for normal % ranges of the various fractions.

V. A description of the $SnCl_2$ method as modified by Bodansky for the analysis of P in saliva is given; an experimental comparison with other methods was made. The method gave the best colour and was most reliable with the smallest sample (0·1 c.c.), the range being 0·009—0·056 mg. P. A. MacG.

Chemistry of mixed human saliva. J. B. Brown, H. D. Wright, and H. P. Limbacher (J. dent. Res., 1938, **17**, 191).—Salivary secretion was measured in the same person at intervals and with varying chewing stimuli. The rate of secretion varied from 28 to 213 c.c. per hr. Continuous chewing over a 6-hr. period led to a decreased rate of secretion associated with a fall in total solids, ash, and Cl. P rose, then fell, while Ca showed an increase approaching blood vals. A. MacG.

Composition of the parotid secretion of *Bufo melanostictus*. G. E. van Gils (Acta brev. neerl.

Physiol., 1938, **8**, 84).—Three N-free substances, bufagin *A*, *B* and *C*, with digitalis-like action were obtained from the parotid secretion of *B. melanostictus*. No N-containing substance has yet been isolated. A. S.

p_H of saliva and gastric juice in gastric disease. F. Stengel (Arch. VerdauKr., 1938, **63**, 191—195).—There is no correlation between the p_H of the saliva and that of the gastric juice. E. M. J.

Gastroenterology. C. M. Jones, T. V. Urmy, E. B. Benedict, M. H. Clifford, and B. V. White (Arch. intern. Med., 1938, **62**, 652—718).—A review. C. A. K.

Gastroscopy in dogs with stomach fistula. M. Gülzow and T. C. Afendulis (Z. ges. exp. Med., 1938, **104**, 160—166).—Gastroscopy was carried out in dogs under pernocton anæsthesia by introducing the instrument through the opening of a gastric fistula. Gastritis is a common finding in dogs with fistulæ. A. S.

New stomach tube for oral administration in rats and mice. A. E. Pugh and A. W. Tandy, jun. (J. lab. clin. Med., 1938, **24**, 80—81).—A hypodermic needle with an enlarged blunt tip is used. C. J. C. B.

Preparation of stomach pouch without interruption of vagal supply. F. Hollander and E. E. Jemerin (Proc. Soc. Exp. Biol. Med., 1938, **39**, 87—90; cf. A., 1938, III, 493).—The dog's stomach is separated into two chambers by incisions and suturing of the mucous lining only, in addition to one incision through the whole wall parallel to the vagal branches. Operative details are shown by diagram. The resultant pouch is about one third of the whole stomach: it is quite shut off from the rest of the stomach, and the serous and muscular coats are intact. V. J. W.

Effect of excision of antral mucosa on secretion of acid by the stomach. E. B. Lewis (Proc. Staff Mayo Clin., 1938, **13**, 249—250).—A cuff of antral mucosa was excised from the stomach of normal dogs. Emptying time was unaffected and no change in secretion of acid occurred. Secretion of acid after a test meal of meat was decreased. No reduction occurred when part of antral mucosa was present. Secretion of acid after histamine was unchanged. A. J. B.

Pathological changes produced by gastrectomy in young swine. S. Petri, F. Nørgaard, and J. Bing (Amer. J. med. Sci., 1938, **195**, 717—722).—Operative removal of the stomach in 6 pigs, 6 weeks old, produced arrest of growth, hypochromic microcytic anæmia, and degenerative changes in the central nervous system and skin. Hyperproteinæmia, plasma-cell metaplasia of the spleen and lymph glands, cirrhosis of the liver, and osteoporosis were inconstantly found. R. L. N.

Gastric hæmorrhages of the suckling child. S. Lœwe-Lyon (Presse méd., 1938, **46**, 978).—Infection and a choleriform syndrome predispose to gastric hæmorrhages. Congestive lesions of other organs frequently co-exist. Vascular innervation, vaso-motor disturbances, and nervous disorders play some part in causation. A. J. B.

Behaviour of the normal human stomach towards the stimulus of a test meal. F. E. de Salamanca (Arch. VerdauKr., 1938, **63**, 37—94).—A comprehensive method for the evaluation of a special test meal is described which allows the determination of secretion, dilution, and motility and their variants. The normal limits of all functions were fixed after examination of 42 healthy individuals, the averages being as follows: 20% of the ingested fluid and 30% of the bread remain in the stomach after 1 hr. The slower the emptying rate the greater is the secretion. Total Cl′ increases as the emptying slows down up to a max., after which the emptying becomes more rapid. There is no appreciable regurgitation of duodenal contents. E. M. J.

Changes in gastric contents on keeping. H. F. O. Haberland (Arch. VerdauKr., 1938, **63**, 11—13).—Specimens obtained during a test meal show an increase in HCl and total acid when left for days or months. E. M. J.

Allergic-hyperergic gastritis. T. C. Afendulis and M. Gülzow (Z. ges. exp. Med., 1938, **104**, 167—181).—Dogs with gastric fistulæ were sensitised against horse serum by repeated subcutaneous injections. Anaphylactic shock was produced by subsequent intravenous injection of horse serum during deep anæsthesia. Gastroscopy 1 hr. after the intravenous injections showed acute gastritis (swelling, reddening, hæmorrhage into the mucous membrane) and gastric spasm. Secretion of gastric juice and acidity were increased. Normal conditions were found after 1—3 weeks. The histological findings resemble those after injection of histamine. A. S.

Pathogenesis of gastric and duodenal ulcer. R. Nothhaas (Z. ges. exp. Med., 1938, **104**, 188—200).—5 normals and 5 patients with gastric or duodenal ulcers were kept for 2 days on a meat-free diet and were subsequently given 100 g. of raw minced meat twice a day. The heat loss of one hand, dipped in water at 30°, was determined calorimetrically. The ulcer patients showed a considerably greater loss of heat, when put on the meat diet, than the controls; dermographic reactions disappeared more quickly. A. S.

Secretory functions of the stomach of domestic birds (chickens, geese) during ontogenesis. N. Schkljar (Ukrain. Biochem. J., 1938, **11**, 387—394).—The p_H of the stomach contents of chick embryos falls from 7·2 on the 10th to 4·2 on the 20th day of incubation, and of goose embryos from 7·2 on the 12th to 3·15 on the 27th day of incubation; the Cl content of the material varies irregularly, but the [HCl] rises steadily. Pepsin and chymosin are produced in small amounts during the final period of embryonic development. R. T.

Effect of sodium chloride deficiency on gastric acidity. M. O. Soley, J. B. Lagen, and J. C. Lockhart (Amer. J. med. Sci., 1938, **196**, 88—94).—NaCl deficiency was produced in 3 patients by decreasing the NaCl in the diet and increasing the

excretion by sweating. In no case were there significant changes in free or total HCl of the gastric secretion. R. L. N.

Proteinase of gastric juice of *Homarus vulgaris*. C. ENGEL (Acta brev. neerl. Physiol., 1938, 8, 28—29).—The gastric juice of the fasting *H. vulgaris* contains a proteinase which can be activated at p_H 6·4; it is inhibited by 0·1 mg. of monoiodoacetic acid in 1 c.c. A. S.

p_H optimum of pepsin and p_H of the gastric contents. H. J. VONK and A. M. W. MENNEGA (Acta brev. neerl. Physiol., 1938, 8, 27—28). A. S.

Hormonal action of the spleen on gastric acidity. T. HASEGAWA (Arb. med. Univ. Okayama, 1938, 6, 68—71).—Total acidity and free HCl of the gastric juice of rabbits are increased after splenectomy. Atropine or administration of spleen extracts reduces the acidity of the gastric juice in splenectomised rabbits. A. S.

Action of cholic acid on acidity, and on the chloride, sodium, and potassium content of the gastric juice of a Pavlov pouch in dogs. T. HASEGAWA (Arb. med. Univ. Okayama, 1938, 6, 54—67).—Oral and subcutaneous administration of cholic acid increases gastric secretion, total and free HCl, and the Cl content of gastric juice of a Pavlov pouch. The concn. of Na and K is diminished. A. S.

Action of splenectomy on the alkalinity of intestinal juice. T. HASEGAWA (Arb. med. Univ. Okayama, 1938, 6, 72—78).—A Thiry-Vella jejunal fistula was made in dogs. Subcutaneous injection of 1 c.c. of a 1% cholate solution per kg. body-wt. or extirpation of the spleen increases the alkalinity of the intestinal juice. The alkalinity is diminished by administration of extracts of the spleen in splenectomised animals. A. S.

Vascular supply of the Peyer follicles. G. MURATORI (Arch. ital. Anat., 1938, 40, 491—511).—The mucous-submucous follicles of Peyer's patches of mammals (cat, rat, rabbit, guinea-pig) have (1) an intrafollicular capillary net, (2) an epifollicular subepithelial net on the mucous surface of the follicle, and (3) a perifollicular net consisting of rather larger capillaries. The submucous follicles have either a uniform capillary net (primary nodes) or a double one, peripheral and central (secondary nodes). The homogeneous lymphoid tissue is supplied with larger vessels and capillaries which follow irregular courses. S. O.

Rate of flow of bile in the rabbit. B. HALPERT (Proc. Soc. Exp. Biol. Med., 1938, 39, 115—119).—Bile from the common bile duct in the anæsthetised rabbit gradually decreased in 6 hr. from 3·4 c.c. to 2·3 c.c. per kg. body-wt. The gall-bladder re-absorbed about 0·5 c.c. per kg. per hr. V. J. W.

Cholaluria and choluria in experimental occlusion of the small intestine in dogs. J. CAROLI, M. GIRARD, and H. LAVERGNE (Compt. rend. Soc. Biol., 1938, 129, 471—472).—Occlusion of the small intestine is followed by an increased urinary excretion of bilirubin and bile acids. H. G. R.

High obstruction of the small intestine in dogs. J. BOTTIN (Z. ges. exp. Med., 1938, 104, 243—248).—The duodenum was ligatured in dogs below the orifice of the pancreatic duct, or above the beginning of the jejunum; the ileum was obstructed in other experiments. Plasma non-protein-N, -urea, and -uric acid, and urinary non-protein-N, urea, NH_3, and uric acid were considerably raised. A. S.

Cure of post-operative ileus by spinal anæsthesia. T. ASTERIADÈS (Presse méd., 1938, 46, 1103—1104).—In 5 of 8 cases of ileus, anal sphincter spasm, and in 3, œsophageal spasm, occurred. All 8 cases of ileus were cured by spinal anæsthesia. A. J. B.

Characteristic differences in the intestinal permeability of leaf-carotenoids in various races of silkworm. C. MANUNTA (Boll. Soc. ital. Biol. sperim., 1938, 13, 732—733).—Preliminary results, and their bearing on the colour of the cocoons, are discussed. F. O. H.

Effect of minerals and fibre on avian intestinal p_H. V. G. HELLER and R. PENQUITE (Poultry Sci., 1936, 15, 397—399).—Ingestion of considerable proportions of basic salts increased the p_H of the crop, stomach, and gizzard of chickens but produced little change in that of the intestine. Modification in the Ca and P contents of the ration such as might occur in ordinary practice cause no significant changes. Observed variations in metabolism of different proportions of protein are not the result of p_H changes in the digestive tract. A. G. P.

Behaviour of enterochromaffin cells in starved rodents. J. VETTER (Z. mikr.-Anat. Forsch., 1938, 43, 623—632).—Counts of the basal granular cells of the intestine of guinea-pigs, white rats, and white mice were made in animals starved for periods up to 100 hr. and more, and compared with normal controls. There is an increase in their no. in the early stages of hunger period, followed by a fall. As hunger is prolonged they increase gradually again to approach the normal in very prolonged starvation. J. H. G.

Salt requirements of man. VI. Salt absorption in the small intestine. H. GLATZEL (Z. ges. exp. Med., 1938, 103, 725—739).—1 and 5% glucose solutions were injected into ligatured jejunal loops of dogs. The absorption of 1% glucose is accelerated if 0·1—0·5% NaCl is added; higher NaCl concn. inhibits the absorption. The absorption of 5% glucose is inhibited by NaCl (0·5—2%). A. S.

Effect of the alarm reaction on the absorption of toxic substances from the gastro-intestinal tract. H. SELYE (J. Pharm. Exp. Ther., 1938, 64, 138—145).—Gastric administration of adrenaline (5 mg.) to rats produced no symptoms. Repeated administration after exercise caused death, with ulceration in the stomach and intestines. Histamine caused death after exercise or exposure to cold. In the guinea-pig this was associated with gastric ulceration and emphysema. Substances not normally absorbed from the gastro-intestinal tract are absorbed during the "alarm reaction." E. M. S.

Digestion in the small intestine of man. W. Heupke and F. Schülein (Dtsch. Z. VerdauKr. Stoffw., 1938, **1**, 20—32).—Absorption of all foodstuffs was almost completed in the small intestine of a man of 24 with an ileostomy. 1 g. of protein per day was excreted after 500 g. of meat or 1000 g. of fish. 6 g. of fat were excreted on a diet containing 90 g. of hazel nuts and 150 g. in all. 95% of the carbohydrates in a mixed diet are utilised. White bread is better utilised than coarse brown bread. E. M. J.

Intestinal absorption of fats in the phloridzinised dog. S. Filippon and L. Bellini (Arch. Fisiol., 1938, **38**, 220—227).—The absorption of oleic acid from an intestinal loop is reduced by poisoning with phloridzin; the absorption of olive oil is affected to a small degree. S. O.

Absorption from the alimentary canal. (A) Proteins. U. Lombroso. **(B) Carbohydrates and fats.** L. de Caro. **(C) Pharmaceutical substances.** P. di Mattei (Boll. Soc. ital. Biol. sperim., 1938, **13**, 489—530, 531—579, 582—642).—Reviews. F. O. H.

Absorption of cholecystokinin and secretin from the colon and rectum. H. Doubilat and A. C. Ivy (Proc. Soc. Exp. Biol. Med., 1938, **39**, 129—130).—Both substances were dissolved in saline at p_H 6 and administered by rectum to dogs and men. Some increase in pancreatic secretion followed in 4 dogs out of 5. The gall bladder was not affected. V. J. W.

Intestinal infantilism as a result of regional enteritis. A. H. Logan and P. W. Brown (Proc. Staff Mayo Clin., 1938, **13**, 335—336).—A case report. A. J. B.

Effect and fate of acids in the organism. III. Blood-p_H and intestinal bacteria. S. Hermann, R. Neiger, and M. Zentner (Arch. exp. Path. Pharm., 1938, **189**, 539—546; cf. A., 1938, III, 556).—Na lactate, formate, and propionate shift the p_H of cultures of intestinal bacteria towards alkalinity; Na gluconate causes a shift towards acidity with formation of acetic and lactic acids. Na gluconate has little effect on the p_H of blood if given intravenously, but causes a marked shift towards alkalinity if given orally. This is explained by the decomp. of gluconate to acetate and lactate in the intestine. H. Bl.

***B. coli* infection of the duodenum [and gastric acidity].** W. Grunke (Klin. Woch., 1938, **17**, 1362—1364).—In 40% of cases of dyespepsia *B. coli* was present in the duodenum. 80% of these had a- or hypo-chlorhydria; in those without *B. coli* only 16% showed anacidity. E. M. J.

Hypoglycæmia and pancreatic calculi. J. B. Rinck and G. Sponholz (Dtsch. Z. VerdauKr. Stoffw., 1938, **1**, 3—13).—A case is described of pancreatic lithiasis with fibrosis, disappearance of glandular structure, occlusion of the ducts, and hyperplasia of the islets of Langerhans, manifesting itself clinically as hypoglycæmia. E. M. J.

Pancreatectomy in the goat. F. D. W. Lukens (Amer. J. Physiol., 1938, **122**, 729—733).—Pancreatectomy in goats led to a mild type of diabetes with very slight glycosuria and low excretion of N. Ketonuria was slight or absent. The glycosuria in the phlorizinised goat is greater than in the depancreatised goat but the N excretion in the two conditions is the same. It is suggested that gluconeogenesis in the depancreatised goat is very slow. Glucose given per os hardly affects the blood-sugar of normal or depancreatised goats and the sugar disappears rapidly from the stomach and intestines. The possibility of some fermentation process changing the sugar to a non-reducing form is put forward. M. W. G.

Inspissation of secretion, dilatation of the ducts and acini, atrophy and fibrosis of the pancreas in infants. K. D. Blackfan and C. D. May (J. Pediat., 1938, **13**, 627—623).—35 infants with this condition at autopsy are discussed. Emaciation and pulmonary symptoms were present; 7 showed the clinical picture of cœliac disease. C. J. C. B.

Overaction of the pancreas. W. Berger (Klin. Woch., 1938, **17**, 1385—1389).—A review. E. M. J.

Post-operative "gas pains" without gas. A. E. M. Ferreira (Proc. Staff Mayo Clin., 1938, **13**, 222—224).—Rœntgenograms of the abdomen of 9 patients were made when the pain was at its worst and when it was gone. No excess of gas was found in the intestine. A. J. B.

Test for occult blood [in fæces]. E. Redowitz (J. lab. clin. Med., 1938, **24**, 95).—A description of a hæmoglobin control solution. C. J. C. B.

(I) LIVER AND BILE.

Seasonal variations in the cytology of the liver of *Bufo arenarum*. E. De Robertis (Rev. Soc. argent. Biol., 1938, **14**, 145—155).—The size of the liver cells is max. in summer when the fat content is highest and decreases when the fat content is low, being at a min. during spring and early summer. These variations are related to feeding and sexual activity. In winter and spring annular chondriosomes were seen. The Golgi apparatus is reticular in summer; in autumn and winter it is a thicker and more compact cord. In the female in August–September the nucleus becomes hyperchromic and shows a tendency to picnosis. Pigment accumulates in the Kupffer and hepatic cells. Pigmented cells are rare in summer; they increase progressively in no. during autumn and winter; they are more numerous in the female. Variations in the fatty body correspond with those in liver fat in the male and female. J. T. L.

Cytology of liver in *Bufo arenarum* at high temperatures. E. De Robertis (Rev. Soc. argent. Biol., 1938, **14**, 321—325).—Toads were kept at 32° for 20—30 days during the winter. The cell vol. decreased owing to a decrease in glycogen and lipins. The fatty body also diminished. The chondrioma showed modifications coincident with the fall in liver-glycogen and fats. The Golgi apparatus became reticular and fragmented. Bile secretion was accelerated. The chromopexic and chromagogue capacities

for acid vital dyes were increased. Pigmentogenesis was accelerated and pigmented cells increased. J. T. L.

Blood-fructose test of liver function. R. Rivoire, R. Gayet, A. Bermond, and F. Moreau (Presse méd., 1938, **46**, 1331—1332).—Ingestion after fasting of 0·5 g. of fructose per kg. body-wt. regularly results in a rise and fall of blood-fructose which reaches a peak of 15—20 mg.-% within 1 hr. and disappears in 2½ hr., even in diabetics. Liver impairment results in a higher rise and slower decline of blood-fructose vals. The test is claimed to be more sensitive than any liver function test hitherto employed, particularly the galactose test. G. Sch.

Indole. VII. Hepatic function tested by the indican–indole index in Parkinson's disease. E. Macchia and G. Colucci. **VIII. Indole and blood constituents.** E. Macchia and G. M. Cataldi (Boll. Soc. ital. Biol. sperim., 1938, **13**, 647—648, 710—712; cf. A., 1936, 752).—VII. Of 10 patients examined, 8 gave low, and 2 high, vals.; the renal function was unimpaired in all cases.

VIII. Gastric administration of indole (15 mg. per kg.) to rabbits has no significant effect on the hæmoglobin content or corpuscles of the blood. F. O. H.

Undernutrition and liver-fat. C. H. Best and J. H. Ridout (J. Physiol., 1938, **94**, 47—66).—During fasting, male rats do not usually exhibit an increase in total liver-fat but females do. Choline in slightly super-normal amounts has little effect on liver-fat during fasting. In rats with fatty livers choline may accelerate disappearance of fat from the liver during fasting. The deposition of fat in the liver of normal rats is, within limits, proportional to the caloric intake provided by the diet low in choline; 42 cal. or more per 200-g. rat daily gives max. deposition in 21 days. Cryst. vitamin-B_1 added to diets low in choline or to a sucrose diet increases the deposition of fat in the liver of normal rats. The rate of loss of wt. is a significant factor affecting the change in liver-fat during the first part of the experimental period when animals with fatty livers are placed on diets low in choline, which provide various caloric intakes. J. A. C.

Effect of supplementary lysine, methionine, and cystine on production of fatty livers by high-fat diets containing gliadin. H. F. Tucker and H. C. Eckstein (J. Biol. Chem., 1938, **126**, 117—123; cf. A., 1938, III, 747).—The total lipin content of rat livers increased from 7·3 to 33·8% when the gliadin content of a diet containing 40% of lard was decreased from 18 to 5%. Addition of lysine to the above diet containing either 5 or 18% of gliadin had very little effect on the liver-fat content. The total lipin of the livers was 77·5% less when a 5% gliadin diet containing 40% of lard was supplemented with methionine, but addition of cystine in place of methionine had practically no effect on the total lipins. J. N. A.

Hepatic ketogenesis and ketolysis in different species. P. P. Cohen and I. E. Stark (J. Biol. Chem., 1938, **126**, 97—107).—Liver slices of well-fed monkeys have a lower rate of ketolysis than those of well-fed rats, rabbits, and guinea-pigs, whilst fasting reduces the rate of ketolysis in the latter group more than in the monkey. Differences in the susceptibility to ketosis of primates and the lower species are discussed. P. G. M.

Liver therapy and cholesterolæmia. II. P. Van de Calseyde (Sang, 1938, **12**, 712—735).—The hypercholesterolæmia caused by the ingestion of whole liver or certain anti-pernicious anæmia extracts is not due to the antianæmic factor, liver-cholesterol, or vitamin-*A*. It is not due to the presence of lipin or protein as certain water-sol. extracts also cause hypercholesterolæmia. The new factor (of unknown origin) is termed the hypercholesterolæmic liver factor (cf. A., 1938, III, 778). C. J. C. B.

Micro-determination of copper in the liver. G. Baldassi (Boll. Soc. ital. Biol. sperim., 1938, **13**, 698—700).—Data from an electrochemical method, applied to various species, are tabulated. Min. amounts of Cu (*e.g.*, 12 mg. per kg. of fresh liver) occur in fish and max. amounts in mammals (*e.g.*, 176 mg. per kg. in sheep). Liver-Cu appears to be mainly combined with protein. F. O. H.

Glucose assimilation in rats after administration of sterocholenic acid. T. Hasegawa (Arb. med. Univ. Okayama, 1938, **6**, 79—83).—The hyperglycæmic reaction of rats after administration of glucose is reduced by subcutaneous injection of trihydroxysterocholenic acid. Glycogen formation in the liver is increased. A. S.

Action of cholic acids on glycogen formation in the liver. I. Imai (Arb. med. Univ. Okayama, 1938, **6**, 126—135).—Glycogen formation in rat's liver after oral administration of glucose is increased by adrenaline, ascorbic acid, 3-hydroxyketocholic acid, and ursodeoxycholic acid, and to a smaller degree, by chenodeoxycholic acid. The ascorbic acid effect is inhibited by large doses, and potentiated by small doses, of cholic acid. The inhibitory effects of chenodeoxycholic, ursodeoxycholic, and 3-hydroxy-7-ketocholic acid decrease in that order. A. S.

Action of cholic acid on the acetone content of blood and urine. K. Ohta (Arb. med. Univ. Okayama, 1938, **6**, 156—166).—The acetone and acetoacetic acid content of blood and the amount excreted in the urine of fasting dogs are increased by subcutaneous injection of 2 c.c. of a 1% cholic acid solution per kg. body-wt. A. S.

Production of taurocholic acid in the dog. II. Cystamine. R. W. Virtue and M. E. Doster-Virtue (J. Biol. Chem., 1938, **126**, 141—146; cf. A., 1937, III, 382).—When cystamine is administered orally or subcutaneously together with cholic acid to fasting bile fistula dogs whose livers are depleted of taurine there is no increased formation of taurocholic acid. Most of the S of the cystamine is excreted as inorg. SO_4''. J. N. A.

Kratky–Giacomello theory of the structure of choleic acids. Conception of linear co-ordination. A. Roncato (Boll. Soc. ital. Biol. sperim., 1938, **13**, 674—678; cf. A., 1937, I, 118).—The

structure of cholic acid and related substances is discussed. F. O. H.

Unpaired chenodeoxycholic acid in chicken bile. K. Maeda (Arb. med. Univ. Okayama, 1938, **6**, 101—102).—Small amounts of an unpaired chenodeoxycholic acid were found in chicken bile. A. S.

Composition of bile of some fish. T. S. Sihn and C. H. Kim (Arb. med. Univ. Okayama, 1938, **6**, 49—53).—The bile of the "Hirame" (*Paralichthys olivaceus*) and of the "Suketo" fish (*Theragra cholcogramma*) contains cholic acid and chenodeoxycholic acid which is combined with taurine. A. S.

Composition of bile of the kurodai fish. T. Hasegawa (Arb. med. Univ. Okayama, 1938, **6**, 84—86).—The bile of the kurodai (*Sparus macrocephalus*) contains cholic, chenodeoxycholic, and dehydrochenodeoxycholic acid and taurine. A. S.

Composition of bile of the Kawahagi and of the Mebaru fish. H. Ashikari, C. H. Kim, and T. S. Sihn (Arb. med. Univ. Okayama, 1938, **6**, 136—140).—4 g. of cholic and 0·12 g. of chenodeoxycholic acid were found in 300 c.c. of bile of the fish *Monacunthus cirrhifer*; 3·8 g. of cholic and 0·21 g. of chenodeoxycholic acid were found in 240 c.c. of bile of *Sebastodes inermis*. A. S.

Tetramethyl ester of *iso*hydroxycoproporphyrin I.—See A., 1938, II, 509.

Hæmoglobin from bile pigment. G. Barkan and O. Schales (Nature, 1938, **142**, 836—837). W. F. F.

Chemical factors in the formation of gallstones. R. E. Dolkart, K. K. Jones, and C. F. G. Brown (Arch. intern. Med., 1938, **62**, 618—635).—Ketocholanic acids, given by mouth, increased the flow of bile in dogs with biliary fistula. Bile from the dog's gall-bladder dissolves human gall-stones; chemical studies showed that the solvent capacity resides in the saponifiable fraction, which is high in bile from the dog and sheep (animals that do not form gallstones) but low in the ox, hog, and man (which form gallstones). Fatty acids probably play a larger part in keeping cholesterol in solution than bile acids or salts. C. A. K.

(m) KIDNEY AND URINE.

Renal compensatory hypertrophy in batrachians. R. González (Rev. Soc. argent. Biol., 1938, **14**, 165—172).—No difference was found between the wt. of the left and right kidneys in 20 toads. The right kidney was extirpated and weighed and the left removed, weighed, and observed microscopically after varying intervals in different animals. After 10—15 days an increase in wt. of 44±4% occurred; the increase was 58±7% in 20 days and 48±6% in 25 days. The tubules were enlarged, but no other significant changes were seen. No new formation of renal units was observed. J. T. L.

Influence of the hypophysis in renal compensatory hypertrophy. R. González (Rev. Soc. argent. Biol., 1938, **14**, 173—183).—The compensatory hypertrophy of the remaining kidney after removal of the other is reduced in hypophysectomised toads, from 44±4% in 10—15 days and 58±7% in 20 days in normal controls to 22±3% and 23±6% in the operated animals. Implantation of whole hypophysis in hypophysectomised animals leads to an increase of 100±17% in the wt. of the remaining kidney. Implantation of anterior lobe gave an increase of 63±7%, and of the posterior lobe one of 70±8%. J. T. L.

Controlling effect of "renal hormone" on water contents of skin. H. Choh and T. Miyaji (J. Chosen Med. Assoc., 1935, **25**, 1444—1452).—The hormone is probably identical with Tokumitsu's hormone. Ch. Abs. (*p*)

Influence of urea on kidney function. H. Gremels (Arch. exp. Path. Pharm., 1938, **190**, 207—208).—The quantities of filtrate were estimated by Rehberg's method in a heart–lung–kidney prep. 100% increase of serum-urea abolished the impermeability of the renal epithelium to creatinine, rendering the application of Rehberg's method impossible. 150% increase of serum-urea led to decreased diuresis by increased back-diffusion of water and urea due to increased permeability. 200 mg.-% of urea in the serum caused oliguria, increased retention of urea, and renal oedema. The resulting disturbance of renal blood flow could be treated by cutting the renal capsula. I. S.

Pharmacological observations on Mount Etna. (A) P. Mascherpa. (B) **Effect of ingestion of sucrose on diuresis in man.** A. Cannavà (Boll. Soc. ital. Biol. sperim., 1938, **13**, 208—209, 210—212).—(A) Literature references.

(B) Ingestion of aq. sucrose on Etna (2941 m.) during summer (temp. 9—9·5°) produces a greater diuresis than that occurring at Catania (approx. sea-level) during winter (temp. 12°). F. O. H.

Glycolysis in kidney. C. Lenti (Boll. Soc. ital. Biol. sperim., 1938, **13**, 659—661).—With pulped kidney in 0·03M-$NaHCO_3$–H_2CO_3 buffer at p_H 7·4 and 37°, the cortex produces lactic acid from glucose, mannose, and fructose; the medulla appears not directly to utilise glucose. The cortex forms lactic acid from fructofuranose diphosphate and 6-glucopyranose phosphate as rapidly as from glucose. Formation of lactic acid from glucose by the cortex is slightly enhanced by PO_4''', $Mg^{..}$, or adenylic acid; these activators, however, increase the formation by the medulla by up to 600%. The medulla readily utilises hexose diphosphate. Lactic acid formation is completely inhibited by F' and iodoacetate and partly by *dl*-glyceraldehyde and phloridzin: the inhibition by malonate is abolished by equiv. amounts of fumarate. Both cortex and medulla form lactic acid from *dl*-glyceraldehyde and dihydroxyacetone. Aërobic and anaërobic conditions give similar results. The mechanism of the glycolytic processes and the enzyme systems involved are discussed. F. O. H.

Formation of methæmoglobin by urine. H. Riedel (Arch. exp. Path. Pharm., 1938, **190**, 224—225).—Methæmoglobin was formed in cat, dog, and

ox blood by addition of human urine. The active substance was stable to boiling. It passed collodion membranes freed from nitrite. The NO_2' concn. in the urine was only 1 mg. per c.c. and was therefore not responsible for the methæmoglobin formation. The substance was absorbed by activated charcoal. Chromatographic absorption analysis revealed that methæmoglobin formation occurred most quickly with the most coloured portions. Methæmoglobin was formed more quickly by the fractions of urobilin, urobilinogen, and uroerythrin than by those of urochrome and urochromogen. Methæmoglobin formation was also observed with bile. I. S.

Human allantoinuria. M. Paget and R. Berger (Compt. rend., 1938, **207**, 679—681; cf. A., 1938, III, 737).—The concn. of allantoin in the urine varies between 10 and 70 mg. (usually 15—25 mg.) per l. and is not related to age. The daily output of allantoin varies from 20 to 70 mg., being greatest during waking hours, following closely the elimination of urea and less closely that of uric acid. Diuresis may increase the elimination of allantoin threefold. Ingestion of 250 mg. of allantoin soon leads to a large increase in its concn. in the urine, but only a part is recoverable. This is probably due to its conversion (allantoinase) through allantoic acid into urea. J. L. D.

Excretion of urea by the kidney.—See A., 1939, I, 33.

Determination of iodine in urine. See A., 1939, I, 38.

Dietetic therapy of calcium oxalate calculi in urinary passages. G. Hammarsten (Skand. Arch. Physiol., 1938, **80**, 165—175).—110 rats were kept over 4—5 months on an acidotic diet, poor in Mg and vitamins, and containing oxalic acid. 46 animals developed renal or bladder calculi (*X*-ray diagnosis). The rats were then fed on a normal diet. 40% of the renal stones decalcified after 3—5 months; 2 out of 15 calculi of the urinary bladder decalcified. A. S.

(n) OTHER ORGANS, TISSUES, AND BODY-FLUIDS. TUMOURS.

Chemical and bioclimatic studies in Brittany. II. Effect of air-borne iodine from Brittany on the iodine supply of central Europe. H. Cauer (Biochem. Z., 1938, **299**, 69—91; cf. A., 1937, III, 389).—During kelp-burning 25—50% of the I escapes into the atm. Results of analyses of air, water (rain, spring, tap, sea, separated from the atm. by cooling), and seaweed ash in Brittany are reported and the effects of meteorological conditions on the results are discussed. W. McC.

Heredity in disease. D. Beres and V. Schatia (J. Pediat., 1938, **13**, 555—581).—A crit. review of recent literature. C. J. C. B.

Transference of induced food-habit from parent to offspring. III. D. E. Sladden and H. R. Hewer (Proc. Roy. Soc., 1938, **B**, **126**, 30—44).—The ability of stick insects reared on ivy to eat this plant increases in succeeding generations. Insects reared on privet show a smaller increase in ability to accept ivy in the first 4 generations and a diminished ability in the 5th and 6th generations. Forced ivy feeding therefore increases the ability to accept ivy in succeeding generations. F. B. P.

Water-soluble choline constituents of blood and organs. E. Kahane and J. Lévy (Compt. rend., 1938, **207**, 642—644).—Aq. $Fe_2(SO_4)_3$–$CaCO_3$ (cf. Luneau, A., 1937, III, 504) extracts choline, acetylcholine, and unidentified choline esters from the material ground with sand. Choline is pptd. with Reinecke's salt and determined, acetylcholine is determined directly, and the unknown esters after hydrolysis. Blood contains 0·1—120 μg. per c.c. of free and 0·5—120 μg. per c.c. of total water-sol. choline. Organs from the dog, guinea-pig, rabbit, and rat contain 0—0·5 mg. per g. of free choline. The "combined" water-sol. choline probably has a definite function in tissues and is not merely a chance degradation product of phosphoaminolipins. J. L. D.

Buffer action of the inorganic constituents of bone. N. Ercoli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 754—755).—The buffer actions of $Ca_3(PO_4)_2$ and powdered bone are discussed. F. O. H.

Glycogen and ossification in rat's embryo. V. P. Parvis (Arch. Ist. Biochim. Ital., 1938, **10**, 281—288).—Histological study of glycogen distribution in the embryo (14—16 days) indicates the prevalence of glycogen in connective tissue and cartilage prior to ossification. Granules of glycogen are especially abundant where osteoblastic activity occurs. The rôle of glycogen in ossification is discussed. F. O. H.

"Arthropathia mutilans." E. Jonsson (Acta med. scand., 1938, **96**, 28—42).—Review and report of 2 cases of a 32 year-old man and a 62 year-old man, with joint pains and extensive destruction of the skeleton and particularly resorption of the epiphysis of the bones of hands and feet. The cases were dissimilar in some respects, one being of an inflammatory type and the other non-inflammatory and resembling osteitis fibrosa. C. A. A.

Importance of the skin in the defence against infectious diseases. H. Knauer (Klin. Woch., 1938, **17**, 1510—1511).—In meningitis in infants the skin becomes very tolerant to ultra-violet radiation. 12 infants who reacted to very large doses recovered while 2 who did not react succumbed. The exanthemata of chicken-pox serum and nirvanol disease can be localised to areas irradiated early with ultra-violet light; their formation can be prevented in areas irradiated at a later stage. E. M. J.

Unidirectional properties of frog skin in conductivity, polarisation, and permeability. I. Differential conductivity as a secondary phenomenon. II. Ionic permeability and polarisation in relation to membrane charge. K. Motokawa (Japan. J. Med. Sci., 1938, III, **5**, 197—209, 211—231).—I. The direct current conductivity of the frog skin is greater when the smaller electrode is the cathode than when it is the anode, independently of whether it is mounted on the outer or inner surface. This unilateral effect disappears, remains unchanged,

or is increased by washing with Ringer's solution; 0·1N-$AlCl_3$, or 0·066M-Na_2HPO_4, respectively.

