CHEMICAL ABSTRACTS

VOLUMES 41-50

1947-1956

Fifth Decennial Index

AUTHORS

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THE OHIO STATE UNIVERSITY, COLUMBUS 10, OHIO

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SUBJECTS

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E—NUTRITION

PHILIP B. HAWK

Amino acid treatment intravenously and by duodenal tube. M. Bjørneboe, B. Eskesen, N. Harboe, and H. Hennings. *Nord. Med.* 37, 581–5(1948).—A report on intravenous nutrition tests with a Danish amino acid prepn., "Aminolin Orthana pro injectione," made by acid hydrolysis of casein. The prepn. was administered for 7 days in doses not exceeding 80 g. daily. It was possible to establish a pos. N balance. Duodenal tube administration of Aminolin resulting in a reduction of the N deficiency is also reported. Valborg Aschehoug

a **Citrin and ascorbic acid therapy in chronic arthritis and toxemia of pregnancy.** Birger Ekman. *Nord. Med.* 38, 1112–15(1948).—Two cases of arthritis were treated with citrin. Free indole and indoxylsulfuric acid in the serum were diminished. No change in the clinical symptoms was observed. Three cases of toxemia of pregnancy, albuminuria and blood pressure were treated with citrin and ascorbic acid and gave good results. The possibility of a detoxicating effect of citrin and ascorbic acid is discussed. Valborg Aschehoug

b **Activity of the oil of the crab on the vitamin A-deficient rat.** René Grangaud and Renée Massonet. *Compt. rend.* 227, 568–70(1948).—The oil of the Crustaceae is practically devoid of vitamin A and poor in carotene as evidenced by its effect on the growth on white vitamin A-deficient rats. The oil derived from the crab is an exception. The cephalothorax from 1 kg. of crabs was ground with anhyd. Na_2SO_4 and extd. with Me_2CO. Water and petroleum ether were added and after agitation and concn. of the petr.-ether, 5 g. of a dark red oil was obtained. Albino rats 75–90 days old were raised from weaning on a vitamin A-deficient diet; the animals weighed 60–70 g. and suffered from xerophthalmia. They were divided into 6 groups. In addn. to the basal diet groups *A*, *B*, and *C* received, resp., 90, 45 and 22 mg. of oil daily, groups *D* and *E* received 15 and 4 I.U. vitamin A daily, and group *F* did not receive any adjunct. The animals of group *D* gained wt. rapidly, those of group *E* gained at a slower rate, while the animals of group *F* died within 15–25 days. The rats of group *A* which received 90 mg. oil daily gained wt. rapidly, the rats of group *B* gained more slowly and 3 out of 6 died after 22, 30, and 38 days, while all the animals of group *C* succumbed in less than 35 days. The traces of carotene in the oil are responsible for the gain in wt., however, it does not explain the effect on the xerophthalmic lesions cured in the animals in groups *B* and *C*. A daily dose of 4 γ of carotene is judged necessary for healing and only the rats in group *A* received an amt. approximating this requirement. In the groups of animals which received vitamin A or no adjunct, only the rats receiving 15 I.U. were cured of xerophthalmia; the others retained their symptoms. A definite antixerophthalmic activity is ascribed to crab oil. W. B.

c **Effect of deficiencies in vitamins and in protein on avian malaria.** Albert O. Seeler and Walther H. Ott. *J. Natl. Malaria Soc.* 5, 123–6(1946); *Biol. Abstracts* 21, 1545, 1642(1947); cf. *C.A.* 39, 4925⁴. E. J. C.

d **Fat rancidity in eviscerated poultry. II. The effect of variation in diet on the characteristics of the fat extracted from immature turkeys.** F. A. Kummerow, J. Hite and S. Kloxin. *Poultry Sci.* 27, 689–94(1948).—More fat and less phospholipide were found in the skin tissue than in gizzard or liver tissue. Fat from the skin tissue of birds fed linseed oil was least stable and that from birds fed choline chloride or ethanolamine hydrochloride most stable towards oxidative rancidity compared to controls, length of induction period being used as the criterion. Cholesterol, alfalfa leaf meal ext., and carotene also increased stability. George K. Davis

e **The relation of energy to fiber in chick rations.** E. I. Robertson, R. F. Miller, and G. F. Heuser. *Poultry Sci.* 27, 736–41(1948).—White Leghorn chicks required about 800 kcal./lb. ration for satisfactory growth to 4 weeks of age. The addn. of 4% cellophane to the ration contg. 930 kcal./lb. did not retard growth, but the replacement of wheat and corn by wheat by-products and oats to increase the fiber to 8% increased the vol. from 0.64 to 1.10 l./lb. and lowered body wt. at 4 weeks of age about 20%. George K. Davis

f **The toxicity of sodium chloride and its relation to water intake in baby chicks.** M. R. Kare and Jacob Biely. *Poultry Sci.* 27, 751–8(1948).—Water intake per g. feed consumed increased progressively with increased NaCl content of the feed. Up to 3.18% NaCl in the feed exerted no detrimental effect on baby chicks. All lots of baby chicks receiving over 4% NaCl in the mash exhibited a characteristic edematous condition. The toxicity of NaCl in low concns. given in drinking H_2O was roughly that of an equivalent intake of NaCl in the mash. Salt intake when 0.9% NaCl was given in drinking H_2O was 4.31% in terms of mash eaten. Sub-toxic levels of NaCl had a negligible effect upon gain per 100 g. of feed consumed. George K. Davis

g **The effect of carotenols on fertilizing capacity of fowl sperm.** R. H. Ferrand, Jr., and B. B. Bohren. *Poultry Sci.* 27, 759–69(1948).—By use of a technique of sperm competition, a diet low in carotenols was shown to reduce the sperm competitive ability of New Hampshire and White Plymouth Rock males, but not of Barred Plymouth Rock males. Lab. tests and the duration of fertility test were unaffected by the low carotenol diet. G. K. D.

h **Studies in turkey nutrition using a purified diet.** M. L. Scott, G. F. Heuser, and L. C. Norris. *Poultry Sci.* 27, 770–2(1948).—White Holland poults grew significantly better on the purified diet contg. crude casein than on a com. turkey starter. Folic acid is required at about 80 γ/100 g. of diet. Yeast contg. factor S and liver concentrate contg. the animal protein factor did not greatly increase growth rate of poults on the purified diet. George K. Davis

i **Energy, protein, and unidentified vitamins in poult nutrition.** M. L. Scott, G. F. Heuser, and L. C. Norris. *Poultry Sci.* 27, 773–80(1948).—Early poult growth can be increased by raising the energy, protein, factor S and animal protein factor levels of the ration. Protein at a 28–30% level gave most rapid gains with a high-energy ration with increased unidentified vitamin content. The poult requires larger amts. of factor S and animal protein factor than the chick and probably requires dietary glycine. George K. Davis

j **Thyroactive iodocasein and thiouracil in the diet, and growth of parasitized chicks.** A. C. Todd. *Poultry Sci.* 27, 818–21(1948).—Thyroactive iodocasein (protamone) helped chicks to overcome the effects of worm infection, but did not enable parasitized chicks to grow as well as noninfected chickens. Thiouracil depressed the growth rate of infected and noninfected chickens. George K. Davis

k **Daily uptake of biotin by the hen's egg.** J. R. Couch, W. W. Cravens, C. A. Elvehjem, and J. G. Halpin. *Poultry Sci.* (Research Notes) 27, 823–5(1948).—Eggs from hens depleted on a biotin-low diet had a yolk content of 28 and egg white content of 2 m γ biotin/g. Given a biotin-adequate diet the egg whites and egg yolks showed a slight increase on the 3rd day, a further increase on the 6th day, and an almost linear increase from the 7–14th days when normal levels of 500 and 110 m γ/g. of yolk and white, resp., were reached. George K. Davis

l **Response of dogs to liver extracts containing the pernicious anemia factor.** W. R. Ruegamer, W. L. Brickson, N. J. Torbet, and C. A. Elvehjem. *J. Nutrition* 36, 425–35(1948).—Folic acid was found to play an important part in bringing about more consistent responses to niacin in niacin-deficient dogs, but it had no apparent effect on the macrocytic anemia which developed progressively. Liver exts. rich in the pernicious anemia factor were effective in restoring the blood picture and general health of the animals. These exts. were only partially effective when given alone, but in combination with folic acid gave complete recovery. When higher levels of protein were fed (24–30%), the need for folic acid could not be shown. As little as 1 U.S.P. unit of reticulogen per day is sufficient to bring about complete recovery. Apparently the factor

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19.47, solids-not-fat 13.16, protein 7.09, lactose 5.18, and ash 0.99%. The mean values of milk constituents for dry-lot sows were, for first-day colostrum: total solids 22.81, solids-not-fat 17.21, protein 14.29, lactose 3.42, and ash 0.73%; for later milk: total solids 20.69, solids-not-fat 13.38, protein 7.42, lactose 5.08, and ash 0.98%. Russell E. Davis

The effects of feeding supplemental copper to growing foals. P. T. Cupps and C. E. Howell. *J. Animal Sci.* 8, 286–9(1949).—The Cu content of the blood of foals receiving 8 to 109 p.p.m. of Cu in the ration averaged 1.4γ per ml. while the livers contained 38 and 359γ, resp., of Cu per g. The Cu requirement of the growing foal apparently is less than 8 p.p.m. in the ration. R. E. D.

The synthesis of B vitamins in the horse. F. D. Carroll, Harold Goss, and C. E. Howell. *J. Animal Sci.* 8, 290–9(1949).—Horses fed purified diets low in B vitamins synthesized considerable quantities of thiamine, riboflavin, pantothenic acid, nicotinic acid, pyridoxine, folic acid, and biotin in the intestinal tract. After 4 months the horses showed symptoms which in other species are assocd. with thiamine deficiency. These symptoms disappeared when 30 mg. of thiamine was fed daily. Russell E. Davis

The effect of a low-carotene winter ration on the blood, milk, and liver concentrations of vitamins A and C of ewes and their lambs. W. C. Weir, A. L. Pope, P. H. Phillips, and G. Bohstedt. *J. Animal Sci.* 8, 381–91 (1949).—Ewes on a low-carotene ration (oat straw, oats, and soybean-oil meal) maintained a blood plasma level above 20γ per 100 ml. The substitution of alfalfa hay for straw increased both the blood level and liver storage of vitamin A. The plasma ascorbic acid values were lower for the straw-fed ewes than for the hay-fed ewes. Russell E. Davis

Observations on efficacy of vitamin supplements for new-born calves. R. E. Erb, G. W. Scott, Jr., C. L. Norton, and K. S. Morrow. *J. Animal Sci.* 8, 425–32 (1949).—Supplementary feeding of 250,000 I.U. of vitamin A, 50,000 I.U. of vitamin D, and 500 mg. of niacin to calves at birth was of no benefit in reducing the incidence of colds, pneumonia, scours, and death losses. Russell E. Davis

Pantothenic acid deficiency in pigs fed diets of natural feedstuffs. R. W. Luecke, F. Thorp, Jr., W. N. McMillen, and H. W. Dunne. *J. Animal Sci.* 8, 464–9(1949).—The addn. of calcium pantothenate to a ration consisting of corn, casein, soybean-oil meal and minerals prevented the symptoms of locomotor incoördination and myelin degeneration from appearing. There were wide variations in urinary excretions of pantothenic acid but the blood level was very uniform within the groups. R. E. Davis

Effect of adrenaline on the growth of mammals. Theodor Wense. *Arch. ges. Physiol.* (*Pflügers*) 251, 38–48 (1949).—Adrenaline-HCl (I) from natural sources was injected on alternate days into rats on a mixed diet. In doses of 0.01–0.0001 mg./kg. body wt., it promoted the growth of young (20–80 day) rats, but had no effect on the growth of 100- to 160-day-old rats. Rats on a restricted diet were affected more than well-fed animals, and length and wt. were affected similarly. In doses of 1.0–0.1 mg./kg., I restricted the growth of older and younger rats on both types of diet. The effect on wt. was more marked than on length. Buffered solns. of I had the same effect, but oxidized solns. had less effect. M. E. Deutsch

Psychological effects of levels of vitamin B_1 and glutamic acid in the diet. Paule Aschkenasy-Lelu. *Ann. nutrition et aliment.* 3, 109–44(1949).—Review with 78 references. J. Dufrenoy

Nitrogen balance index in protein-deficient patients. J. Trémolières and G. Pequignot. *Ann. nutrition et aliment.* 3, 145–83(1949).—Review with 52 references. J. Dufrenoy

Urinary elimination and use of thiamine in normal subjects. Roberto Llamas. *Anales inst. biol.* (*Univ. nacl. Méx.*) 19, 441–51(1948).—In 11 women and 9 men, healthy and on a normal diet, the urinary excretion of thiamine was studied for 7 consecutive days. Range of excretion was 0.018–0.719γ/cc.; low and high av. 0.072 and 0.409 γ/cc. for the week. Before and after ingestion of 1 mg. thiamine, the av. min. difference for the week was 0.27γ/cc. and the max. 1.43γ/cc. M. Elliott

Spleen reduction by nicotinic acid. M. Salvini and A. Fracasso. *Atti soc. med.-chir. Padova* 25, 277–82(1947); cf. *C.A.* 42, 6001*a*.—Intravenous nicotinic acid caused a hemodynamic syndrome of which the diminution of spleen vol. was a partial concomitant phenomenon. This was shown radiographically. M. Elliott

Hematologic variations immediately after intravenous injection of sodium nicotinate. M. Salvini and A. Fracasso. *Atti soc. med.-chir. Padova* 25, 283–90(1947).—Rapid intravenous injection of 0.03 g. Na nicotinate in 14 persons was followed by hyperglobulia with lymphocytosis and thrombocytosis, which was interpreted as secondary to the hemodynamic syndrome provoked. M. E.

Influence of vitamin C on absorption of iron. I. C. Prina and L. Barbieri. *Boll. soc. ital. biol. sper.* 24, 1312–14(1948).—Paired guinea pigs were fed for 8 days on baked carrots and allowed to fast 24 hrs., then fed 40 mg. $FeSO_4$ (I) or I plus 40 mg. vitamin C (II) dissolved in 2–3 cc. water. Blood was withdrawn at 2–6 hrs. later. Also two dogs were held on a diet of dough, rice, and bread. Blood Fe was studied after fasting, after administration of 0.15–0.20 g./kg. I or of I plus II in like amts. By combined treatment with I and II an increase in serum Fe of about 30% was obtained. II intravenously with I orally did not favor Fe absorption, nor did oral administration of cysteine, glutathione, or vitamin E. M. E.