II. Frog skin is placed between Ringer's solution (inside) and an experimental fluid (outside) and the current strength at a definite external potential measured from time to time. Cations in order of their activity on the amplitude (issuing minus entering current) are $Al''' > Ba'' > Ca'' > Li' > K' > Na'$ and anions are $Cl' > Br' > NO_3' >$ acetate $> SO_4'' >$ citrate. Hence $AlCl_3$ or $BaCl_2$ has a positive action and Na_2HPO_4 a negative action whilst KCl and NaCl have only a slight effect. Polarisation is greater when H^+, OH^-, or multivalent ions are forced into the skin than when they move in the reverse direction. This phenomenon is closely related to membrane charge. T. F. D.

Normal arsenic content of hair. R. Steinbrück (Pharm. Zentr., 1938, **79**, 702—703; cf. Wührer, A., 1938, III, 207).—As is not an essential constituent of the human body although the latter sometimes contains up to 30 μg. of As per 100 g. even in absence of special causes for absorbing As. The hair of the head contains 0·00—10·00 μg. of As per 100 g. Individual differences and differences between As content of various parts of the body are great and irregular. W. McC.

Plasmalogen. III. Identification of plasmal. R. Feulgen and M. Behrens (Z. physiol. Chem., 1938, **256**, 15—20; cf. A., 1930, 1465).—The phosphatide fractions of brain and muscle contain approx. 10% of plasmal but whereas muscle-plasmal consists chiefly of palmitaldehyde with a little stearaldehyde, brain-plasmal consists of approx. equal parts of these aldehydes. Plasmal contains also a substance, possibly an unsaturated aldehyde, having a pungent odour. For identification, the thiosemicarbazone of plasmal is hydrolysed with dil. H_2SO_4 and the free plasmal, in acetic acid, is oxidised to the corresponding acids with CrO_3. W. McC.

Effect of pleural and peritoneal exudates on tissue cultures. G. Weitzmann (Arch. exp. Path. Pharm., 1938, **190**, 196).—Inhibition of growth resulted generally from addition of exudates to tissue cultures; in some cases this was followed by increased growth. Degeneration of the cultures was observed after addition of ultra-filtrates of exudates. I. S.

Constituents of leprotic nodules. E. M. Paras (Philippine J. Sci., 1938, **66**, 155—160).—The ground dried nodules, treated by the procedure used by Anderson in the study of the tubercle bacillus (A., 1927, 1114), yield phosphatide 3·2, acetone-sol. fat 6·4, and wax 1·5% all insol. in water and physiological aq. NaCl. The fat and wax are sol. in oil (*e.g.*, olive oil). Of the three constituents the wax only has biological activity in the skin test. W. McC.

New sulphuric ester in the mucus of *Charonia lampas*. T. Soda and F. Egami (Bull. Chem. Soc. Japan, 1938, **13**, 652).—The mucus contains a sulphuric ester (SO_4''-S 15%, N less than 0·2%) which resembles mucoitintetrasulphuric acid without the NH_2 group, and inhibits blood coagulation more powerfully than does commercial heparin. J. D. R.

Relation between internal and external medium in *Artemia salina* (L.), var. *principalis*, Simon. H. Warren, D. Kuenen, and L. G. M. B. Becking (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 873—878).—When *A. salina* is immersed in aq. NaCl of different concns., the osmotic pressure of the hæmocele fluid remains relatively const. as long as the [NaCl] does not exceed 2M. With higher [NaCl] the osmotic pressure of the fluid is raised. The NaCl content of the fluid accounts quantitatively for its osmotic properties. Regulation is effected by excretion or uptake of water. The swelling or shrinkage of the animals in response to osmotic differences is only about ¼ of the predicted val., probably in consequence of an exchange between the hæmocele and gut. W. O. K.

Osmotic regulation in invertebrates in fresh water. M. Florkin (Arch. int. Physiol., 1938, **47**, 113—124).—Anodonta maintain their internal medium when placed in hypotonic solutions but the concn. increases in hypertonic solutions. Absorption of salt or excretion of hypotonic saline takes place in the portion of the nephridia between the ampoule of the organ of Bojanus and the excretory pore. The anodonta lose water in hypertonic solutions. They maintain the concn. of their blood during long periods of inanition but it falls after such periods as 22 months. Their behaviour is quite different from that of crayfish. H. E. R.

Exchanges of water and of electrolytes by a pagure (*P. longicarpus*). N. S. R. Malœuf (Arch. int. Physiol., 1938, **47**, 1—23).—When the animals are placed in a hypotonic sea-water they swell rapidly for about two hr., then they lose wt. at first rapidly and later gradually. Controls in normal sea-water show only a gradual decrease in wt. If the alimentary canal is obstructed the swelling still takes place, showing that the increase in wt. is an osmotic effect through the integument. H. E. R.

Salt concentration in the tissues of some marine animals. A. Krogh (Skand. Arch. Physiol., 1938, **80**, 214—222).—The hæmolymph of certain marine invertebrates (*Mytilus edulis*, oyster) is approx. in ionic equilibrium with the surrounding sea-water. The Cl content of the tissues is much lower than that of sea-water. The eggs of some marine fish (*Crenilabrus exoletus, Syngnathidæ, Nerophis æquoreus*) are at first in Cl equilibrium with the surrounding water; the developing embryo shows a progressive reduction of its Cl content. A. S.

Isolation of hypoxanthine from earthworms. T. Q. Chou and H. P. Chu (Chinese J. Physiol., 1938, **13**, 265—268).—A bronchodilator substance was isolated as hydrochloride and shown to be hypoxanthine (Hy) [*aurichlorides*, $Hy,AuCl_3$, m.p. 243°; $Hy,HCl,AuCl_3,2H_2O$, m.p. 250° (decomp.)]. N. H.

Urea in the blood of silkworms at the fifth stage of development and in the excrement during the development of larva and chrysalis. B. G. Donato (Boll. Soc. ital. Biol. sperim., 1938, **13**, 735—736).—The blood-urea of the worm falls from 0·07 to 0·03% during the period between max.

growth and maturation. During the five stages of development, the urea content of the excrement steadily increases. The variation in urea content of the chrysalis is dependent on sex, the male generally having a greater content than has the female.

F. O. H.

Urea and the larval development of various races and crosses of silkworm. B. G. Donato (Boll. Soc. ital. Biol. sperim., 1938, **13**, 736—737).—The course of the increase in urea content of the larva during development varies with the race.

F. O. H.

Fatty acids in the lecithin and glyceride fractions of egg yolk. R. W. Riemenschneider, N. R. Ellis, and H. W. Titus (J. Biol. Chem., 1938, **126**, 255—263).—Palmitic, stearic, oleic, linoleic, and clupanodonic acids have been isolated from the lecithin and glyceride fractions of egg yolk. Δ^9-Hexadecenoic acid is present in the latter.

E. M. W.

Augmentation of nitrogen in the egg-white after formation of shell membranes in the fowl. H. M. Scott, J. S. Hughes, and D. C. Warren (Poultry Sci., 1937, **16**, 53—61).—The immature (isthmian) egg contains 96% of the N content of the (preceding) laid egg. The second laid egg of a clutch contains 90% of that of the first egg, due to smaller size and lower N content of the white. Addition of protein to the egg via the shell membrane is unlikely.

A. G. P.

Pigment of egg-shell membranes. A. A. Klose and H. J. Almquist (Poultry Sci., 1937, **16**, 173—174).—Spectroscopic analysis confirms that the pigment is a natural porphyrin. A. G. P.

Body weight, egg weight, sexual maturity, and growth rate in the domestic fowl. N. F. Waters (Poultry Sci., 1937, **16**, 305—313).—Data for several varieties are recorded and discussed. A. G. P.

Milk of the wild horse. J. Mašek (Chem. Obzor, 1938, **13**, 137—139).—The composition of the milk of a wild horse corresponds with that of the domesticated horse, except that the content of lactose seems to be larger. The catalase content is high, which supports the view that this enzyme results from feeding on green pasture. F. R.

Biological aspect of the cancer problem. W. E. Gye (Arch. exp. Path. Pharm., 1938, **190**, 92—111).—A review. I. S.

Tumour structure and tumour problems. W. J. Purdy (J. Royal Microscop. Soc., 1938, [iii], **58**, 171—184).—A lecture. E. B.

Porphyrins in biology and pathology. IV. Formation of porphyrin in pathology. J. Thomas (Bull. Soc. Chim. biol., 1938, **20**, 1058—1078).—In the tumours of two cases of chloroma and in the ganglions of two cases of myeloid leukæmia the green porphyrin pigment which gives a red fluorescence in ultra-violet light is extracted and identified as protoporphyrin by its absorption spectrum. The pigment is probably combined with protein in the tissue, and is not produced by degradation of hæmoglobin. A. L.

Microchemical studies of tumour fat. H. Tokugawa (Gann, 1938, **32**, 211—213).—Of 63 human tumours all except one mammary adenoma showed inclusions of granules or drops of fat in the cells. E. B.

Acid-fast granules of different tumour tissues. II. Malignant tissues. Y. Hamazaki (Gann, 1938, **32**, 214—217).—The acid-fast granules are rare in young rapidly growing tumours, but common in older cells. The purine content of tumours is higher than that of the parent tissues. E. B.

Shope's virus papilloma in rabbits. I. S. Yun, S. C. Choi, W. T. Ryang, and S. S. Kim (Gann, 1938, **32**, 220—222).—Domestic rabbits were less sensitive to a 5% suspension of Shope's papilloma tissue than wild rabbits. Exposure to ultra-violet light reduced the activity of the virus. Injection of ascorbic acid inactivated the virus. E. B.

Immunological reactions with a virus causing papillomas in rabbits. I. Demonstration of a complement-fixation reaction; relation of virus-neutralising and complement-binding antibodies. II. Properties of the complement-binding antigen present in extracts of growths; its relation to the virus. III. Antigenicity and pathogenicity of extracts of growths of wild and domestic species; general discussion. J. G. Kidd (J. Exp. Med., 1938, **68**, 703—724, 725—736, 737—760).—Complement fixation occurs when the sera of rabbits with virus-induced papillomata are mixed with antigenic extracts of virus-containing growth. Sera of normal or otherwise infected rabbits give no fixation. Complement-binding and virus-neutralising antibodies run parallel and both are in higher titre in cotton-tail than in domestic rabbits. The virus and complement-binding antigen can only be obtained from the growth and are not dissociated by filtration, centrifugation, heating, or p_H change although some dissociation is obtained by irradiation with ultra-violet light or treatment with alkali. Generally, large amounts of virus are associated with the presence of complement-binding antigen in high titre. It is concluded that *in vivo* virus stimulates the formation of virus-neutralising and complement-binding antibodies, and it is probably identical with the antigen which with immune serum fixes complement *in vitro*. A. C. F.

Tissue metabolism during the development of liver cancer induced by feeding dimethylaminoazobenzene. M. Nakatani, K. Nakano, Y. Ohara (Gann, 1938, **32**, 240—244).—The aërobic and anaërobic glycolysis of the liver increased with the duration of feeding; the respiration was unchanged. E. B.

Intravenous application of butter-yellow and *o*-aminoazotoluene. H. Nakamura, M. Yamada, H. Okamura, Y. Yoda, and T. Nishi (Gann, 1938, **32**, 245—250).—Intravenous injections of lanolin emulsions of butter-yellow and *o*-aminoazotoluene in rats and rabbits produced changes in the liver but no hepatomata. Both rats and rabbits excreted the substances very rapidly in the urine; the excretion was more rapid in rabbits. E. B.

Experimental production of liver cancer and diet. T. Ando (Gann, 1938, **32**, 252—258).—Rats fed on rice were more susceptible than rats fed on wheat to the induction of liver carcinoma by feeding with *o*-aminoazotoluene. E. B.

General disposition to experimental carcinogenesis. V. Male sex hormone and production of liver cancer. T. Tomita (Gann, 1938, **32**, 258—265).—The injection of male hormone increased the action of *o*-aminoazotoluene in producing hepatoma in male rats but not in females. The addition of cholesterol had a slight effect in increasing the size of livers of animals fed with *o*-aminoazotoluene. E. B.

Experimental investigation of susceptibility to cancer. I. Analysis of some factors concerned in the production of cancer. S. Yamashita (Gann, 1938, **32**, 266—274).—The effect of feeding thyroid gland and injection of casein and of Indian-red on the action of *o*-aminoazotoluene in rats was studied. E. B.

Influence of some carcinogenic substances on the transplantation of embryonic tissues. M. Hashida (Gann, 1938, **32**, 283—288).—Embryos transplanted into the muscles of rats fed with *o*-aminoazotoluene or treated with tar developed more slowly than in normal rats. E. B.

Biochemical study of the course of induction of liver cancer by feeding with dimethylaminoazobenzene. T. Masayama, H. Iki, T. Yokoyama, and M. Hasimoto (Gann, 1938, **32**, 303—306).—The tissue of hepatomata induced in rats by feeding dimethylaminoazobenzene contained only $\frac{1}{10}$th of the histidase, $\frac{1}{10}$th the arginase, half the ascorbic acid, slightly more glutathione, the same amount of free cholesterol, and twice the amount of cholesterol ester as the normal liver tissue. E. B.

Cancer of cats. F. Katsurada and T. Okino (Gann, 1938, **32**, 345—346).—A case of mammary cancer in a 12-year old cat is described. E. B.

Industrial lung cancer in gas generator workers in steel works. K. Kawahata (Gann, 1938, **32**, 367—387).—21 cases of lung cancer in gas-generator workers occurred in 6 years. The incidence is much higher than in other parts of the steel works. The men suffering from cancer had worked on the average 16 years, and cancer caused death on the average in 7 months. E. B.

Primary sarcomata and melanoblastomata of the liver. N. Toro (Arch. Ist. Biochim. Ital., 1938, **10**, 289—318).—Clinical and pathological aspects and histogenesis of three cases of malignant tumours of the liver (one fibro-sarcoma and two melanoblastomata) are discussed with reference to other published cases and especially to the hepatic origin of melanotic tumours. F. O. H.

Action of water-soluble vitamins on cancer. H. J. Lauber, H. Schocke, and T. Bersin (Münch. med. Wschr., 1938, **85**, 1741—1744).—Malignant tumours were produced in 240 animals by application to the skin of a 0·5% ether solution of methylcholanthrene twice a week. Vitamin-B_1 was injected daily in doses of 0·002 and 0·00002 mg., lactoflavin in doses of 0·0005 and 0·000005 mg., and -*C* in doses of 0·05 and 0·0005 mg. The growth of the tumours was not affected. A. S.

Carcinogenic substances. A. Butenandt (Arch. exp. Path. Pharm., 1938, **190**, 74—91).—A review. I. S.

Mode of action of carcinogenic substances. H. Druckrey (Arch. exp. Path. Pharm., 1938, **190**, 184—187).—The solubility of benzpyrene in body fluids was examined by means of its varying fluorescence (yellow-green for pure benzpyrene, deep violet for mol. solutions). Benzpyrene is slightly sol. in serum, more sol. in purine substances, especially in caffeine. It was very sol. in serum of animals fed on a fat diet. Benzpyrene was detected by the fluorescence method in cell cultures, and in isolated organs; mainly along the nerves after intramuscular injections, and in the mesenterial fat tissue after intraperitoneal injection. Oral administration caused fluorescence of the intestinal mucous membrane in fasting animals but not when preceded by food. Benzpyrene was absorbed by C and positively charged particles, whereby the fluorescence was abolished. Mol. solutions of benzpyrene passed collodion membranes from oily as well as aq. solutions into a deoxycholic acid solution. Tumours were formed by intraperitoneal implantation of collodion bags containing cryst. benzpyrene. Addition of benzpyrene killed tissue-cultures, and caused damage of cells and fatty degeneration with necrosis in the organism, followed by intoxication. Formation of tumours occurred after 4—12 months in the regeneration area. I. S.

Morphology of action of carcinogenic substances. H. Hamperl (Arch. exp. Path. Pharm., 1938, **190**, 187—188).—A collodion sac containing benzpyrene in aq. suspension or in oily solution was implanted into the peritoneum of rats. A non-sp. necrobiotic process and inflammatory regeneration of tissue occurred, followed by formation of sp. tumour cells. I. S.

Heredity in immunity to radium-produced sarcomata in the guinea-pig. W. Gavrilov (Compt. rend. Soc. Biol., 1938, **129**, 49—51).—10% of guinea-pigs grafted with Ra-induced sarcoma from other guinea-pigs have a natural resistance. Pigs bred from these resistant pigs do not have a higher % immunity. P. C. W.

Myxoma in the fibroma-immune rabbit. E. W. Hurst (Austral. J. Exp. Biol., 1938, **16**, 205—208).—The disease produced in fibroma-immune animals is clinically and pathologically recognisable as myxoma, but it differs from that in the non-immune animal in (1) the severity of the allergic changes, and (2) the resistance of areas removed from the point of inoculation, as shown by the lack of typical histological changes in the spleen and distant lymph glands. The latter observation is correlated with the difficulty found in demonstrating myxoma virus in the blood-stream of fibroma-immune rabbits, and with the view that the partial immunity depends on the localising action exerted by already circulating

agglutinins against myxoma, produced as a response to the fibroma infection. D. M. N.

Proteolytic activity of plasma during tumour or embryonic growth in rats. L. Weil and M. A. Russell (J. Biol. Chem., 1938, **126**, 245—254).—The aminopolypeptide activity of rat plasma remains const. during the growth of tumours. Proteinase activity decreases during both tumour growth and pregnancy, returning to normal on removal of the tumour or delivery of the litter. The optimum p_H for aminopolypeptidase activity is 7·5 and for proteinase 7. Micro-methods of determination are described. E. M. W.

Operation and cancer resistance. H. Herken and B. Rarei (Arch. exp. Path. Pharm., 1938, **190**, 188—191).—Resistance against new implants of Jensen sarcoma was obtained by repeated extirpation of a previous Jensen sarcoma in rats. In the case of the Flexner carcinoma the formation of metastases was stimulated by such a procedure. I. S.

(o) NUTRITION AND VITAMINS.

Nutritional problems of childhood. L. G. Parsons (Brit. Med. J., 1938, II, 929—933).—A review. C. A. K.

Effect of infestation with the nematode *Cooperia curticci* on the nutrition of lambs. J. S. Andrews (J. Agric. Res., 1938, **57**, 349—361).—Infection of wether lambs did not depress the digestibility of crude protein or crude fibre in rations or lower the ability to store Ca or P. Failure of such lambs to produce adequate increase in live-wt. is due to increased energy metabolism, possibly resulting from nervous excitation. A. G. P.

Effect of feeding grit on digestibility in the domestic fowl. J. C. Fritz (Poultry Sci., 1937, **16**, 75—79).—The digestibility of all food constituents (notably fat) was only slightly increased by feeding grit. The coarser grit was the more effective. A. G. P.

Relation of carotenoid pigments of feed to those of egg-yolk. J. S. Hughes and L. F. Payne (Poultry Sci., 1937, **16**, 135—138).—The xanthophyll content of egg yolk increased with the proportion of yellow maize in the ration. Carotene and cryptoxanthin in yolks varied widely with different hens and was unrelated to the amount of maize given. Of the carotene of green barley 2·6% and of that of dried lucerne 2·5% was deposited in the yolk. A. G. P.

Cannibalism-preventing properties of oats. M. W. Miller and G. E. Bearse (Poultry Sci., 1937, **16**, 314—321).—Oats as sole cereal in poultry rations diminished cannibalism in comparison with yellow maize. Growth vals. of cereals were in the descending order, oats, maize, wheat, barley. A. G. P.

Prevention of nutritional encephalomalacia in chickens. T. G. Ni (Chinese J. Physiol., 1938, **13**, 229—238).—Nutritional encephalomalacia produced by Pappenheimer and Goettsch's diet 108 was prevented by soya-bean oil or lipin-free Chinese gelatin, but not by ordinary gelatin or the lipin fraction of Chinese gelatin. Chinese gelatin retained its activity after alkaline hydrolysis followed by extraction with ether. The similarity of the active factor to vitamin-B_4 is discussed. N. H.

Fatty oils of smoked fish. II. Feeding experiments with smoked-herring oils. E. Takahashi and Y. Masuda (J. Agric. Chem. Soc. Japan, 1938, **14**, 1271—1276).—Rats did not live long on a diet containing 3% of yeast and 5% of rancid herring oil, but with fresh oil, growth was normal even when 20% of oil was used; 20% of smoked herring oil gave nearly as good a growth as 20% of butter fat. On a diet without yeast, growth was not appreciably impaired by addition of 10% of fresh oil and even 20% was less harmful than 5% of rancid oil. J. N. A.

Utilisation [by rats] of polyglyceryl esters. M. Bodansky, C. L. Herrmann, and K. Campbell (Biochem. J., 1938, **32**, 1938—1942).—Stearic, oleic, and linoleic esters of polymerides of glycerol, fed for long periods at 5 and 10% levels, have no detrimental effects and are as well utilised by rats, through several generations, as are naturally occurring fats (lard, butter, margarine, linseed oil, cacao butter). W. McC.

Effect of high-glucose and high-fructose diets on body-weight, and on the fat, glycogen, and nitrogen contents of the liver and body of albino rats. G. Bachmann, J. Haldi, W. Wynn, and C. Ensor (J. Nutrition, 1938, **16**, 229—237).—Glucose and fructose (68% of the ration) produced in rats having restricted exercise similar increases in body-wt. (higher in females than in males), the same total glycogen and N contents in body and liver, and the same total fat content in liver. The glucose diet gave higher fat contents in the entire body, less highly hydrated tissues, smaller liver wt., and higher % of fat in the liver than did the fructose diet. A. G. P.

Comparative effects of a high-glucose and a high-fructose diet on activity, body-weight, and various constituents of the liver and body of albino rats exercising at will. J. Haldi, G. Bachmann, C. Ensor, and W. Wynn (J. Nutrition, 1938, **16**, 239—248; cf. preceding abstract).—Diets containing 68% of fructose, glucose, or a 1 : 1 mixture of these produced similar increases in body-wt. Spontaneous activity in the animals decreased in the order glucose, mixed sugars, fructose. The fat content of the body was not greatly affected by the nature of the sugar supplied but was smaller than in unexercised animals. The % N and glycogen in the body were similar with glucose and fructose diets but the latter produced higher liver wts. and lower % of fat in the livers. The % of N and glycogen in livers was the same for both single-sugar diets but liver-glycogen was higher with a mixed-sugar ration. A. G. P.

Use of honey as a carbohydrate in infant feeding. F. W. Schlutz and E. M. Knott (J. Pediat., 1938, **13**, 465—473).—In 10 male infants observed over the first 6 months, honey was easily digested and absorbed more rapidly than most sugars during the first 15 min. after ingestion. There was a slight tendency for greater average wt. gains per day

to occur on lower caloric intakes when honey was included in the formula. C. J. C. B.

Effect of "basic" and "acidic" diets on animal metabolism. I. Variability of the productive action of starch equivalent in feeding with "basic" and "acidic" diets. S. E. Borshkovski, V. V. Michailova, and M. A. Kolomitschenko. **II. Effect of "basic" and "acidic" diets on digestibility.** S. E. Borshkovski, V. O. Smoljar, and M. K. Netschitailo (Ukrain. Biochem. J., 1938, **11**, 405—423, 425—433).—I. Better growth of rabbits is achieved over a 20-day period by feeding diets with an excess of alkaline than of acidic constituents, this effect being most marked in the spring. Since the water intake and output were the same on all diets, as were also the starch equiv. and digestibility of the diets, it is concluded that the productive val. of the starch equiv. is determined not only by the content of assimilable foodstuffs in the diet, but also by the nature of its inorg. constituents.

II. A more detailed study confirms the finding that digestibility is unaffected by variations in the proportion of acid to base in the diet, at different seasons of the year. R. T.

Effect of varying the ratio of basic to acidic constituents in the food of geese on the physico-chemical changes occurring in the egg during embryonic development. I. N. M. Schkljar (Ukrain. Biochem. J., 1938, **12**, 141—162).—Eggs from two groups of geese, maintained respectively on diets containing excess of H_3PO_4 or of $Ca^{..}$, were incubated. The Ca content of the eggs of the latter group exceeded that of the former. Changes in the p_H, buffering capacity, and water content of the various parts of the developing egg (white, yolk, blood, and amniotic and allantoic fluids) took place more rapidly in the former than in the latter group. R. T.

Phosphorus metabolism of chicks afflicted with perosis. A. C. Wiese, B. C. Johnson, C. A. Elvehjem, and E. B. Hart (Science, 1938, **88**, 383—384).—Perosis (slipped tendon) in chicks was produced by a diet containing 3—5% of $Ca_3(PO_4)_2$, and the addition of 50 mg. of $MnSO_4,4H_2O$ per kg. of the diet gave protection from the condition. Low blood- and bone-ester-P and phosphatase contents were found in the affected birds. W. F. F.

Constituents of wheat gray shorts which prevent slipped tendons. R. M. Sherwood and G. S. Fraps (Poultry Sci., 1937, **16**, 109—111).—The active factor is an ash constituent. A. G. P.

Nitrogen, calcium, and phosphorus balances of rural adolescent boys on low-cost diets. L. C. Kung and H. L. Yeh (Chinese J. Physiol., 1938, **13**, 285—305).—N, Ca, and P balances of 14 boys were determined on 3 diets of the same cost, over periods of 6, 9, and 9 days respectively. The first diet consisted of semi-refined wheat flour and vegetables, the 2nd of sweet potatoes, mixed flour (soya bean, red kaoliang, and millet), vegetables, and fish, the 3rd of wheat flour, mixed flour, fish, meat, and extra vegetables. Cereals provided 80% of the protein. The following average figures were obtained for the 3 periods, in g. per head daily: N intake, 16·8, 14·3, 17·2; N retention, 3·84, 1·97, 3·18; Ca intake, 0·93, 1·38, 1·51; Ca retention 0·38, 0·41, 0·67; P retention about 2 irrespective of intake; protein digestibility, 89, 62, and 70%. N. H.

Effect of calcium and phosphorus content of diet of chickens on egg production and hatchability. H. W. Titus, T. C. Byerly, N. R. Ellis, and R. B. Nestler (Poultry Sci., 1937, **16**, 118—128).—Hens laid more eggs than did pullets when a low-Ca diet was given. High-Ca rations produced the reverse effect. Gypsum was as effective as $CaCO_3$ for egg production but hatchability was better when $CaCO_3$ was used. The P intake had no effect on production or hatchability except that the adverse effects of high-Ca feeding on hatchability were more marked at lower levels of P intake. Embryo mortality in the last 3 days of hatching increased with the level of Ca intake and was somewhat greater when the P supply was lowered. A. G. P.

Availability of calcium in vegetable food materials. L. C. Kung, H. L. Yeh, and W. H. Adolph (Chinese J. Physiol., 1938, **13**, 307—315).—Young rats were fed for 28 days on a low-Ca diet + about 10 mg. of Ca daily in the form of 12 different kinds of dried vegetables or skim milk powder. The bodies were ashed. Ca from the vegetables was as well retained as from the milk, except for raw or cooked spinach, the oxalate content of which is high. N. H.

Effect of dietary calcium on the calcium content of the body. C. S. Lanford and H. C. Sherman (J. Biol. Chem., 1938, **126**, 381—387; cf. A., 1936, 1543).—In two or more generations of young and adult rats, 3- or 4-fold enrichment of the Ca content of a diet containing just adequate amounts of Ca greatly increases the rate of calcification and results in 5—10% increase in the final Ca content of the body. Although the final Ca contents after 3- and 4-fold enrichment are the same the rate of calcification is greater after 4-fold than after 3-fold enrichment. W. McC.

Coccidiosis in chickens. Calcium carbonate additions and coccidia. C. E. Holmes, C. A. Herrick, and G. L. Ott (Poultry Sci., 1937, **16**, 335—339).—Addition of 6% of oyster shell to a ration containing Ca 0·871 and P 0·934% increased mortality following infection with coccidiosis. A. G. P.

Effect of roughage on calcium balance in rats. W. H. Adolph, C. H. Wang, and A. H. Smith (J. Nutrition, 1938, **16**, 291—297).—Feeding regenerated cellulose (25% of intake) to rats does not increase the fæcal output of Ca or P, and, if given with a Ca-free ration, does not induce Ca excretion. A. G. P.

Comparison of ferrous and ferric iron in the nutrition of the rat. E. J. Underwood (J. Nutrition, 1938, **16**, 299—308).—Growth, hæmoglobin regeneration, and storage of liver-Fe in anæmic rats were equally affected by $Fe^{..}$ and $Fe^{...}$. At the same level of intake Fe was more effectively utilised when given in a milk diet than in solid foods. A. G. P.

Does there exist a connexion between the fluorine content of drinking water and goitre? T. VON FELLENBERG (Mitt. Lebensm. Hyg., 1938, **29**, 276—290).—No connexion was apparent between endemic goitre and the F content of the water supply. The F content of the foodstuffs was not taken into account. E. C. S.

Iodine level of Blumenstein, Berne. T. VON FELLENBERG (Mitt. Lebensm. Hyg., 1938, **29**, 290—303).—No clear connexion exists between the I content of the water and vegetable foodstuffs of the different villages in the Blumenstein district and the incidence of goitre and cretinism. The tendency to goitre seems to be increased by the poor sanitary condition of the water, which in some instances was condemnable on account of high O_2 requirement. E. C. S.

Chemistry of the Vitamins and Hormones. M. T. SIVADJIAN (Gauthier-Villars, Paris, 1938, 239 pp.).—A short, extremely clear monograph dealing with the properties, constitution, and synthesis of vitamins and hormones, including physiological and pharmacological studies. An extensive list of the current literature is added. H. R.

Oxygen uptake of tissues in vitamin deficiencies. B. SURE and J. B. DEWITT (J. Biol. Chem., 1938, **126**, 287—298).—The O_2 uptake (using the Barcroft apparatus) of various tissues of rats is reduced in vitamin-*B*-complex-, -B_1-, and -*A*-deficiency, but not in proportion to the pathological severity of the deficiency. E. M. W.

Vitamin deficiency complicating chronic ulcerative colitis. R. L. CLARK (Proc. Staff Mayo Clin., 1938, **13**, 232—235).—A case report. A. J. B.

Action of vitamins on oxygen uptake. G. F. GÖTHLIN (Skand. Arch. Physiol., 1938, **80**, 133—141).—The O_2 uptake of vitamin-deficient rats and guinea-pigs was determined with Krogh's respiratory apparatus. Administration of -*A* or -*C* to -*A*- or -*C*-deficient animals does not change the O_2 consumption. Administration of -B_1 to -B_1-deficient rats (Sherman and Chase's diet) increased the O_2 uptake. Lactoflavin had no action in -B_2-deficient rats. -*D* increases considerably the O_2 consumption in -*D*-deficient animals. A. S.

Influence of avitaminoses on weights of endocrine glands. B. SURE (Endocrinol., 1938, **23**, 575—580).—Vitamin-*A* deficiency caused hypertrophy of the pancreas. -B_1 deficiency caused hypertrophy of thyroid, adrenals, and pituitary with atrophy of the thymus. The animals used are not specified. V. J. W.

Effect on blood-cholesterol of (A) vitamin-B_1, (B) ascorbic acid, (C) ascorbic acid during hepatic disease. A. MORELLI and L. D'AMBROSIO (Boll. Soc. ital. Biol. sperim., 1938, **13**, 714—715, 716—718, 718—719).—(A) Intravenous injection of 2 mg. of aneurin into normal men diminishes blood-cholesterol (*e.g.*, from 0·180 to 0·150%), the max. effect occurring 3 hr. after injection and normal vals. being attained after approx. 6 hr.

(B) Intravenous injection of 200 mg. of ascorbic acid into men increases blood-cholesterol (*e.g.*, from 0·180 to 0·280%), the max. effect occurring 3 hr. after injection and normal vals. being attained after approx. 6 hr.

(C) The hypercholesterolæmia due to ascorbic acid is of slower onset and termination. F. O. H.

Effect of the thyrotropic and sex hormones on the vitamin-*A* and -*C* contents of the liver and adrenals of guinea-pigs. Z. MLINKÓ (Z. physiol. Chem., 1938, **256**, 42—46).—In guinea-pigs administration of sex hormones (1500—10,000 units of follicular hormone daily for 3 days to females; 2 cock's comb units of male hormone daily for 3 days to males) or of thyrotropic hormone (100—300 units daily for 3 days) produces large decreases in the -*C* content of the liver and adrenals and in the -*A* content of the liver. W. McC.

Vitamin-*A*. O. A. BESSEY and S. B. WOLBACH (J. Amer. med. Assoc., 1938, **110**, 2072—2080).—A review. R. L. N.

Vitamin-*A* requirements of chicks: comparative efficiency of carotene and vitamin-*A*. P. R. RECORD, R. M. BETHKE, and O. H. M. WILDER (Poultry Sci., 1937, **16**, 25—33).—Chicks at 8 weeks require 50—100 μg. of carotene or 80—160 I.U. of vitamin-*A* from cod-liver oil, per 100 g. of ration. Response of chicks to carotene and to -*A* was similar when equiv. rat units were fed. A. G. P.

(A) Vitamin-*A* requirements of white Leghorn pullets during the growing period. (B) Effect of varying levels of vitamin-*A* in the hen ration on the vitamin-*A* content of egg yolk, on hatchability and chick livability. G. E. BEARSE and M. W. MILLER (Poultry Sci., 1937, **16**, 34—38, 39—43).—(A) The requirement was 175 Sherman–Munsell units per 100 g. of ration.

(B) The vitamin-*A* content of egg yolks is proportional to that of the ration. Chicks fed an -*A*-free diet grew in proportion to the -*A* content of the breeding hen ration. For optimum hatchability of eggs the -*A* requirement of hens was 500 Sherman–Munsell units per 100 g. of ration. A. G. P.

Avitaminosis-*A* and thrombocytes. E. LORENZ (Klin. Woch., 1938, **17**, 1498—1501).—Avitaminosis-*A* has no effect on the hæmoglobin content or erythrocyte count in guinea-pigs, but causes degeneration of thrombocytes. The thrombocyte count rises in the first week to 900,000 per cu. mm., falls abnormally low in the second, and rises finally to vals. of over 1,000,000, pathological forms being numerous. This final rise can only be detected by using Jürgens' (but not with Fonio's) method. (Cf. A., 1938, III, 708.) E. M. J.

Severe night blindness due to vitamin-*A* deficiency. O. E. FISHER (Brit. Med. J., 1938, II, 944).—A case, a Malay youth 18 years old, is described. Vitamin-*A* cured the condition in 2 weeks. C. A. K.

Vitamin-*A* deficiency in man. Resolution of cutaneous lesions following parenteral administration of carotene. C. N. FRAZIER and H. C. LI (Chinese Med. J., 1938, **54**, 301—314).—That the body can utilise carotene as a source of vitamin-*A* is shown by the recovery of a patient with cutaneous

lesions due to -*A* deficiency after intramuscular injections of 1—2 mg. of carotene daily for 51 days. Treatment is best evaluated by the response to treatment of definite clinical manifestations; photometric tests of visual acuity may be misleading. W. J. G.

The biophotometer as a test for vitamin-*A* deficiency. C. E. Snelling (J. Pediat., 1938, **13**, 506—509).—The biophotometer was unsatisfactory as a method of estimating in children variations of dark adaptation such as might be produced by vitamin-*A* deficiency. C. J. C. B.

Effect of vitamin-B_1 on blood-sugar of normal persons and of persons suffering from hepatic and blood diseases. P. de Lucia and A. Morelli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 649—650).—Intravenous injection of 1000 I.U. of vitamin-B_1 has a slight hypoglycæmic action in normal men. With liver diseases, a rise or fall of blood-sugar may occur whilst with blood diseases, the level is generally unchanged. F. O. H.

Effect of vitamin-B_1 on blood-phosphorus. P. de Lucia and A. Morelli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 706—707).—Intravenous injection of 2 mg. of aneurin into normal men has no significant effect on total, acid-sol., lipin-, or inorg. P of the blood or on total P of the serum. F. O. H.

Intestinal absorption of glucose and xylose in vitamin-B_1-deficient rats. F. Lattes (Boll. Soc. ital. Biol. sperim., 1938, **13**, 661—664).—During vitamin-B_1-deficiency, absorption of glucose and xylose first decreases and subsequently returns to levels approaching normal; this increase occurs earlier and to a greater extent with xylose. F. O. H.