The motion of the isolated gall bladder of guinea pigs and the action of water-soluble vitamins. D. Acuña Lagos. *Rev. españ. fisiol.* 5, 47–55(1949).—The spontaneous motion of the isolated gall bladder (I) of 105 guinea pigs consists of 2 types: slow contractions and small, rapid ones. Both appear only after an "adaption time" of 15–45 (av. 30–35) min.; I, kept at 2–3° for 8–9 hrs., shows sometimes stronger contractions. Addn. of 10 mg. vitamin B_1, 5 mg. B_2, 0.10 g. C or PP to the immersion liquid inhibited contraction and produced relaxation which did not extend to the vesicular fiber tonus. Contraction, produced by acetylcholine or $BaCl_2$, was not inhibited by B_2, but relaxed under the influence of B_1, C, or PP. Conclusion: B_2 acts on the muscle fiber itself while B_1, C, and PP act on the nerve ends. F. Fromm

Biological activity of the compound absorbing at 560 mμ in antimony trichloride, obtained by the oxidation of axerophthol with permanganate. Paul Meunier and Raymond Ferrando. *Bull. soc. chim. biol.* 31, 227–30(1949).—The above compd., also called a "congener of axerophthal" (*C.A.* 42, 8170*d*), has 0.04–0.05 the activity of vitamin A alc. (axerophthol) in rats. L. E. Gilson

Vitamin activity of the oil of the crustacean Penaeus foliaceus on the vitamin A-deficient rat. René Grangaud and Renée Massonet. *Bull. soc. chim. biol.* 31, 231–4 (1949).—See *C.A.* 43, 1087*c*. L. E. Gilson

Massive doses of vitamin D_2 in adult humans. Humoral effects. Max Lévy, Michel Sapir, and Suzanne Mignon. *Bull. soc. chim. biol.* 31, 300–21(1949); cf. *C.A.* 42, 7389*c*.—The adult human readily tolerates large repeated doses of vitamin D_2. Blood Ca shows little change; blood P varies with the dose of vitamin D_2. Other effects are as previously reported by numerous investigators. L. E. Gilson

Relation of diet to the duration of survival, body weight, and composition of hypophysectomized rats. James H. Shaw and Roy Orval Greep. *Endocrinology* 44, 520–35(1949).—Between 60 and 70% of rats fed 3 different purified diets (formulas are given) ad lib. after surgical removal of the hypophysis survived 88–112 days or longer. Only 10% of comparable rats given stock lab. chow pellets survived beyond 45 days and none more than 63 days. The long survival was not due to the fine particle size of the purified rations nor to their lack of undigestible crude fiber. Those which survived for long periods increased considerably in wt. and apparently accumulated considerable protein during the growth process. Tail growth occurred, individual caudal vertebrae

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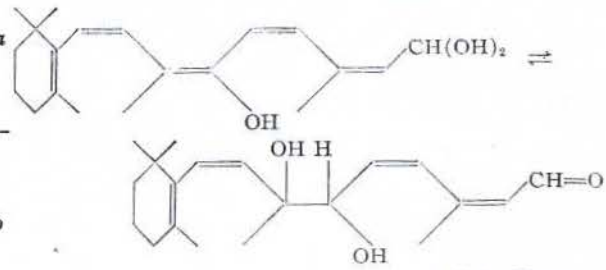
edema due to starvation. (Experiments on animals.) Martin Gülzow (Med. Univ. Klin., Greifswald, Ger.). *Klin. Wochschr.* **24/25**, 518–24(1947); *Chem. Zentr.* **1947, II**, 820; cf. *C.A.* **43**, 3909*g*.—Expts. were carried out on 15 dogs, 7 of which were starved and 8 of which received a diet of boiled rutabagas and rye. The latter group all developed edema and died. In the group subjected to abs. starvation the reductions in amts. of plasma and of blood were relatively greater than the loss in body weight. The concn. of albuminous substances remained the same until shortly before death; the amt. of circulating albumin was reduced to $^1/_3$, and there was a displacement of the protein picture toward the right. In the animals receiving the deficient diet the amts. of blood and plasma remained the same; there was a progressive reduction in the albumin concn., a loss of albumin, and a displacement toward the left. The reduction in the amt. of circulating albumin was about the same as in the case of abs. starvation. The undernourished animals died sooner than those which were starved. Abs. starvation thus has a less serious effect on the metabolic economy than pronounced malnutrition. The period required for regeneration of the albumin is dependent upon the value of the protein administered. The final drop in the albumin concn. in the starved animals and in those fed rutabagas occurred in the phase of especially marked neg. N balance. Disturbance of the tissue metabolism in cases of abs. starvation or protein deficiency results in a condition favorable to the development of edema. Dry inanition and starvation edema are different types of regulation in hypoprotia and are to be differentiated in cases of human malnutrition. M. G. Moore

Pantothenic acid in copper deficiency in rats. Leon Singer and Geo. K. Davis (Florida Agr. Expt. Sta., Gainesville). *Science* **111**, 472–3(1950).—Two groups of piebald and black rats, 22 days old, were placed on simplified diets designed to study a comparison of wt. gains of the animals. Group 1 was placed on basal ration of whole dried milk (KLIM) 50, sucrose 49.5, NaCl 0.49, $MnSO_4$ 0.0008, $FeSO_4$ 0.002, and thiamine-HCl 0.00034%. Group 2 was fed the basal ration augmented with 20 p.p.m. Cu in the form of $CuSO_4$. At the end of 60 days, the groups showed approx. the same wt. gain. After 7 weeks the animals of Group 1 showed a consistent peculiar graying identical to that found in rats deficient in pantothenic acid. A narrow stripe of black hair from the top of the head extending along the middle of the back remained while graying occurred in the remainder of the body. Animals of Group 2 maintained normal pigmentation indicating adequate pantothenic acid when Cu is present in the diet. After 4 months animals of Group 1 were placed on different levels of calcium pantothenate supplement. After 5 weeks, 10 γ daily dose was without effect on repigmentation, 20 γ daily exerted some effect, 30- and 40-γ doses caused pronounced effect. The response of graying of the hair on a Cu-deficient diet to administration of Cu or calcium pantothenate suggest some metabolic relation between them. Marjorie Mueller

A study of some properties of the antianemic factor (cobamine) commonly called vitamin B_{12}. Raoul Lecoq, Paul Chauchard, and Henriette Mazoué. *Compt. rend.* **230**, 1315–17(1950).—Vitamin B_{12} (I) exercises a curative action on the characteristic neuromuscular disorders of rats having induced megaloblastic anemia. I acts in levels considerably below those of folic acid required to reverse the symptoms. Subcutaneous injection of I in the rat after injections of ascorbic acid or NH_4Cl indicates that I exerts also an alkalinizing effect. J. R. Porter

Antixerophthalmic activity of a carotenoid pigment from Aristeomorpha foliacea (Penaeidae). René Grangaud and Renée Massonet. *Compt. rend.* **230**, 1319–21(1950).—Astaxanthine (3,3′-dihydroxy-4,4′-diketo-β-carotene) isolated from the shrimp *Aristeomorpha foliacea* has marked vitamin A activity as assayed in rats. J. R. Porter

The structure of a derivative obtained by oxidation of vitamin A having antivitamin A activity. Paul Meunier, Georges Zwingelstein, Jacques Jouanneteau, and René Mallein. *Compt. rend.* **230**, 1323–4(1950).—The oxidation product of V_2O_4-treated vitamin A is shown to be



J. R. Porter

The digestion of fats in the intestine. W. Heupke and G. Rost (Hosp. Heiligen Geist, Frankfurt a.M., Ger.). *Z. physiol. Chem.* **284**, 204–10(1949).—As models for the study of the digestion of fat, soybeans were used. They are rich in fat which can be released by means of duodenal juice. Bile alone cannot release the neutral fat which is contained in these cells. However, if the neutral fat which is contained in the soybean cells is hydrolyzed by means of pancreatic lipase, the fatty acids can be quantitatively dissolved by pure human or ox bile at pH 6.5. In the model it was shown that ox bile-fatty acids in the ratio 1:1 become water-sol. at a reaction which prevails in the human small intestine. Under these conditions, fatty acids with the help of bile can be brought through the intact cell wall of the potato, and later the fat contained in the potato cells can be dissolved with bile. Fatty acids in the presence of bile can permeate through plant cell walls in either direction. The epithelial membrane of the small intestine has the same selective-permeability properties as the walls of plant cells. Hence fat penetrates the epithelial cells of the small intestine in the same way as it does the cell walls of plants. Felix Saunders

Substances called vitamin P. R. Wasicky (Univ., São Paulo, Brazil). *Scientia Pharm.* **18**, 4–5(1950).—The flavones, the flavone-glycosides, and their reduction products have a wide distribution in nature and oxidation-reduction properties. So they may be vitamins, but their study has been hindered by the difficulty of prepg. a suitable diet free from them. J. H. Scott

Amino acids and their therapeutic action. Siegfried Rauschning (Inst. Ernähr. u Verpflegungswissenschaft, Potsdam-Rehbrücke, Ger.). *Pharm. Zentralhalle* **89**, 71–5(1950).—A review, with reports about expts. with essential amino acids on test animals which resorbed them very well. R. Seiden

Digestibility of various kinds of cellulose by ruminants. K. Mehring and W. Schramm. *Tierzucht* **1**, 11(1949); *Veterinärmed.* **2**, 102(1949).—Highest digestibility was shown by pine sulfite cellulose (91.3%), followed by cellulose of beech (89.1%), poplar (87.4%) and feedstuffs (83.9%). A relationship exists between digestibility and chem. constitution of the cellulose; material with the highest content of unchanged cellulose seemingly is better utilized by animals than that contg. decompd. cellulose. R. Seiden

Vitamin D_3 and vitamin D_2 in prophylaxis and therapy of experimental rachitis of swine. G. Bonfante. *Zooprofilassi* **4**, 1(1949); *Veterinärmed.* **2**, 105(1949).—Vitamin D_3 (4000 units) is efficient in the prophylaxis of rachitis, while vitamin D_2 in the same dose has no effect. However, large doses of 400,000 units of either have the same therapeutic effect. R. Seiden

Desoxycorticosterone treatment of ketonemia of cattle. M. Vandelplassche. *Vlaams Diergeneeskund. Tijdschr.* **18**, 197–203(1949).—Even though the treatment of acetonemia of cows with 2 doses of 25 mg. desoxycorticosterone (I) did not give 100% cures, it was very helpful in restoring to normal the disturbed carbohydrate metabolism. Soon after administration of I, the vitamin B_1 (II) content of the urine dropped markedly; it is assumed that I acted by changing II into its pyrophosphate. In this

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Gray School of Med., Winston-Salem, N.C.). *J. Lab. Clin. Med.* **38**, 705–8(1951).—Phospholipide turnover as followed with radioactive P shows no response to choline or methionine after the administration of a diet of 32 g. of protein per day for a week. Kathryn D. Kuck

Vitamin B_{12}. Josef V. Koštíř. *Chemie* (Prague) **4**, 177–8(1948).—K. reviews the discovery and isolation of vitamin B_{12} and discusses the growth factor and the anti-anemic power in the purified product. Frank Maresh

Human milk. Wartime studies of certain vitamins and other constituents. S. K. Kon and E. H. Mawson. *Med. Research Council* (*Brit.*), *Special Rept. Ser.* No. **269**, 188 pp. (1950); cf. *C.A.* **44**, 10071*g*.—A study was made to det. the relationship between constituents of human milk and the state of nutrition of the mother. The fat content (mean value, 4.78 g./100 ml.) varied little in the 3rd to 24th week of lactation, or with variations in milk yield. Solids-not-fat (mean, 8.93 g./100 ml.) decreased slowly with lactation, then remained const. Total N (230 mg./100 ml. high to 186 mg./100 ml.. low) fell rapidly in the 1st 3 or 4 weeks, then more gradually. The mean Ca was 29.9 mg./100 ml. and P was 13.0 mg./100 ml. The vitamin A and carotenoid contents increased with increasing fat content, but the concn. in the fat decreased. Vitamin A was high, > 100 I.U./g. fat, at the beginning of lactation, but fell rapidly to 46 I.U./g. fat in the 3rd week, then more slowly to 30 I.U. the 18th week. The carotenoid content fell from 20 γ/g. fat on the 3rd or 4th day to 4.3 γ in the 3rd week, and finally to 3.6 γ. Women whose milk yield was low produced milk fat with a significantly higher vitamin A and carotenoid content than did the general mean. Vitamin A concn. increased with increasing age of the mothers; a similar, but smaller, change occurred with carotenoids. Women who ate liver within 24 hrs. of taking samples had a much higher vitamin A content than did the general mean. Oral vitamin A also increased the vitamin A content of the milk fat. The mean values for carotenoid pigments (calcd. as percentage of total extinction at 451 mμ) were: α- and β-carotene, 23; lycopene, 9; lutein, 47; an unknown pigment, 21. There was no correlation between vitamin A content in milk fat and in plasma, but there was a significant correlation of carotenoids. The vitamin D content of early lactation milk fat was 0.13 to 0.27 I.U./g.; for later lactation, 0.15 to 0.41 I.U. The proportion of "free" to total vitamin B_1 increased with progress of lactation. Vitamin B_1 was 3 γ/100 ml. on the 3rd day, rose rapidly in the 1st 3 weeks, then leveled at 17 γ/100 ml. at the 5th week; no variation was found with age. Large doses of the vitamin caused immediate increases in the milk, particularly in the nonphosphorylated (free) form. The riboflavin content of the milk varied with the amt. of riboflavin eaten in meals; a mean of 25.5 γ/100 ml. was found. The mean value for vitamin C was 3.6 mg./100 ml. The quantity of vitamin C in the milk was strongly affected by the amt. in the diet. Theresa McKee

Renal lesions in pyridoxine-deficient rats. L. R. C. Agnew (Rowett Research Inst., Aberdeen, Scot.). *J. Path. Bact.* **63**, 699–705(1951).—Renal lesions were seen in several pyridoxine (Py)-deficient rats and appeared to be the result of hematuria. Hematuria was not observed in long-term Py deficiency, although the kidneys and hearts of albino rats, like those of long-term Py-deficient hooded rats, all of which had hematuria, were significantly heavier than those of corresponding inanition or ad lib. fed controls. The earliest renal lesion detected in hooded short-term Py-deficient rats with hematuria appeared to be a disturbance of the patency of the glomerular filter. Amorphous, slightly eosinophilic material was deposited in many subcapsular spaces. Protracted hematuria resulted in gross Ca deposition, especially in the cortico-medullary zone. Deposition of Ca in, and destruction of, the renal papillae occurred in several of these rats. Grossly scarred kidneys were sometimes found but may have been caused by intercurrent pyelonephritis. John T. Myers

Interactions between environment and diet in the production of acute liver necrosis in the rat. J. M. Naftalin (Rowett Research Inst., Aberdeen, Scot.). *J. Path. Bact.* **63**, 649–66(1951).—The hypothesis of Hunnsworth and Glynsis (*Clin. Sci.* **5**, 93(1944–45)) that the consumption of 200 to 500 mg. of casein per rat per day is the necessary condition for the production of acute liver necrosis was not confirmed. The highest incidence of such necrosis occurred when the environmental temp. was 70 to 74° F. At 60 to 65°, rats on unlimited food showed a lower incidence of liver necrosis, and at 35 to 50° the incidence was still lower. 30 references. John T. Myers