Lactic acid oxidation in the brain of B_1-avitaminous animals. P. E. Galvão and J. Pereira (Arq. Inst. Biol., 1938, **9**, 25—36).—Extra O_2 uptake in presence of lactate (with minced tissue) is decreased in the cerebrum (motor region) of rats and optic lobes of fowls showing nervous symptoms; in rats without symptoms a decrease was found in the mid-brain. S. O.

Fate of dehydro- and dehydrodeoxy-cholic acid in the rabbit. C. H. Kim (Z. physiol. Chem., 1938, **255**, 267—270; cf. Fukui and Ishida, A., 1938, III, 219).—In avitaminosis-*B*, the urine of rabbits into which dehydro- or dehydrodeoxy-cholic acid has been injected contains small amounts of deoxycholic acid derived from the injected acid. The bile of rabbits given dehydrodeoxycholic acid is free from deoxycholic acid. W. McC.

Effect of polyneuritis on the lactic acid and glycogen contents of pigeon muscles in various stages of fatigue. L. I. Palladina and L. A. Dubovtzeva (Ukrain. Biochem. J., 1938, **12**, 41—61).—The effects previously reported (A., 1938, III, 275) are more pronounced in the case of pigeons suffering from acute vitamin-B_1 deficiency. R. T.

Hydration of vitamin-B_1. W. A. Bastedo, jun., N. R. Trenner, and T. J. Webb (J. Amer. Chem. Soc., 1937, **60**, 2303—2305).—Gravimetric determinations show that the degree of hydration at 25° increases continuously with increase of aq. v.p., viz., from approx. 0·4% of water at 1 mm. to 5·20% at 19 mm. At the aq. v.p. of the saturated solution (20·9 mm.), the hydration corresponds with approx. 1 mol. of water to 1 mol. of vitamin. The determinations agree with those by a volumetric method. E. S. H.

Significance and determination of blood-vitamin-B_1. E. N. Rowland and J. F. Wilkinson (Brit. Med. J., 1938, II, 878—883).—Vitamin-B_1 was determined in human blood by observing the growth-promoting effect on the mould *Phycomyces blakesleeanus*. Normal vals. ranged from 6·5 to 16·5 μg. per 100 c.c. of blood. Deficiencies occurred in alcoholic neuritis (4 μg.), nutritional neuritis (3·5—4·5 μg.), scurvy (4·8—5·5 μg.), and malnutrition (4·7 μg.). Normal vals. were seen in other types of polyneuritis, in subacute combined degeneration of the spinal cord, and in pernicious anæmia. C. A. K.

Quantitative measurement of vitamin-B_1 and its phosphoric esters, and their synthesis in animal tissues. S. Ochoa and R. A. Peters (Nature, 1938, **142**, 356).—The author's recent results (A., 1938, III, 926) support, in the main, those of Westenbrink and Goudsmit (*ibid.*, 819). L. S. T.

Catatorulin test for vitamin-B_1. R. A. Peters (Biochem. J., 1938, **32**, 2031—2036).—Improvements in the procedure are described, pyruvate being used as substrate in place of lactate. A positive reaction is obtained with less than 0·2 μg. of vitamin-B_1. The discontinuity of the curve expressing the rate of oxidation of pyruvate is explained. The max. amount of -B_1 which can be determined by means of the test is approx. 0·5 μg. W. McC.

Testis and ovary during experimental beriberi in birds. G. Solarino (Arch. Ist. Biochim. Ital., 1938, **10**, 325—335).—The conclusion of Dulzetto and Cannavà (A., 1938, III, 805) that the lesions in testis and ovary during avian avitaminosis-B_1 are not due solely to underfeeding is questioned. F. O. H.

Effect of riboflavin on incidence of curled toe paralysis in chicks. E. L. R. Stokstad and P. D. V. Manning (J. Nutrition, 1938, **16**, 279—283).—The paralysis did not occur in chicks unless small amounts of riboflavin were present in the ration. Larger amounts prevented the disorder. A. G. P.

Riboflavin content of meats. W. J. Darby and P. L. Day (J. Nutrition, 1938, **16**, 209—218).—Data for various meats are recorded. On a vitamin-B_2-deficient diet, 67% of experimental rats developed cataract. Among those receiving meat supplements the incidence of cataract was inversely related to the rate of growth. A. G. P.

Pellagra following gastro-enterostomy. R. Maassen (Dtsch. med. Wschr., 1938, **64**, 1398—1399).—Symptoms of pellagra were observed following gastro-enterostomy. Injections of nicotinamide cured the patient. A. S.

Nicotinic acid in the prevention of pellagra. H. L. Schmidt, jun., and V. P. Sydenstricker (J. Amer. med. Assoc., 1938, **110**, 2065—2066).—16 cases of pellagra were treated with 100 mg. twice

weekly of nicotinic acid over a 6-week period. Transitory improvement occurred in most cases but in only 1 was improvement maintained. This dose was not effective in preventing relapse in chronic pellagrins. A small daily dose might have proved more effective. R. L. N.

Multiple nature of the deficiency of black-tongue-producing diets as shown by studies in rats. O. M. Helmer and P. J. Fouts (J. Nutrition, 1938, **16**, 271—277).—Black-tongue diets did not contain sufficient riboflavin, chick antidermatitis (filtrate) factor, or nicotinic acid to promote normal growth of rats. Addition of riboflavin to the diet improved growth in one case only; addition of nicotinic acid slightly diminished growth. Black-tongue-producing diets are similar to those of pellagrous patients. Treatment of the latter should include the administration of all components of the vitamin-B_2 complex. A. G. P.

Vitamin-B_2 in chick nutrition. R. M. Bethke, P. R. Record, and O. H. M. Wilder (Poultry Sci., 1937, **16**, 175—182).—Differences in the growth-promoting vals. of caseins are noted. Wheat middlings contains more vitamin-B_2 than ground wheat. The -B_2 of pig liver and yeast was wholly or partly inactivated by autoclaving in an alkaline but not in an acid medium. The growth and leg-disorder factor (-B_2) of pig liver was sol. in cold 20% but not in 95% alcohol and absorbed by fuller's earth. A flavin was the principal factor involved. A. G. P.

Ineffectiveness of 3-aminopyridine in black-tongue. F. M. Strong, R. J. Madden, and C. A. Elvehjem (J. Amer. Chem. Soc., 1938, **60**, 2564—2565).—3-Aminopyridine is ineffective against black-tongue in dogs (cf. Subbarow *et al.*, A., 1938, III, 676). R. S. C.

Inactivity of 3-aminopyridine in black-tongue. Y. Subbarow and W. J. Dann (J. Amer. Chem. Soc., 1938, **60**, 2565).—Cure of black-tongue in dogs by 3-aminopyridine could not be repeated (cf. preceding abstract). R. S. C.

Fatty livers in vitamin-B_6-deficient rats. N. Halliday (J. Nutrition, 1938, **16**, 285—290).—Livers of the deficient rats were heavier and contained a higher % of fatty acids than did normal livers. Administration of choline had a remedial effect but even massive doses failed to bring liver wt. to normal. Storage of liver extracts for 3 months causes diminution in total and phospholipin fatty acids and I vals. without affecting the total cholesterol contents. A. G. P.

Vitamin-*C* and obstetrics. A. Aigner (Münch. med. Wschr., 1938, **85**, 1744—1745).—Vitamin-*C* may prevent habitual abortion; it is valuable in the treatment of anæmia and produces a considerable increase of the reticulocyte count. A. S.

Vitamin-*C* and Shwartzman's phenomenon. G. Pacheco and M. Para (Compt. rend. Soc. Biol., 1938, **129**, 417—419).—Vitamin-*C* has no influence on the Shwartzman phenomenon. H. G. R.

Urinary reduction value during administration of vitamin-*C*. K. Wachholder (Klin. Woch., 1938, **17**, 1517—1518).—Polemical review. E. M. J.

Action of exercise and cold on vitamin-*C* excretion in urine. K. Ohta (Arb. med. Univ. Okayama, 1938, **6**, 87—92).—Exercise (man) and cold (rabbits in ice water) increase the vitamin-*C* excretion in urine. A. S.

Vitamin-*C* and anaphylaxis. G. Pacheco and M. Para (Compt. rend. Soc. Biol., 1938, **129**, 419—421).—Vitamin-*C* has a variable protective action against anaphylactic shock which is most marked if administered at the same time as or a week before the sensitising dose. H. G. R.

Synthesis of vitamin-*C* in guinea-pig's tissues. M. Mitolo (R.C. Atti Accad. Lincei, 1938, [vi], **28**, 31—38).—Minced organs (liver, kidney, brain, spleen, small intestine, adrenals) from normal and scorbutic animals, incubated for 3—23 hr. at 37° (p_H 7·4), show increased reduction of 2 : 6-dichlorophenol-indophenol. S. O.

Connexion between ascorbic acid and liver-lipase. B. Goldstein and S. P. Bondareva (Ukrain. Biochem. J., 1938, **12**, 91—109).—Aëration does not significantly affect the lipase activity of rat liver extracts, except in presence of cabbage juice (ascorbic acid oxidase), when 70—80% inactivation is obtained. The results do not support Pantschenko-Jurewicz's hypothesis that ascorbic acid is the active group of lipase (A., 1935, 251; 1936, 1024). R. T.

Changes during scurvy in the adrenaline content of the blood and adrenals of normal and thyroidectomised guinea-pigs. T. Doby and I. Weisinger (Z. physiol. Chem., 1938, **255**, 259—266; cf. Mosonyi and Rigó, A., 1934, 228).—Scurvy is accompanied by increase in the adrenaline content of the blood and decrease in that of the adrenals; when the disease is cured the blood-adrenaline content decreases. The adrenaline contents of the blood and adrenals of thyroidectomised guinea-pigs are greater than those of normal guinea-pigs but the blood-adrenaline val. decreases almost to zero when thyroidectomy is followed by onset of scurvy whilst the adrenaline content of the adrenals decreases to normal vals. The results support the view that vitamin-*C* deficiency leads to increased production of thyroxine which, in turn, increases the amount of adrenaline passed into the blood by the adrenals. W. McC.

Effect of vitamin-*C* on the adrenaline content of the blood and adrenals of normal and thyroidectomised guinea-pigs. E. Sárfy (Z. physiol. Chem., 1938, **255**, 271—276).—Subcutaneous administration of vitamin-*C* increases the adrenaline contents of the blood and adrenals. Thyroidectomy also increases the contents whilst subsequent injection of -*C* further increases the blood-adrenaline but decreases the content of the adrenals. W. McC.

Copper content of tissues and protection by vitamin-*C*. L. de Caro (Boll. Soc. ital. Biol. sperim., 1938, **13**, 727—729).—With guinea-pigs on a scorbutic diet containing varying amounts of $CuSO_4$, the Cu content of the tissues (liver, intestine, adrenals) is independent of their vitamin-*C* content. The toxicity of Cu is significantly reduced only by a -*C* intake sufficient to maintain the content of the tissues

in -*C* at normal levels. The contents of the tissues in glutathione are tabulated and discussed. F. O. H.

Intestinal absorption of glucose and xylose during avitaminosis-*C*. L. DE CARO and E. ROVIDA (Boll. Soc. ital. Biol. sperim., 1938, **13**, 725—727).—Avitaminosis-*C* in guinea-pigs does not significantly affect intestinal absorption of glucose or xylose, the decrease in absorption after the 15th or 21st day, respectively, being due to a secondary cause and not directly to lack of vitamin-*C*. F. O. H.

Metabolism and oxido-reductions. III. Dehydroascorbic acid/ascorbic acid ratio at low metabolic levels. C. LOMBROSO and B. CERA (Arch. Fisiol., 1938, **38**, 228—240).—The O_2 consumption of rats under amytal is reduced, and the ratio dehydroascorbic acid/ascorbic acid is lower than normal. S. O.

Action of hormones and cholic acid on the ascorbic acid content of some organs. I, II. K. OHTA (Arb. med. Univ. Okayama, 1938, **6**, 1—10, 31—48).—I. The ascorbic acid content of rabbit's and guinea-pig's adrenal, spleen, testis, liver, and kidney (determined by Martini and Bonsignore's method) is diminished by starvation or injection of insulin and increased by subcutaneous injections of adrenaline or cholic acid.

II. The ascorbic acid content of rabbit's urine (determined by Harris, Birch, and Ray's method) is increased by subcutaneous injection of insulin and diminished by injections of adrenaline and cholic acid. A. S.

Normal ascorbic acid content [of animal tissues]. A. GIROUD, C. P. LEBLOND, R. RATSIMAMANGA, and E. GERO (Bull. Soc. Chim. biol., 1938, **20**, 1077—1087).—Determinations of the ascorbic acid content of the adrenal, liver, kidney and muscle tissue of many mammals, lower vertebrates, and invertebrates, which themselves synthesise ascorbic acid, indicate that each organ is associated with a characteristic amount independent of the species. This amount may be regarded as the normal. A. L.

Realisation of the normal ascorbic acid value in the guinea-pig. A. GIROUD, C. P. LEBLOND, R. RATSIMAMANGA, and E. GERO (Bull. Soc. Chim. biol., 1938, **20**, 1088—1096).—In the guinea-pig the ascorbic acid content of the various organs is proportional to the log of the daily amount ingested as such or in food. To attain the normal ascorbic acid val. (cf. preceding abstract), which is realised instinctively when the animals are allowed a plentiful mixed diet, 50 mg. daily of the acid are required. A. L.

Realisation of the normal ascorbic acid value in man. A. GIROUD, M. RABINOWICZ, and E. HARTMANN (Bull. Soc. Chim. biol., 1938, **20**, 1097—1101).—Determinations of the ascorbic acid contents of the adrenal glands, livers, and kidneys at autopsy and in cases of accidental death show that the ascorbic acid vals. in man are much below the normal for other species. This fact, taken in conjunction with other findings in regard to the ascorbic acid requirement before urinary elimination is observed, shows that, in general, food intake in man is deficient in vitamin-*C*. A. L.

Vitamin-*C* content of Chinese foods. II. T. J. CHU and B. E. READ (Chinese J. Physiol., 1938, **13**, 247—255; cf. A., 1935, 903).—The vitamin-*C* in 80 animal and vegetable foodstuffs was determined by titration with I and with dichlorophenol-indophenol. Black soya bean, fennel, laver (seaweed), bitter gourd, sesamé seed, and apricot kernels were rich in -*C*. N. H.

Hunan [China] local food products. III. Vitamin-*C* content of "vegetable water." T. F. SU (Chinese Med. J., 1938, **54**, 351—357).—The vitamin-*C* contents of the products produced by boiling various vegetable leaves in water are given; they range from 2 to 20% of that of orange juice. The -*C* content was little affected by boiling for 30 min. W. J. G.

Vitamin-*C*. I. Content in various flowers and leaves. H. MITUDA (J. Agric. Chem. Soc. Japan, 1938, **14**, 1228—1236).—Vitamin-*C* is extracted by acetic acid, colouring matter removed by fuller's earth, and -*C* determined by titration with 2 : 6-dichlorophenol-indophenol. Flowers and leaves contain large amounts of -*C*, viz., more than is present in citrous fruits. Petals contain more -*C* than pistils, stamens, and calices, and red and violet flowers generally contain more dehydroascorbic acid than do white or yellow flowers. Young wistaria leaves contain much more -*C* than old leaves. Green tea contains more -*C* than black tea. *Amarantus tricolor*, L., contains large amounts of -*C* and there is a relationship between the amounts of -*C* and chlorophyll. J. N. A.

Pyrophosphate in the determination of vitamin-*C* content of plant and animal tissues K. V. GIRI and N. S. DOCTOR (Indian J. Med. Res., 1938, **26**, 165—170).—A detailed account of work already noted (A., 1938, III, 822). H. B. C.

Treatment of psoriasis by ingestion of massive doses of vitamin-*D*. L. A. BRUNSTING (Proc. Staff. Mayo Clin., 1938, **13**, 280—283).—Of 19 patients with psoriasis treated with massive doses of vitamin-*D* 3 were cured, 12 improved, and 2 made worse. A. J. B.

Massive doses of vitamin-*D* in chronic arthritis: effect on calcium metabolism. C. L. STEINBERG (J. Lab. clin. Med., 1938, **24**, 17—24).—Clinical improvement was noted in 35% of 40 cases treated. The massive dose of vitamin-*D* had the following effects: it lowers a high serum-Ca; it raises a low or normal serum-Ca to a higher level and then (after continued administration) again decreases the hypercalcæmia. The clinical improvement or non-improvement had no bearing on the change of blood-Ca. The dosage used was 160,000 U.S.P. units daily. C. J. C. B.

Effect of charcoal and length of storage on calcifying property of cod-liver, sardine (pilchard), and concentrated cod-liver oils. L. L. LACHAT and H. A. HALVORSON (Poultry Sci., 1937, **16**, 147—154).—The calcifying action of these oils

was unaffected by C whether freshly mixed or after storage for 1 year. A. G. P.

Vitamin-*D* requirements of growing chicks as affected by the calcium content of the ration. J. R. Couch, G. S. Fraps, and R. M. Sherwood (Poultry Sci., 1937, **16**, 106—108; cf. B., 1937, 83).—With a low level of vitamin-*D* supply the requirement depends on the amount of $Ca^{\cdot\cdot}$ in the ration. A. G. P.

Experimental rickets in pigs. W. Schoch (Mitt. Lebensm. Hyg., 1938, **29**, 176—186).—The basal diet conisted of maize, barley, bran, meat-meal, $CaCO_3$, and NaCl in unlimited amount, and 200 g. per day of skim milk powder. Normal ossification resulted, and no effect was produced by additional vitamin-D_2 or cod-liver oil. The results support those of Dunlop (cf. A., 1935, 393). E. C. S.

New vitamin-*D* in cod-liver oil. C. E. Bills, O. N. Massengale, K. C. D. Hickman, and E. Le B. Gray (J. Biol. Chem., 1938, **126**, 241—244).—On high-vac. distillation of cod-liver oil, the most volatile fraction of vitamin-*D*-bearing distillate is from ¼ to ½ as effective for chickens as the total -*D* of the oil. E. M. W.

Chemistry of vitamin-*D*. C. E. Bills (J. Amer. med. Assoc., 1938, **110**, 2150—2155).—A review. R. L. N.

Antirachitic provitamins of invertebrates. F. Bock and F. Wetter (Z. physiol. Chem., 1938, **256**, 33—41).—The provitamin of the earthworm *Lumbricus terrestris* is ergosterol (possibly accompanied by traces of another provitamin) and that of the snail *Helix pomatia* is probably ergosterol. The sterols of the snail *Arion empiricorum* contain 25% of ergosterol, this val. decreasing in 6 months to 7·5% when the diet contains little or no provitamin. The provitamin of the marine snail *Buccinum undatum* is 7-dehydrocholesterol, the alimentary tract containing 26·3% and the skin and muscles 7·5%. These animals contain also cholesterol and substances similar to phytosterols. W. McC.

Antirachitic provitamin of wheat-germ oil. A. Windaus and F. Bock (Z. physiol. Chem., 1938, **256**, 47—48; cf. A., 1938, III, 217).—The crude sterol of the oil contains 1·2% of ergosterol which is isolated by adsorption on Al_2O_3 and elution with light petroleum–benzene–methyl alcohol mixture. W. McC.

Effect of Chronic Vitamin-*E* Deficiency on the Nervous System and Skeletal Musculature. L. Einarson and A. Ringsted (Humphrey Milford, 1938, 163 pp.).—This monograph contains the results of systematic investigations on the nervous system and skeletal musculature in white rats fed on a vitamin-*E*-deficient diet. For histological examination of the spinal cord the usual methods + a gallocyanin stain (introduced by Einarson) were used. -*E* lack produces first degeneration of the dorsal roots and posterior columns, then the anterior horn cells and their fibres are involved, and finally the pyramidal tracts may be affected. The corresponding clinical changes in movements, reflexes, and sensation are described. Degeneration in nerves and muscles also occurs. Administration of wheat-germ oil at any stage during the first 6 weeks of the diet prevents the development of paralysis; after this time it is ineffective even if given before paralysis actually occurs (usually after 4 months of -*E* lack). The figures (95) and plates (2) are good. C. A. K.

Determination of vitamin-*E*. III. Relation between dosage and response to vitamin-*E*. A. L. Bacharach (Biochem. J., 1938, **32**, 2017—2023; cf. A., 1938, III, 823).—A very steep curve expressing the relation has been constructed on the basis of experiments with the unsaponifiable matter of wheat-germ oil kept in sealed tubes under N_2 and administered to rats. W. McC.

Isolation of a crystalline compound with vitamin-*K* activity. S. A. Thayer, D. W. MacCorquodale, S. B. Binkley, and E. A. Doisy (Science, 1938, **88**, 243).—Crystals, m.p. 69°, probably of vitamin-*K*, have been isolated from an oil obtained by the fractionation of a light petroleum extract of lucerne leaf meal. The chick unit, 0·6 μg., for the crystals is more than that of any other fraction obtained or of the original oil. L. S. T.

Vitamin-*K*: its distribution and chemical properties; methods of preparation and assay. A. E. Osterberg (Proc. Staff Mayo Clin., 1938, **13**, 72—74).—A method of extraction of vitamin-*K* from fish meal allowed to putrefy is described. 10 mg. added to 1 kg. of food were active. A. J. B.

Determination of the antihæmorrhagic vitamin. H. J. Almquist, E. Mecchi, and A. A. Klose (Biochem. J., 1938, **32**, 1897—1903; cf. A., 1937, III, 498).—In chicken's blood, the clotting time varies with the vitamin-*K* content of the diet, the -*K* reserve of the body, and the age, max. time being attained at 2 weeks of age and balance between clotting power and -*K* level in the diet at 3 weeks. In determining the -*K* content of food, advantage is taken of the fact that the clotting power (reciprocal of the clotting time) is a simple, linear function of the logarithm of the dietary -*K* concn. The hæmoglobin content of the blood of chickens free from hæmorrhage but having very prolonged clotting times is normal. W. McC.

Effect of bile on erosions of the chick gizzard lining. H. J. Almquist and E. Mecchi (J. Biol. Chem., 1938, **126**, 407—412; cf. A., 1938, III, 680).—Cholic and dehydrocholic acid are almost equally effective as agents in the prevention of the erosions and the cholic acid content of the lining increases when cholic acid is given as dietary supplement. Deoxycholic acid has little preventive action. Dehydrocholic acid is more effective in the diet than when given by intramuscular injection. Deficiency of bile or of cholic acid leads to erosions of the lining. W. McC.

Effects of light, soya-bean, and other diet supplements on seasonal hatchability and egg production. T. C. Byerly, H. W. Titus, N. R. Ellis, and R. B. Nestler (Poultry Sci., 1937, **16**, 322—330).—Several grades of soya-bean meal lacked a factor necessary for hatchability. Exposure of birds to direct sunlight partly corr. this deficiency by means other than production of vitamin-*D*. Sun-

light increased the no. of eggs from penned birds receiving adequate amounts of cod-liver oil. A. G. P.

Dietary factors associated with nutritional muscle dystrophy. S. Morgulis, V. M. Wilder, and S. H. Eppstein (J. Nutrition, 1938, **16**, 219—227).—Acetone extracts of wheat germ contain all factors necessary for the cure of nutritional dystrophy. Neither the water-sol. nor fat-sol. fractions of the germ alone exert any curative action: the two fractions fed together effect a complete cure. The water-sol. fraction is also effective when fed in conjunction with yeast or with vitamin-*B* concentrates. The dietary factor present in the unsaponifiable fraction of wheat-germ oil also occurs in lettuce, cottonseed, and maize oil, but not in linseed oil; it closely resembles vitamin-*E*. A. G. P.

(p) METABOLISM, GENERAL AND SPECIAL.

Metabolism during hibernation. E. Klar (Z. ges. exp. Med., 1938, **104**, 105—115).—Hibernation of hedgehogs can be prevented by large doses of vitamin-*D*; serum-Ca in these animals was over 12 mg.-%. Serum-non-protein-N is increased during hibernation; -NaCl is unchanged. A. S.

Effect of temperature on heat production in the normal and hibernating dormouse. C. Kayser (Compt. rend. Soc. Biol., 1938, **128**, 1201—1204).—*Myoxus glis* behaves as a homœtherm during the summer months. At −20° its heat production is 15·5 cal. per kg. per hr.; at 29° it is 4 cal. per kg. per hr. The rectal temp. remains const. The basal metabolism is raised if the animals are kept in a low temp. Hibernating dormice kept at 10° and 8°, however, behave as poikilotherms, the O_2 consumption varying directly as the room temp. P. C. W.

Respiratory exchanges in *Muscardinus* and bats. C. Kayser (Compt. rend. Soc. Biol., 1938, **128**, 1204—1208).—*M. avellanarius* when not hibernating behaves as a homœthermic mammal. In the autumn its powers of thermoregulation are diminished. *Vesperugo noctula* and *Plecotus auritus*, however, behave as poikilotherms when not hibernating, the rectal temp. and respiratory exchanges rising and falling parallel with the external temp. P. C. W.

(A) Pulmonary ventilation, (B) respiratory metabolism, during muscular exercise in children. V. Piacentini and A. Bollettino (Boll. Soc. ital. Biol. sperim., 1938, **13**, 645—646, 646—647).—(A) The calorific val. per l. of expired air is max. for a metabolic val. of 8 kg.-cal. per kg. per hr. (B) Energy consumptions in adults and children are compared. F. O. H.

Effect of folliculin on basal metabolism of women. V. Piacentini and F. Guercio (Boll. Soc. ital. Biol. sperim., 1938, **13**, 681).—Injection of large doses of folliculin has no effect on basal metabolism of women. F. O. H.

Respiratory metabolism of women during muscular work. V. Piacentini and F. Guercio (Boll. Soc. ital. Biol. sperim., 1938, **13**, 682).—The work performance, as with man, is max. at a speed of walking (on level ground) of 4 km. per hr. Max. rate of work without incurring O_2 debt is 9 kg.-cal. per hr., as compared with 12 kg.-cal. for man. F. O. H.

Physiology of the tonsils. Effect of tonsil extracts on the basal metabolism of rats. G. Benetato and C. Oprisiu (Compt. rend. Soc. Biol., 1938, **129**, 11—14).—Normal basal metabolism and the increased val. due to thyroxine are decreased by injection of an aq. extract of tonsil (man, pig). H. G. R.

HCN-resistant part of muscle respiration. E. T. Soreni and O. P. Tschepinoga (Ukrain. Biochem. J., 1938, **11**, 307—326).—The O_2 intake of muscle pulp for trained is greater than for untrained muscle (frog, pigeon, chicken, dog). This effect is due to increase in that part of the respiration not inhibited by 0·006—0·012N-HCN, the magnitude of the increase being proportional to working efficiency of the muscle. For this reason naturally "trained" muscles (heart, diaphragm) are less sensitive to HCN than is skeletal muscle. Comminution of trained muscles increases their sensitivity to HCN, showing that the HCN-resistant type of respiration exists in the intact muscles. HCN-resistant respiration is connected with the yellow respiratory enzyme, and is a part of the Pasteur–Meyerhof reaction, as it inhibits lactic acid formation. R. T.

Quantitative porphyrin metabolism in man. IX. J. T. Brugsch (Z. ges. exp. Med., 1938, **104**, 210—220).—10 g. of human fæces, obtained after a chlorophyll-rich diet, were extracted with ether and treated with 10, 25, and 37% HCl (3 parts ether to 1 part HCl). The intensity of the red spectral bands was compared with that of a standard solution of chlorophyll, and the amount of unabsorbed light was determined spectrophotometrically for each λ. The amount of unabsorbed light of 1 mg.-% of chlorophyll in acetone or ether was 58% at 665 mμ. The 10% HCl fraction yields the smallest, the 37% HCl fraction the highest, amount of chlorophyll degradation products; they are easily distinguishable from phyllerythrin. The 25% HCl fraction ("stercophorbide fraction") contains phorbide *a* and *b*; 2 methyl esters were obtained from phorbide *a* by treatment with diazomethane. The phæophytin fraction (37% HCl fraction) can be transformed into phæophorbide *a* and *b*. At least 40% of the ingested cryst. chlorophyll is recovered unchanged from the fæces. A. S.

Effect of pyrrole on the oxidation of amines and the non-natural isomerides of certain amino-acids. F. Bernheim, M. L. C. Bernheim, and H. O. Michel (J. Biol. Chem., 1938, **126**, 273—285; cf. A., 1931, 1189).—Pyrrole accelerates the oxidation of amines by rat liver (ground up and washed), pyrrole + methæmoglobin being even more effective. 1 mol. of β-phenylethylamine takes up 1 mol. of O_2 in the former, and 2 mols. in the latter, case. These reagents have less effect with guinea-pig and rabbit livers. In all cases the effect increases with increasing O_2 pressure, and is completely inhibited by KCN or pyrophosphate. Fluoride has no effect on the pyrrole, but partially inhibits the pyrrole + methæmoglobin acceleration. Similar acceleration occurs

in the oxidation of non-natural isomerides of amino-acids, but is not influenced by the O_2 pressure. *N*-Methyl- and -ethyl-pyrrole are less active than pyrrole, and pyridine is inactive. Oxidation of lactate and of hypoxanthine is slightly accelerated by pyrrole, but no other oxidations investigated are influenced. The formation of methæmoglobin by kidney and liver (but not by brain) is increased by pyrrole to an extent proportional to the O_2 uptake. A. Li.

Effect on man and animals of overdoses of phenylalanine. A. Fölling, K. Closs, and T. Gamnes (Z. physiol. Chem., 1938, **256**, 1—14; cf. A., 1938, III, 918, 919, 934).—In oligophrenia (imbecillitas) phenylpyrouvica appearance of phenylpyruvic acid in the urine is a consequence of increased *l*-phenylalanine content of the blood. In rabbits the rates of urinary excretion of *l*-phenylalanine and phenylpyruvic acid differ greatly after intravenous injection of *l*-phenylalanine but run almost parallel after oral administration. Oral and intravenous administration of *l*-phenylalanine in neutral solution increases the *l*-phenylalanine content of the blood, and, in man, the rat, and the rabbit causes excretion of phenylpyruvic acid accompanied, in man and the rabbit, by increased excretion of *l*-phenylalanine. In the organism *d*- is converted into *l*-phenylalanine by way of phenylpyruvic acid. The effect of the reaction of the solution used for administration of *l*-phenylalanine is explained by supposing that the acid acts in the intestine as anion, cation, or zwitterion or that the p_H affects the rate of absorption, the secretion of gastric juice and its composition, or the activity of the digestive enzymes. Differences in p_H may also affect the action of the kidneys or liver. Absence of production of phenylpyruvic acid from *l*-phenylalanine by kidney or kidney enzyme, *in vitro*, is accompanied by absence of NH_3 production. W. McC.

Variations in the total and non-protein arginine content of eggs during embryonic development, and under the influence of certain factors. O. J. Raschba (Ukrain. Biochem. J., 1938, **11**, 395—403).—The non-protein arginine of hen's eggs falls from initially 10 to a min. of 4 mg. on the 4th day of incubation, thereafter gradually rising to the original val. on the 11th day; the total arginine content does not vary significantly. Injection of aq. $MnSO_4$ or of dil. H_2SO_4 of the same p_H slightly lowers the non-protein arginine of developing eggs. R. T.

Experimental production of xanthomas in laboratory animals. F. Schaaf (J. invest. Dermatol., 1938, **1**, 11—30).—Some rabbits were fed with lanolin and others also injected subcutaneously with choline. In all the animals a fold in the nape of the neck was tightly fixed with a clamp. Serum-fat analyses were carried out at regular intervals and histological examinations made of the neck fold. The total cholesterol and cholesterol ester content of the serum increased rapidly at about the 60—110th day of the experiment without the phosphatide fraction undergoing a comparable increase. Subsequently the serum-fat undergoes a marked decrease. Animals fed lanolin alone showed xanthomatous lesions in the neck fold between the 300th and 400th day, while those also given choline showed lesions as early as the 150th day. The metabolic disturbance (as determined by analyses of the fat and lipin constituents of the blood serum) does not necessarily persist after formation of xanthomas. (2 photomicrographs.) C. J. C. B.

Behaviour of sulphonated fats administered to depancreatised and normal animals. V. Martini and G. C. Morando (Boll. Soc. ital. Biol. sperim., 1938, **13**, 668).—Sulphonated olive oil is only slightly, or not at all, absorbed from the intestine of normal or depancreatised ducks. F. O. H.

Introduction of heavy hydrogen into the growing organism. VI. Biological synthesis of fats. G. Günther and K. F. Bonhoeffer (Z. physikal. Chem., 1938, **183**, 1—8).—*Endomyces vernalis* was cultivated in agar-sugar media containing varying amounts of D_2O, and the D content of the water obtained from combustion of the synthesised fat was determined. The m.p. of the normal and D-containing fats were similar. The data indicate that the rate of introduction of D is one third that of H. Comparison is made with similar data of Schönheimer and Rittenberg (A., 1936, 1018) and the theory of fat synthesis developed by Fink *et al.* (cf. A., 1937, III, 432; B., 1937, 1232) is discussed. C. R. H.

Manipulation of glucose tolerance by diet. E. P. McCullagh and C. R. K. Johnston (Amer. J. med. Sci., 1938, **195**, 773—781).—7 cases with chronic hypoglycæmia showed a consistent decrease in glucose tolerance following the use of low-carbohydrate, high-fat diets. 2 of these subsequently showed increased tolerance on a high-carbohydrate low-fat diet. In 5 cases of mild diabetes mellitus an increased tolerance followed high-carbohydrate low-fat diets. A knowledge of dietary habits of the patient is necessary for proper clinical evaluation of the glucose tolerance test. R. L. N.

Latent hereditary diabetes and carbohydrate tolerance. H. Lemser (Münch. med. Wschr., 1938, **85**, 1657—1661).—Many cases of hereditary latent diabetic conditions can be recognised by determining blood-sugar curves after various carbohydrate tolerance tests. A. S.

Glucose tolerance test in diabetics. F. Rathery, M. Froment, and P. de Traverse (Compt. rend. Soc. Biol., 1938, **128**, 1062—1064).—A series of glucose tolerance tests performed on 10 diabetic patients under carefully controlled conditions showed wide variations from day to day. The val. of the test is considered to be slight. P. C. W.

Influence of lactoflavin and corticosterone on experimental renal diabetes. F. Hoff (Klin. Woch., 1938, **17**, 1535—1537).—Administration of lactoflavin or corticosterone diminishes glucose excretion in phloridzinised dogs by 50%. E. M. J.

Residual "chromic" index in the plasma of the diabetic. M. R. Dandurand (J. Physiol. Path. gén., 1938, **36**, 669—678).—Normal deproteinised plasma contains substances which are oxidised by $K_2Cr_2O_7$ in acid solution. The "residual" index is

obtained by subtracting the dichromate reacting with glucose. This figure is increased in simple diabetics and very largely in tubercular diabetics and is proportional to the severity of the hyperglycæmia. Insulin therapy reduces it rapidly and the alkaline reserve returns to normal. The substances responsible are concerned in carbohydrate metabolism. C. A. A.

Effect of various types of starch in a mixed diet on the glycogen content of the liver. E. Danopoulos (Biochem. Z., 1938, **299**, 100—103).—In rats on an adequate diet of caseinogen, liver oil, salt mixture, lemon juice, and starch, the glycogen + glucose content of the liver is approx. 20% higher when the source of the starch is rice than when it is potato, wheat, or maize. W. McC.

Effect of iodoacetic acid on intestinal absorption of monosaccharides and sodium chloride. K. A. Klinghoffer (J. Biol. Chem., 1938, **126**, 201—205).—Injection of the acid causes a decreased absorption of glucose, xylose, and NaCl from the intestinal tract of the rat. This decrease is associated with severe gastrointestinal lesions (together with pyloric spasm, hæmorrhagic enteritis, adrenal cortical and medullary hæmorrhages, hæmoglobinuria, and pharyngeal œdema) and is probably caused by it rather than by a sp. action of the acid on intestinal phosphorylation. J. N. A.

Effect of copper on carbohydrate metabolism. A. Morelli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 712—714).—In dogs which have received (by gastric administration) 5 mg. of $CuSO_4$ daily for 7—28 days, the fasting blood-sugar and the alimentary hyperglycæmia (administration of 3—6 g. of glucose) are significantly less than in controls. The mechanism of the enhancement of carbohydrate metabolism by Cu is discussed. F. O. H.