The utilization of vitamin A. I. Effect of feeding massive doses on liver storage. G. C. Esh and Sukhamoy Bhattacharya (Bengal Immunity Research Inst., Calcutta). *Indian J. Physiol.* **5**, 15–20(1951).—Approx. 1800 units of vitamin A (I) alc. or I-acetate dild. in peanut oil, ethyl oleate, or water contg. 20% Tween 20, was fed to I-depleted rats during a 3-day period. Liver storage of I was greatest when I alc. was administered as an aq. suspension. The diluents listed had no significant effect on the amt. of storage of I after administration as I acetate. Females stored somewhat more I than males. Richard F. Riley

Vitamin activity of astaxanthin. R. Grangaud and R. Massonet (Faculte méd., Algiers). *Congr. assoc. franç. avancement sci., Tunis*, **1951**; *Tunisie méd.* **39**, 680–3(1951); cf. *C.A.* **44**, 6927*i*, 7494*b*. **Astaxanthin and retinal pigments.** R. Grangaud. *Ibid.* 684–6.—The eyes and livers of albino rats, fed with *Aristeomorpha foliacea* ext. prepd. according to G. and M. (*C.A.* **43**, 8468*g*) contained astaxanthin. The liver contained only traces. G. Sag

Vitamin-P-like properties of the leucoanthocyanic chromogen of peanuts. Raoul Lecoq, Paul Chauchard, and Henriette Mazoué (Hôp. St. Germain en Laye, France). *Tunisie méd.* **39**, 930–7(1951).—The chromogen ext. from the tegument of peanut (Tayeau and Masquelier, *C.A.* **43**, 3490*i*) behaved in rats fed with a diet deprived of vitamin P, like epicatechol or rutin. Nervous disorders and acidosis ceased. It was also an antianaphylactic against histamine and acetylcholine. G. Sag

Behavior of the glutathione content of blood after vitamin E administration. E. Bottiglioni (Univ. Bologna, Italy). *Arch. patol. e clin. med.* **28**, 440–8(1951).—In 19 of 20 sound subjects to whom 90–120 mg. tocopherol was parenterally administered the total and reduced glutathione content (I) of blood, detd. by the method of Woodward and Fry (*C.A.* **26**, 5599) was raised within 1–3 hrs. after the injection; oxidized glutathione increases were not const. The daily tocopherol administration maintained a higher basal level of I. A physiol. discussion follows. C. Scandura

Strepogenin content and biological value of hydrolyzates of casein and soybean protein. Walter Karrer and Hilde Pfaltz (Hoffmann-La Roche & Co., Basel, Switz.). *Helv. Chim. Acta* **34**, 2225–30(1951)(in German).—Casein hydrolyzates prepd. by digestion with acid (*A*), pancreatin (*B*), and papain (*C*) and soybean protein hydrolyzates prepd. with pancreatin (*D*) and papain (*E*) were assayed for strepogenin (I) in the rat-growth test. *A* and *C* contain only 0–0.4 units I (compared with *B* = 1) and all animals died within 6 weeks. In the *B* group 1/3 of the animals died, whereas in the *D* group (2.0–3.5 I) all animals remained alive. *E* had 1.5–2.1 I. Intact casein has a higher I content than any of its hydrolyzates. K. Schoen

Variations in the vitamin content of seeds and their agricultural significance. Werner G. Jaffé. *Rev. sanidad y asist. social* (Venezuela) **15**, 423–8(1950).—The riboflavin and niacin content of different batches of seeds of *Sesamum indicum* and *Vigna sinensis* fluctuated more then 100%. K. Schoen

The treatment of protein-deficiency syndromes. Grace A. Goldsmith (Tulane Univ., New Orleans, La.). *Bull. Tulane Med. Faculty* **7**, 57–62(1947–48).—A discussion of pathol., physiol., and nutritional aspects. W. C. Tobie

Duration of activity of vitamins D_2 and D_3 in oral and parenteral administration. Ernst Auhagen and Carla Kollstede (Physiol. Lab. Farbenfabriken Bayer, Wuppertal-Elberfeld, Ger.). *Z. Naturforsch.* **4b**, 219–22(1949).—Both oral and intravenous doses of vitamin D_2 in the rat build up according to the log of the amt. given, and also decrease according to an exponential function. Intramuscular or subcutaneous doses in oil are slowly but evenly absorbed. Vitamins D_2 and D_3 have qualitatively similar activity in the rat but the ratio of their quant. activity is $D_3:D_2 = 4:3$. Ivan A. Wolff

3-Hydroxykynurenine as a *cn*$^+$-gene-dependent link in the intermediate metabolism of tryptophan. A. Butenandt, W. Weidel, and H. Schlossberger (Univ. Tübingen, Ger.). *Z. Naturforsch.* **4b**, 242–4(1949).—*dl*-3-Hydroxykynurenine (I), decompg. > 190°, was synthesized by the procedure used for kynurenine (Butenandt, *et al.*, *C.A.* **41**, 3800*hi*). I gave pigment formation in the expected fashion with the *cn*$^+$ gene (*Drosophila*) and was therefore probably

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glands, testicles, ovary and hypophysis of 10 guinea pigs are histologically described. C. Scandura

Vitamin F. Mariangela Massera. *Riv. ital. essenze, profumi, piante offic., oli vegetali, saponi* **34**, 315–18(1952). C. Scandura

Table salt substitutes. E. v. Skramlik (Humboldt-Univ., Berlin). *Pharmazie* **7**, 412–16(1952).—Substitutes for NaCl in low-Na diets are discussed. K and ammonium salts, etc., can yield effective substitutes from a physicochem. point of view, but none gives the same taste as NaCl. Edward H. Sheers

Theory of animal nutrition and possibilities for improvement. E. Mangold (Humboldt-Univ., Berlin). *Pharmazie* **7**, 424–30(1952).—A review and discussion with 41 references. Edward H. Sheers

Low nourishment with raw vegetables. Masanori Kuratsune (Kyushu Univ., Fukuoka). *Kyushu Mem. Med. Sci.* **2**, No. 1–2, 41–52(1951).—Two human subjects on a strictly vegetable diet of approx. 1340 kcal. were studied for periods up to 3 months. Skin temp. dropped 1°, but rectal temp. remained unchanged. The pulse rate and basal metabolism decreased, but work efficiency increased. Anemia and edema occurred when the diet was heated, but not when the diet was eaten uncooked. J. D. Taylor

The influence of supplementation of curd to the poor South Indian diet on the intestinal synthesis of vitamin B_1 in rats. S. Balakrishnan and R. Rajagopalan (Indian Inst. Sci., Bangalore). *J. Indian Inst. Sci.* **34**, 229–34(1952).—The urinary and fecal excretions of vitamin B_1 by rats receiving curd were much higher than those of the control rats receiving pure vitamin B_1 soln. as supplement. The storage level of the vitamin in liver was also higher in the curd-fed animals. The results indicate that curd favors the bacterial synthesis of vitamin B_1, probably because of the type of flora it produces in the intestine. Also in *Indian J. Physiol. and Allied Sci.* 6, 143–54(1952). A. E. Teeri

Reaction of vitamin A aldehyde with plasma albumin. K. Rajagopal and P. K. Datta (Indian Inst. Hyg. and Pub. Health, Calcutta). *Nature* **170**, 370–1(1952).—Vitamin A aldehyde dissolved in EtOH was added to a soln. of bovine plasma albumin and allowed to react for $^1/_2$ hr. and then dialyzed against phosphate buffer at pH 7.5 for 36 hrs. The soln. of albumin-vitamin A aldehyde complex thus formed gave the following analysis for albumin and aldehyde: protein, 0.968 g./100 ml. of soln.; vitamin A aldehyde, 2.985×10^{-5} g./100 ml.; aldehyde as percentage of protein, 0.003. A. E. Teeri

Action of vitamin E on the blood-aqueous barrier. F. Caselli. *Boll. oculist.* **31**, 271–80(1952); *Am. J. Ophthalmol.* **35**, 1848(1952).—Six rabbits were given hydrosol. vitamin E, 60 mg./kg. body wt., intravenously for 10 days. With fluorescein curves, the permeability of the iridociliary capillaries was diminished in all cases. W. C. Tobie

A highly sensitive spectrophotometric method for the microbiologic determination of the B_{12} vitamins with Euglena gracilis var. bacillaris. H. C. Heinrich and H. Lahann (Univ. Hamburg, Ger.). *Z. Naturforsch.* **7b**, 417–18(1952).—The extinction of alc. or acetone exts. of chlorophyll a + b of the alga is measured at the absorption maxima of 4320 and 6640 A. with a 436-mμ filter. The method is applicable to concns. of vitamin B_{12} between 0.001 and 100 γ/ml. Karl F. Urbach

Relation between vitamin E and male sex hormone (17-ketosteroid excretion after oral administration of α-tocopherol acetate in healthy men). J. Hüppe and K. Mellinghoff (Med. Univ.-klinik, Göttingen, Ger.). *Z. ges. exptl. Med.* 118, 346–51(1952).—Daily oral intake for 4–5 days of 50, 100, 500, and 1000 mg. vitamin E did not affect the urinary excretion of 17-ketosteroids, amounting to 10.4–19.1 mg./day in various cases. John H. Weisburger

Feeding of S^{35}-labeled yeast to rabbits. Investigation of the intestinal cleavage of yeast protein and of the resorption and organ distribution of S^{35}-thioamino acids. H. Schlüssel and K. H. Lyck (Univ.-klinik, Cologne-Lindenthal, Ger.). *Z. ges. exptl. Med.* 118, 399–406(1952); *Biochem. Z.* **321**, 533(1951); cf. *C.A.* **45**, 7191*g*; **46**, 4608*i*.—Rabbits fasted 12 hrs. received a dose of approx. $^1/_3$ mc. S^{35}-labeled yeast. Blood samples were taken at intervals. Necropsy was performed at the end of 4, 16 hrs., 3, 7, 21, 68, and 135 days. Various organs were analyzed for radioactivity (I). The blood I showed 2 peaks at 1–2 hrs. and 3–5 hrs., resp. The stomach and colon-rectum contents had a slightly increased I between 16 hrs. and 3 days. The max. % and specific I was reached by each organ in the order: 4–16 hrs. for intestinal walls, blood, liver, small intestine; 3 days for kidneys, lungs, bones; 7 days for cardiac and skeketal muscle, fur. After 21 and 68 days 40 and 24%, resp., of the dose was found in the organs analyzed. After 135 days only traces of I occurred in the fur. John H. Weisburger

Effect of liver extracts on cobalt therapy in experimental anemias in animals. Elizabeth Fischer (Univ. Munich, Ger.). *Z. ges. exptl. Med.* 118, 483–8(1952).—Rats were made anemic by a diet of milk and oats. The hemoglobin and erythrocyte values increased more in animals supplemented with a cobalt-liver ext. or a liver ext. alone than in rats receiving either Co or vitamin B_{12}. J. H. W.

Voluntarily fasting human. Wolfgang Vollmer and Heinrich Berning (1st Med. Univ.-klin., Hamburg-Eppendorf, Ger.). *Z. ges. exptl. Med.* 118, 604–27(1952).—The variations in wt., body temp., circulation, electrocardiogram, fluid balance, urine compn. (sp. gr., total N, Cl, pH, diastase, 17-ketosteroids), blood compn. (blood vol., plasma vol., hematocrit. value, sedimentation const., total protein, albumin, globulin, tyrosine, tryptophan, extracellular fluid, NaCl, blood sugar, serum Fe, residual N, uric acid, urea, Ca, total, free, and bound cholesterol, bilirubin, Takata, Weltmann, thymol tests, cephalins, alk. and acid phosphatases), blood morphology and gastric juice before, during, and after a 37-day fasting period by a woman 58 years old are given. Only about 900 ml. water (analysis reported) was consumed each day. John H. Weisburger

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Nutritive value of Et esters of mixed fatty acids of spermaceti oil (Akiya) **27**. Vitamin B_{12} (Folkers) **10**.

Axelrod, A. E., Chow, B. F., Cunha, T. J., *et al.* Recent Advances in Nutrition Research with Emphasis on the Newer B Vitamins. New York: Natl. Vitamin Foundation. 1952. 129 pp. $1.50.

Grangaud, René: Das Astaxanthin, ein neuer Vitamin A-Faktor. Paris: Masson & Cie. 1951. 51 pp. Fr. 380. Reviewed in *Z. Lebensm.-Untersuch. u.-Forsch.* **95**, No. 1, 35 (1952).

F—PHYSIOLOGY

J. B. BROWN

Suprarenals and antidiuretic hormone. D. Hofmann-Credner (Med. Univ. Klinik, Vienna). *Arch. intern. pharmacodynamie* **91**, 241–56(1952).—Exposure of water-satd. rats to a flicking light source releases the antidiuretic hormone, probably via the hypothalamus. Adrenalectomy sensitizes the distal tubule to the hormone, but daily exposure to the light stimulus does not cause adrenal hypertrophy. M. L. C. Bernheim

Fat synthesis in the perfused lactating cow udder. G. Peeters and L. Massart (Vet. Coll., Ghent, Belg.). *Arch. intern. pharmacodynamie* **91**, 388–98(1952).—When glucose was added to the perfusion fluid, the respiration quotient of a surviving lactating cow udder was less than 1. Glucose with Na acetate, or Na acetate alone, gave respiration quotients of over 1, and the O uptake and the CO_2 output were greater than with glucose alone. Therefore acetate can serve as a precursor of milk fat. M. L. C. Bernheim

Changing values of nucleic acid of cells in bone marrow during development of red blood cell. Maud L. Menten and Mary Willms (Brit. Columbia Med. Research Inst., Vancouver, Can.). *Arch. Path.* **54**, 343–50(1952).—Bone marrow aspirated from 31 patients with various blood dyscrasias showed values for deoxyribonucleic acid (DNA) P from 0.40 to 2.63×10^{-9} and ribonucleic acid P from 0.15 to 1.67×10^{-9} mg./cell. Prepns. in which immature basophilic erythroblasts predominated were compared with those contg. mostly late normoblasts. In the former type a gradual increase of DNA P occurs as the cells develop, and in the latter a decrease takes place as the nucleus is extruded and hemoglobin is formed. M. L. C. Bernheim

The relation between the distribution of iron and ascorbic acid in the body. J. A. Nissim (Guy's Hosp. Med. School, London). *Brit. J. Exptl. Path.* **33**, 419–27(1952).—After injections of "saccharated Fe oxide," Fe accumulates in the rat and the mouse, and the distribution corresponds very closely to that of ascorbic acid in the adrenals, ovaries, and young connective tissue. Fe is not deposited in the adrenals after injections of Fe ascorbate. M. L. C. B.