Effect of various intermediate products of carbohydrate metabolism on the capacity for work on iodoacetate-poisoned muscle. P. Foà and P. Fornaroli (Boll. Soc. ital. Biol. sperim., 1938, **13**, 664—665).—With perfused frog's gastrocnemius preps. poisoned with iodoacetate, glucose, glycerol, gluconate, succinate, formate, acetate, hexose diphosphate, and creatine have no effect, formaldehyde, acetaldehyde, Na ethoxide, and guanidine decrease the capacity for work, whilst glycerophosphate, lactate, pyruvate, and methylglyoxal increase the capacity for work during aërobic, but not anaërobic, contraction. F. O. H.

Glycolytic processes in trained muscles. M. F. Guli (Ukrain. Biochem. J., 1938, **11**, 297—306).—The amount of lactic acid formed when pulp or extract of trained rabbit muscles is incubated (30 min. at 38°, in vac.) is greater than that from untrained muscles; this is due to the higher glycogen content of trained muscles, as after addition of excess of glycogen lactic acid formation is equal in both cases. R. T.

Deficiency of contraction in iodoacetate-poisoned muscle perfused with methylglyoxal or pyruvic acid. P. Fornaroli and P. Foà (Boll. Soc. ital. Biol. sperim., 1938, **13**, 666—667).—The modified contraction (frog's gastrocnemius), which does not occur in absence of O_2, is probably due to an oxidation product of methylglyoxal or pyruvic acid; it is not due to change in p_H. F. O. H.

Metabolic investigations on a case of phenylpyruvic oligophrenia. G. A. Jervis (J. Biol. Chem., 1938, **126**, 305—313).—The phenylpyruvic acid in the urine of a patient suffering from phenylpyruvic oligophrenia was increased by feeding him with phenylalanine (the *d*-form causing a greater increase than the *l*-), formyl- and acetyl-*l*-phenylalanine, phenyl-pyruvic and -lactic acid. Other amino-acids and related substances produced no increase. E. M. W.

Specificity of coupled esterification of phosphate in muscle. D. M. Needham and G. D. Lu (Biochem. J., 1938, **32**, 2040—2048; cf. A., 1937, III, 471).—Two stages in the oxido-reduction between triose phosphate and pyruvate are distinguished. Oxidation of triose phosphate to phosphoglyceric acid by co-enzyme is accompanied by esterification of phosphate. The subsequent oxidation by pyruvate of the reduced co-enzyme thus formed involves no esterification. Oxido-reductions in muscle extract involving glyceraldehyde are probably not accompanied by coupled esterification of phosphate. Oxido-reduction involving triose phosphate is activated, but that involving glyceraldehyde is inhibited, by adenylic acid. W. McC.

Phosphorus metabolism in normal and rachitic rats with a radioactive phosphorus isotope. II. Total and lipin-phosphorus contents and formation of lipin-phosphorus. M. J. L. Dols, B. C. P. Jansen, G. J. Sizoo, and F. Barendregt (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 997—1003; cf. A., 1937, III, 307).—Rachitic rats contain less total P and Ca, but more lipin-P, than normal rats. After injection of radioactive Na phosphate there is an increased formation of lipin-P in rachitic rats. J. N. A.

Phosphorus compounds of the brain at various stages of embryonic and post-embryonic growth. S. E. Epelbaum and B. I. Chaikina (Ukrain. Biochem. J., 1938, **11**, 277—295).—The water and total P contents of the cerebrum of chickens fall steadily from the 9th day of embryonic growth to maturity water from 8·85 to 80%, P content from 2·19 to 1·58%). Over this period, the content of acid-sol. P falls from 0·855 to 0·5%, and that of inorg. P rises from 0·184 to 0·384%. The content of readily hydrolysable P compounds falls steadily with increasing age. The content of all fractions of cerebral P compounds is greater in hens than in roosters. R. T.

Effect of "basic" or "acidic" diets on animal metabolism. III. Effect on nitrogen, phosphorus, and calcium metabolism during different seasons of the year. S. E. Borshkovski, V. V. Michailova, M. A. Kolomitschenko, and M. K. Karpenko (Ukrain. Biochem. J., 1938, **12**, 131—140).—Negative N, P, and Ca balances are found for chinchilla rabbits during late spring and early

summer, on acid and alkaline diets. At other seasons the balances are positive. R. T.

Nitrogen : sulphur ratio in white rats fed with *l*-cystine. E. Lippmann and U. Dachà (Arch. Fisiol., 1938, **38**, 1—25).—The N/S ratio in the body is not affected by administration of cystine. S. O.

Absorption and elimination of sulphates. B. Boucek and A. Kucera (Compt. rend. Soc. Biol., 1938, **129**, 109—111).—SO_4'' is absorbed in the intestines and increases elimination of total S in the urine without increasing diuresis. H. G. R.

(q) PHARMACOLOGY AND TOXICOLOGY.

Renal excretion of sulphanilamide in dogs. D. F. Green, J. B. Allison, and M. L. Morris (J. Pharm. Exp. Ther., 1938, **64**, 263—270).—The range of variation of sulphanilamide/urea clearance ratios was determined on a control. Ratios were independent of urine flow. In dogs with impaired renal function both sulphanilamide and urea clearances were lowered, but not proportionally. The ratios increased with lowered urea clearances, suggesting differential reabsorption of sulphanilamide and urea through certain tubule cells. E. M. S.

Treatment of septicæmia with convalescent blood transfusions. H. Heermann (Münch. med. Wschr., 1938, **85**, 1748).—A patient suffering from a severe otogenous septicæmia with hæmolytic streptococci was cured with a blood transfusion from a patient who had recovered from hæmolytic streptococcal septicæmia. Intensive treatment with prontosil had been ineffective. A. S.

Use of sulphanilamide in diagnosis and treatment of brucellosis. H. Welch, J. A. Wentworth, F. L. Mickle (J. Amer. med. Assoc., 1938, **111**, 226—231).—Sulphanilamide markedly increased the opsonocytophagic activity for *Brucella* organisms in guinea-pigs. It appeared to act by stimulating the defence mechanism of infected animals by increasing the production of sp. opsonins, thus neutralising the endotoxic or aggressin-like substances produced by the organisms, with resulting phagocytosis. R. L. N.

Action of prontosil in scarlet fever. R. Pfaffenbichler (Wien. klin. Wschr., 1938, **51**, 1193—1195).—The course of scarlet fever is greatly alleviated and the no. of serious complications (peritonsillar abscesses, otitis media, nephritis) is considerably reduced if prontosil is given at the start of the disease for one week (150 cases treated and 150 control cases). A. S.

Granulocytopenia from sulphanilamide compounds. F. D. Johnston (Lancet, 1938, **235**, 1044—1047).—Two cases of puerperal sepsis showed marked leucopenia (1 granulocytopenia) after the administration of sulphanilamide compounds for about 25 days. It is suggested that duration of treatment is a more important factor than total dosage of the drug. C. A. K.

Pneumococcal meningitis treated with sulphanilamide and M. and B. 693. A. A. Cunningham (Lancet, 1938, **235**, 1114—1116).—A case of pneumococcal meningitis was successfully treated with sulphanilamide (15 g. in 36 hr.) followed by M. and B. 693 (50 g. in 7½ days). The cerebrospinal fluid concn. of M. and B. 693 was about half that of the blood. C. A. K.

Sulphonamide in treatment of acute mastoiditis. V. G. Horan and S. G. French (Brit. Med. J., 1938, II, 942—943).—Administration of sulphonamide to cases of acute suppurative otitis media reduced the frequency of complicating acute mastoiditis. C. A. K.

Bacteriostatic effects of sulphonamide-P, soluseptasine, and M. and B. 693. B. G. Macgraith and R. L. Vollum (Brit. Med. J., 1938, II, 985—986).—All three drugs inhibit growth of *Str. viridans*, *N. gonorrhœæ*, and *N. meningitidis* only in the presence of leucocytes. M. and B. 693 is the most effective against *Str. viridans* and soluseptasine against *N. gonorrhœæ*. None of the drugs acted on *Staph. aureus*. C. A. K.

Prontosil in sprue. L. Rogers (Brit. Med. J., 1938, II, 943—944).—A case of sprue improved after administration of prontosil rubrum. C. A. K.

Sulphanilamide in the treatment of gonococcal ophthalmia in children. M. W. Michels (J. Pediat, 1938, **13**, 527—541).—There was a reduction of hospitalisation from 28·5 days in a control group of 32 patients to 5·8 days in the 15 patients treated with sulphanilamide. There was very rapid decrease in the swelling and discharge from the eyes following commencement of treatment. C. J. C. B.

Sulphanilamide. P. M. Hamilton and E. S. Platen (J. Pediat., 1938, **13**, 605—617).—A discussion. C. J. C. B.

Sulphanilamide in *Br. abortus* infection in animals. R. F. Montgomerie (Vet. Rec., 1938, **50**, 380—382).—Oral administration cured the infection in guinea-pigs and goats. M. A. B.

Determination of *p*-aminobenzenesulphonamide. Micro-method. E. A. MacLachlan, B. W. Carey, and A. M. Butler (J. lab. clin. Med., 1938, **23**, 1273—1277).—A modification of Marshall's method for the determination of the concn. of both free and total sulphanilamide in whole blood, requiring but 0·1 c.c. of capillary blood, is described and discussed. C. J. C. B.

Treatment of the bacteræmia of post-scarlatinal nephritis with prontosil and prontylin. A. W. Chapman (Arch. Pediat., 1938, **55**, 560—569).—A case is reported with uræmia and streptococcal bacteræmia which rapidly recovered after administration of these drugs. C. J. C. B.

Meningococcal meningitis treated with proseptasine and soluseptasine. R. H. Hannah and F. G. Hobson (Lancet, 1938, **235**, 937—941).—7 out of 9 cases of meningococcal meningitis were successfully treated with proseptasine and soluseptasine; 2 cases died. No toxic signs were seen. C. A. K.

Chemotherapy in measles and whooping cough. A. R. Thompson and C. R. M. Greenfield (Lancet, 1938, **235**, 991—994).—Cases of measles and

whooping cough, given sulphanilamide or benzylsulphonamide, showed fewer complications than untreated controls. C. A. K.

Sulphanilamide in treatment of trachoma. R. KIRK, A. R. MCKELVIE, and H. A. HUSSEIN (Lancet, 1938, **235**, 994—995).—Sulphanilamide was fairly effective in 25 cases of trachoma. It was most successful in cases with keratitis and pannus. C. A. K.

Sulphonamide chemotherapy in surgical infections. A. J. COKKINIS (Brit. Med. J., 1938, II, 845—847, 901—903).—A review. C. A. K.

Sulphanilamide in *Brucella abortus* infection. M. GAFFNEY (Brit. Med. J., 1938, II, 885—887).—5 cases of undulant fever were treated with sulphanilamide. Rapid improvement followed, but relapse, easily controlled by the drug, occurred in 3 cases. One patient showed cyanosis and tachycardia. C. A. K.

Treatment of *Brucella abortus* infection with fouadin and prontosil. A. P. THOMSON (Brit. Med. J., 1938, II, 884—885).—3 cases of undulant fever were successfully treated with sulphanilamide; 2 other cases improved with fouadin (Sb compound). C. A. K.

Uliron and its derivatives in the body and their excretion in the urine. W. W. KÜHNAU (Klin. Woch., 1938, **17**, 1215—1219).—Diseptal B (D.B. 87) is better absorbed than uliron and the serum concn. is higher. Uliron is usually effective with a serum val. of more than 4 mg.-%. D.B. 87 is even absorbed from the large intestine; it is excreted in the urine almost quantitatively, whereas uliron cannot be recovered to nearly the same extent. E. M. J.

Oxygen saturation of arterial blood in the cyanosis from sulphanilamide. F. H. KING and A. LESLIE (J. Amer. med. Assoc., 1938, **110**, 2069).—Arterial blood analysis of 8 cases showing cyanosis after sulphanilamide therapy showed that diminished O_2 content was not a significant causative factor. R. L. N.

Reduction of prontosil-soluble by urine. J. V. SCUDI (J. Lab. clin. Med., 1938, **24**, 68—69).—Non-sterile specimens of urine (especially if alkaline) showed reduction of prontosil-soluble in appreciable quantities. Addition of phenol or mineral acid to the urine, or boiling for 5 min. before adding the dye, stopped the reduction. C. J. C. B.

Effect of compounds containing the sulphhydryl group on experimental tuberculosis in guinea-pigs. I. Sodium thiosalicylate and its derivatives. K. YANAGISAWA and T. SUGAI (Jap. J. exp. Med., 1938, **16**, 187—199).—Subcutaneous injection of Na thiosalicylate had an inhibitory action on the development of tuberculosis in guinea-pigs. Na dithiosalicylate had no effect whilst Na salicylate accelerated the infection. It is suggested that the efficacy of the thiosalicylate may be due to the SH group. C. J. C. B.

Therapy of tabetic atrophy of the optic nerve. H. HEIM (Wien. med. Wschr., 1938, **88**, 1196—1199). A review. A. S.

Therapy of bronchial asthma. W. BEIGLBÖCK (Wien. klin. Wschr., 1938, **51**, 1188—1190).—A review. A. S.

Chemotherapy of bacterial infections. L. WHITBY (Lancet, 1938, **235**, 1095—1103).—A review. (B.) C. A. K.

Salyrgan in the reduction of localised traumatic œdema. M. J. PETTY (Brit. Med. J., 1938, II, 944).—Localised œdema, mainly resulting from fractured bones, was often removed by intramuscular injection of salyrgan. C. A. K.

Cerebrospinal meningitis cured by carboxysulphamidochrysoidine. J. MORNET and G. DE L'ECLUSE (Presse méd., 1938, **46**, 928).—A case of cerebrospinal meningitis caused by meningococcus *B* was cured in 3 days. A. J. B.

Effect of dehydrocholate on blood-alcohol. A. SEBASTIANELLI (Arch. Fisiol., 1938, **38**, 26—35).—After oral administration of alcohol to normal subjects, its concn. in the blood falls more rapidly if Na dehydrocholate has been previously injected. S. O.

Ammonium succinimidoaurate, a gold compound of low toxicity. M. E. OBERMEYER and S. W. BECKER (J. invest. Dermatol., 1938, **1**, 85—107).—Results are reported on the employment of NH_4 succinimidoaurate, a new compound of low toxicity, in the treatment of 49 patients with lupus erythematosus, over a period of 6 years. Therapeutic activity is slower than with Na Au thiosulphate, but untoward reactions are less frequent and less severe. Serious cutaneous phenomena were never observed. (B.) C. J. C. B.

New treatment of leishmaniasis. F. FLAERER (Presse méd., 1938, **46**, 1388—1389).—One infiltration of the granuloma with a solution of 0·5 g. of atebrin in 1 c.c. of distilled water effected a complete and lasting cure with disappearance of the *Leishmania* in all of 14 cases so treated. G. SCH.

Spirochæticidal action of the arsphenamines on *Spirochæta pallida in vitro*. H. EAGLE (J. Pharm. Exp. Ther., 1938, **64**, 164—189).—Arsphenamine, neoarsphenamine, Ag arsphenamine, and "arsenoxide" (*m*-amino-*p*-hydroxyphenylarsenoxide) have a direct spirochæticidal action *in vitro* on virulent *S. pallida* fresh from rabbit chancres. The action increases with increasing temp. Tissue derivatives inhibit the action *in vitro*, thus affording no evidence that the arsphenamines are themselves inactive and are converted by the tissues into a spirochæticidal agent. The effective concns. of the drugs *in vitro* are of the same order of magnitude as those attained *in vivo* after therapeutic administration. E. M. S.

Trypanocidal activity and arsenic content of the cerebrospinal fluid after administration of arsenic compounds. II. F. HAWKING, T. J. HENNELLY, and W. T. WALES (J. Pharm. Exp. Ther., 1938, **64**, 146—163; cf. A., 1937, III, 177).—The power of administered As compounds to penetrate into the cerebrospinal fluid was investigated, in man, by estimating the trypanocidal activity and As content of the fluid. As 190 was as active as tryparsamide (previously investigated); sulpharsphenamine was

less active; K 352, stovarsol, acetylarsan, solvarsin, parosan, and neostibosan (Sb compound) were relatively inactive. E. M. S.

Therapeutic efficacy of totaquina in human malaria. I. E. J. Pampana. **II.** W. Fletcher (Quart. Bull. Health Org. League Nations, 1934, **3**, 325—358).—Totaquina (analyses recorded) acts like quinine in malaria. Ch. Abs. (*p*)

Oral administration of bismuth in treatment of experimental rabbit syphilis. J. E. Kemp and P. D. Rosahn (Amer. J. Syphilis, 1936, **20**, 131—145).—$BiCl_3$, Bi Na Fe citrate, and K Bi tartrate were non-effective. Ch. Abs. (*p*)

Properties of tungstic acid and allied substances: chemotherapy of tumours. H. N. Mukerjee (Calcutta Med. J., 1936, **30**, 452—455).—Tungstic, phosphotungstic, molybdic, and phosphomolybdic acids and Na metavanadate, when given orally, increase blood-sugar in rabbits. Efficiency of Na tungstate in cancer treatment may be due to its oxidising power. Ch. Abs. (*p*)

Drug action in states of psychological depression. F. E. Flügel (Klin. Woch., 1938, **17**, 1286—1288).—Pervitin (β-methylamino-α-phenylpropane) has a stimulating action on all forms of activity in normal persons in doses of 3—4 mg. and lessens the requirement for sleep. The same dosage caused improvement in a no. of cases suffering from various depressive psychoses, temporarily roused those in schizophrenic stupor, and neutralised katatonic states, often producing euphoria. E. M. J.

Chemotherapy of pneumonia and pneumococcal sepsis. B. Kemkes and A. Steigler (Klin. Woch., 1938, **17**, 1394—1395).—Quinine preps. had no influence on infections with hæmolytic streptococci or *B. Friedlander* in mice, but saved 50% of rabbits suffering from pneumococcal sepsis. E. M. J.

Action of F. 933 on the enucleated eye of the frog. E. Moisset (Arch. int. Pharmacodyn., 1938, **59**, 482—487).—F. 933 causes prolonged myosis in the enucleated eye of the frog, which persists after washing with Ringer's solution. The mydriatic action of adrenaline is diminished. D. T. B.

Action of F. 933 on the isolated intestine. R. Hazard and E. Moisset (Arch. int. Pharmacodyn., 1938, **59**, 457—460).—F. 933 causes relaxation of the gut muscle and diminishes or reverses the inhibitory action of adrenaline. D. T. B.

Treatment and prognosis of tetanus. L. Cole (Proc. Roy. Soc. Med., 1938, **31**, 1205—1207).—Intravenous injection of 200,000 units of antitoxin will prevent further absorption of toxin and neutralise that already present in the blood and lymph. Avertin controls reflex spasms. The prognosis is most favourable when the interval between the first symptom and the appearance of the first generalised reflex spasms is more than 48 hr. W. J. G.

Uliron and gonorrhœa. W. Gertler (Klin. Woch., 1938, **17**, 1401—1404).—Cases of gonorrhœa which react favourably to uliron show a parallelism between uliron blood level and urinary excretion. Resistant cases show a high excretion; uliron toxicity is accompanied by low excretion. Treatment is ineffective if started before the 20th day after infection. E. M. J.

Uliron excretion in the fæces. F. Marquardt (Klin. Woch., 1938, **17**, 1518).—66% of the uliron administered by mouth is rapidly excreted in the fæces. E. M. J.

Influence of uliron on gastric acidity and urinary excretion of aneurin. H. Hüllstrung (Klin. Woch., 1938, **17**, 1518—1520).—Total and free HCl in the stomach fall in most cases during uliron administration; aneurin excretion is also diminished. E. M. J.

Placental globulin in the modification of measles. J. I. Waring (Arch. Pediat., 1938, **55**, 570—571).—In 50 cases the use of placental globulin was found to be a valuable procedure in the prevention and modification of measles. C. J. C. B.

Trypaflavin treatment of feverish cholangitis. F. Hansen (Münch. med. Wschr., 1938, **85**, 1672—1673).—Excellent results in the treatment of cholangitis with fever were obtained with repeated intravenous injections of 5 c.c. of 2% trypaflavin. A. S.

Treatment of female gonorrhœa with olobintin. A. Henneberg (Münch. med. Wschr., 1938, **85**, 1673—1674).—Intramuscular injections of 0·4—0·6 c.c. of 40% olobintin were successfully used. A. S.

Tetrophan therapy in postdiphtheritic paralyses. F. Tecilazic (Klin. Woch., 1938, **17**, 1247—1249).—Tetrophan (dihydronaphthacridine*meso*carboxylic acid) has an action somewhat similar to strychnine and can be used in daily doses of 1·0—1·5 g. orally or intramuscularly for 10—14 days, or intrathecally 0·5—1·0 g. every 2 days for 2—4 doses, in children with postdiphtheritic paralyses. Pharyngeal and even diaphragmatic palsy is often influenced beneficially by 2 intrathecal injections, and palatal palsy or general muscular hypotonia is greatly improved. Oral or intramuscular administration gives a marked subjective sensation of well-being but is useless as a prophylactic measure against palsies even if administered from the beginning of the disease. E. M. J.

Phenothiazine. V. Fate of phenothiazine in the body. F. Deeds, C. W. Eddy, and J. O. Thomas. **VII. Bactericidal properties of urine after oral administration of phenothiazine.** J. O. Thomas, F. Deeds, and C. W. Eddy (J. Pharm. Exp. Ther., 1938, **64**, 250—262, 280—297).—V. After oral administration of phenothiazine to rats, rabbits, and man, the urine contains phenothiazine and its oxidation products, thionol and leucothionol. Details of the methods of isolation and identification are given.

VII. After oral administration the urine also contains combined leucothionol. This is hydrolysed, in amounts varying with p_H, liberating leucothionol, which is oxidised to thionol. The urine is bactericidal *in vitro*, and in experimental cystitis in rabbits. The action is min. near neutrality, and is enhanced by lowering the O_2 tension. In the treatment of infective cystitis the p_H of the urine should be 4·5—5·5. E. M. S.

Preparation and bactericidal and physical properties of α-phenylalkanoic acids. R. H. Goshorn and E. F. Degering (J. Amer. Pharm. Assoc., 1938, **27**, 865—870).—The bactericidal activity (against *B. coli* and *Staph. aureus*) of phenol, benzoic acid, and the α- and ω-phenyl derivatives of propionic, butyric, and valeric acids depends on the p_H of the media, a small decrease in p_H over the range 5·3—4·3 producing a large increase in the max. effective dilution; the activity is also related to the oil–water partition coeff. and to the adsorption properties. The activity of the α- is not significantly different from that of the corresponding ω-phenyl derivative. F. O. H.

Entozon and acriflavine for the treatment of chronic, contagious, bovine mastitis. A. W. Stableforth and N. J. Scorgie (Vet. Rec., 1938, **50**, 663—676).—Udder injection of entozon or acriflavine was effective in curing latent mastitis and, in some cases, chronic clinical mastitis, without causing permanent depression in milk yield. M. A. B.

Vasoconstriction and analeptic effect of sympathomimetic amines. V. Larsen (Skand. Arch. Physiol., 1938, **79**, 282—289).—The vasoconstrictor activity of numerous sympathomimetic amines with anti-narcotic effect was tested on the perfused rabbit's ear and on the blood pressure of decerebrate cats. There is no parallelism between analeptic and vasoconstrictor activity. A. S.

Bulgarian belladonna in treatment of post-encephalitic Parkinsonism. D. Hill (Lancet, 1938, **235**, 1048—1050).—There were no differences in efficiency between English and Bulgarian belladonna in 14 cases of post-encephalitic Parkinsonism. C. A. K.

Therapeutic effect of the Italian–Bulgarian cure of chronic epidemic encephalitis and Parkinsonism. W. Völler (Münch. med. Wschr., 1938, **85**, 1703—1708).—An aq. extract of *Atropa belladonna* roots was given per os in doses of 6—200 c.c. per 24 hr. (up to 40 mg. of the total alkaloids in the roots). The results are very satisfactory, even in cases where prolonged treatment with atropine did not substantially improve the condition. A. S.

Use of prostigmine in post-diphtheric paralysis. R. Altschul (Schweiz. med. Wschr., 1938, **68**, 1277).—Severe post-diphtheric paralysis of the fauces and of the accommodation mechanism was successfully treated with repeated injections of prostigmine. A. S.

Ephedrines as agents in combating anoxæmia. L. Binet and M. Strumza (Compt. rend., 1938, **207**, 543—545).—Chloralosed dogs tolerate anoxæmia (2·41% of O_2 in the inspired air) much better after injecting *dl*-ephedrine sulphate or chloride than before. *dl*-Nor- and *dl*-ψ-nor-ephedrine react similarly. Doses below 25 mg. per kg. have little effect. The effects are less marked in vagotomised animals with denervated carotid sinuses. J. L. D.

Micro-bioassay method on some isolated tissues. G. Katz (J. Pharm. Exp. Ther., 1938, **64**, 314—318).—A method is described for continuous irrigation of cold-blooded tissues suspended in air, with modifications suitable for mammalian tissues. E. M. S.

Choline-esterase activity. I. Manometric method of assay. M. Rinkel and M. Pijoan (J. Pharm. Exp. Ther., 1938, **64**, 228—235).—A technique is described for determining choline-esterase activity in the Van Slyke gas extraction apparatus. E. M. S.

Effect of the autonomic hormones on the thyrotoxic heart. B. Wise and H. E. Hoff (J. Pharm. Exp. Ther., 1938, **64**, 217—224).—Electrocardiograms of the rabbit heart, under the influence of mecholyl (acetyl-β-methylcholine chloride) and adrenaline, were obtained before and during a period of thyroid feeding. The exaggerated response of the thyrotoxic hearts suggests an increased sensitivity to the drugs. E. M. S.

Action of sympathomimetic amines on the heart–lung preparation. J. M. Crismon and M. L. Tainter (J. Pharm. Exp. Ther., 1938, **64**, 190—208).—The effects of a group of sympathomimetic amines were investigated on heart–lung preps. of cats, the arterial resistance and venous pressure being kept const. The effects of cardiac stimulation were qualitatively similar. Benzedrine, ephedrine, neosynephrine, paredrine, propadrine, tyramine, 3 : 4-dihydroxyephedrine, arterenol, and cobefrin increased in potency in the order named, taking adrenaline as the standard of comparison. E. M. S.

Isomerides of acetyl-β-methylcholine. A. Simonart (Arch. int. Pharmacodyn., 1938, **60**, 209—212).—*l*-Acetyl-β-methylcholine has a much slighter muscarine action than the *d*-isomeride. The nicotine action on the gastrocnemius of the cat is the same. Neither has a nicotine effect on the cat's blood pressure. The *d*-isomeride only is hydrolysed by esterase in the cat's and rabbit's serum. D. T. B.

Disappearance of the physiological action of tyramine on combination with sulphur. M. Loeper, J. Loeper, A. Lemaire, J. Cottet, and J. Parrod (Compt. rend. Soc. Biol., 1938, **128**, 1050—1051).—The physiological properties of tyramine are lost on combination with S to form "tyraminesulphuric acid." H. G. R.

Effect of eserine and atropine on linguo-maxillary reflex response elicited by stimulation at different frequencies. M. Bonvallet and B. Minz (Compt. rend. Soc. Biol., 1938, **128**, 1033—1037).—Both drugs when injected alone cause a diminution of the increased response caused by stimulation at a certain frequency. When given in succession to the same animal the second acts as an antagonist to the first in whatever order they are given. P. C. W.

Intrapulmonary inhalation of benzedrine. O. Swineford, jun. (J. Allergy, 1938, **9**, 572—576).—Benzedrine inhalations increased the vital capacities of a small group of normal individuals. The normal bronchial mucosa was blanched while the inflamed mucosa was blanched and shrunken by the drug and the use of the bronchoscope materially aided. Such inhalations were symptomatically useful in most cases

of asthma paroxysms and were more efficient when used with adrenaline or ephedrine. C. J. C. B.

Action of ephedrine. J. H. GADDUM and H. KWIATKOWSKI (J. Physiol., 1938, **94**, 87—100).—Stimulation of the sympathetic nerves causes vaso-constriction (rabbit's ear; specially perfused) and liberation of a substance which gives a colorimetric test for adrenaline. Low concns. of ephedrine sensitise the rabbit's ear, the cat's nictitating membrane, and the frog's heart not only to adrenaline but also to stimulation of adrenergic nerves. Ephedrine increases the yield of the substance, which may be adrenaline. J. A. C.

Action of novocaine on fibrillation of the heart. K. VAN DONGEN (Arch. int. Pharmacodyn., 1938, **60**, 206—208).—Novocaine (2·5 mg. per kg.) caused considerable resistance in cats and rabbits to electrically induced fibrillation of the heart. Large doses may cause auriculo-ventricular block. D. T. B.

Action of ergobasine on the heart. L. DONATELLI (Arch. int. Pharmacodyn., 1938, **59**, 461—481).—Ergobasine has a negative chronotrope and positive inotrope action on the frog's and toad's hearts. Transient phases of the opposite effects may be observed. It has negative chronotrope action also on the mammalian heart. The effects resemble those of ergotamine, but this more frequently has a negative inotrope action on the frog's heart. D. T. B.

Mechanism of action of ergobasine on the heart. L. DONATELLI (Arch. int. Pharmacodyn., 1938, **60**, 173—194).—The initial positive chrono- and ino-trope actions of ergobasine are due to stimulation of the myocardium and the autonomic motor centre. The later negative effects are caused by stimulation of the vagus and inhibition of the autonomic centre. D. T. B.

Action of digitalis glucosides on the heart of *Bufo melanostictus*. W. RADSMA and L. E. KIANG (Acta brev. neerl. Physiol., 1938, **8**, 83).—The toad's heart is comparatively insensitive towards digitalis. 0·006% digitoxin has no effect on the heart of *B. melanostictus*; 0·002% produces an irreversible systolic arrest of the frog's heart. The digitalis effects on the *Bufo* heart are readily reversible. 0·2% $CaCl_2$ produces systolic arrest of the *Bufo* heart; 0·56% $CaCl_2$ has the same effect on the frog's heart. The sensitivity of the hearts of both species towards K and Ba is identical. A. S.

Strong and variable action of U.S.P. XI digitalis standard. L. W. ROWE (J. Amer. Pharm. Assoc., 1938, **27**, 844—852).—The high strength of the U.S.P. XI standard is confirmed (cf. B., 1938, 846). The U.S.P. 1-hr. frog method is made variable by the presence or absence of alcohol; this variation does not occur in the assay by min. lethal dose in frogs. Revision of the U.S.P. method of assay and of the correction factor for the standard is advocated. F. O. H.

Action of digitalis bodies in transient ventricular fibrillation. S. P. SCHWARTZ and A. JEZER (Amer. Heart J., 1938, **16**, 462—468).—Digifolin and ouabain were given intravenously to 3 patients subject to spontaneous transient ventricular fibrillation (2 having also established auriculo-ventricular dissociation). In all cases the drugs induced transient fibrillation in about 18 min., and are therefore contraindicated in such subjects. C. A. K.

Alkyl nitrites. I. Pharmacologic study of a new series of aliphatic nitrites. II. Pharmacology of β-ethyl-*n*-hexyl α-nitrite. J. C. KRANTZ, jun., C. J. CARR, and S. E. FORMAN (J. Pharm. Exp. Ther., 1938, **64**, 298—301, 302—313).—I. β-Bromoethyl nitrite, γ-bromopropyl α-nitrite, α-bromopropyl β-nitrite, tetramethylpinacol mononitrite, *cyclo*hexyl nitrite, and β-ethyl-*n*-hexyl α-nitrite administered to dogs, by inhalation, caused a fall in blood pressure. The last, which is free from undesirable side actions, is as potent as amyl nitrite, but gives a longer response, and is suitable for clinical trial.

II. The depressed response in dogs and man is of 5—7 times longer duration than that of amyl nitrite. The coronary flow is increased despite the depressor action. Octyl nitrite is less toxic than amyl nitrite, and methæmoglobin formation is negligible. E. M. S.

Mode of action of β-*p*-hydroxyphenyl*iso*propylmethylamine. A. GUARNASCHELLI-RAGGIO (Arch. Farm. sperim., 1938, **66**, 119—128).—In man, this substance increases cardiac activity and rate of circulation and produces peripheral vaso-constriction. F. O. H.

Action of certain cardiac drugs on embryonic heart explants. R. N. CHOPRA, N. N. DAS, and B. MUKERJI (Indian J. med. Res., 1938, **26**, 271—278).—Heart explants from chick embryos, 2—7 days old, were cultivated *in vitro* to investigate the nature and site of action of lanadigin, thevetin, strophanthin, caffeine, and cardiazol on the aneural heart. All these drugs posessed a direct action on cardiac muscle. The first 3 were predominantly inhibitory, whilst caffeine and cardiazol were predominantly stimulant. Caffeine caused the explants to continue pulsations for a longer period than the controls. H. B. C.

Pharmacology of *Cissampelos pareira*, L., var. *J. Gardneri*, Diels. L. FLORIANA (Rev. farm. Buenos Aires, 1936, **78**, 49—53).—Extracts contain alkaloids, saponin, sugar, and org. acids. The toxicity is small. Effects on the heart are described. CH. ABS. (*p*)

Effect of digitalis infusions on the diuresis due to intravenous administration of hypertonic solutions of sodium chloride. E. VINDIGNI (Arch. Farm. sperim., 1938, **66**, 87—96).—The effect on the excretion of water and NaCl (rabbit) depends on the concn. of the infusion. F. O. H.

Cumulative action of digitalis in rats and dogs. J. KAWAHARA (Fukuoka Acta Med., 1931, **31**, 147—148).—In rats, digitoxin exerts the greatest cumulative action, in dogs digitoxin and ouabain, and the cumulative action is inversely proportional to their rate of elimination. Only if large doses are given does the cumulative action become apparent. This action is accompanied by hæmorrhages, cellular infiltration, and nuclear degeneration, in the cardiac

muscle, and by increase in the P–R and P–T intervals, and inversion of the T wave in the electrocardiogram. W. D'A. M.

New indications for the therapeutics of pulmonary emboli. M. Villaret, L. Justin-Besançon, and P. Bardin (Rev. Méd., 1938, **55**, 393—419). Pearls of enamel (without lead) of the diameter of the external jugular vein, when introduced into the pulmonary circulation of dogs (up to 30 at once) caused no ill-effects. A fine lycopodium powder caused almost instant death. Using powders of known grades of fineness, particles of 150 μ. diameter and less caused sudden death due to respiratory inhibition. In a rabbit after section of the cervical sympathetic, death was produced with ¼ the amount of powder required in the intact animal. When both vagi were cut in the neck, seven times as much powder was necessary. Inhibition of the sympathetic with yohimbine caused death in 30 sec. after powder (in intact animal, 3—4 min.) and this occurred when the dog was in a condition of induced acidosis, but alkalosis or a hypersympathicotonus enabled life to be prolonged for ½—1 hr. after giving powder. The histological data after death from emboli show the effects of capillary vasodilation. These results are applied to the therapeutics of pulmonary emboli. H. B. C.

Effect of alcohol on hunger sense. C. C. Scott, W. W. Scott, and A. B. Luckhardt (Amer. J. Physiol., 1938, **123**, 248—255).—Hunger contractions were recorded in man by the balloon-in-stomach method. 200 c.c. of 20% alcohol, taken in 10-c.c. doses, 5 min. apart, were given. Hunger contractions which occurred after the primary inhibitory effect due to ingested alcohol produced hunger sensations. Alcohol did not increase the amplitude of hunger contractions. An epigastric sensation of appetite, less intense than hunger, was felt during the period of alcohol inhibition preceding hunger contractions. M. W. G.

Action of ergot preparations on diuresis. E. Zunz and O. Vesselovsky (Arch. int. Pharmacodyn., 1938, **60**, 163—178).—Intramuscular injection of ergometrinine causes increased diureses in fasting, and, after ingestion of water, diminishes the fall of Cl′ and urea content in water diureses, and the rise of this in fasting. The effects of ergometrine are more pronounced. D. T. B.

Effect of molecular compounds of ergot alkaloids on diuresis. (A) Sensibamine, ergotamine, and ergotaminine. (B) Ergoclavine, ergosine, and ergosinine. E. Zunz and O. Vesselovsky (Compt. rend. Soc. Biol., 1938, **128**, 1163—1165, 1165—1167).—The effects of the mol. compounds on diuresis differ considerably from those of their constituents. H. G. R.