The development of inclusion bodies in the cells of the

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compared by their effect on electrically induced seizures of the grand mal type in guinea pigs: phenobarbital (I), diphenylhydantoin (II), phenylethylacetylurea (Trinuride) (III), and 5-phenyl-5-ethylhexahydro-4,6-pyrimidinedione (Mysoline) (IV). I and II in increasing doses cause progressive reduction in the seizures with their suppression at 35 and 96 mg./kg., resp. By opening of the ring of phenobarbital the antiepileptic property is retained. II converts the exptl. epileptic seizure into an elec. convulsion of the clonic type. IV is anticonvulsant as well as antiepileptic. The therapeutic index is 0.28 for II and 0.82 for I. The margin of safe use is sufficient for I and II and good for III and IV. Clinical results confirm these results in animals. M. Elliott *a*

Clinical and electroencephalographic data (on the effects of) introduction of procaine into the carotid. G. Alema (Univ. Bologna). *Boll. soc. ital. biol. sper.* **28**, 1642–5 (1952).—Injection of 0.4–0.8 cc. 8% procaine into the carotid of men led to an ophthalmoparesis of 0.5–3-min. duration and in 5% of the cases after 1–2 min. to clonic convulsions, first of the opposite half and then of the same half of the body. Also the electroencephalogram is changed. It is assumed that the dilation of the ophthalmic artery is greater than that of the encephalic vessels (cf. *Riv. neurol.* **21**, 39(1951)) and leads to a greater influx of procaine and consequently to a paralysis of the motor plaques around the eye. F. Fromm *b*

Mechanism of action of the pancreatic lipotropic factor: its nature and demonstration of the protective effect it has on the pancreas. C. Lombroso and L. Arrigo (Univ. Genoa). *Boll. soc. ital. biol. sper.* **28**, 1708–11(1952); cf. *C.A.* **49**, 397*b*.—The morphological changes of the pancreas of rats which were poisoned by CCl_4, were prevented during the first 30 days by simultaneous injection of trypsin (Merck). Also the fatty infiltration of the liver was absent during this time. Conclusion: the pancreas excretion contains a lipotropic factor which is present in trypsin (Merck). F. Fromm *c*

Adrenocorticotropic effect of intravenous *p*-aminosalicylic acid and its therapeutic implications. Gerard Favez, Claude Fortier, André Bossy, and Charles Krahenbuhl (Univ. Lausanne, Switz.). *Diseases of the Chest* **26**, 646–55(1954).—Oral, daily administration of 5 or 15 g. of *p*-acetylaminosalicylic acid (I) to 12 young tuberculous women did not change the no. of eosinophils and lymphocytes while intravenous infusion of 15 g. I in aq. soln. decreased both significantly. Sensitivity to insulin (II) was significantly decreased after the oral dose of 15 g. I; resistance to II existed after infusion of I. Conclusion: The changes are indicative of pituitary-adrenal activation by intravenous I which releases adrenocorticotropic hormone from the pituitary gland. F. Fromm *d*

Animal experiments with anticancer agents, 1952. John R. Sampey (Furman Univ., Greenville, S.C.). *Am. J. Pharm.* **126**, 326–35(1954); cf. *C.A.* **46**, 9265*h*; **48**, 8930*c*, 8946*b*, 8965*h*.—Recent surveys have been made by S. on animal expts. with anticancer agents for the 3 yrs., 1949–51 (*C.A.* **48**, 13022*e*). The present study covers 122 articles on animal expts. published during 1952. 122 references. W. G. Gaessler *e*

Influence and mode of action of protamine sulfate on growth of microörganisms. R. Wolff and J. Brignon (Univ. Nancy, France). *Bull. soc. chim. biol.* **36**, 1125–36(1954).—In neutral or weakly acid media protamine exerts a bacteriostatic action on some species of bacteria. This action is antagonized by ribonucleic acid and by heparin, both of which displace protamine from its combination with the bacterial cell. They both combine with protamine in stoichiometric proportions. The partial-hydrolysis products of protamines called protones also exert a bacteriostatic action in relatively high concns. Mononucleotides in high concns. antagonize the action of protamine. L. E. Gilson *f*

The photodynamic activity of the natural coumarins. Luigi Musajo, Giovanni Rodighiero, and Giuseppe Caporale. *Bull. soc. chim. biol.* **36**, 1213–24(1954).—See *C.A.* **48**, 4111*h*. L. E. Gilson *g*

Antixerophthalmic activity of esters of astaxanthin. R. Grangaud and R. Massonet (Univ. Algiers, Algeria). *Compt. rend. soc. biol.* **148**, 1392–4(1954); cf. *C.A.* **44**, 6927*i*.—In rats deprived of vitamin A, administration of astaxanthin esters (isolated from the integument of *Aristeomorpha foliacea*) cured xerophthalmia but did not enable the rats to resume growth. L. E. Gilson *h*

Discussion of the origin of the adrenal reserves of hypertensive amines. J. Malméjac, S. Lissitzky, M. Bianchi, and G. Neverre (Univ. Algiers, Algeria). *Compt. rend. soc. biol.* **148**, 1394–6(1954). L. E. Gilson *i*

Action of 1,5-diethyl-5-butylthiobarbituric acid (JL 1074) on the sensitivity of the respiratory center to carbon dioxide. G. Bizard, J. Vanlerenberghe, A. Robelet, and G. Milbled (Univ. Lille, France). *Compt. rend. soc. biol.* **148**, 1406–7(1954).—In dogs the action is weak and of short though variable duration. L. E. Gilson *j*

Modification of the resistance to oxygen deficiency after administration of etanautine to the guinea pig. R. Rajsic, P. Arnould, and M. Lamarche (Univ. Nancy, France). *Compt. rend. soc. biol.* **148**, 1479–80(1954).—The resistance of guinea pigs to anoxemia was markedly reduced by intraperitoneal injection of 2 mg./kg. of etanautine (no formula given) 1 hr. previously. L. E. Gilson *k*

Drug allergy. Edward A. Carr, Jr. (Univ. of Michigan, Ann Arbor). *Pharmacol. Revs.* **6**, 365–424(1954).—Review with 376 references. L. E. Gilson *l*

Pharmacology of indole alkylamines. V. Erspamer (Univ. Bari, Italy). *Pharmacol. Revs.* **6**, 425–87(1954).—A review, with special attention to 5-hydroxytryptamine. 307 references. L. E. Gilson *m*

Expectorants and respiratory tract fluid. Eldon M. Boyd (Queen's Univ., Kingston, Ontario, Can.). *Pharmacol. Revs.* **6**, 521–42(1954).—A summary of reported observations made mainly on exptl. animals. L. E. Gilson *n*

Cortisonelike effect of hematoporphyrin and sunlight on anaphylaxis in mice. Frank H. J. Figge and Geo. C. Peck (Univ. of Maryland, Baltimore). *Proc. Soc. Exptl. Biol. Med.* **87**, 592–5(1954); cf. *C.A.* **47**, 10712*e*.—Intraperitoneal injection of small doses (0.6–2.0 mg.) of hematoporphyrin significantly increased the lethal effects of anaphylaxis in mice sensitized to horse serum. Injection of 2 mg. followed by 3–15 min. exposure to sunlight decreased the lethality of the shock dose of horse serum. This protective effect was roughly proportional to the length of exposure to sunlight; a 15-min. exposure saved 92% of the mice subsequently given a shock dose. This effect is similar to that of cortisone. L. E. Gilson *o*

Antagonism studies on reserpine and certain central nervous system depressants. Graham Chen and Charles R. Ensor (Parke, Davis & Co., Detroit, Mich.). *Proc. Soc. Exptl. Biol. Med.* **87**, 602–8(1954); cf. *C.A.* **48**, 13072*i*.—Quant. studies with electrically induced convulsions were made with mice on the antagonism between reserpine and 9 common central nervous system depressant drugs. The possible mechanisms of action are discussed. L. E. Gilson *p*