New mercurial diuretic, esidron "Ciba." A. Schneiderbauer (Münch. med. Wschr., 1938, **85**, 1783—1784).—Intramuscular or intravenous injection of 0·5—2 c.c. of esidron "Ciba" (a Hg–quinoline–theophylline compound) has a very marked diuretic effect. A. S.

Effects of hydroxyphenyl-β-methylaminoethanol on water diuresis in the dog. E. Zunz, T. Sparchez, et L. Gillo (Arch. int. Pharmacodyn., 1938, **60**, 1—29).—In small doses the compound increases water diuresis in the bitch with vesical fistula. Large doses diminish or stop diuresis. When the diuresis is increased the gradual fall of Cl′ content is diminished, and that of urea is increased. The *d*-isomeride acts similarly but in much larger doses. D. T. B.

Correlation between blood pressure and nembutal dosage in the toxæmias of late pregnancy. J. W. Ross (Amer. J. Obstet. Gynec., 1938, **35**, 855—859).—60 cases of late pregnancy toxæmias (with high blood pressure, 140 systolic or above) were treated with graded nembutal doses according to blood pressure heights without the occurrence of convulsions, apoplexy, or death. M. H.

***X*-Ray studies on the effect of opium on the gastro-intestinal tract in man.** E. H. Fell (Radiology, 1938, **31**, 348—353).—In 3 normal subjects administration of opium caused constipation with small, dry, and hard stools. W. F. F.

Cardiac depression by barbituric acid derivatives. Relative antidotal action of certain cardiac stimulants. R. L. Johnston (J. Pharm. Exp. Ther., 1938, **64**, 330—334; cf. A., 1936, 1415).—Depression, caused by perfusion of the turtle heart with barbiturates, is decreased slightly by coramine and picrotoxin, more effectively by purine derivatives, especially theophylline–Ca salicylate. E. M. S.

Use of eupaverine in arterial embolism. H. D. Frensche (Münch. med. Wschr., 1938, **85**, 1747—1748).—A patient with embolism of the popliteal artery was successfully treated with intravenous injections of 0·03 g. of eupaverine. A. S.

Morphine, codeine, and their derivatives. XIII. Comparative effects of dihydro*iso*codeine and codeine. L. F. Davenport (J. Pharm. Exp. Ther., 1938, **64**, 236—242; cf. Eddy and Small, A., 1934, 805).—Dihydro*iso*codeine was substituted for codeine in the treatment of advanced cases of pulmonary tuberculosis, with persistent cough. No variation in the effect of the two drugs was elicited. In patients whose cough can be relieved by codeine a dose of 10 mg. is sufficient. E. M. S.

"Sevenalil" anæsthesia in animal experiments. B. Deutsch and M. Engel (Arch. int. Pharmacodyn., 1938, **60**, 213—217).—"Sevenalil" (phenylethylbarbituric acid, diallylmalonylurea, and ethyl carbamate) was injected subcutaneously into cats to produce anæsthesia for digitalis standardisation. In dose of 0·4 c.c. per kg. it produced no ill-effects on the heart. D. T. B.

Acquired tolerance to certain short-acting barbiturates. M. Masuda, R. N. Budde, and J. M. Dille (J. Amer. Pharm. Assoc., 1938, **27**, 830—836).—Tolerance (developed after the first dose, reaching a max. after 4—7 days, and disappearing 3—4 days after cessation of dosage), as indicated by the period of sleep, is acquired by rabbits injected daily with pentobarbital, pernocton, and amytal, but not with ortal or evipal. The rate of disappearance

of amytal from blood, liver, and muscle is slightly greater in tolerant than in non-tolerant rabbits. F. O. H.

Hypnotic action and excretion of dormovit. F. FRETWURST and H. E. NEVER (Klin. Woch., 1938, **17**, 1372—1374).—Dormovit (5-furfuryl-5-*iso*propyl-barbituric acid) is similar in action to noctal and phanodorm. 2·5% is excreted in the urine unchanged. E. M. J.

Slight respiratory accidents during etherisation. J. BERGER and G. DELAHAYE (Presse méd., 1938, **46**, 1196—1198).—A review. A. J. B.

Fatal toxic reactions associated with tribromoethanol anæsthesia. H. K. BEECHER (J. Amer. med. Assoc., 1938, **111**, 122—129).—Avertin with amylene hydrate was used over 8 years in 3934 cases with 7 deaths. Reports on the fatal cases and factors responsible for the lessened use of the drug are discussed. This form of anæsthetic appeared more toxic than $CHCl_3$. R. L. N.

Procaine injection treatment of herpes zoster. S. ROSENAK (Lancet, 1938, **235**, 1056—1058).—Injection of 0·5% procaine solution into ganglia of the sympathetic chain relieved pain in most of 22 cases of herpes zoster. Injection into the Gasserian ganglion relieved 2 cases of trigeminal herpes. C. A. K.

Case of ether convulsions. F. F. CARTWRIGHT (Lancet, 1938, **235**, 1058—1059). C. A. K.

Nitrous oxide in midwifery. J. E. ELAM (Lancet, 1938, **235**, 1113—1114).—A new apparatus is described. C. A. K.

Clinical study of acid alurate as a rectal analgesic during labour. W. A. GRAHAM and M. D. PETTIT (Amer. J. Obstet. Gynec., 1938, **35**, 1023—1027).—101 cases in labour, comprising 77 primiparas and 21 multiparas, were treated. The initial dose for patients under 130 lb. is 9 grains of acid alurate in 4 oz. of 5 : 3 ether–olive oil mixture per rectum. The drug gave complete analgesia in 74% of cases and amnesia in 68%. Failure resulted in 11% of cases. No toxic reactions in either mother or child resulted. The duration of labour was definitely increased under this combination of drugs. M. H.

Postnarcotic alkalosis. H. SELBACH and E. WEBER (Z. ges. exp. Med., 1938, **103**, 782—792).—The p_H of blood from the portal vein and inferior vena cava (junction with liver veins) was measured in rabbits, using a compensation potentiometer (hæmoionometer of Lautenschläger). Portal vein blood is 0·2 p_H more alkaline than cava blood in the non-anæsthetised animal. The reaction of the portal blood remains unchanged under ether anæsthesia; the cava blood reaction becomes up to 0·77 p_H more alkaline; the reaction of the blood of the ear vein is up to 0·64 p_H more alkaline. The max. effects were observed 30—45 min. after the onset of the anæsthesia. A. S.

Anæsthetic effects of chlorine derivatives of *cyclo*propane. V. E. HENDERSON (J. Pharm. Exp. Ther., 1938, **64**, 225—227).—Animals anæsthetised with mono- and di-chloro*cyclo*propane develop severe lesions due to irritation of the lungs. E. M. S.

Action on the carotid sinus of evipan, pernocton, sodium amytal, and avertin. S. J. G. NOWAK (Arch. int. Pharmacodyn., 1938, **60**, 118—128).—Evipan has no depressing effect on blood pressure in the dog; a variable depressing effect on the cerebrospinal pressor reflex diminishes respiration rate and increases heart rate. Na amytal has a similar action. Pernocton and avertin, after a brief interval, are depressors. D. T. B.

Effect of temperature on production of propyl bromide anæsthesia in the gudgeon. M. TIFFENEAU and R. CAHEN (Compt. rend. Soc. Biol., 1938, **128**, 1058—1060).—The amount of anæsthetic fixed per min. per g. of brain tissue is increased by a rise in temp. This is attributed both to quicker absorption and to fixation. P. C. W.

Effect of body temperature on production of propyl bromide anæsthesia in guinea-pigs. M. TIFFENEAU and R. CAHEN (Compt. rend. Soc. Biol., 1938, **128**, 1060—1062).—The anæsthesia is quicker in onset when the body temp. is raised by the injection of "pyrifer" and slower when it is lowered with antipyrine. While the concn. in the brain is the same in both cases fixation is more rapid at the higher temp. P. C. W.

Oxygen and carbon dioxide changes in arterial and venous blood in experimental spinal anæsthesia. Choice of basal anæsthetics for blood-gas studies. S. J. G. NOWAK and V. DOWNING (J. Pharm. Exp. Ther., 1938, **64**, 271—279).—Procaine, 20—40 mg. per kg., administered intrathecally to cats under light ether anæsthesia, causes a definite reduction of venous, and a slight reduction of arterial, O_2 contents. Anoxæmia is not a primary factor in causing circulatory collapse following spinal anæsthesia. Preliminary use of barbital is unsatisfactory as it reduces the O_2 and increases the CO_2 contents of blood. E. M. S.

Use of eunarcon in obstetrics. C. STUPPY (Münch. med. Wschr., 1938, **85**, 1709—1712).—Intravenous injection of eunarcon produces a very satisfactory general anæsthesia. 1200 obstetrical cases were treated. The rate of injection is 1 c.c. per min. 7—8 c.c. suffice for forceps operations. 2—3 c.c. were injected during normal delivery. No untoward effects were observed. A. S.

Influence of avertin rectal narcosis on alkali reserve and blood-sugar. T. NAKAMURA (Tohôku J. Exp. Med., 1935, **26**, 450—469).—The effect is slight. CH. ABS. (*p*)

Effects of pentothal sodium on the electrocardiogram of patients with essential hypertension. C. J. BETLACH (Proc. Staff Mayo Clin., 1938, **13**, 189—191).—44 patients were studied, ages 21—56 years. 15 had normal electrocardiograms, 29 abnormal. The dose of penthothal was about 750 mg. in 15—20 min. Cardiac rate increased 10—16 beats per min. The *P* wave was increased and the *T* wave decreased in amplitude. A. J. B.

Anæsthetic procedures used at the Mayo Clinic. II. For neurologic surgery. E. B. Fuohy (Proc. Staff Mayo Clin., 1938, **13**, 377—378).—A summary. A. J. B.

Intravenous anæsthesia with eunarcon and evipan. F. Hollenbach (Klin. Woch., 1938, **17**, 1230—1232).—Protracted fractional administration is the method of choice for exsanguinated cases of advanced age or other complications. Eunarcon is injected in min. amounts, according to the depth of anæsthesia established and the stage of the operation, into the tube introducing an intravenous drip transfusion. 90 operations, with only 1 death, were performed, including many gastrectomies, lasting from 70 to 110 min. in people aged up to 74 years. E. M. J.

Influence of nembutal, pentothal, seconal, amytal, phenobarbital, and chloroform on blood-sugar concentration and carbohydrate mobilisation. M. C. Hrubetz and S. N. Blackberg (Amer. J. Physiol., 1938, **122**, 759—764).—Nembutal and amytal (40 mg. per kg. intraperitoneally) produce no change in mean blood-sugar levels in rabbits at the time of deep anæsthesia; phenobarbital (150 mg. per kg. intraperitoneally) causes none in the first hr.; pentothal and seconal (40 mg. per kg.) bring about a rise in the first hr. All produce a fall at the time of recovery. All depress the glycogenolytic power of the liver as shown by the absence or the diminution of the rise in blood-sugar after 0·25 mg. of adrenaline per kg. subcutaneously. Phenobarbital, which is excreted by the kidneys and does not involve the liver for its excretion, also depresses the glycogenolytic power of that organ. $CHCl_3$ causes the same depression. M. W. G.

Idiosyncrasy to paraldehyde. J. Klotz, G. B. Roth, and W. A. Lyon (J. Amer. med. Assoc., 1938, **110**, 2145—2148).—Paraldehyde was used in more than 600 labour cases with good results. One fatality due to hypersusceptibility is described. R. L. N.

Changes in skin and rectal temperatures during surgical operations under anæsthesia. P. W. Searles (Proc. Staff Mayo Clin., 1938, **13**, 192).—Induction causes a max. rise in skin temp., which falls only with shock or cessation of anæsthesia. Rectal temp. changes only when the patient loses or gains heat. The ideal room temp. is 82° F., ideal R.H. is 55%. Increase of these vals. results in elevation of rectal temp. and sweating; decrease lowers rectal temp. A. J. B.

Heart action of camphor, cardiazol, and coramine. G. Kahlson (Skand. Arch. Physiol., 1938, **80**, 209—213).—Rhythmical activity of a frog's ventricle after a Stannius ligature was maintained by electrical stimulation; the electrocardiogram was recorded from the base and the apex. Local administration of therapeutic concn. of cardiazol and coramine on the apex electrode does not alter the monophasic action current. Camphor (1 : 10,000—1 : 25,000) diminishes the size and duration of the action potential. A. S.

Effect of benzedrine on ciliary movement. E. M. Boyd (Amer. J. med. Sci., 1938, **196**, 44—46). —In concns. of 0·05 and 0·1% the following compounds depressed ciliary movements of the œsophageal mucosa of frogs in that order of decreasing toxicity: benzedrine, benzedrine sulphate, ephedrine hydrochloride, and metasynephrine or neosynephrine hydrochloride. R. L. N.

Effect of strychnine sulphate on the emotional mimetic functions of the hypothalamus of the cat. J. H. Masserman (J. Pharm. Exp. Ther., 1938, **64**, 335—354).—Faradic stimulation of the hypothalamus produced reactions characteristic of rage and fear. Injection of strychnine (0·07—0·15 mg. per kg.) in this region caused similar emotional mimetic effects, and lowered the threshold or increased the response to faradic stimulation. In acute experiments, under light ether anæsthesia, vasomotor and respiratory reactions paralleled the emotional responses. Strychnine facilitates the reactivity of the hypothalamus. E. M. S.

Antidotal action of picrotoxin in acute intoxication by the barbiturates. E. A. Rovenstine (Amer. J. med. Sci., 1938, **196**, 46—50).—In 4 cases of severe poisoning with barbiturates, picrotoxin proved a valuable antidote. R. L. N.

Inactivation and elimination of picrotoxin. J. M. Dille (J. Pharm. Exp. Ther., 1938, **64**, 319—329).—Convulsive doses of picrotoxin, administered to rabbits by slow intravenous infusion, were inactivated in 45 min. Small amounts of picrotoxin were detected in the urine up to 18 hr. after administration. E. M. S.

Analeptic action of sympathomimetic amines. E. Jacobsen, J. T. Christensen, F. Eriksen, and J. Hald (Skand. Arch. Physiol., 1938, **79**, 258—281). —Numerous sympathomimetic amines were pitted against chloral hydrate, paraldehyde, amylene hydrate, diethylbarbituric, ethylallylbarbituric, and *cyclo*hexylmethylallylbarbituric acids in mice, rabbits, and cats. An analeptic action of the amines was observed only if the anæsthesia was light; the effect occurs after a longer latency and is more prolonged than following the use of cardiazol. Only those substances have an analeptic action where the amine group is linked to the middle C of a 3-C chain and where the phenyl group is in the β-position to it. *sec.* Amines are effective if their org. radicals comply with this rule. *tert.* Amines are effective; quaternary amines have no analeptic action. The effect is diminished by the introduction of a keto-group into the side-chain. Introduction of a hydroxy- or methoxy-group into the phenyl nucleus renders the substances inactive. A. S.

Action of prostigmine in myasthenia gravis. A. Lanari (Klin. Woch., 1938, **17**, 1471—1473). —Oily solutions act for twice as long as aq. solutions. E. M. J.

Action of cardiazol on glycogen and vitamin metabolism. H. Weigand (Z. ges. exp. Med., 1938, **103**, 775—781).—Therapeutic doses of cardiazol have no effect on glycogen storage and vitamin-*A* and carotene content of the liver. The blood cell counts are unchanged. A. S.

Chemical constitution and pharmacological action of convulsant drugs. S. TAKEUCHI (Sei-i-Kwai Med. J., 1935, 54, 2321—2503).—The convulsant action of dihydromorphine was less than that of morphine, and that of aminomorphine and dihydronitrosomorphine less than that of nitrosomorphine. Unlike morphine, dihydro-, nitro-, and amino-morphine, codeine, nitroso- and amino-codeine, thebaine, and dihydrothebaine produced clonic spasm in mice. CH. ABS. (p)

Blood-guanidine after administration of convulsants. J. E. ANDES and G. A. EMERSON (Arch. int. Pharmacodyn., 1938, 60, 30—36).—Convulsant drugs (metrazole, picrotoxin) caused no greater increase of blood-guanidine in dogs and rabbits than that due to concn. of the blood or renal deficiency. These conditions explain the increase in man after convulsive seizure. D. T. B.

Central or peripheral action of bulbocapnine. W. A. DEN HARTOG JAGER (Arch. néerland. Physiol., 1938, 23, 254—255).—The spasms cease when the nerve is cut and occur in a limb in which the arteries had been ligatured before the injection of the drug. Hence the effects are due to central action. H. E. R.

Ejaculation induced by drug action. S. LOEWE (Arch. int. Pharmacodyn., 1938, 60, 37—47).—Of 12 hypnotics injected into albino mice pernocton alone produced ejaculation. Barbital and others were effective when combined with stimulants. Stimulants like amidopyrine, benzedrine, and metrazole cause ejaculation in lethal doses. Yohimbine was ineffective except in combination with pernocton. Some combinations of hypnotics and stimulants acted in small doses. D. T. B.

Hypocitricæmia after administration of salicylic acid. N. ALWALL (Skand. Arch. Physiol., 1938, 80, 27—39).—The citrate content of serum of man and rabbits is lowered by oral administration of therapeutic doses of acetylsalicylic acid. A. S.

Effects of choline derivatives on coagulation of blood. E. LUNZ and O. VESSELOVSKY (Arch. int. Pharmacodyn., 1938, 60, 146—162).—Choline and its derivatives delay coagulation of recalcified oxalate plasma. Thrombin formation is retarded. Acetyl-β-ethylcholine inhibits all 3 phases of coagulation. The acetyl compounds retard more than others. Ethyl and methyl groups tend to inhibit the action of choline. Homocholine is the only compound which has some effect after intravenous injection. D. T. B.

Action of magnesium ions on the movements of the isolated uterus. S. GENELL (Skand. Arch. Physiol., 1938, 80, 124—132).—Addition of 0·0005—0·01% $MgCl_2$ to salt solution potentiates 5—10-fold the action of the oxytocic posterior pituitary hormone on the isolated uterus of mice, rats, guinea-pigs, and rabbits. The optimal effect was observed at 0·005% $MgCl_2$. If the concn. exceeds 0·01%, the inhibitory action of $MgCl_2$ on uterus tone and movements becomes apparent. $MgCl_2$ has no potentiating action on the intestine. The action is due to the Mg ion; $Mg(NO_3)_2$ has the same effect as $MgCl_2$. A. S.

Clinical experiences with ergonovine. J. I. KUSHNER (Amer. J. Obstet. Gynec., 1938, 35, 859—862).—Ergonovine in the form of ergonovine maleate (ergotrate, Lilly), 0·2 mg., given intravenously, was most effective in post-partum patients in controlling degree of involution of the post-partum uterus, control of bleeding, and resulting firmness of the uterus and lessened morbidity. M. H.

Relative efficiency of two types of ergot preparations in control of post-partum bleeding. R. C. TER KUILE (Amer. J. Obstet. Gynec., 1938, 35, 999—1003).—500 patients were divided into two groups one of which was treated with pitocin and ergotamine tartrate and the other with an ergonovine prep. Both groups were then observed with reference to amount of immediate and secondary bleeding, uterine tone, and appearance of foul lochia. Results showed that ergonovine was more efficient in preventing and controlling abnormal bleeding than ergotamine tartrate. M. H.

Action of ergometrine on the isolated human uterus. A. D. MCLACHLIN (J. Pharm. Exp. Ther., 1938, 64, 243—249).—Isolated strips of human uterine muscle, obtained at Cæsarean section, or in the non-pregnant condition, gave no response to ergometrine when rhythmic contractions were already present. Quiescent strips were activated to a minor degree. A marked response was obtained in quiescent guinea-pig preps. E. M. S.

Action of basergin, neo-gynergen, and gynergen in obstetrics. H. KOTTMEIER (Schweiz. med. Wschr., 1938, 68, 1211—1215).—Basergin (1—2 c.c. intramuscularly) is very efficient in the treatment of atonic uterine hæmorrhages. Gynergen produces strong uterine contractions, but its action is more delayed than that of basergin. Neo-gynergen has a weaker action than basergin; its effect is more prolonged. A. S.

Use of argotropin as a urinary disinfectant. E. TÜRKEL (Wien. klin. Wschr., 1938, 51, 1236—1239).—Argotropin (1% colloidal Ag + 20% hexamine) is a useful urinary disinfectant. A. S.

Distribution of thorium-*B* in the body after injection. C. DITTMAR (Z. Krebsforsch., 1938, 48, 121—128).—Th-*B* when injected into tumour-affected mice in saline or colloidal solution is deposited mainly in the kidneys, liver, spleen, and bone, where it is retained the longest time. The tumour contains only minute amounts. E. M. J.

Jaundice from bismuth compounds used in the therapy of syphilis. R. NOMLAND, E. A. SKOLNIK, and L. L. MCLELLAN (J. Amer. med. Assoc., 1938, 111, 19—21).—In 75 cases of jaundice during syphilis therapy 32 were believed due to a Bi compound. Jaundice developed within 6 weeks after the last treatment. 22 of the patients had had neoarsphenamine but not within 12 weeks of the onset of jaundice, 10 had received Bi alone. No fatality occurred and most patients were given Bi therapy subsequently with no ill-effect. R. L. N.

Effect of copper in vitiligo. B. SHAFFER (J. invest. Dermatol., 1938, 1, 225—234).—Cu, injected

intracutaneously as a 0·1% $CuSO_4$ solution or colloidal suspension or given by inunction as a 2 or 10% ointment, had no effect in inducing pigmentation in the non-pigmented areas in vitiligo. The results were not modified when the Cu-treated patches were painted with 10% alcoholic solution of bergamot oil, exposed to ultra-violet light, or subjected to the simultaneous use of both these agents. C. J. C. B.

Experimental arsphenamine sensitisation. Reactions to arsphenamine in guinea-pigs given staphylococcus toxin, and in guinea-pigs with induced streptococcal infection. F. E. Cormia (J. invest. Dermatol., 1938, **1**, 199—218).—Staphylococcus toxin did not influence the severity of the induced cutaneous hypersensitivity to arsphenamine, even when the diet was low in vitamin-*C*. Chronic local infection with group *C* hæmolytic streptococcus accentuated the manifestations of cutaneous arsphenamine hypersensitivity. This accentuating effect was inhibited when the diet was high in *C*. C. J. C. B.

Arsphenamine hypersensitiveness in guinea-pigs. I. Cutaneous and anaphylactic responses to old arsphenamine and to neoarsphenamine after sensitisation with old arsphenamine. W. Frei and M. B. Sulzberger (J. invest. Dermatol., 1938, **1**, 191—198).—Guinea-pigs regularly acquired marked skin-sensitivity to old arsphenamine after intracutaneous injects of the drug, and when reinjected intracardially with the drug plus homologous serum seldom showed anaphylaxis. Intravenous injection, however, caused severe anaphylactic shock. These animals sensitive to old arsphenamine also gave strong skin reactions to neoarsphenamine but did not show anaphylactic reactions to intravenous injections. C. J. C. B.

Daily peroral administration of soluble bismuth to experimental animals. E. B. Tauber and G. E. Clarke (J. invest. Dermatol., 1938, **1**, 109—117).—Following the daily administration of K Bi tartrate (0·02—0·04 g. per kg. body-wt.), there was little more deposit in the liver, kidney, and spleen at the end of the 28-day period than at the end of the 4-day period and little difference in the amount deposited with the two dosages. C. J. C. B.

Action of sodium fluoride on experimental osteodystrophy and inactivation atrophy. J. Marx (Beitr. klin. Chir., 1938, **168**, 261—266).—NaF solution, fed to guinea-pigs per os over several weeks, was without effect on the skeleton, and the blood-Ca was unchanged. When given simultaneously with parathyroid extract over several weeks, the fluoride did not prevent the osteodystrophy, nor alone would it prevent inactivity atrophy, the blood pictures in these experiments remaining const. NaF gave rise to gastric catarrh with ulcer formation. H. B. C.

Biochemical characteristics of snake venom. A. C. Roy and R. N. Chopra (Indian J. Med. Res., 1938, **26**, 241—248).—Russell's viper venom contains more albumin and less pseudoglobulin than cobra venom, and also contains 3·6% of euglobulin, which is absent from cobra venom. Neither venom has any invertase or diastatic enzyme, but both are strongly proteolytic. Neither venom had any action on an olive oil emulsion. Viper venom was almost non-hæmolytic, but cobra venom is hæmolytic to susceptible types of red-blood corpuscles. H. B. C.

Dextrorotatory hydrocupreidine derivatives. I. Comparative hæmolytic activity. R. N. Chopra, B. Mukerji, and M. Chakravarty. **II. Comparative action on digestive enzymes.** B. Mukerji and N. K. Iyengar (Indian J. Med. Res., 1938, **26**, 279—288, 289—293).—I. The hæmolytic activity of hydrocupreidine derivatives increases in potency with the increase in the no. of C atoms in the side-chain, and tends to be more complete (the *iso*butyl derivative is an exception). The potency of the *iso*-compounds is practically identical with that of the normal derivatives. Hydrocupreine and its derivatives are similar in their hæmolytic activity. The hæmolytic potency diminishes greatly in presence of serum or plasma, and members high up the series are more effective. p_H affects the hæmolysis, which resembles that caused by saponin rather than by hypotonic solutions.

II. Lævorotatory hydrocupreidine derivatives were far more powerful inhibitors to the amylases than dextrorotatory, quinine coming between the two groups. The lower members of the series appear to possess no inhibitory action on invertase activity, whilst the higher have some. The mode of inactivation of the amylases suggests a reaction of CH_2 groups with active enzyme groups, but this probably is not the case with invertase. H. B. C.

Vasodepressant action of *Viscum album* extracts. F. Mattausch (Wien. med. Wschr., 1938, **88**, 1175—1177).—Satisfactory results in the treatment of arterial hypertension, coronary and arteriosclerotic disturbances were obtained with prolonged administration of mistletoe extracts. A. S.

Preventing dermatitis from dress shields. L. Schwartz and G. C. Andrews (J. invest. Dermatol., 1938, **1**, 219—223).—A case is described of recurrent axillary dermatitis due to rubber dress shields. Washing the rubber with soap and Na_2CO_3, or with soap and NH_3, stopped the dermatitis. It is concluded that S_2Cl_2 used in curing the rubber was the causal agent. C. J. C. B.

Skin temperature reaction to histamine in atopic dermatitis (disseminated neurodermatitis). D. H. Williams (J. invest. Dermatol., 1938, **1**, 119—129).—Intramuscular injection of histamine in individuals who have atopic dermatitis increases skin temp. at the sites of predilection for this condition, *i.e.*, the face, neck, upper part of the chest, and flexures at the elbows and knees. The increase of skin temp. in normal persons is limited to the face and neck and is not observed in the flexures. It is suggested that the increased reactivity of these sites to histamine when injected intramuscularly may be a factor in the characteristic localisation of atopic dermatitis. C. J. C. B.

Curare-like substance in the seeds of a leguminose. C. G. Santesson (Skand. Arch. Physiol., 1938, **80**, 361—368).—Pulverised seeds of a Mexican *Erythrina* tree were extracted with ether and NaCl.

The substance gives alkaloid and glucoside reactions; it has a strong curare-like action. A. S.

Dermatitis caused by diethylene glycol. B. A. Newman (J. Amer. med. Assoc., 1938, **111**, 25).—A case is reported in which contact dermatitis was caused by diethylene glycol. R. L. N.

Pharmacology of sulphur. I. Suspensions of sulphur in gum arabic and body temperature. II. Solutions of sulphur in olive oil and body temperature. S. Gajatto (Arch. Farm. sperim., 1938, **66**, 97—118, 129—144).—When allowance is made for the effect of the vehicle, intramuscular injection of suspensions of S in aq. gum arabic produces a fall, followed by a rise, in body temp.; the effect is greater with solutions of S in olive oil. F. O. H.

Skin reactions. II. Effect of allergic and histamine wheals on rate of absorption of dyes and blood from human cutis. H. A. Abramson and M. Engel (J. invest. Dermatol., 1938, **1**, 65—82).—The absorption of intracutaneous depots of dil. solutions of crystalloid and colloid dyes was examined incidental to the formation and disappearance of allergic and histamine wheals at the depot sites. Accelerated absorption of dyes was always observed in both types of wheals. Intradermally injected whole blood as well as certain blood-pigments also showed accelerated absorption with both types of wheal, whilst extravasated blood, as well as purple blood-pigment, was absorbed, in most cases, comparatively quickly with histamine wheals. C. J. C. B.

Poison-ivy hypersensitiveness in guinea-pigs. R. L. Kile and A. W. Pepple (J. invest. Dermatol., 1938, **1**, 59—63).—Guinea-pigs on a diet markedly deficient in vitamin-*C* were not as sensitive to poison ivy as guinea-pigs on a balanced diet. When these animals were subsequently placed on a diet adequate in -*C*, they were not any less sensitive to poison ivy than sensitised controls on adequate diets throughout. Other animals on a high-*C* diet did not react differently from controls. Irritation with a strong salicylic acid–resorcinol ointment at the site of, and previous to, the original paintings with the poison ivy oil seemed to decrease sensitivity when tests were made at a later date. The offspring of pigs sensitised during or before pregnancy were not specifically affected by the mothers' sensitivity to poison ivy. C. J. C. B.

Vascular and retinal abnormalities following inhalation of tobacco smoke. W. E. Herrell and P. L. Cusich (Proc. Staff Mayo Clin., 1938, **13**, 273—279).—Following inhalation of tobacco smoke in a no. of individuals, blood pressure rose, skin-temp. fell, and the retinal vessels became narrower. A. J. B.

Variation in hepatic and cerebral lecithins during morphine poisoning of guinea-pigs. M. Delaville and Russell (Compt. rend. Soc. Biol., 1938, **128**, 941—943).—A decrease in hepatic and a corresponding increase in cerebral lecithin was observed. H. G. R.

Effect of colchicine on adrenals and lymph glands. C. P. Leblond and G. Segal (Compt. rend. Soc. Biol., 1938, **128**, 995—997).—Colchicine produces non-sp. toxic symptoms in the rat, adrenal hyperplasia and atrophy of thymus, spleen, and lymph glands; when given to the adrenalectomised rat these organs do not atrophy. P. C. W.

Prevention of apnœa by *apo*morphine. R. Hazard, J. Cheymol and A. Quinquand (Compt. rend. Soc. Biol., 1938, **128**, 1081—1084).—The apnœa in the dog caused by injection of yohimbine or adrenaline is prevented by a previous injection of *apo*morphine. P. C. W.

Acute arsenical poisoning in fowls. W. K. Townson (Vet. Rec., 1938, **50**, 403—404).—Post-mortem findings are described. M. A. B.

Pharmacological action of 2-pyrryl *iso*butyl ketone. A. Rabbeno, G. Rastelli, and S. Sacchi (Arch. int. Pharmacodyn., 1938, **59**, 431—449).—The ketone causes muscular paralysis in the frog without convulsions. In the rat it causes nervous depression with slowing of respiration. Introduction of the valeryl radical into the pyrrole nucleus causes great nervous depression which is typical of the action of valeric acid. D. T. B.

Toxicity of methyl alcohol. P. Alder, W. Buschke, and T. Gordonoff (Arch. int. Pharmacodyn., 1938, **59**, 416—432).—Methyl alcohol, free from impurities, causes severe corneal and retinal lesions in the rabbit. The pure synthetic alcohol is more toxic than the methanol of Merck. D. T. B.

Action of oxidising and reducing substances on nitrogenous metabolism. R. Bonnet, J. Fournel, and T. Terroine (Arch. int. Pharmacodyn., 1938, **59**, 383—398).—Quinol and pyrogallol cause increase of sp. endogenous metabolism, followed by pronounced decrease. Disintegration of erythrocytes occurs with succeeding anæmia. Creatinine excretion remains const. while purine output is increased. Creatinuria occurs during the action of the poison. D. T. B.

Action of nicotine on *Lebistes reticulatus*. E. R. Schuster-Woldan (Klin. Woch., 1938, **17**, 1481—1482).—*Lebistes reticulatus*, when brought into dil. solutions of nicotine, at first shows a certain nervousness, followed by rigidity of the pectoral fin and then of the whole body, the vertebral column often being highly and irreversibly flexed just before death. Nicotine also causes abortion in the pregnant female *Lebistes*. E. M. J.

Benzene and gonads. J. Hett and H. Maak (Klin. Woch., 1938, **17**, 1376).—Administration of benzene to mice leads to degeneration of the testicular germinal epithelium and of the ova. Sterility was not produced. E. M. J.

Action of nicotine on the organism. W. Brandt (Chem.-Ztg., 1938, **62**, 851—852).—Summary of recent literature. E. H. S.

Histamine content of organs in serous inflammation. H. Kaunitz, R. Neugebauer, and E. Schweiger (Z. ges. exp. Med., 1938, **103**, 627—637).—20—40 mg. of allyl formate in 0·5 c.c. of alcohol were injected intraperitoneally into guinea-pigs; the animals were killed 2—3 hr. later. The average histamine content (determined by Code's modification of the Barsoum–Gaddum technique) of normal

kidney was 1·62 mg.-%, of liver 0·69, of muscle 0·5; the figures in the poisoned animals were 0·88, 0·38, 0·38 mg.-%. The figures in animals kept 3 days at low barometric pressure (6000 m.) were 1·25, 0·69, 0·58 mg.-%. A. S.

Production of inflammation and necrosis by *Viscum album*. F. E. Koch (Z. ges. exp. Med., 1938, **103**, 740—749).—A mouse unit of mistletoe extract is the concn. which kills a mouse, on intravenous injection, within 4 days. Intracutaneous injection of mistletoe extracts produces necrosis. Repeated intravenous or intracutaneous injections have less general or local toxic effects, and mice can be immunised against a multiple of the lethal dose. A. S.

Lipolytic activity of cobra and Russell's viper venoms. A. C. Roy (Indian J. Med. Res., 1938, **26**, 249—257).—Cobra venom only acts on ethyl butyrate; the esterase and hæmolytic activities do not run parallel. The esterase acitivity is destroyed by heating at 56° for ½ hr., while the hæmolytic activity persists, much impaired, after 15 min. heating at 100°. Both cobra and Russell's viper venoms liberate fatty acids from lecithin. Venom lecithinase is entirely destroyed by autoclaving, but is unaffected by boiling for 20 min. A close parallelism exists between the lecithinase activity and hæmolysin formation in the presence of lecithin. Neither venom splits an emulsion of cholesteryl oleate, but cobra venom caused its lysis, whilst the viper venom caused a flocculation. H. B. C.

Liver damage and alcohol metabolism. H. A. Oelkers (Klin. Woch., 1938, **17**, 1410—1411).—Liver damage produced by poisoning with As, P, or $CHCl_3$ leads to a disturbance of alcohol metabolism in rabbits. E. M. J.

Poisoning by petroleum distillates. E. R. Hayhurst (Indian Med. Rec., 1936, **5**, 53—63).—The distillate dissolves lipins from the central nervous system, medullary sheaths of the nerves, heart muscle, and liver. Symptoms appearing after wetting by the liquid are described. Ch. Abs. (*e*)

Methyl salicylate poisoning in an infant. Report of a case with partial necropsy. A. Eimas (J. Pediat., 1938, **13**, 550—554).—4 c.c. of methyl salicylate can produce death in infants. Since most cases show a low CO_2-combining power, alkalis should be given. At post-mortem, the child showed pulmonary œdema, cloudy swelling of all the parenchymatous organs, and fatty infiltration of the liver. C. J. C. B.

Acute poisoning with nicotine. H. Wehrlin (Schweiz. med. Wschr., 1938, **68**, 1191—1192).—A peasant showed symptoms of a severe intoxication with nicotine after having sprayed trees with a solution containing 1·5% of nicotine. A. S.

Mechanism of the anaphylactic reaction. K. Nakamura and Y. Takahashi (Jap. J. exp. Med., 1938, **16**, 161—182).—Anaphylactic shock is quite distinct from histamine shock and probably a direct effect on the peripheral nerve endings of the vegetative nervous system. Thus the contraction caused by horse serum in the sensitised isolated ileum or uterus of the guinea-pig is relaxed by the addition of adrenaline or nicotine tartrate, while that caused by histamine is not. Nicotine tartrate 1/1000 prevents the reaction to horse serum 1/250 whilst histamine 1/167,000 caused a violent reaction after treatment with the nicotine. C. J. C. B.

Treatment of allergic headache. J. M. Watt (S. Afr. J. med. Sci., 1938, **3**, 95—101).—A discussion on the causative factor and treatment of allergic headache. R. L. N.

Contact dermatitis. III. Active sensitisation with *Krameria* in man. M. Grolnick (J. invest. Dermatol., 1938, **1**, 179—191).—Active sensitisation with *Krameria* was produced by 1—8 applications in 32 out of 37 subjects. The incubation period was 10—21 days. Experimental sensitivity was present for at least 7 months; a clinical case showed sensitivity 4 years after the onset of the contact dermatitis. *Krameria* is the dried root of the plant *K. triandra* or of *K. argentea*, belonging to the family Leguminoseæ. It is usually prescribed orally or as a rectal irrigation for its astringent effect. C. J. C. B.

Importance of allergy in endocrine arthritis. A. Sylla (Klin. Woch., 1938, **17**, 1511—1515).—A review. E. M. J.

Allergy in pediatric practice. B. Ratner, F. S. Smyth, A. H. Rowe, and G. Piness (J. Pediat., 1938, **13**, 582—604).—A discussion. C. J. C. B.

Sensitisation of animals with simple chemical compounds. V. Sensitisation to diazomethane and mustard oil. K. Landsteiner and A. A. Di Somma (J. Exp. Med., 1938, **68**, 505—512).—Sensitisation was obtained in albino guinea-pigs by application to the skin of diazomethane in solution in dioxan containing org. peroxides. Application of mustard oil to the forearm of 6 human subjects resulted in hypersensitivity in one. No sensitivity to this substance could be induced in guinea-pigs, monkeys, or rabbits but some success was obtained with hogs. A. C. F.

Asthma due to sensitisation to a mushroom fly (*Aphiochæta agarici*). R. A. Kern (J. Allergy, 1938, **9**, 604—606).—The symptoms occurred in the early spring and late autumn when the fly was plentiful. An extract of the flies gave skin tests and was also effective in treatment. Sp. reagin in the patient's serum was demonstrated by the passive transfer technique. C. J. C. B.

Soya bean sensitivity with a case report. H. B. Wightman (J. Allergy, 1938, **9**, 601—603).—A case of asthma is described, with sensitivity to soya bean on inhalation and ingestion, and with direct skin test, and by passive transfer. C. J. C. B.

Beet pollen and beet seed dust causing hay fever and asthma. L. O. Dutton (J. Allergy, 1938, **9**, 607—609).—4 cases are described. C. J. C. B.

Sensitisation to jute. F. A. Stevens and L. Jordan (J. Allergy, 1938, **9**, 610—612).—5 cases developed rhinitis or asthma due to this cause. C. J. C. B.

Allergic diseases in childhood. W. C. Deamer (J. Allergy, 1938, **9**, 616—626).—A general review. C. J. C. B.

Retention of lipiodol in the lungs. G. Flaum (J. Allergy, 1938, **9**, 593—600).—2 cases are reported with retention of lipiodol in the lungs of asthmatical patients, with surrounding areas of pneumonitis. It is concluded that iodised oils should not be used in the treatment of asthma. C. J. C. B.

Urticaria of serum sickness type. G. L. Waldbott and M. S. Archer (J. Allergy, 1938, **9**, 584—592).—In 5 cases of urticaria a definite incubation of 5—9 days was noticed and other signs of serum sickness were present. In 4 of these cases the condition could be brought about by means other than injection, viz., ingestion, contact, and infection. In urticaria of serum sickness type the skin-sensitivity is of transient nature and eosinophilia is usually absent. C. J. C. B.

Urticaria of bacterial origin. O. C. Hansen-Pruss (J. Allergy, 1938, **9**, 577—583).—10 patients suffering from urticaria showed β-hæmolytic streptococcal infections in the respiratory tract or duodenal contents and were skin-sensitive to streptallergens and autogenous vaccines. Elimination of the infection by the use of sulphanilamide or allied drugs cured the urticaria. The patients had then lost their skin-reactivity to their vaccines. C. J. C. B.

Active immunisation of allergic individuals against tetanus by means of tetanus toxoid, alum-precipitated refined. H. Gold (J. Allergy, 1938, **9**, 545—550).—Allergic subjects could be safely immunised against tetanus by 2 injections of 1 c.c. each of alum-pptd. toxoid given 90 days apart. The antitoxic protection produced is identical in its reactions and duration with that of non-allergic persons. On occurrence of an injury a third repeat dose of 1 c.c. was given. This caused an increase in the antitoxin content of the blood and 0·1 unit or more could be demonstrated in the blood 4—5 days after this repeat injection. C. J. C. B.

Specific diagnosis and treatment of poison ivy (*Rhus toxicodendron*) dermatitis. A. H. W. Caulfeild (J. Allergy, 1938, **9**, 535—544).—By using a poison ivy extract, "rholigen," patch tests were found of val. in diagnosis. Intramuscular injections of increasing amounts of the extract lowered the susceptibility of the patient to further contact with the ivy and reduced the skin reaction to tests. A reduced skin reaction coincided with clinical immunity. C. J. C. B.

Relations of idiosyncrasy and the anatomical structure of the epidermis. H. T. Schreus (Klin. Woch., 1938, **17**, 1171—1173).—Total epidermal allergy in the absence of antigens or antibodies from the serum is explained by an anatomical continuity of the whole epidermis which is nothing but one protoplasmic mass. If in a guinea-pig an area of skin is separated from the contiguous parts by deep and broad incisions, and dinitrochlorobenzene is applied to either part, only that part will react to a subsequent application allergically; the separated part normergically. E. M. J.

Allergy and constitution. W. Schäper (Z. Zuchtung, 1937, **39**, 163—195).—A review. A. G. P.

Biological action of elements in small quantities. W. Kollath. (Münch. med. Wschr., 1938, **85**, 1769—1776).—A review. A. S.

Defence phenomena of the organism: biophylaxy. Neret-Cauchy (Rev. Méd., 1938, **55**, 382—391).—A discussion of previous work. H. B. C.

Alcohol and intelligence. K. Tuppa (Wien. klin. Wschr., 1938, **51**, 1183—1187).—Intelligence tests were made on school children of various districts in Austria. Better results were obtained in districts where the children do not drink alcohol. A. S.

Effects of antipyretics on production of agglutinin. J. Shinohara (Sei-i-Kwai Med. J., 1935, **54**, 2504—2582).—Effects of administration to rabbits of quinine Na salicylate, aspirin, antipyrine, and pyramidone on production of certain agglutinins varied widely with the nature of the antigen, the dose of antipyretic, and the time of the productive phase of agglutinins. Ch. Abs. (*p*)

Nature of the attenuation of the anaphylactogenic power of acetylated anti-diphtheria serum. G. Sandor and H. Goldie (Compt. rend. Soc. Biol., 1938, **128**, 978—979).—The attenuation (A., 1938, III, 79) is due to acetylation of primary NH_2-groups and not to agitation during the process. H. G. R.

Fever therapy by electric means and its rationale. H. C. Vassiliadis (Chinese Med. J., 1938, **54**, 271—276).—A method of raising the body temp. to 104—107° F. for several hr. by electromagnetic induction is described, together with the physiological effects. W. J. G.

(*r*) INDUSTRIAL PHYSIOLOGY AND HYGIENE.

Industrial psychology in Russia. M. S. Viteles (Occupational Psychology, 1938, **12**, 85—103). T. B.

Accident proneness and accident liability. E. Farmer (Industr. Welfare, 1938, **20**, 129—132).—A discussion of the factors concerned in the causation of accidents. With accident-prone people the cause of the special proneness should be sought. It may be some mental strain, or inaccurate or slow hand and eye co-ordination, or inability quickly to adapt to a changing situation. Psychological tests for accident proneness are also prognostic of industrial efficiency. T. B.

Annual Report of the Chief Inspector of Factories and Workshops for 1937 (London: H.M.S.O., 1938).—Increasing industrial activity is associated with an increasing accident frequency. Young persons still meet with an excessive no. of accidents. Night work by boys does not appear to injure health, but shifts exceeding 8 hr. cause signs of fatigue and listlessness. Cases of Hg poisoning amongst workers exposed to mercuric methyl iodide are described. The no. of cases of epitheliomatous ulceration in tar distillers and cotton mule spinners increased. No ill-effects appear to be suffered by

users of paints containing radioactive substances, but radiation measurements show the need for extra precautions. T. B.

Efficiency tests in adolescents. K. H. Bieling (Z. ges. exp. Med., 1938, **103**, 763—770).—The efficiency of adolescents was tested on an ergometer by measuring the O_2 consumption and CO_2 output with a Knipping–Dargatz apparatus. A. S.

Results of clinical ergography. H. W. Knipping (Klin. Woch., 1938, **17**, 1457—1460).—A review. E. M. J.

Draught temperatures and velocities in relation to skin temperature and feeling of warmth. F. C. Houghten, C. Gutberlet, and E. Witkowski (Heat., Pip. and Air Condit., 1938, **10**, 145—152).—The effects of air currents impinging on the neck and feet were studied for the sensations experienced and the drop in skin temp. produced. Subjects were seated in still air at 70° F. and currents of air at different temp. and velocities were directed on to neck and ankle. An air current on the neck took 30 min. to cool the skin to its lowest temp. when at 68° F. and moving at 11 ft. per min., a fall of 3½° being finally brought about. Many other results are given. T. C. A.

Air conditioning factors. T. Chester (J. Inst. Heat. Vent. Eng., Lond., 1938, **5**, 538—592).—The causes and effects of climate are discussed and human comfort is considered in relation to the American effective temp. scale. A new effective temp. comfort chart is suggested wherein the comfort line varies with latitude. The physics of air conditioning are dealt with fully from an engineer's viewpoint. T. C. A.

Bacterial control in air conditioning. T. S. Carswell, H. K. Nason, and J. D. Fleming (Heat., Pip. and Air Condit., 1938, **10**, 279—282).—In the large ventilation plants employed in theatres etc. it is customary to pass the air through spray water washers. It has been assumed that if a disinfectant is added to this recirculated spray water the bacteria suspended in the air are destroyed. This work shows that spray water washes the air only, and therefore is equally effective in removing bacteria whether the water is pure and sterile or whether it is highly charged with bactericide. T. C. A.

Air conditioning and industrial health. L. D. Bristol (J. Amer. med. Assoc., 1938, **110**, 2142—2143).—1000 people working in scientifically controlled air-conditioned spaces did not exhibit any improvement in incidence or duration of sickness when compared with a control group of the same size working in quarters ventilated by the usual mechanical and natural methods. R. L. N.

Measurement of sanitary ventilation. W. F. Wells and M. W. Wells (Amer. J. publ. Health, 1938, **28**, 343—350).—The effectiveness of the control of air-borne bacteria was measured by use of an "infector" (a device for atomising and blowing up a culture of *B. coli*) and an "infectee" (or Wells centrifuge) which collects the bacteria from the air in any part of the room to be investigated. The control of bacterial concn. by ventilation and by irradiation of the air of the room by different systems is discussed, the last-named means being by far the more effective. T. C. A.

Body temperature control and physiological reactions during muscular work in gas-protective clothing. G. P. Crowden (J.R.A.M.C., 1938, **70**, 217—228).—The ordinary gas-protective clothing greatly hinders loss of body heat, and when heavy labour is undertaken in such clothing the temp. rises and there is grave danger of heat collapse. When the outer surface of protective clothing is kept wet the free evaporation of water increases body heat loss and heavy muscular work can be done with only an insignificant rise of body temp., while sweating is reduced and the risk of heat collapse, even under hot summer conditions, eliminated. The utility of various combinations of protective clothing is discussed. T. B.

Measurement and continuous registration of the temperature of the human skin. H. Anton (Arch. Hyg. Bakt., 1938, **120**, 63—104).—An apparatus for the continuous registration of the temp. of a no. of spots on the skin, using a string galvanometer and photographic reproduction, is described. J. S. W.

Air conditioning with particular attention to effective temperature. W. L. Fleischer (J. Inst. Heat. Vent. Eng., Lond., 1938, **6**, 255—264). T. B.

Regeneration of the air of confined spaces by means of soda. M. L. Jean (Arch. Méd. et Pharm. Nav., 1938, **128**, 84—128).—The efficient use of NaOH for absorbing CO_2 is discussed with particular reference to submarines and air-raid shelters. T. B.

Principal factors in the pollution of town air. A. Kling (Rev. Hyg. Méd. prévent., 1938, **60**, 444—453).—A general discussion of atmospheric pollution. It is urged that the burning of raw coal in domestic or industrial fires should be forbidden. T. B.

Odour control in animal laboratories. F. H. Munkelt (Heat., Pip. and Air Condit., 1938, **10**, 289—291).—The small-scale experiments described were made to supply data for the design of a ventilation system for a new modern animal laboratory. It was found that 0·75 cu. ft. per min. of air per small animal or 2·25 cu. ft. per min. per lb. wt. of animal sufficed to keep the odours to a reasonable level. These quantities being on the high side, 20% of this air should be from outside, the remainder being recirculated and purified by passing through granulated coconut-shell activated C. T. C. A.

Dust control in industry. T. C. Angus (Industr. Welfare, 1938, **20**, 171—177).—A survey of the dust hazard, methods of dust estimation and of dust control. A novel local exhaust hood is described. T. B.

Dust-affected lungs. III. Aluminium oxide content of lungs in 128 cases. G. Gerstel (Arch. Gewerbepath. Gewerbehyg., 1937, **8**, 277—316).—No relation was found between Al_2O_3 content of the lung and severity of the affection, or between Al_2O_3 content and SiO_2 content, indicating that the

SiO_2 was not always present as sericite. The needles found in the lungs were not invariably sericite. M. A. B.

Harmful effects of sericite and steel-grinding dust. Comparative experiments on guinea-pigs. P. Weiland (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 412—425).—Sericite dust produced much greater damage than steel-grinding dust or quartz dust in the lungs of guinea-pigs exposed for 7½ months. M. A. B.

Physiological response of pleural surfaces to implanted dusts. W. R. Bradley and M. W. First (J. Lab. clin. Med., 1938, 24, 44—52).—Rabbits react to intrapleural implantation of dusts with typical inert, absorptive, and proliferative reactions. The injection of a dust or several dusts into both pleural cavities and into the peritoneal cavity of the same animal was practicable and saved time and animals. (4 photomicrographs.) C. J. C. B.

Silicosis in metal grinders. W. Bergerhoff (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 339—411).—The dust from grindstones made of sandstone produces silicosis in workers after some years. This effect can be eliminated by the use of artificial stone, which contains very little free silica and which gives rise to only about $\frac{1}{50}$th the amount of dust. Artificial stone may have a slight effect on the lungs after many years. The pathological anatomy and clinical symptoms of silicosis and silico-tuberculosis are described. M. A. B.

Difficulties in diagnosis in carcinoma of the lung after asbestosis. F. Hornig (Z. Krebsforsch., 1938, 47, 281—287).—Carcinoma of the lung was observed 9 years after the patient had ceased working with asbestos. E. M. J.

Occupational carcinoma of the asbestos worker. M. Nordmann (Z. Krebsforsch., 1938, 47, 288—302).—Carcinoma of the lung of the asbestos worker is discussed on the basis of 4 cases from the literature and 2 own cases and designated an occupational disease. It is in 80% of cases a squamous cell carcinoma and occurs about 18 years after work with asbestos has started. E. M. J.

Detection of crystalline silica in lung tissue by *X*-ray diffraction analysis. H. C. Sweany, R. Klaas, and G. L. Clark (Radiology, 1938, 31, 299—307).—The presence of quartz in dried and ground lung tissue, as revealed by *X*-ray diffraction patterns, has been correlated with silicotic fibrosis in patients examined after death. W. F. F.

Treatment and prevention of industrial diseases in filling factories. A. L. L. Silver (J. R.A.M.C., 1938, 71, 87—96).—A detailed description of the diagnosis, treatment, and prophylaxis of poisoning with trinitrophenylmethylnitroamine, trinitrotoluene, and Hg fulminate. W. F. F.

Industrial exposure to the vapours of benzene and its homologues. W. Gueffroy and F. Luce (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 426—440).—Analyses of urine and expired air show that after exposure to benzene vapour the ethereal SO_4'' may at first be retained to some extent but is later excreted as shown by the N : S ratio in the urine. Yant's method of testing for exposure to benzene by determining the ratio of org. to total S must be supplemented by a determination of the N : S ratio. Determination of ascorbic acid, phenols, and benzoic acid in the urine gives no reliable indication of exposure. Increased amounts of volatile org. compounds are found in the expired air. M. A. B.

Skin disease from Rapid Fast dyes in calico-printing. H. Hebestreit (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 249—255).—The nitrosoamines produced eczema in skin tests, whereas the coupled dyes had no action. NaOH solution damaged the skin, but did not produce eczema. NaOCl had no effect. M. A. B.

Relation between local and general damage in industrial poisoning (based on a case of mercury poisoning). A. Vannotti (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 266—276).—A case of Hg poisoning is described. The multiplicity of symptoms results from a complex mechanism of interaction between the generalised and localised effects of the poison. M. A. B.

Porphyrins and industrial pathology. A. Vannotti (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 240—248).—Excessive quantities of porphyrins may be produced in the body by damage to the bone marrow, which results in synthesis of excess of porphyrin instead of the proper amount of hæmoglobin; also by damage to the liver resulting in decomp. of existing hæmoglobin. These effects are observed in cases of poisoning by benzene, Pb, dinitrophenol, tetrachloroethane, Hg, and CCl_4. M. A. B.

Conquest of an occupational disease: phosphorus poisoning in lucifer match making. T. Oliver (J. Roy. Inst. Publ. Hlth. Hyg., 1938, 1, 660—666). L. B.

Protection of radium workers from γ-radiation. Protection afforded by building materials. G. W. C. Kaye, G. E. Bell, and W. Binks (Brit. J. Radiol., 1936, 9, 161—171).—Measurements were made of the absorption of γ-rays by Pb, Fe, Al, concrete, brick, and coke-breeze for both wide and narrow beams of radiation. Ch. Abs. (e)

Gas protection in cases of perforated eardrum. O. Muntsch and B. Prathithavanija (Arch. Gewerbepath. Gewerbehyg., 1937, 8, 317—320).—Cotton-wool plugs saturated with vaseline will protect against concns. of perchloromethyl formate ("Perstoff") greater than those generally used in gas warfare. M. A. B.

(s) RADIATIONS.

Photobiological problems. O. Merkelbach (Schweiz. med. Wschr., 1938, 68, 1245—1250).—A review. (B.) A. S.

Experiments with anti-sunburn preparations. M. Henschke (Arch. exp. Path. Pharm., 1938, 190, 220—221).—Erythema and sun pigmentation were examined on the Jungfrau-Joch with an ultra-violet filter-set and a monochromator. Erythema was produced only by λ shorter than 320 mμ. Marked pig-

mentation without erythema was caused by the longer ultra-violet waves. Anti-sunburn preps. were tested. I. S.

Microbicidal action of ultra-violet rays. M. Rouyer and M. Servigne (Ann. Inst. Pasteur, 1938, **61**, 565—578).—The effect of ultra-violet radiations from different sources on agar-plate cultures of *Ps. pyocyanea*, *Bact. coli*, *Staph. aureus*, bacillus of fowl cholera, enterococcus, and *Saccharomyces ellipsoideus* under standard conditions is investigated. The zone of wave-lengths producing lethal effects is continuous. It is situated at about 2650 A. and extends up to 2900 A. and down to 2200 A. for longer exposures. The relative sensitivity of different organisms to ultra-violet radiations corresponds with that found with the β-rays of Ra. G. P. G.

Irradiated cell nucleus. P. Wells (Arch. exp. Path. Pharm., 1938, **190**, 196—197).—Ultra-microns in the nucleus of the egg cell increased in no. after irradiation as shown by dark-ground illumination. I. S.

Short waves and vasodilator substances. F. Hildebrandt (Arch. exp. Path. Pharm., 1938, **190**, 197).—Histamine was determined in the blood of dogs exposed 1—2 hr. to short-wave irradiation or diathermy. Increase of histamine up to 100% was observed, sometimes immediately, sometimes 2—3 hr. after the experiment with return to normal 2—4 hr. later. I. S.

Influence of ultra-short waves on the growth of rabbit sarcoma. N. Nobuoka (Gann, 1938, **32**, 292—294).—A summary of results with no experimental details. The irradiation inhibited the growth of the sarcoma. E. B.

Short and ultra-short waves, their effects on glycogen, vitamin-*C*, glutathione, calcium, potassium, and oxidase reaction. H. Nakamura, H. Okamura, K. Tanaka, and M. Wakabayasi (Gann, 1938, **32**, 294—300).—Short and ultra-short waves cause a decrease in vitamin-*C* and glutathione, increase the ratio Ca/K, and decrease glycogen and the oxidase reaction in sarcomata in rabbits and mice. E. B.

Effect of hexokinase on the mitogenetic ray due to blood glycolysis. T. Konomi (Fukuoka-Ikwad. Zasshi, 1936, **29**, 820—827).—Addition of hexokinase to blood increases the mitogenetic ray effect due to glycolysis. Hæmolysed blood recovers its ray effect and glycolytic power on treatment with hexokinase and glucose. No ray effect occurs in the tyrosine–tyrosinase reaction. Addition of the adrenal co-enzyme to heart muscle increases the ray effect due to glycolysis but not the reaction of lactodehydrogenase. Ch. Abs. (*p*)

Effect of imbibition on the sensitivity of viper's venom to radium. A. Lacassagne and M. Rouyer (Compt. rend. Soc. Biol., 1938, **129**, 434—437).—Irradiation has no effect on the desiccated venom, whilst a decrease in the hæmolytic power and toxicity occur during irradiation in solution. H. G. R.

Geiger–Müller counter. M. L. Weinstein and L. Rovner (J. lab. clin. Med., 1938, **24**, 82—95).—A non-technical description of a physical apparatus that has applications in radiology, radiobiology, and in physiology, with indications of its possibilities and limitations. It is used to observe ionising radiations of very low intensity. C. J. C. B.

(t) PHYSICAL AND COLLOIDAL CHEMISTRY.

Optical properties of solutions of tobacco mosaic virus protein. M. A. Lauffer (J. Physical Chem., 1938, **42**, 935—944).—The stream double refraction of tobacco mosaic virus protein solutions decreases with increasing n of the solution, and becomes zero at $n = 1{\cdot}55$. The jelly-like pellets obtained by ultra-centrifuging solutions of the protein are in the liquid cryst. or paracryst. state. Conc. solutions of the protein separate into two layers on keeping. These layers differ considerably in Tyndall effect, the light scattered by the upper layer being only slightly depolarised whilst that scattered by the lower layer is very largely depolarised. The results accord with the view that the particles of the protein are rod-shaped nuclear proteins, with little or no intrinsic double refraction. J. W. S.

Colloidal Chemistry of the Protoplasm. V. V. Lepeschkin (Theodor Steinkopf, Dresden und Leipzig, 1938, 244 pp.).—A brief, clear monograph, combining successfully the recent advances in the knowledge of plasma functions with those in colloidal chemistry. H. R.

Changes of nitrogen content brought about by denaturation of proteins. B. M. Hendrix and J. Dennis (J. Biol. Chem., 1938, **126**, 315—322).—Denaturation of cryst. ovalbumin and edestin produces a statistically significant decrease in N %. The filtrates from the prep. of the denatured proteins contain insufficient N to account for this decrease. It is suggested that hydrolysis of the protein takes place, with direct addition of H_2O to the mol. E. M. W.

[Conversion of] collagen and related substances [into gelatin]. E. Cherbuliez, J. Jeannerat, and K. H. Meyer (Z. physiol. Chem., 1938, **255**, 241—254; cf. B., 1938, 699; Fauré-Frémiet, A., 1937, III, 253; Champetier *et al.*, A., 1937, I, 350).—Examination of the effects of 2% aq. NaOH, hot and cold water, formamide, aq. NH_4CNS, and ether + solid CO_2 on stretched and unstretched collagen fibres (pig's tendon) confirms the view that the conversion of collagen into gelatin is a two-stage process. The first (reversible) stage leads to production of amorphous rubber-like material resistant to the action of trypsin and the second (irreversible) to destruction of the three-dimensional structure and loss of power to resist tryptic attack followed by dissolution and progressive decrease in viscosity. The two stages can be separated in the cases of collagen and isinglass but not in that of elastoidin. W. McC.

Absorption of water by ovokeratin of selachians. C. T. Baudouy (J. Chim. phys., 1938, **35**, 268—276; cf. Fauré-Frémiet, A., 1938, III, 309).—As regards its power to absorb water, ovokeratin from the eggs of *Raja batis* is intermediate between the "dry" and the "moist" proteins (Jordan

Lloyd). With ovokeratin absorption is minimal in the p_H zone 6—10·5 ("isoionic" zone). Water is much more firmly retained, however, by ovokeratin than by proteins of the collagen type. As regards the effect of p_H on the amounts of free acid and alkali which it binds, ovokeratin resembles the keratin of horse hair. W. McC.

Heterogeneous equilibrium of protein solutions.—See A., 1939, I, 23.

Arrangement of peptide chains in the molecules of sphæroproteins.—See A., 1939, II, 42.

(u) ENZYMES.

Enzyme catalysis. A. K. Balls (J. Washington Acad. Sci., 1938, **28**, 425—433).—Recent advances in enzyme chemistry are reviewed. W. O. K.

Biological reduction. I. Nitrate-reductase of *B. coli*. S. Yamagata (Acta Phytochim., 1938, **10**, 283—295).—The enzyme is more sensitive to the action of CN′ than other hydrogenases, being completely inhibited by a concn. of 0·01M-KCN or by heating to 54°. Its activity is also reduced by 33% by toluene, by 50% in the presence of 0·04M-$Na_4P_2O_7$, by 93% in the presence of M-urethane, and by passage through a Berkefeld filter. P. G. M.

Hydrogenase. Mechanism of bacterial oxyhydrogen gas reaction. S. Yamagata and H. Nakamura (Acta Phytochim., 1938, **10**, 297—311).—The O_2–H_2 gas reaction is a process of O_2 respiration by means of which the H–hydrogenase system takes the place of the usual substrate–dehydrogenase system. P. G. M.

Phylogenetic aspects of oxidation processes. I. L. E. Rozenfeld and S. S. Goldman (Ukrain. Biochem. J., 1938, **12**, 111—129).—The O_2 intake and succinic oxidase activity of the liver or hepatopancreas of a no. of phyla fall in the series rat or mouse > spring frog > winter frog > crayfish > snail > *Mytilus* > Anodonta; an almost identical order is found for catalase and peroxidase. The ratio of oxidone to oxidase activity changes from 4 : 1 to 2 : 3 in the same series. Data for whole earthworms are recorded. R. T.

Redox potential determinations in β-hydroxybutyric acid–dehydrogenase–acetoacetic acid. E. Hoff-Jørgensen (Skand. Arch. Physiol., 1938, **80**, 176—192).—The enzyme was obtained from pig's heart muscle by repeated extraction with 1% NaCl and phosphate buffer at p_H 7·5. The activity of the enzyme extracts shows an optimum at p_H 7·3 in Thunberg's experiments, and p_H 6·5 with Warburg's experiment. The extract contained cozymase. The enzyme is not influenced by KCN in the Thunberg experiment. The reaction β-hydroxybutyric acid $\rightleftarrows$ acetoacetic acid + 2H is reversible at a p_H range 6·1—7·8. The equimol. potential at p_H 7·0 and 38° is −0·2931 ± 0·0001 v. The temp. coeff. found by potential determinations at 38° and 25° is 0·000731. The total heat (ΔH) developed during the reaction is −16,890 ± 100 g.-cal.; the change of free energy $\Delta F = -6399 \pm 5$ g.-cal. A. S.

Effect of extracts of the ciliary body on tissue oxidation. D. Michail and P. Vancea (Compt. rend. Soc. Biol., 1938, **129**, 15—16).—The extracts inhibit the reducing power of the oxidases of muscle and crystalline lens, the action being annulled by adrenaline. H. G. R.

Enzymes in fruit and vegetables. Determinations of ascorbic acid and activity of its oxidase in tomato tissue. H. Naito and K. Ishimaru (Bull. Inst. Phys. Chem. Res. Japan, 1938, **17**, 797—812).—The amount of ascorbic acid in tomato fruit increases, but the activity of its oxidase decreases, during ripening. The ascorbic acid content and oxidase activity of the leaf are approx. equal to, whilst those of the stem are less than, those of the fruit. A trace of combined ascorbic acid is detected in unripe fruit by hydrolysis (0·1% HCl). Benzoic and salicylic acids have slight accelerating effects on the oxidation of ascorbic acid when added to its solution containing oxidase (tomato juice). A. T. P.

Non-specificity of ascorbic acid oxidase. G. A. Snow and S. S. Zilva (Biochem. J., 1938, **32**, 1926—1937; cf. A., 1937, III, 138).—The enzyme, as it occurs in cucumber juice, oxidises reductone, reductic acid, and *d*-gluco-ascorbic acid, although less readily than it oxidises *l*-ascorbic acid. With reductone the O_2 uptake is less than the calc. val. probably because some of the substrate is utilised in a side reaction. The dialysed juice oxidises glutathione and cysteine and the undialysed (but not the dialysed) juice oxidises dihydroxymaleic acid with production of CO_2 the O_2 uptake exceeding that required for the amount of substrate oxidised. Oxidation of these three substances is probably due, not to ascorbic acid oxidase, but to other enzymes; the dihydroxymaleic acid is probably completely degraded. W. McC.

Hydrolysis and resynthesis of polyphenol oxidase and of hæmocyanin. F. Kubowitz (Biochem. Z., 1938, **299**, 32—57; cf. A. 1937, III, 427; 1938, III, 613).—The isolation, from potatoes, and purification of the oxidase are described, the purification including adsorption on $Al(OH)_3$ and elution with aq. NaCl. The isoelectric point is p_H 5·4. At 0° the oxidase is stable for months and it loses but little activity when dried. A test for the oxidase with Robison's ester as substrate is described, the O_2 uptake being proportional to the concn. of oxidase and of the pyrocatechol which is used as catalyst. The oxidase, which contains 0·19—0·20% of Cu, and its CO-compound exhibit no sp. absorption of light. In the compound at a CO pressure of 1 atm. the ratio CO : Cu is 0·5. Indifferent gases eliminate the CO from the compound. The best substrate for the oxidase is pyrocatechol but pyrogallol, 3 : 4-dihydroxyphenylalanine, protocatechuic acid, tyrosine, adrenaline, and dihydroxycinnamic acid (not resorcinol, quinol, ascorbic acid) are also oxidised. The rates of oxidation and reduction of the oxidase and the corresponding consts. have been calc. The oxidation and reduction of the Cu during these processes are stoicheiometrical reactions. As regards the ratio of CO to Cu in its CO-compound, its conversion into Cu salt and protein by HCN, and its resynthesis, hæmocyanin

from octopus blood very closely resembles the oxidase. The Cu content of hæmocyanin is 0·25%. W. McC.

Non-identity of cytochrome-oxidase and Warburg's respiratory enzyme. H. Tamiya and H. Kubo (Acta Phytochim., 1938, **10**, 317—334).—Warburg's enzyme is sensitive to CO and resistant to CN′, whilst the reverse is true for cytochrome-oxidase. P. G. M.

Anaërobic oxidation of reduced cytochrome-*C* by *B. coli* in presence of nitrate. E. Aubel (Compt. rend. Soc. Biol., 1938, **129**, 444—445).—The oxidation of reduced cytochrome-*C* is accompanied by formation of NO_2'. H. G. R.

Dihydroxymaleic acid and peroxidase. I. Robežnieks (Z. physiol. Chem., 1938, **255**, 255—258; cf. A., 1938, III, 950).—Oxidation of dihydroxymaleic acid by peroxidase and H_2O_2 proceeds very slowly but is catalytically accelerated by plant juices. Resorcinol does not accelerate oxidation of the acid or of ascorbic acid by H_2O_2 and peroxidase, pyrocatechol accelerates it greatly with ascorbic acid but not at all with dihydroxymaleic acid, *o*- and *p*-phenylenediamine accelerate it less with dihydroxymaleic acid than with ascorbic acid, and quinol and benzidine accelerate it equally in both cases, the effect of benzidine being very pronounced. In some cases the concn. of the catalyst must be increased 100-fold in order to produce with dihydroxymaleic acid an effect equal to that with ascorbic acid. W. McC.

Effect of injections of diformaldehyde peroxide on the activity of blood-catalase. J. Maisin and Y. Pourbaix (Compt. rend. Soc. Biol., 1938, **129**, 46—49).—The catalase activity of rabbit's blood is decreased after injection of the peroxide, min. vals. occurring after 15 min. and 48 hr. and the effect lasting about a week. H. G. R.

Catalytic properties of the phthalocyanines.—See A., 1939, I, 34.

Hydrolysis of homatropine and atropine by various tissues. F. Bernheim and M. L. C. Bernheim (J. Pharm. Exp. Ther., 1938, **64**, 209—216).—Guinea-pig liver contains an esterase which hydrolyses homatropine quickly and atropine more slowly. The *l*-isomerides are preferentially attacked. Hydrolysis is inhibited by small amounts of eserine. The enzyme is not identical with the choline-esterase, nor with that which hydrolyses ethyl mandelate. E. M. S.

Use of added protein in the determination of the activity of tyrosinase. M. H. Adams and J. M. Nelson (J. Amer. Chem. Soc., 1938, **60**, 2472—2474).—Addition of gelatin increases the activity and decreases the deactivation of pure tyrosinase preps. Graubard and Nelson's method (A., 1936, 244) of determining tyrosinase activity is modified accordingly. R. S. C.

Nature of the enzyme tyrosinase. M. H. Adams and J. M. Nelson (J. Amer. Chem. Soc., 1938, **60**, 2474—2478).—The ratio of the activities towards *p*-cresol and pyrocatechol–quinol of tyrosinase from 5 sources varies. The ratio of the two activities of tyrosinase from *Psalliota campestris* is changed by pptn. and adsorption on Al_2O_3 and kaolin, and fractions can be obtained rich in either factor. Differential enrichment could not be effected with preps. from *Lactarius piperatus* or *Calvatia cyathiformis*. The *p*-cresol activity is associated with normal enzyme properties, *e.g.*, it is destroyed by heat or acids, does not penetrate semipermeable membranes, and is pptd. by $(NH_4)_2SO_4$. R. S. C.

Pancreatic lipase. III. Activation of washed enzyme by serum and other substances. L. Rabinowitch and A. M. Wynne (J. Biol. Chem., 1938, **126**, 109—115; cf. A., 1936, 378).—Activation of the enzyme is largely conditioned by the buffering power of the substances concerned, *e.g.*, the thermostable substances of the enzyme dialysate which contains phosphates. The activating power of amino-acids is inhibited by destruction of their amphoteric characters. P. G. M.

Fumarase effect of propionic bacteria. J. Erkama (Suomen Kem., 1938, **11**, **B**, 28).—Synthesis of aspartic acid from malic acid and NH_3 occurs through the fumarase activity of the bacteria. The reaction velocity and equilibrium attained are practically the same as with *B. fluorescens liquefaciens*. H. G. R.

Is creatinuria the result of an interference with the action of arginase? M. Pescatore (Arch. int. Physiol., 1938, **47**, 63—70).—Thyroxine and phloridzin have no interfering effect on the course of hydrolysis of arginine by arginase *in vitro*. Thyroxine added to a mixture of arginine and arginase accelerates the rate of formation of urea. It is impossible to say if this phenomenon indicates an intervention of the thyroid in the control of urea formation in normal animals. The substances which promote creatinuria do not act by removing some arginine from the action of arginase. H. E. R.

Nucleic acids. X. Enzymic fission of yeast- and thymo-nucleic acid. H. Bredereck, G. Caro, and F. Richter (Ber., 1938, **71**, [*B*], 2389—2391).—Study of the action of an enzyme prep. from sweet almonds on yeast- and thymo-nucleic acid at p_H 4·9 to 5·1 brings no evidence against the hypothesis that these acids are hydrolysed by one and the same "polynucleotidase." H. W.

Enzymic histochemistry. XXIX. Dilatometric micro-determination of peptidase activity. K. Linderstrøm-Lang and H. Lanz, jun. (Compt. rend. Trav. Lab. Carlsberg, Sér. Chim., 1938, **21**, 315—338).—A more detailed account is given of the falling-drop method already published (A., 1937, III, 269). The accuracy is about 50 times that of the previously described micro-technique (A., 1931, 1455). The vol. changes following hydrolysis of *d*-alanylglycine depend on p_H and concn. of the PO_4''' buffer. The relation between *d* and peptide hydrolysis has been determined at p_H 6·8 to 7·4 and the linear form of the time–*d* curve enables the activity to be read directly as the slope of the curve. The activity is proportional to enzyme concn. except at very low concn. The vol. changes per millimol. of peptide linkage hydrolysed are 9·1 to 9·9 cu. mm. in the given cases. J. N. A.

Enzymic proteolysis. II. Production of free tyrosine during peptic digestion. M. Damo-

DARAN and P. S. KRISHNAN (Biochem. J., 1938, **32**, 1919—1925; cf. A., 1938, III, 1049).—When caseinogen is digested with pepsin for 7 days in the absence of bacteria approx. 6% of its total N and total tyrosine contents are converted into a form not precipitable by phosphotungstic acid, and 1·7—1·8% of the total tyrosine content is obtained in the free state. W. McC.

Specificity of tissue proteinases (cathepsins). B. GOLDSTEIN, M. GINZBURG, and E. MILGRAM (Ukrain. Biochem. J., 1938, **11**, 327—356).—Siskin, dog, rabbit, and pigeon liver cathepsins do not hydrolyse ovalbumin, addition of which to the extracts prevents autolysis of the homologous tissue-proteins, as a result of formation of stable ovalbumin–cathepsin complexes. The rate of production of NH_2-acids in rat, heron, and tortoise liver extracts is unaffected by addition of ovalbumin, showing that these cathepsins have a feeble action on this substrate. The rate of NH_2-acid production from ovalbumin rises in the series carp < hen < *Carcinus marmoratus* < *C. mœna* < newt < frog < adder < crayfish < skate < axolotl < chick embryo yolk sac cathepsins. It is concluded that the higher is a given genus in the evolutionary scale, the greater is the specificity of its tissue proteinases. Physiological changes in the animal affect the specificity of cathepsins; thus liver cathepsin from pregnant rabbits hydrolyses ovalbumin. The same property is conferred on ordinary rabbit liver cathepsin by addition of heat-inactivated yolk sac cathepsin. R. T.

Influence of avitaminosis-*C* on the tissue enzymes (cathepsin, lipase) of animals. I. Cathepsin. II. Lipase. E. V. HIMMELREICH (Ukrain. Biochem. J., 1938, **11**, 357—385; **12**, 63—89).—I. The activity of guinea-pig liver cathepsin with respect to gelatin falls during the initial stages of scurvy, and then rises, whilst that of kidney cathepsin falls uninterruptedly; that of both cathepsins with respect to their homologous tissue-proteins rises continuously. Inactivation of the cathepsins by H_2S is below normal in the early, and above normal in the late, stages of scurvy.

II. The lipase activity of guinea-pig liver and kidney falls considerably, and of lung slightly, in scurvy; at the same time that of the spleen and adrenals rises slightly. The vals. found for normal controls exhibit very wide individual and seasonal differences. R. T.

Purification of thrombin. W. H. SEEGERS, K. M. BRINKHOUS, H. P. SMITH, and E. D. WARNER (J. Biol. Chem., 1938, **126**, 91—95).—Purified prothrombin is dissolved in aq. 0·9% NaCl and 0·15% $Ca(NO_3)_2$ and the solution adjusted to p_H 7·0—7·2. Addition of thromboplastin, purified as described from beef lung, converts the prothrombin into thrombin in 2 hr. The thrombin is pptd. by acetone, the ppt. is extracted with water, and the solution is adjusted to p_H 5·0—5·3 with 0·25% acetic acid. After removal of the ppt. thrombin is re-pptd. by acetone as a greyish-white powder, sol. in water. It contains 300—540 units per mg. P. G. M.

Pectic enzymes. II. Pectic enzymes of tomatoes. Z. I. KERTESZ (Food Res., 1938, **3**, 481—487; cf. A., 1938, III, 73).—Pectin-methoxylase (pectase) activity was ~40—50 units in green, and 180—190 units in ripe, field tomatoes. This enzyme is responsible for the changes in η and quality of cold-pressed tomato juice, since the pectin-polygalacturonase activity of the fruit is extremely low. E. C. S.

Isolation of glyceraldehyde-3-phosphoric acid in enzymic degradation of hexosediphosphoric acid. O. MEYERHOF (Bull. Soc. Chim. biol., 1938, **20**, 1033—1042).—In enzymic degradation of hexosediphosphoric acid in presence of N_2H_4 a mixture of equal amounts of the hydrazones of glyceraldehydephosphoric acid and dihydroxyacetonephosphoric acid is obtained. The free acids are liberated with benzaldehyde and the glyceraldehyde is determined by oxidation with I, and by the optical rotation of the phosphoglyceric acid so obtained. A. L.

Synthetic activity of renal phosphatase. J. COURTOIS (Compt. rend., 1938, **207**, 683—685).—In a medium containing glycerol, the hydrolysis of α- and β-glycerophosphates by autolysed pig's kidney leads to the same equilibrium mixture as when the medium contains an equimol. amount of PO_4'''. The equilibrium mixture comprises about 80% of α-glycerophosphate as determined by Fleury and Paris' method (A., 1933, 696) but no phosphorylated sugars, PO_4''', or easily hydrolysed phosphates. Inactivated autolysates of kidney convert β- into α-glycerophosphate to the extent of about 10%. J. L. D.

Phosphatatic actions of hydrogels.—See A., 1939, I, 34.

(v) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY.

Production of yeast. I. H. FINK and J. KREBS. **II. Apparatus for propagating yeast by the äeration method under standardised conditions.** H. FINK, R. LECHNER, and J. KREBS (Biochem. Z., 1938, **299**, 1—27, 28—31).—I. When the C source is well äerated 1% sugar solution (sucrose, glucose, maltose; lactose is not utilised for yeast production) containing $(NH_4)_2HPO_4$, $(NH_4)_2SO_4$, K_2SO_4, and $MgSO_4$ the max. yield of *Torula utilis* is equiv. to 52·3% of the sugar consumed and this val. is not increased by replacing the air with O_2, diminishing the sugar concn. to 0·5%, or adding vitamin-B_1, biotin, or inositol separately or in any combination.

II. An apparatus for propagating moderately large amounts of yeast by the äeration method is described. W. McC.

Cataphoresis of wine and brewer's yeasts. K. HENNIG and H. AY (Biochem. Z., 1938, **299**, 123—132).—Wine and brewer's yeasts have a negative charge in acid and alkaline media and the sign of the charge is not changed even at high $[H^+]$. At such $[H^+]$ the charge is lost in some cases. The persistence of the negative charge is due to the size and composition of the yeast cell, which render it non-colloidal, and to its vitality, which is not destroyed by 0·167N-HCl. Yeasts may, however, acquire positive charge or become neutral through contact with media which are capable of acquiring a charge. Advantage is

taken of the negative charge and adsorptive power of yeast from high quality, new wine in preserving and removing bad odours. W. McC.

Effects of chemical stimulants on yeast growth. F. L. Trainina (Proc. Inst. Sci. Res. Food Ind. Leningrad, 1935, 2, No. 3, 141—155).—Yeast fermentation is stimulated by ethylene and by extracts of *A. niger*. Ch. Abs. (*p*)

Production of alcohol by *Saccharomyces ellipsoideus* in syruped fermentations. L. Hohl (Food Res., 1938, 3, 453—465; cf. A., 1937, III, 70).—Addition of syrup to grape juice slightly increased the yeast crop and the yield of alcohol. The latter decreased as the ratio surface : vol. of the fermenting liquid decreased. Aëration with O_2 increased, whereas N_2 slightly, and CO_2 markedly, decreased, the yield of alcohol. Neither the size of inoculum of the starter, its age, nor the method of its storage had appreciable effect on the alcohol yield. E. C. S.

Effect of composition of medium on growth of yeast in presence of bios preparations. II. Response of strains of *Saccharomyces cerevisiæ*. J. B. Lesh, L. A. Underkofler, and E. I. Fulmer (J. Amer. Chem. Soc., 1938, **60**, 2505—2507; cf. A., 1936, 1421).—The growth response of various strains of this yeast to bios II, inositol, and $MgSO_4$, alone and in combination, varies and affords a method of classifying the strains into three groups. R. S. C.

Pantothenic acid. II. Concentration and purification from liver. R. J. Williams, J. H. Truesdail, H. H. Weinstock, jun., E. Rohrmann, C. M. Lyman, and C. H. McBurney (J. Amer. Chem. Soc., 1938, **60**, 2719—2723; cf. A., 1933, 982).—Pantothenic acid is extracted from sheep (or beef or hog) liver by keeping in benzene at 37°, heating at 95—100°, and removing the solvent. A long and complicated purification is detailed, which gives a nearly pure Ca salt with a potency of 11,000 units, 1 unit being the potency of a 60% MeOH extract of rice bran towards "G.M." yeast, comparisons being made at low dosages. The acid is amorphous, and highly hydrophilic, giving no insol. derivatives, is unstable (particularly in alcoholic acid) except in neutral solution, and probably contains several types of functional groups. R. S. C.

Pantothenic and nicotinic acids as growth factors for lactic acid bacteria. E. E. Snell, F. M. Strong, and W. H. Peterson (J. Amer. Chem. Soc., 1938, **60**, 2825).—Pantothenic acid (see preceding abstract) and the authors' growth-factor (A., 1937, III, 487) are proved biologically to be identical. Two species of lactic acid bacteria require also nicotinic acid for full growth and activity. R. S. C.

***Torulopsis pulcherrima*.** B. Porchet (Ann. Ferm., 1938, **4**, 385—405).—10 strains, agreeing in general characters with the genus, have been isolated from various fruits. They produce alcohol and small amounts of acid from glucose and fructose and can utilise alcohol as a source of C. A reddish non-carotenoid pigment is irregularly produced; it appears to be dispersed in the medium, and is retained by a Seitz E. K. filter. Fe is not necessary for its formation. Detailed characters of the strains, 4 of which show dissociation and thus differ from the genus type, are described. I. A. P.

(A) Biochemical production of citric acid. N. N. Ivanov. **(B) Effects of radium and ultraviolet light on growth and citric acid formation in *Aspergillus niger* cultures.** E. K. Kresling and E. A. Schtern. **(C) Acid activation of *A. niger*.** E. K. Kardo-Suisoeva. **(D). Gas regime of *A. niger* as related to citric acid formation.** M. A. Gudlet. **(E) Activation of *A. niger* by cross-culturing.** T. J. Palei. **(F) Biochemical production of calcium gluconate.** E. K. Kardo-Suisoeva. **(G) Relations between acid-forming power and morphological characteristics of *A. niger* strains.** O. P. Protodiakonov and E. R. Kresling. **(H) Invertase of *A. niger*.** M. A. Drboglav and V. A. Kirsanova. **(I) Optimum conditions for formation of citric acid by *A. niger*.** M. A. Drboglav and S. A. Devíaschina. **(J) Methods of crystallising citric acid.** M. A. Drboglav and M. A. Frantzuzova. **(K) Replacing sugar by other materials in citric acid production.** T. J. Palei and M. A. Frantzuzova. **(L) Nitrogen metabolism of *A. niger*.** L. K. Osnitzkaja. **(M) Effect of radium on citric acid formation by *A. niger*.** E. K. Kresling. **(N) Gas metabolism of *A. niger*.** M. A. Gudlet. **(O) Salt metabolism of *A. niger* as related to citric acid formation.** M. A. Gudlet, V. A. Kirsanova, and V. V. Makarova. **(P) Acid-resistance of *A. niger*.** E. K. Kardo-Suisoeva. **(Q) Perodixase activity of *A. niger*.** M. A. Drboglav and V. A. Kirsanova. **(R) Amylase activity of *A. niger*.** M. A. Drboglav and V. A. Kirsanova. **(S) Carbohydrate balance of *A. niger* in biochemical processes.** L. N. Rubel and E. K. Kardo-Suisoeva. **(T) Morphological and biochemical pecularities of *A. niger* strains which differ in acid yield.** E. K. Kresling. **(U) Mutal interaction of *A. niger* and *Penicillium luteum-purpurogenum*, Thom and Church.** T. J. Palei and A. G. Osuitscheva. **(V) Changes in oxidation-reduction potential during citric acid formation.** M. A. Gudlet (Proc. Inst. Sci. Res. Food Ind. Leningrad, 1935, **3**, No. 1, 3—4, 5—24, 25—44, 45—69, 70—81, 83—92, 101—113, 115—129, 131—141, 143—152; 1936, No. 4—5, 7—30, 31—47, 49—64, 65—84, 85—94, 96—102, 103—110, 112—115, 116—128, 130—145, 146—156, 157—167).—(A) Adaptation of *A. niger* to commercial production of citric acid is examined.

(B) Irradiation inhibited growth and induced morphological changes. Rn produced changes which were hereditary and gave rise to variants; yields of acid were increased.

(C) Spontaneous changes in strains of *A. niger* were accompanied by diminution of acid yield and often by degeneration. Activation by 0·025—0·50N-HCl reversed these changes.

(D) Aëration of cultures increased yields of citric acid. CO_2 production was frequently less than that required theoretically for conversion of glucose into acid.

(E) Cross-culturing high- and low-yielding strains reduced yields of acid to that of the weak strain. Cross-culturing with *Citromyces* or *Penicillium* produced some increase in yields.

(F) Gluconic acid (50% of sugar used) was obtained by culturing small colonies of *A. niger* in media of low inorg. salt content, subsequently adding $CaCO_3$ and continuing the fermentation.

(G) Low-acid-yielding strains produced notched and highly pigmented conidia. In this and other characteristics they differ from high-yielding strains.

(H) Invertase activity was max. in the p_H range 2·5—4·5, and was maintained at max. level by changing the sugar solution daily.

(I) Use of the same substrate for fungus growth and fermentation caused lower sugar consumption and higher acid yields than when the fungus is transplanted from a nutrient to the fermentation solution.

(J) Presence of H_2SO_4 hastened crystallisation of citric acid and rendered this more complete. Rocking the crystalliser improved the form of the crystals. Sugar and Ca in the solution did not interfere with crystallisation. Fe may be removed from the product with $K_4Fe(CN)_6$ and Pb as PbS.

(K) Ease of utilisation of glucose varied with the strain used and in some cases equalled that of sucrose. Potato molasses was satisfactorily utilised by strains grown on 2—3% glucose media. Wood sugar gives smaller yields (12%) of acid.

(L) Max. yields of citric acid were obtained in media containing 0·104 g. of N per 100 c.c. when NH_4NO_3 was the source. No individual source of N is optimum for all strains of *A. niger*. Low-yielding strains tended to liberate more N into the media than did high-yielding strains, but no direct relationship was apparent.

(M) Acid yields were not increased by exposure of cultures to Ra emanation at the time of inoculation, but rose slightly on exposure to Rn two days after inoculation.

(N) Deep layers of solution are unsuitable for citric acid formation; aëration of such solutions may lower yields. The latter were unaffected by variations of $[CO_2]$ in air above the cultures.

(O) $Na_2B_4O_7$, $KMnO_4$, and Th salts lowered acid yields. Activity of weakening cultures was restored by adding $MgSO_4$.

(P) Germination altered the acid-resistance of spores. Acid-resistance and yield of citric acid were unrelated.

(Q) Peroxidase activity of *A. niger* was max. at p_H 8·2—9·0. Activity and acid yield were unrelated.

(R) Amylase activity of *A. niger* was low but increased somewhat with cultivation.

(S) In fermentation tests with 2 successive solutions, addition of sucrose to both solutions increased the utilisation of glucose and fructose. Addition of glucose to both solutions lowered acid yields, but addition of sucrose to the first and glucose to the second produced large yields. Under conditions favouring gluconic acid formation (low acid and inorg. salt concns.) glucose but not fructose was utilised. Addition of glucose to both solutions had the same effect as addition of sucrose.

(T) Strains of *A. niger* giving poor yields of citric acid contained more fat in mycelium than did high-yielding strains. The latter actively synthesise starch. The starch content of mycelium and yield of citric acid were directly related.

(U) A heat-resistant substance ("*penicillin*") which is unfavourable to citric acid production by *A. niger* occurs among metabolic products of *Penicillium luteum-purpurogenum*.

(V) No direct relation was apparent between yield of citric acid and titratable acidity or oxidation–reduction potential. CH. ABS. (*p*).

Growth-promoting action of amino-acids. II. Effect of β-alanine on growth of *A. niger*. III. Effect of β-alanine, β-alanylglycine, aspartic acid, glycylaspartic acid, and related substances on yeast. N. NIELSEN and V. HARTELIUS (Compt. rend. Trav. Lab. Carlsberg, Sér. Physiol., 1938, **22**, 267—269, 271—280; cf. A., 1937, III, 143).—II. β-Alanine has no growth-promoting action on *A. niger*, and in high concn. is toxic.

III. β-Alanine is toxic to yeast unless asparagine or aspartic acid is present in the medium, when it acts as a growth-promoting agent. β-Alanylglycine, glycylaspartic acid, or β-hydroxypropionic acid cannot replace β-alanine in this respect. β-Alanine and aspartic acid prepared by hydrolysis of β-alanylglycine and glycylaspartic acid show growth-promoting activity. J. N. A.

Difference in growth of pathogenic fungi with variation of medium and oxygen tension. J. W. WILLIAMS (J. lab. clin. Med., 1938, **24**, 39—43).—The atm.–medium relationship determines amount, type of growth, and surface or subsurface tendencies of micro-organisms. Invasion of the medium results from the organism seeking the most favourable atm.–medium relationship for growth and departure of growth. In a similar way invasion of tissues and selectivity for tissues in disease are dependent on a similar relation. C. J. C. B.

Phytoplankton in the Thames. I, II. C. H. RICE (Ann. Bot., 1938, **2**, 539—557, 559—581).—Seasonal variations in distribution of phytoplankton (largely diatoms) at two points in the river are recorded. Water levels, the influx of salt water, and the degree of pollution are influential factors controlling plankton populations. The vernal max. of diatoms is associated with high $[NO_3']$ in the water. A. G. P.

Applicability of nutrient solution purification to study of trace-element requirements of *Rhizobium* and *Azotobacter*. R. A. STEINBERG (J. Agric. Res., 1938, **57**, 461—476).—Purification of nutrient solutions by $MgCO_3$ and $CaCO_3$ (A., 1936, 382) slightly improved the growth of *R. trifolii* and *A. chroococcum*. The need for Fe, Mn, Mo, and Ca is sp. Co-enzyme-*R* is probably essential for the growth of *Rhizobium*. The need of a second essential factor "rhizobiosin" is indicated. A. G. P.

Influence of bios on nodule bacteria. Influence of crude bios preparations on acid production by strains of *Rhizobium trifolii*. D. G. LAIRD and P. M. WEST (Canad. J. Res., 1938, **16**, C, 347—353).—The stimulative effect of yeast extract on *R. trifolii* was also produced by bios IIB,

V, and IIA, the potencies increasing in the order named, and being paralleled by their ability to stimulate hydrolysis of urea by urease. Cryst. vitamin-B_1, nicotinic acid, uracil, choline, β-alanine, carnosine, β-indolyl-acetic and -butyric acids, glutathione, cystine, and vitamin-*C* were inactive in this respect. A. G. P.

Physiology of *Rhizoctonia solani*, Kühn. V. Activity of certain enzymes. H. I. Edwards and W. Newton (Sci. Agric., 1937, **17**, 544—549).—Physiological forms of *R. solani* may be differentiated on the basis of their invertase activity. Catalase, diastase, and invertase activities of culture filtrates were high when peptone was used as sole source of N, and low when gelatin, KNO_3, $(NH_4)_2SO_4$, or urea was used. Supplementing peptone media with KNO_3 or $(NH_4)_2SO_4$ did not further increase enzyme activity. The apparent stimulatory action of peptone may result from its protective effect against hydrolysis of the enzymes. A. G. P.

Formation of organometalloidal and similar compounds by micro-organisms.—See A., 1939, II, 12.

Metabolism of purple bacteria. IV. Rôle of hydrogenase in the metabolism of *Rhodobacillus palustris*. H. Nakamura (Acta Phytochim., 1938, **10**, 259—270; cf. A., 1937, III, 486).—*R. palustris* utilises not only methylene-blue and NO_3' but also O_2, fumaric acid, S, etc. as H acceptors. Acetone-dried preps. will not reduce CO_2 in the presence of H_2 owing to the absence of the requisite pigment (bacteriochlorophyll). P. G. M.

Proteins of the acetic acid bacteria. T. Tadokoro and N. Takasugi (J. Chem. Soc. Japan, 1936, **57**, 346—348).—Isolated water-sol. and 0·1N-NaOH-sol. proteins possessed similar properties, the former having low monoamino- and high free amino- and arginine-N, and the latter, high free amino-N. Both types had higher [α], less S, and more P than plant proteins, and resembled plant prolamines more closely. Ch. Abs. (*p*)

Production of *l*-erythrulose by the action of *Acetobacter suboxydans* on erythritol. R. L. Whistler and L. A. Underkofler (J. Amer. Chem. Soc., 1938, **60**, 2507—2508).—The prep. of *l*-erythrulose in 85% yield from *meso*erythritol by *A. suboxydans* is described. R. S. C.

Dextran produced from sucrose by *Betacoccus arabinosaceus hæmolyticus*. M. Stacey and F. R. Youd (Biochem. J., 1938, **32**, 1943—1945; cf. Carruthers and Cooper, A., 1936, 899; Peat *et al.*, A., 1938, II, 310).—Irregularities of growth are avoided in the large-scale production of the dextran by using a medium containing 20% of sucrose and, as source of accessory growth substance, 5% of maple syrup. Purified dextran, obtained without the use of heat, acid, or alkali, contains 0·25% of N and has $[\alpha]_D^{20}$ +180° in water. N is removed and η greatly decreased by treatment with hot dil. acid. On acid hydrolysis the dextran yields *d*-glucose only. W. McC.

Polysaccharide produced from sucrose by *Betabacterium vermiformé* (Ward-Meyer). W. D. Baker and M. Stacey (Biochem. J., 1938, **32**, 1946—1948).—The organism synthesises the dextran from sucrose only (probably from the glucose moiety), max. yield (equiv. to 20% of the sucrose used) being attained when the sucrose concn. is 20%. The best N source for the growth of the organism is yeast extract (no growth with glucose, fructose, maltose, lactose, glycerol, mannitol, sorbitol, inulin, lævan), but tomato extract, crude vitamin-*B* concentrate, and, when peptone or asparagine is also present, maple syrup and beet sugar molasses also serve well. In sucrose–yeast extract media the yield of dextran is increased slightly by addition of urea, succinamide, or creatinine, but growth is inhibited by glycine, *d*-alanine, *l*-leucine, or malonamide. Although the crude dextran is insol. in water, it is rendered sol. by stirring with conc. HCl, the purified N-free substance having $[\alpha]_D^{20}$ +177° in water. Acid hydrolysis yields glucose (93%). W. McC.

Methylene-blue reduction by and oxidation reduction potential of members of the colon-aërogenes group of bacteria. S. S. Epstein (Iowa State Coll. J. Sci., 1936, **10**, 303—316).—Methylene-blue does not always distinguish between the genera. Reduction of the dye is not invariably paralleled by oxidation–reduction potentials. Eosin–methylene-blue–agar is a good index of the behaviour of the strains in lactose media in respect to oxidation–reduction potentials. A. G. P.

Pathogenic fungi. I. The lipins of *Blastomyces dermatiditis*. R. L. Peck and C. R. Hauser (J. Amer. Chem. Soc., 1938, **60**, 2599—2603).—*B. dermatiditis* yields 2·3—3·0% of phosphatides (*A*) and 5·6—8·2% of acetone-sol. material (*B*). Much (*A*) is lost if the fungus is killed in 1% aq. phenol before extraction. (*A*) contains 68% of ether-sol. material (including 3% unsaponifiable), which by hydrolysis gives ethanolamine, choline, glycerophosphoric acid, carbohydrates (a little), and acids (mainly oleic with some palmitic, stearic, and linoleic). (*B*) contains 8—15·4% of unsaponifiable and 4—4·8% of water-sol. material and gives mainly oleic with some linoleic and small amounts of palmitic and stearic acid and 4—6% of ergosterol. R. S. C.

Induced tissue resistance to *Brucella abortus* infection. E. J. Pullinger (J. Path. Bact., 1938, **47**, 413—422).—The simultaneous injection of *Bact. monocytogenes* and *Br. abortus* increases the resistance of guinea-pigs to *Br. abortus*. The increase is transitory, disappearing in the course of 1—2 weeks, and is thought to be dependent on the protective action of macrophages mobilised in lymphoid tissue in response to the stimulus exerted by *Bact. monocytogenes*. (2 photomicrographs.) C. J. C. B.

Treatment of diphtheria and scarlet fever by active immunisation. K. Sedlacek (Brit. J. Child. Dis., 1938, **35**, 175—182).—Good effects were obtained by the use of a mixture of staphylococcal–streptococcal vaccine with diphtheria anatoxin for diphtheria and with streptococcal toxin for scarlet fever. It is considered that the bacterial suspension of the vaccine absorbs and increases the colloidal micelle of the toxin or anatoxin, thus increasing its antigen content and especially its antigenic anti-

infection influence. The production of antitoxin is very rapid and begins to be operative in not much greater time than in passive immunisation with antitoxin, so that the mixture makes an excellent prophylactic injection for individuals exposed to infection. Immunity lasts for some weeks. C. J. C. B.

Absorption of refined diphtheria antitoxin in guinea-pigs. A. T. GLENNY and M. LLEWELLYN-JONES (J. Path. Bact., 1938, **47**, 405—411).—After subcutaneous injection of refined diphtheria antitoxin (R.D.A.), guinea-pigs tolerate without reaction the intracutaneous injection (½—4 hr. later) of 2·2—3·0 times as much toxin as those injected with diphtheria antitoxin (C.D.A.) conc. by pptn. with $(NH_4)_2SO_4$. Guinea-pigs injected intravenously with R.D.A. tolerate without reaction the intracutaneous injection (½—1 hr. earlier) of 1·4—1·9 times as much toxin as those injected with C.D.A. Guinea-pigs injected subcutaneously with R.D.A., together with a great excess of non-antitoxic protein, tolerate 2 hr. later, 4 times as much toxin as control C.D.A. pigs and their blood antitoxin is twice as great. The survival rate of pigs treated with R.D.A. after intraperitoneal infection with diphtheria is greater than with C.D.A. The Schick-negative state lasts longer in guinea-pigs after injection of R.D.A. than after C.D.A.

C. J. C. B.

Physical chemistry of the proteolytic disintegration of anti-diphtheria serum. F. MODERN and G. RUFF (Anal. Asoc. Quím. Argentina, 1938, **26**, 57—85).—The method of Parfentjev (B., 1937, 1136) for the purification of diphtheria antitoxin by pepsin is not improved by addition or replacement of this by trypsin or papain. Inactive proteins can be selectively adsorbed by $Ca_3(PO_4)_2$ gel. The influence of changes of p_H and temp. on the proteolysis by pepsin is recorded. F. R. G.

Comparative titration of anti-dysentery, anti-Shiga serum by the flocculation method and the "standard" international method on mice. G. ISTRATI and A. OLARU (Compt. rend. Soc. Biol., 1938, **129**, 399—402).—The flocculation method yields results which vary within narrow limits from those obtained by the "standard" method. H. G. R.

Treatment of antitoxins and the like.—See B., 1938, 1503.

Serological differentiation of enterococci. A. GRUMBACH and A. SCHNETZ (Schweiz. Z. allg. Path. Bakt., 1938, **1**, 59—71).—Of 171 cultures of enterococci obtained from miscellaneous human material 156 could be grouped with the help of 7 immune sera. These groups also enclosed most of the types described by K. Meyer, Takeda, and Shigeno. E. M. J.

***Gonococcus* and gonococcal infections. Report of committee for survey of research.** ANON. (Amer. J. Syphilis, 1936, **20**, 9—179).—The review includes consideration of growth requirements, biochemical activities, composition, viability, and resistance of the organism to bactericides. A. G. P.

Growth of *Leptospira ictero-hæmorrhagiæ* on the chorio-allantoic membrane of the chick embryo. G. MORROW, J. T. SYVERTON, W. W. STILES, and G. P. BERRY (Science, 1938, **88**, 384—385).—This spirochæte can be cultivated successfully in the chick embryo, and virulence was not diminished after 20 serial passages through embryonic tissues.

W. F. F.

Separation of bacteria according to their [electric] charge. Dissociation of *B. paratyphosus* B. N. CHOUCROUN (Compt. rend. Soc. Biol., 1938, **129**, 487—489).—The two strains obtained by Seigneurin (A., 1938, III, 851) have a strong and a weak negative charge respectively, the latter being classed as positive owing to an error in observation. H. G. R.

Action of vitamin-*C* on the toxin of *B. perfringens*. A. B. SOUTO and C. LIMA (Compt. rend. Soc. Biol., 1938, **129**, 76—79).—Vitamin-*C* is inactive against the toxin *in vitro*, but increases the resistance of mice to the toxin and has a curative action if given not longer than 1 hr. after the toxin.

H. G. R.

Mechanism of lysis of *Pneumococcus* by bile salts. (A) **Antigenic properties of *Pneumococcus* autolysin.** (B) **Sensitivity of *Pneumococcus* autolysin to ultra-violet rays.** S. A. STURDZA (Compt. rend. Soc. Biol., 1938, **129**, 410—412, 412—413).—(A) The serum of animals immunised with living *Pneumococcus* contains a sp. autolytic anti-enzyme which inhibits lysis of *Pneumococcus* by bile salts.

(B) The autolysin is rapidly destroyed by ultra-violet irradiation. H. G. R.

Liberation of histamine by staphylococcal toxin and mercuric chloride. W. FELDBERG and C. H. KELLAWAY (Austral. J. Exp. Biol., 1938, **16**, 249—259).—Incubation of staphylococcal toxin with egg-yolk or with lecithin caused no formation of lysocithin or of a substance causing slow contraction of the jejunum (guinea-pig). Staphylococcal toxin has a stimulating action on the jejunum followed by decreased excitability of the muscle to histamine. By repeated administration of toxin, the gut is desensitised. The injection of toxin into the pulmonary artery of the perfused lung of the dog causes swelling and appearance in the perfusate of protein, histamine, and a substance which causes slow contraction of the jejunum. The intraportal injection of toxin into the perfused liver of the dog causes depigmentation and swelling. Protein, histamine, a substance causing slow contraction of the jejunum, and cellular *débris* appear in the perfusate. The cellular *débris* is rich in histamine, which can be brought into solution by boiling or by the addition of lysocithin or of cobra venom. In the latter case, a slow contracting substance is formed. $HgCl_2$ injected intraportally or into the hepatic artery of the perfused liver of the dog causes coagulative changes in the parenchyma and the appearance of protein and substance which causes slow contraction of the jejunum. The perfusate contains heavy metal in amounts depending on the protein concn. D. M. N.

Means of recognising *in vitro* if Stefansky's bacillus is dead or alive. R. O. PRUDHOMME (Ann. Inst. Pasteur, 1938, **61**, 512—518).—Living rat leprosy bacilli, recovered from experimental lesions

and freed from all traces of tissues by repeated washing and centrifuging, decolorise Na 2-sulpho-1-naphthol-indo-2 : 6-dibromophenol, *o*-cresol- and *o*-chlorophenol-indo-2 : 6-dichlorophenol. The effect is not obtained when the bacilli are killed by heating at 100° for 15 min., by adding 1% formalin for 15 min., or by the action of ultra-violet light. It is not due to tissue particles present in the bacterial suspension. The method is regarded as reliable for distinguishing between living and dead rat leprosy bacilli. G. P. G.

Differentiation of two distinct serological varieties of streptolysin, streptolysin-*O* and streptolysin-*S*. E. W. Todd (J. Path. Bact., 1938, **47**, 423—445).—Group *A* hæmolytic streptococci produce two distinct varieties of streptolysin, streptolysin-*O* which is O_2-sensitive and -*S* which is serum-extractable. They are neutralised by unrelated separate antibodies. Reduced filtrates from cultures in glucose broth contain streptolysin-*O* but not -*S*. Growth of group *A* strains in sugar-free broth or in serum broth, and the hæmolytic extracts prepared by Weld's technique are all mixtures of the 2 lysins. All group *A* hæmolytic filtrates, including serum-streptolysin, serum-free streptolysin, and Weld's hæmotoxin, when inoculated into animals increase the antistreptolysin-*O* titre of the serum but not the antistreptolysin-*S* titre; hence streptolysin-*O* is antigenic but -*S* is not, when separated from hæmolytic streptococci. Antibodies to both lysins are formed when animals are inoculated with living cultures of group *A* streptococci. Patients infected with hæmolytic streptococci do not usually acquire high antistreptolysin-*S* titres, although their antistreptolysin-*O* titres may be considerably raised. C. J. C. B.

Active immunisation against tetanus. J. S. K. Boyd (J.R.A.M.C., 1938, **70**, 289—307).—Inoculation with tetanus toxoid–antitoxin floccules results in negligible quantities of serum antitoxin, but establishes a basal immunity. Inoculation with two doses of 1 c.c. of tetanus toxoid, at an interval of 6 weeks, produces a serum antitoxin concn. well above the tetanus immunity level. Neither floccules nor toxoid produce a general or local reaction. W. F. F.

Laboratory control of tetanus prophylaxis. A. T. Glenny and M. F. Stevens (J.R.A.M.C., 1938, **70**, 308—310).—Methods are described for testing the immunising power of tetanus prophylactics in guinea-pigs and for titrating small quantities of human tetanus antitoxic sera in the mouse. W. F. F.

Inactivation of tetanus toxin by keten. H. Goldie and G. Sandor (Compt. rend. Soc. Biol., 1938, **129**, 454—457).—Keten inactivates most of the toxicity without affecting the antigenic power, the loss of toxicity being proportional to the no. of primary amino-groups blocked. It is not possible to obtain a completely detoxicated antigen analogous to the anatoxin. H. G. R.

Oxygen metabolism of tubercle and of certain acid-fast bacilli. T. Uga (Japan. J. Exp. Med., 1935, **13**, 167—222).—Optimum [O_2] for growth, the R.Q., and the O_2 consumption at various levels of [O_2] for human, bovine, and avian tubercle bacilli are examined. Ch. Abs. (*p*)

Antigenic functions of tubercle bacilli fractions. Y. Aoki (Japan. J. Exp. Med., 1935, **13**, 261—274).—Complement-fixing substances of acid-fast bacilli contain a fraction (*E*) which includes water-sol. substances, polysaccharides, and alcohol–ether residues, and another (*F*) comprising fats, phosphatides, and a $CHCl_3$-sol. "growth factor." Tubercle bacillus antigens are distinguished by the proportions of *E* and *F* present. Ch. Abs. (*p*)

The acid–alcohol resistance of paratubercular bacilli. F. van Deinse and E. Hooghiemster (Compt. rend. Soc. Biol., 1938, **129**, 384—386).—Resistance to alcohol of an acid-fast pathological organism is not a definite indication of *B. tuberculosis*. Some strains of paratubercular bacilli resist prolonged action of HNO_3 (1 : 3) and abs. alcohol and some saprophytic organisms, decolorised by acid, become red on treatment with 96% alcohol, probably due to traces of aldehyde. H. G. R.

New tuberculin patch test. W. D. Steward (J. Pediat., 1938, **13**, 510—512).—90 of 96 patients (chiefly children) in a sanatorium showed positive patch and Mantoux tests while 6 showed positive patch and negative Mantoux tests. C. J. C. B.

Serum therapy of typhoid. A. Felix (Schweiz. Z. allg. Path. Bakt., 1938, **1**, 50—58).—A review. E. M. J.

Retention of life capacity of bacteria of the typhoid–paratyphoid group in concentrated solutions of common salt at various temperatures. V. N. Azbelev (Voprosui Pitaniya, 1935, **4**, No. 3, 61—71).—In 29% aq. NaCl the organisms are destroyed in 1—2 days at 37° but live for 4—8 months at 6—12°. The pathogenicity of these and other bacteria is not lowered by exposure to the solution at room temp. for several months. Ch. Abs. (*p*)

Immunological properties of the carbohydrate–lipin complexes extracted from typhoid bacilli. D. Combiesco, C. Combiesco, and E. Soru (Compt. rend. Soc. Biol., 1938, **129**, 413—416).—The extract contains *H*- and *O*-antigen but, if the bacilli are previously heated at 100° for 2 hr., only the somatic *O*-antigen is obtained. H. G. R.

Effect of vitamin-*C* on the toxin of *Vibrion septique*. A. B. Souto and C. Lima (Compt. rend. Soc. Biol., 1938, **129**, 79—82).—Vitamin-*C* has a neutralising action on the toxin which increases with the time of contact. It increases the resistance of mice and has a curative action if given not longer than 1 hr. after the toxin. H. G. R.

Effect of high temperatures on rapidly dried viruses of Aujeszky's disease and of equine encephalomyelitis. P. Remlinger and J. Bailly (Compt. rend. Soc. Biol., 1938, **129**, 460—462).—The rapidly dried virus of Aujeszky's disease is resistant at 102—104° for 2 min. and that of equine encephalomyelitis at 111—112° for 5—10 min. H. G. R.

Equine encephalomyelitis produced by inoculation of human encephalitis virus. H. W.

Schoening, L. T. Giltner, and M. S. Shahan (Science, 1938, **88**, 409—410).—A sample of one strain of the virus described by Fothergill *et al.* (New Engl. J. Med., 1938, **219**, 12, 411) was cultured and injected into horses and guinea-pigs. Typical equine encephalomyelitis was seen. W. F. F.

Behaviour of virus of yellow fever in the mosquito, *Aëdes triseriatus*. B. L. Bennett, F. C. Baker, and A. W. Sellards (Science, 1938, **88**, 410—411).—The virus of yellow fever was transmitted to monkeys (*Macacus rhesus*) by *A. triseriatus*, and there was some evidence of attenuation in this mosquito. W. F. F.

Persistence of the virus of herpes in rabbits immunised with living virus. J. R. Perdrau (J. Path. Bact., 1938, **47**, 447—455).—A fatal spontaneous onset of acute herpetic encephalitis was observed in some rabbits immunised with living virus after as long a period as 6 months of proved immunity. Active free virus was present in the brains of these rabbits, instead of being "masked" as in rabbits suffering from chronic herpetic encephalitis. C. J. C. B.

Aucuba mosaic virus protein from diseased, excised tomato roots grown *in vitro*. W. M. Stanley (J. Biol. Chem., 1938, **126**, 125—131).—A macromol. virus protein essentially the same as that obtained from diseased tomato plants grown under ordinary conditions has been isolated by differential centrifuging from the juice of aucuba mosaic diseased tomato roots grown *in vitro*. The amount of protein in roots grown *in vitro* is slightly less than that in roots and less than 20% of that in leaves of greenhouse plants. The formation of the protein is not directly dependent on the chlorophyll mechanism of the plant. J. N. A.

Potato virus "*X*"; its strains and reactions. R. N. Salaman (Phil. Trans., 1938, **B**, **229**, 137—217).—At least 6 strains of the virus "*X*" are differentiated. In the field, potato plants are usually infected by two or more strains, although single-strain infections with the mild X^H and the virulent X^N strains are recorded. Infection by any strain causes the formation in host tissues of inclusion bodies which vary in appearance but not in character or frequency in relation to the virulence of the strain. All strains consist of similar sized particles, exhibiting identical serological reactions and producing in plants the same nucleoprotein. The latter in solution exhibits anisotropy of flow. Reactions resulting from mixed strains conform to actual differences in virulence of the strains. Conversion of one strain into another, whether designed or accidental, is always in the direction of higher to lower virulence. A. G. P.

Growth factors for micro-organisms. A. Lvov (Ann. Inst. Pasteur, 1938, **61**, 580—617).—A review. G. P. G.

Growth factors and toxigenicity. P. Bordet (Ann. Inst. Pasteur, 1938, **61**, 618—634).—A review correlating the production of bacterial toxins with the composition of the culture medium on which the bacteria are grown. G. P. G.

Relations between germicides and bacteria; germicidal action. C. Miyakawa (Japan. J. Exp. Med., 1935, **13**, 661—722).—Absorption is concerned in the combination of available Cl_2 with bacteria; subsequently NH_2Cl is produced by reaction with cell constituents. The latter reaction occurs only in the more resistant organisms. With more susceptible species sterilisation by Cl_2 depends largely on oxidation and on the action of Cl′. Ch. Abs. (*p*)

Accuracy of the plate count of suspensions of pure cultures of bacteria in sterile soil. M. Sutherland and N. James (Canad. J. Res., 1938, **16**, C, 305—312).—A statistical study. A. G. P.

Improved mantle for bacteria-proof filter candles. R. R. Henley (J. lab. clin. Med., 1938, **24**, 78—80). C. J. C. B.

Non-toxicity of "contra-antigens." J. Loiseleur (Compt. rend. Soc. Biol., 1938, **129**, 358—360).—"Contra-antigens" are devoid of the toxicity of the original antigens. H. G. R.

Specific antitoxic power of venom "contra-antigens." J. Loiseleur (Compt. rend. Soc. Biol., 1938, **129**, 440—443).—Venom "contra-antigens" have a sp. antitoxic power towards the venom from which they are derived comparable with that of the antitoxins. H. G. R.

Antitoxic power of glutathione. L. Binet and L. Perel (Compt. rend. Soc. Biol., 1938, **129**, 447—448).—Cobra venom loses its toxicity for *Phoxinus lævis* by pretreatment with reduced glutathione or cysteine hydrochloride. H. G. R.

Effect of keten on anti-sheep hæmolysin or horse serum. H. Goldie and G. Sandor (Compt. rend. Soc. Biol., 1938, **129**, 391—395).—Keten causes a gradual decrease in the hæmolytic power. This becomes apparent when 35% of the amino-groups are acetylated, reaches a max. at 75%, and confers antialexic properties on the serum-proteins. H. G. R.

Preparation of formol toxoid and alum-precipitated toxoid. J. G. C. Campbell (J. R.A.M.C., 1938, **70**, 311). W. F. F.

Allergy and immunity produced by dead bacilli suspended in vegetable oils. A. Saenz (Ann. Inst. Pasteur, 1938, **61**, 579).—A revision of statements made by Coulaud (A., 1938, III, 1060) in reference to the author's work. G. P. G.

(w) PLANT PHYSIOLOGY.

Measurement of assimilation and translocation in tomato seedlings under conditions of glasshouse culture. B. D. Bolas, R. Melville, and I. W. Selman (Ann. Bot., 1938, **2**, 717—728).—Seasonal variations in assimilation rates (min. in November) of the seedlings are shown. Under conditions described light intensity in the range 45—1440 ft.-candles does not affect assimilation but temp. (15—28·5°) and assimilation are directly correlated. The ratio gain in wt. of stem + root/whole plant is a measure of the movement of assimilate into stem and root and reaches a max. in winter months. A. G. P.

(A) Adhesion of potato-tuber cells as influenced by temperature. (B) Permeability of potato-tuber tissue as influenced by heat. C. J. Personius and P. F. Sharp (Food Res., 1938, **3**, 513—524, 525—538).—(A) The tensile strength of the raw tissue is influenced only slightly, if at all, by variety or ordinary storage. The inner medulla has a higher tensile strength than the outer. At each temp. (45—70°) the cementing material is weakened to a definite extent, further weakening occurring only with rise in temp. Complete weakening is effected by holding at 75°. No difference was observed between soggy and mealy potatoes in the adhesion of the cells of the raw or cooked tissue. Separation of the cells is not dependent on starch gelatinisation.

(B) In normal cooking permeability (as determined by electrical resistance) increases most sharply slightly above 60°. The tissue becomes freely permeable after the passage, for a few short intervals, of 110-v. a.c., the temp. not rising above 30°. The effect is probably due to local heating of the semi-permeable membranes; treated tubers darken when a cut surface is exposed to the air. The adhesion of the cells is not altered. E. C. S.

Correlation between self-breaking and blue nuclei among certain commercial tulip varieties. F. P. McWhorter (Science, 1938 **88**, 411).—A study of nuclear pigmentation in tulips. W. F. F.

Chemical composition and physical properties of plant tissue fluids. II. Effect of mineral fertilisers on tissue fluids of ragi (*Eleucine coracana*, L.). S. Rajagopal and A. V. V. Iyengar (J. Indian Inst. Sci., 1938, **21**, A, 103—113).—On P-deficient soils application of $NaNO_3$ diminished the % of dry matter in ragi plants, and the total solids, ash, P, and K contents, and acidity of the expressed sap. Treatment of soil with P + N increased the P content of the sap and accelerated the mobilisation of P at the growing points. Further addition of K produced plants of increased dry wt. and top/root ratio and in which the saps contained higher total solid but lower ash and N contents and p_H. A. G. P.

Iron salts given to maize in water culture. C. Olsen (Compt. rend. Trav. Lab. Carlsberg, Sér. Chim., 1938, **21**, 301—312).—Only small amounts of Fe are necessary in a nutrient medium at p_H 4 for optimum growth of maize. Large amounts of Fe have a toxic action. Dry matter production decreases markedly with increase of Fe when $FeSO_4$ is used; increasing amounts of $Fe_2(SO_4)_3$ and Fe^{III} citrate also decrease growth. The amount of Fe in leaves and stems increases with increasing addition of Fe and especially when $FeSO_4$ is used. In media of p_H 7, small amounts of Fe produce only small and chlorotic plants, and large amounts of Fe are necessary for optimum growth. Under the latter conditions considerably more dry matter is produced than under optimum conditions at p_H 4. Large amounts of $FeSO_4$ and Fe^{III} citrate, but not $Fe_2(SO_4)_3$, are toxic. Fe^{III} citrate is a specially suitable source of Fe for plants in water culture but it should be added at intervals. For mustard $FeSO_4$ as well as Fe citrate is necessary. J. N. A.

Distribution of phosphorus in the germinating soya bean. W. Y. Lee and S. L. Li (Chinese J. Physiol., 1938, **13**, 257—264).—90% of the P is acid-sol. After 15 days' germination in the dark, the total dry matter, fat, and lipin-P are diminished and the total and acid-sol. P unchanged but transferred from cotyledons to embryo. N. H.

Does the nitrogen, phosphorus, and potassium content of the leaves of a vine bough differ with the load of fruit? H. Lagatu and L. Maume (Compt. rend., 1938, **207**, 552—555; cf. A., 1933, 874).—In the 2 leaves at the base of branches bearing 2, 1, and 0 bunches of grapes the N + P + K content increases with the fertiliser application, the effect being least with the heaviest crop. The increase in K is least with the heaviest crop and greatest with no crop; N vals. were in the reverse order. The changes are most marked in well-nourished vines. J. L. D.

Nitrogen and phosphorus in oranges. Nitrogen and phosphorus content and nitrogen/phosphorus ratio of orange juice: relation to size of crop. F. G. Anderssen and A. C. Bathurst (Farming in S. Africa, 1938, **13**, 349—352).—Max. yields of Navel oranges are associated with optimum levels of N and P and an optimum N/P ratio (approx. 9) in the juice. When the N content exceeds the optimum, *e.g.*, after heavy N manuring, the P content of juice and yields of fruit decline. A. G. P.

Availability of different forms of nitrogen to a green alga. C. A. Ludwig (Amer. J. Bot., 1938, **25**, 449—458).—*Chlorella* readily utilises HNO_3 and NH_4 salts of inorg. and of certain org. acids. The efficiency of NH_4 lactate, oxalate, succinate, tartrate, and citrate exceeded and that of NH_4 formate equalled that of KNO_3. NH_4 acetate was inferior and NH_4 propionate was not utilised. Acetamide, guanidine carbonate, uric acid, KNO_2 (dil.), certain NH_2-acids, and peptone were suitable N sources; NH_2OH and glucosamine hydrochlorides did not provide available N; diphenylamine, *p*-aminoazobenzene, azobenzene, and diazoaminobenzene were either toxic or non-assimilable. Ca is not essential for growth of *Chlorella* but facilitates the utilisation of NH_4 salts. A. G. P.

Nitrogen distribution in lucerne hay cut at different stages of growth. M. F. Clarke (Canad. J. Res., 1938, **16**, C, 339—346).—The method of Wasteneys and Borsook (A., 1925, i, 97) is applied to the examination of plant material. The % of total N in the hay declines with advancing maturity. The total N in second and third is greater than in first cuttings at corresponding growth stages. The proportion of sol.: total N is considerable and increases from the bud stage to the 10-blossom stage and declines subsequently. Variations in the sol. N fractions in the early stages of flowering indicate a decomp. of complex N materials to produce readily translocated N compounds for utilisation in flower formation. A. G. P.

Varietal differences in barleys and malts. I. Nitrogen distribution among protein fractions of barley. J. A. Anderson and C. A. Ayre (Canad. J. Res., 1938, **16**, C, 377—390).—A positive

correlation is established between total and alcohol-sol. protein-N both within and between varieties. In individual varieties, salt-sol. N decreases, alcohol-sol. N increases, and insol. N remains practically const. as the total N val. increases. Alcohol-sol. protein-N was higher and insol. protein-N lower in 2-rowed than in 6-rowed varieties. Smooth-awned 6-rowed varieties contained less salt-sol. N and more insol. N than did rough-awned 6-rowed varieties. 2-rowed varieties yielded higher, and smooth-awned varieties lower, extracts than did the rough-awned 6-rowed varieties. A. G. P.

Nitrogen metabolism of plants. II. Interrelations among soluble nitrogen compounds, water, and respiration rate. J. G. Wood and A. H. K. Petrie (Ann. Bot., 1938, **2**, 729—750; cf. A., 1938, III, 355).—In *Phalaris tuberosa* and *Lolium multiflorum* increase in NH_3 content did not raise the p_H of the sap. The curve relating residual amino-N and NH_3-N is concave to the NH_3 axis. The amide–NH_3 curves were similar. These relationships are discussed. With decrease in water content, respiration rates increase to a definite level and subsequently decline. A. G. P.

Relationship between nitrogen compounds of various seeds of crops and diastatic power of their malts. I. Kaoliang. II. Beans, especially mung beans. H. Katagiri and N. Mugibayasi (J. Agric. Chem. Soc. Japan, 1938, **14**, 1237—1242, 1243—1247).—I. The forms of N, and saccharifying and liquefying activity of germinated (28—29 hr. at 25°) and ungerminated seeds of various kinds of kaoliang have been determined. The diastatic activity of germinated seeds is about 2—4 times that of ungerminated seeds. The diastatic activity of germinated seeds can be determined from the amount of albumin of the ungerminated seeds which is coagulated from the 5% K_2SO_4 extract by heating at 82° at p_H 4·6.

II. Maltase, saccharifying, and liquefying activities of germinated and ungerminated seeds (including pea, Azuki, mung, and mature and green soya beans) have been determined. Maltase and the liquefying enzyme are not present in ungerminated seeds, whilst maltase is present in germinated mung and Azuki beans but absent in seeds of mature soya beans. Germinated mung seeds have the greatest liquefying activity. During germination, globulin-N of all seeds decreases whilst non-protein-N increases. The N distribution in the ungerminated seeds is described. J. N. A.

Glyoxylic ureides in the evolution of the flower and of the fruit of *Acer pseudoplatanus*, L. A. Brunel and R. Echevin (Compt. rend., 1938, **207**, 592—594).—The buds contain 21·85% of sol. N. A few days after they open, the flowers contain much sol. N, largely ureides distributed mainly in the petioles and pericarp. From October to November, when the accumulation of food reserves in the seeds is slowing down, the allantoic acid, amide, and glyoxylic ureide content of the pericarp decreases, whereas the protein-N of the seed increases. Before the fruit matures all structures except the seed are richer in allantoic acid than in allantoin and have a high content of allantoinase; at maturity the petioles and pericarp contain more allantoin. Urease, but no allantoicase, is present (cf. A., 1933, 648). Allantoin and allantoic acid probably play a part in the breakdown and synthesis of proteins. J. L. D.

Distribution of uncombined hexosamine in pineapple plants supplied with either ammonium sulphate or calcium nitrate salts. C. P. Sideris, H. Y. Young, and B. H. Krauss (J. Biol. Chem., 1938, **126**, 233—239).—Hexosamine (determined by a modification of the method of Elson and Morgan) is present in greater amounts in the mature leaves of plants grown in solutions containing NH_4 salts than in those grown in nitrate. The young leaves contain approx. the same amount of hexosamine in either case. E. M. W.

Seasonal variations in carbohydrate and nitrogen content of roots of bearing pecan trees. C. L. Smith and J. G. Waugh (J. Agric. Res., 1938, **57**, 449—460).—The starch content of the roots was max. in autumn and min. in winter, the actual amounts present depending on growth rate, age, and condition of trees, and the size and stage of development of the nut crop. Growth and nut formation rapidly diminish starch reserves. The proportion of reducing sugars was low at all seasons. Non-reducing sugars were present in larger amounts which varied in parallel with starch contents. The total N contents of roots diminished rapidly during spring growth and increased during the dormant period. Vals. were relatively low throughout and were largely independent of dry matter contents. A. G. P.

Organic acids of rhubarb (*Rheum hybridum*). III. Behaviour of organic acids during culture of excised leaves. G. W. Pucher, A. J. Wakeman, and H. B. Vickery (J. Biol. Chem., 1938, **126**, 43—54; cf. A., 1937, III, 161).—Malic acid, but not citric or oxalic acid, is an important intermediate product in the metabolism of carbohydrates and org. acids of excised rhubarb leaves. The org. acid content of the leaves is controlled by conditions which affect the synthesis of malic acid. P. G. M.

Variability of protein content of plants. E. Rauterberg (Ernähr. Pflanze, 1938, **34**, 296—300).—The importance of determining individual N fractions in plant-proteins in studies of N metabolism is emphasised. Effects of K and N fertilisers on the yield and character of proteins in plants are examined. K fertilisers tend to lower the proportion of α-amino-acids in both protein and non-protein fractions. A. G. P.

Vernalisation of cereals. III. Use of anaërobic conditions in the analysis of the vernalising effect of low temperature during germination. F. G. Gregory and O. N. Purvis (Ann. Bot., 1938, **2**, 753—764; cf. A., 1938, III, 357).—Anaërobic conditions resulted in "devernalisation" of spring rye with increase in leaf no. and delayed anthesis. Such plants were revernalised by low temp. Anaërobic conditions completely prevent vernalisation even after 12 weeks at 1°. The $[O_2]$ required for complete vernalisation exceeds $\frac{1}{500}$ of normal. Effects of alternations of temp. and of exposures to air and N_2 are examined. A. G. P.

Interaction of light intensity and nitrogen supply in growth and metabolism of grasses and clover (*Trifolium repens*). II. Influence of light intensity and nitrogen supply on leaf production by frequently defoliated plants. G. E. Blackman and W. G. Templeman (Ann. Bot., 1938, **2**, 765—791; cf. A., 1938, III, 855).—In full daylight the effects of $(NH_4)_2SO_4$ on growth of *Agrostis tenuis* and *Festuca rubra* were greater than those of $Ca(NO_3)_2$ in 2 cases out of 5. With lowered light intensity (0·6 of daylight) the greater effect of $(NH_4)_2SO_4$ was more definite. With an intensity of 0·37—0·44 of full daylight both salts reduced leaf production, the effect of $Ca(NO_3)_2$ being the greater. Response of *Trifolium repens* to the N sources diminished with light intensity but no difference in effects of the two salts was apparent. In repeatedly defoliated plants, the influence of light intensity on response to N depended on the frequency of defoliation. In legume–grass associations the balance of species is largely dependent on competition for light. A. G. P.

Effects of sodium cyanide and methylene-blue on oxygen consumption by *Nitella clavata*. E. Ross (Amer. J. Bot., 1938, **25**, 458—463).—Inhibition of respiration by various concns. of NaCN and the accelerating effect of methylene-blue are examined. The mechanism of the antagonistic action of these substances is discussed. A. G. P.

Effect of alcohol on respiratory rate of leaves. U. N. Chatterji (Proc. Nat. Acad. Sci. India, 1938, **8**, 18—28).—Introduction of alcohol into leaves of *Eugenia jambolana* accelerates respiration for a period. Amounts of alcohol producing max. initial increase in CO_2 production maintain the increase for a relatively short time. The period of increase is prolonged when the initial change is less marked. A. G. P.

Effect of the pyrrole nucleus on chlorophyll formation. V. Zanotti (Boll. Chim.-farm., 1938, **77**, 609—610).—A review of the work of Lodoletti and of Mameli which indicates that pyrrole and $Mg^{\cdot\cdot}$ are essential for chlorophyll formation and that Fe is essential only for the catalytic formation of the pyrrole nucleus. F. O. H.

Carbon dioxide utilisation by lower algæ in the presence of hydrogen sulphide. H. Nakamura (Acta Phytochim., 1938, **10**, 271—281).—Photosynthesis in the presence of H_2S yields formaldehyde and S. Assimilation by *Pinnularia* and *Oscillatoria* is not affected by H_2S. P. G. M.

Effect of hydrocyanic acid on photosynthesis of *Scenedesmus*. H. Nakamura (Acta Phytochim., 1938, **10**, 313—316).—The respiratory processes of *Scenedesmus* are almost completely inhibited in the presence of 0·001M-HCN. P. G. M.

Minor elements and the pine. J. Hearman (Austral. Forestry, 1938, **3**, 24—27).—External application of aq. $ZnCl_2$ restored "rosetted" trees to normal growth. Injected Na molybdate, $MnSO_4$, $CoCl_2$, H_3BO_3, or $FeSO_4$ produced stimulatory effects less marked and more slowly exhibited than those obtained with Zn salts. A. G. P.

Effect of sterilised solutions of tryptophan on seedlings from ripe, non-germinated seeds. T. Solacolu, M. Constantinesco, and D. Constantinesco (Compt. rend. Soc. Biol., 1938, **129**, 403—405; cf. A., 1936, 1433).—Heat-sterilisation of aq. tryptophan produces growth-promoting substances, the quantity depending on the time of heating and the concn. of tryptophan. H. G. R.

Development of successive leaves in aster with respect to relative growth, cellular differentiation, and auxin relationships. A. L. Delisle (Amer. J. Bot., 1938, **25**, 420—430).—The character and pattern of successively developing leaves are directly related to the concn. and distribution of auxin in the plant. A. G. P.

Influence of 3-indolylacetic acid on respiration and growth of intact seedlings. R. Pratt (Amer. J. Bot., 1938, **25**, 389—392).—Soaking seeds in aq. heteroauxin (0·1—100 p.p.m.) did not affect their respiration rates in the period immediately after soaking but caused a marked acceleration as the seedlings began to grow. The growth rate was depressed. Max. effects were obtained with heteroauxin solutions containing 50 p.p.m. at p_H 4·2. Accelerated respiration was entirely due to heteroauxin and was not a p_H effect. A. G. P.

Nature of the stimulus of heteroauxins in the formation of roots or buds at any selected part of a shoot. P. Chouard (Compt. rend., 1938, **207**, 597—599; cf. A., 1938, III, 770).—3-Indolylacetic and -butyric acid, and 1-naphthylacetic acid are used (method described) to produce roots or buds at will. Usually the roots form before the buds. The first effect is the formation of undifferentiated tissue, the organisation of which into roots and buds is effected by agents other than auxins. J. L. D.

Abnormal meiotic processes induced by acenaphthene. D. Kostov (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 169—171).—Acenaphthene disturbs normal meiotic as well as mitotic processes. In various pollen species exposed to acenaphthene spindle formation was irregular and bivalent chromosomes did not assume the normal polar arrangement. A. G. P.

Differentiation of heterochromatic regions during meiosis. D. Kostoff (Nature, 1938, **142**, 577—578). W. F. F.

Effect of animal hormones on general growth of castor-oil plants and formation of experimental tumours by *Bacterium tumefaciens*. O. Verona and M. L. Paganini (Arch. Ist. Biochim. Ital., 1938, **10**, 319—324; cf. A., 1937, III, 502).—Aq. glycerol extracts of thyroid, adrenal, and anterior pituitary glands and other hormone preps. have an inhibitory action on the growth of castor-oil plants but have no significant effect on the growth of tumours produced in the plant by *B. tumefaciens*. F. O. H.

Wood decay. VIII. Effects of addition of glucose, and glucose with asparagine, on rate of decay of Norway pine sapwood by *Lenzites trabea* and *Lentinus lepideus*. H. Schmitz and F. Kaufert (Amer. J. Bot., 1938, **25**, 443—

448; cf. A., 1937, III, 445).—Addition of moderate amounts of glucose or glucose–asparagine to wood increases the rate of destruction by *L. trabea* but retards that by *L. lepideus*. The latter temporarily utilises the sugar rather than wood substance. A. G. P.

Spike disease in sandal (*Santalum album*, L.). XIX. Physiological and physical methods of characterising the disease. A. V. V. Iyengar (J. Indian Inst. Sci., 1938, **21**, A, 89—101).—Diseased plants were characterised by a low Ca/N ratio. The N/ash ratio varied with the stage of the disease and could not be used in diagnosing diseased plants. The latter consistently produced leaves in which the ratio length/breadth was less than that of healthy leaves. A. G. P.

Inactivation of seed-borne plant pathogens in soil. A. W. Henry and J. A. Campbell (Canad. J. Res., 1938, **16**, C, 331—338).—Flax seed infected with *Polyspora lini* or *Colletotrichum lini* produced more diseased plants on a sterilised than on a natural soil, probably as a result of the antibiotic action of soil organisms on the pathogens. Certain smut fungi are not thus affected. A. G. P.

(x) PLANT CONSTITUENTS.

Analysis of fruit and leaves of *Bauhinia reticulata*, D.C. Presence of large amounts of *l*-tartaric acid. J. Rabaté and A. Gourévitch (J. Pharm. Chim., 1938, [viii], **28**, 386—397; cf. A., 1938, III, 771).—*l*-Tartaric acid is prepared from the K acid tartrate extracted from the fruit and leaves. Some exists in the leaves as the Ca salt. J. L. D.

Formation of oil of caraway. W. Sandermann (J. pr. Chem., 1938, [ii], **151**, 160—166).—In the early stages of development caraway fruits contain much water and, calc. on dried material, relatively much oil. With increasing ripeness the dry wt. increases owing to the marked dehydration. The proportion of oil is almost const. Confirmation is not afforded of Kofler's observation that the content of essential oil increases during storage. According to the carvone content the oil is formed long before the harvest and subsequently does not undergo any marked alteration. The oil from the plants still blossoming or immediately after blossoming contains about 25% of limonene; a much smaller proportion of this and a much larger proportion of carvone are found in the oil from the green fruits. Cadinene is also recognised. This is not present in normal oil of caraway but is present only (to the extent of about 50%) in the stem oils. Biogenetically carvones can be obtained only from limonene; carveol is formed intermediately. It is peculiar that the content of carvone never exceeds 60% (in a single instance the presence of 79% has been recorded). It appears that the rapid oxidation whereby in about 14 days more than 50% of limonene is transformed into carvone is suddenly restricted. The occurrence of dihydrocarveol and dihydrocarvone in oil of caraway shows that reduction as well as oxidation occurs within the plant. The marked evolution of H_2S observed during the distillation of caraway fruits may arise from cysteine or from the carvone–H_2S compound already existing in the plant. A cryst. paraffinoid hydrocarbon is present in all oils, the proportion in normal oil of caraway being markedly lower than that in oil from the whole plant. H. W.

Phylogenic significance of the diterpenes of the phyllocladene and podocarpene groups. J. T. Holloway (New Zealand J. Sci. Tech., 1938, **20**, 16b—20b).—The significance of the occurrence of these terpenes in the oils of Araucarineæ and Podocarpineæ is discussed. A. Li.

Unsaponifiable constituents of cacao-germ oil. K. H. Bauer and L. Seber (Ber., 1938, **71**, [*B*], 2223—2226).—The unsaponifiable matter of the oil is separated by light petroleum into a solid (*A*) and a liquid (*B*) portion. Treatment of (*B*) in light petroleum with Al_2O_3 leads to the isolation of *α-theosterol*, $C_{30}H_{50}O_3$, m.p. 113—114° [*acetate*, m.p. 113—115°; *digitonide*, m.p. 222—224° (decomp.)], which closely resembles α-tritisterol from wheat-germ oil with which, however, it is not identical; *n*-nonacosane, m.p. 63·5—63·7°, and a liquid *hydrocarbon*, $(C_7H_{12})_3$ (?), are also isolated. Acetylation and bromination of *A* leads to the isolation of stigmasteryl acetate tetrabromide, m.p. 202—203° (corr.; decomp.). H. W.

Hemicelluloses from cottonseed hulls.—See A., 1939, II, 10.

Analyses of glacial and preglacial woods. W. A. Gortner (J. Amer. Chem. Soc., 1938, **60**, 2509—2511).—7—15% of the original holocellulose and 9—10% of the pentosans of spruce wood are still present in the wood after burial for $0·7—1·0 \times 10^6$ years. An apparent increase in lignin content is due to loss of other cellulose constituents. R. S. C.

Changes in carbohydrate and nitrogen content of sunflower with reference to irrigation. A. S. Krulin, V. I. Samoilov, and M. S. Schestialtinov (Compt. rend. Acad. Sci. U.R.S.S., 1938, **20**, 59—62).—The monose content of leaves was highest in the top whorl and diminished progressively with approach to the base. Vals. were lower in watered than in unwatered plants. Dissaccharide were higher than monosaccharide contents in all leaves, the difference tending to increase with age. Vals. were higher in the unwatered plants. Starch contents in all leaves in all plants, except the top whorl of unwatered plants, were higher than disaccharide contents, the general level in watered plants being the greater. In the early negative stages the N/carbohydrate ratio was higher in unwatered plants. Prior to seed formation the N content of the upper whorl was higher in the watered plants; after seed was formed the order was reversed. Deficiency of water restricts the formation of starch from sol. carbohydrates. A. G. P.

Characterisation of the plant cell wall by treatment with copper oxide–ammonia solution. R. S. Hilpert and J. Prützenreuter (Ber., 1938, **71**, [*B*], 2220—2222; cf. A., 1937, II, 204).—The finely-divided material is extracted with water followed by alcohol–benzene and then treated for 10 days with Schweitzer's solution in the dark without agitation. The residue is filtered and washed with

water until Cu is not present in the washings. The wood of conifers and deciduous trees gives products containing about 10% and 7% of Cu respectively whilst the former give less sol. matter than the latter. Jute, lime, sisal, and straw yield products still richer in Cu. Pre-treatment of the wood with 5% NaOH at 100° induces the formation of products yet richer in Cu. Methylation greatly diminishes the ability of wood to combine with Cu. The products contain N as well as Cu but there is no apparent relationship between % of N and botanical origin. Absorption of N persists in diminished degree after treatment of the wood with NaOH. Schweitzer's reagent can be used for the characterisation of the cell walls of plants but it can no longer be regarded as a reagent for cellulose. H. W.

Cell-wall constituents of soya bean. I. Embryo of the seed. S. Sasaki and Y. Yamashita (J. Agric. Chem. Soc. Japan, 1938, **14**, 1257—1263).—A scheme for the isolation of the constituents of the cell wall of the embryo is given. J. N. A.

Microscopic structure of plant cell membranes in relation to the micellar hypothesis. W. K. Farr (J. Physical Chem., 1938, **42**, 1113—1147).—Microscopical investigations into the structure of plant cells are reviewed. C. R. H.

Properties of the plastid-granum. W. F. H. M. Mommaerts (Proc. K. Akad. Wetensch. Amsterdam, 1938, **41**, 896—903).—Suspensions of plastid-grana from green plants yield amorphous phyllochlorin from which there are obtained chlorophyll and protein (mol. wt. 17,000) in equimol. proportions. The grana also contained small quantities of org. Fe. W. O. K.

Presence of quercitrin in leaves of *Bauhinia reticulata*, D.C. J. Rabaté (J. Pharm. Chim., 1938, [viii], **28**, 435—437).—Quercitrin (0·5% of the dry wt.) is isolated from the leaves and identified by hydrolysis. R. S. C.

Colloid chemistry of leaf and flower pigments. I. Precursors of anthocyanins. W. D. Bancroft and J. E. Rutzler, jun. (J. Amer. Chem. Soc., 1938, **60**, 2738—2743).—2—5% formic acid extracts of shredded leaves are pink, if anthocyanins or anthocyanidins are present; they become pink when warmed, if leucoanthocyanins are present. If the extracts, mixed with an equal vol. of M-H_2SO_4, are electrolysed at a Hg cathode, flavones or flavonols are reduced to anthocyanins; leaves of 60 out of 65 different plants are thus shown to contain flavones or flavonols. Formation of anthocyanin from the leucoanthocyanin of the sugar-maple by warm H_2SO_4 is ndependent of the presence of quinol and is thus not due to oxidation. The origin of anthocyanins is discussed in general terms and with reference to sp. cases. Blue flowers contain a stabiliser of the blue pigment. R. S. C.

(y) APPARATUS AND ANALYTICAL METHODS.

Preservation of pathological museum specimens under tropical conditions. E. K. Wolff and L. D. C. Austin (Ceylon J. Sci., 1935, **3**, **D**, 243—247).—A modified Jores' fixing fluid contains Na_2SO_4 220, NaCl 90, K_2SO_4 10 g., aq. chloral hydrate (saturated) 500 c.c., formaldehyde (formalin) 2, water 10 l., and blood serum 10 c.c. The mixture is adjusted to p_H 7·0—7·2 by addition of $NaHCO_3$. The chloral and formaldehyde are replaced at intervals. Use of the solution is described. Ch. Abs. (*p*)

Differential pre-amplifier for electro-physiological purposes.—See A., 1939, I, 44.

Thermo-electric measurement of vapour pressure.—See A., 1939, I, 42.

Apparatus for analysis for carbon dioxide and oxygen.—See A., 1939, I, 44.

Determination of dissolved oxygen by means of the dropping mercury electrode, with applications in biology.—See A., 1939, I, 38.

Portable apparatus for determination of oxygen dissolved in a small volume of water.—See A., 1939, I, 44.

Micro-determination of lactic acid. B. F. Miller and J. A. Muntz (J. Biol. Chem., 1938, **126**, 413—421).—The acid is determined in 0·2 c.c. of fluid (*e.g.*, blood-serum after deproteinisation with HPO_3, saliva, aq. extract of powdered teeth) by a modification of the sp. procedure of Eegriwe (A., 1934, 171). Carbohydrates do not interfere and need not be removed. Pyruvic acid if present is destroyed by prolonging the time of heating with H_2SO_4. The depth of colour is measured with a photometer or colorimeter. 0·1 μg. of the acid can be determined, best results being obtained when the amount is 2—10 μg. W. McC.

Effect of nitrogenous substances on the determination of maltose by the methods of Bertrand, Willstätter and Schudel, and Auerbach and Bodländer. R. Klemen (Biochem. Z., 1938, **299**, 58—62).—Urea does not interfere appreciably in any of the methods and $(NH_4)_2SO_4$ and glycine interfere appreciably in the Willstätter and Schudel method only. Peptone and albumin scarcely interfere in Bertrand's method but in the other methods they increase the result to the extent to which the nitrogenous compound reacts with hypoiodite. W. McC.

Determination of pentosans in wet material and solutions. A. Ziperovitsch (Ukrain. Biochem. J., 1938, **11**, 465—470).—The reaction of conversion of pentosans into furfuraldehyde does not proceed to completion when the [HCl] is below 11·5%; in determining pentosans in wet material the final [HCl] should not fall below this figure. R. T.

Detection and determination of small amounts of metals in organic material.—See A., 1939, I, 39.

Colorimetric determination of chromium in plant ash, soil, water, and rocks. C. F. J. van der Walt and A. J. van der Merwe (Analyst, 1938, **63**, 809—811).—The method (B., 1938, 645) previously used for chromite is applied to the determination of small amounts of Cr in biological materials and rocks. F. R. G.