Effect of 2-methyl-2-propyl-1,3-propanediol dicarbamate (Miltown) on the central nervous system. C. D. Hendley, T. E. Lynes, and F. M. Berger (Wallace Labs., New Brunswick, N.J.). *Proc. Soc. Exptl. Biol. Med.* **87**, 608–10(1954); cf. *C.A.* **46**, 5716*d*.—The compd. has a potent and persistent mephenesin-like action on multineuronal spinal and bulbar reflexes in cats. The effects on cortical and thalamic elec. activity are described. L. E. Gilson *q*

Effect of thyroxine and potassium thiocyanate on the capacity of the rat thyroid gland to accumulate astatine^{211}. C. J. Shellabarger, Patricia W. Durbin, Marshall W. Parrott, and Joseph G. Hamilton (Univ. of California, Berkeley). *Proc. Soc. Exptl. Biol. Med.* **87**, 626–9(1954); cf. *C.A.* **49**, 1220*i*, 1221*b*.—Administration of thyroxine to intact female rats resulted in a lowered thyroidal accumulation of injected At^{211} and I^{131}. This effect is attributed to a reduction of pituitary activity by the thyroxine. Subcutaneous injections of KSCN blocked thyroidal accumulation of At^{211}. Under certain conditions KSCN discharges At^{211}, but not I^{131}, from the thyroid; this shows that At^{211} is probably not organically bound in the same manner as is I^{131}. L. E. Gilson *r*

Metabolic effects of three preparations of testosterone. A. Aronoff, J. E. Graham, and Hamish W. McIntosh (Shaughnessy Hosp., Vancouver, B.C.). *Can. Med. Assoc. J.* **71**, 340–5(1954).—Testosterone cyclopentylpropionate, testosterone propionate, and free testosterone were administered (400 mg. of each) successively after suitable rest periods to each of 3 normal men. Na, K, N and 17-keto steroids were detd. in the urine. No con- *s*

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within one day when the casein content of their diet was increased from 25% to 45 or 70% and continued to increase for several days more, whether the results were expressed as activity per liver or per g. of liver protein N. Liver wts. also increased, and so did kidney arginase activity and kidney wt. When the casein content of the diet was returned to 25%, the arginase activity curve was approx. the reverse of the curve obtained when the casein content was raised. L. E. Gilson

Prevention of fatty liver due to threonine deficiency by moderate caloric restriction. Akira Yoshida, Kiyoshi Ashida, and A. E. Harper (Univ. Nagoya, Japan). *Nature* 189, 917–18(1961).—Male weanling rats were used in 2 series of expts.; 1 group received a threonine-deficient diet, the other, a choline-deficient diet. Control groups of rats were fed basal diets *ad libitum*. The exptl. rats were fed the same amt. of protein and amino acids, but the caloric intakes were 70 or 50% of the controls. After 2 weeks the rats were killed and their livers removed and fat was extd. with ether. Fat content of control livers in the threonine-deficient series was 20.3% on a dry wt. basis, whereas the value for the rats that received 30% less calories was 13.3%. Hence a moderate redn. in caloric intake with an equal intake of protein prevented fatty infiltration without appreciably reducing growth. Redn. of calories to 50% reduced liver fat even further, but also retarded growth. The growth of the group fed the choline-deficient diet and 30% less calories was markedly reduced, and no significant redn. in liver fat was noted. It was concluded that fatty liver caused by feeding rats a low-protein diet deficient in thronine appeared to be a result of a disproportionately high intake of cal. in relation to the intake of balanced protein. Irene D. Ginger

Vitamin A activity of 8′-apo-β-carotenal. Wilbur Marusich, Elmer DeRitter, James Vreeland, and Rudolph Krukar (Hoffmann-La Roche Inc., Nutley, N.J.). *J. Agr. Food Chem.* 8, 390–3(1960); cf. *CA* 51, 10786*e*.—The vitamin A activity of *all-trans*-8′-apo-β-carotenal (I) in oil soln. was obtained by curative rat-growth assays and averaged 1,200,000 U.S.P. units/g. or 72 ± 8% of the activity of *all-trans*-β-carotene on a wt. basis. Dry stabilized beadlets of I were slightly but not statistically less potent. Possible metabolic pathways in the biol. conversion of β-carotene to vitamin A are discussed. W. M. Hunting

Complete *vs.* total protein in the evaluation of diets. Hartley W. Howard, Clifford D. Bauer, and Richard J. Block (Borden Special Products Co., New York). *J. Agr. Food Chem.* 8, 486–8(1960); cf. *CA* 52, 20717*i*.—Growth response of rats on diets of equal total protein but different content of complete protein and different content of several essential amino acids showed the nutritive value of a protein food to be closely correlated with its content of complete protein. Detn. of the total protein content of a food was shown to be an inadequate index of nutritive value. W. M. Hunting

Nutritional evaluation of the replacement of the fat in whole cow milk by coconut oil. Frank E. Rice (Food Research Associates, Chicago). *J. Agr. Food Chem.* 8, 488–91(1960).—A review with 41 references. W. M. Hunting

Effect of feeding butylated hydroxyanisole to dogs. O. H. M. Wilder, Paul C. Ostby, and Barbara R. Gregory (Univ. of Chicago). *J. Agr. Food Chem.* 8, 504–6(1960).—Dogs fed butylated hydroxyanisole (BHA) daily at levels of 0, 5, 50, and 250 mg./kg. of body wt. for 15 months indicated that they can tolerate a level at least 220 times the max. allowable level for this antioxidant in lard as shown by general health, wt. gains, hemoglobin, blood-cell counts, and tissue-section microscopy. Liver injury occurred in 3 dogs receiving the highest dosage. The BHA-fed dogs showed higher levels of glucuronates and a higher total SO_4^{--}-to-inorg. SO_4^{--} ratio which indicated that the BHA was excreted by this route. W. M. Hunting

Dietary evaluation of cottonseed protein from cotton bred for low gossypol content. F. H. Smith, C. L. Rhyne, and V. W. Smart (North Carolina State Coll. of Agr. and Eng., Raleigh). *J. Agr. Food Chem.* 9, 82–4(1961); cf. *CA* 53, 10588g.—Strains of cotton with a low gossypol content were evaluated with respect to nutritive quality. Rats fed meals prepd. from 3 crops of these strains of seed at the 10% protein level showed good growth. Excellent growth was obtained from strains of cotton having relatively high gossypol levels. This suggested improvements in other nutritive components through breeding. W. M. Hunting

Chloride requirements in milk cows. R. N. Odynets, I. A. Fantalis, and P. P. Valuĭskiĭ. *Izvest. Akad. Nauk Kirgiz. S.S.R., Ser. Biol. Nauk* 2, No. 4, 15–17(1960).—It was established that 75 g. of Cl^- in winter and 100–110 in summer for cows weighing 510–590 kg. with productivity 11.7–18.0 kg. milk daily represents min. daily requirements. Michal Jacukowicz

Utilization of urea by milk cows. C. C. Balch and R. C. Campling (Natl. Inst. Research Dairying, Reading, Engl.). *J. Dairy Research* 28, 157–63(1961).—Friesian cows averaging about 30 lb. of milk per day were used for N balance expts. of the change-over type, in which 3.0–3.5 lb. of 2 mixtures of molasses and urea were added to basal diets low in protein but contg. a high proportion of starch and lower carbohydrates and ample energy for the amt. of milk produced. The molasses mixtures contained 9–10% urea, about 2% H_3PO_4, and were added either alone or with 7% EtOH. In the first expt., the intake of digestible crude protein from the basal diet was about 90% of the recommended allowance and utilization of urea N was poor. In the second expt. the intake of digestible crude protein with the basal diet was 40% of the recommended allowance and the utilization urea N and N of addnl. peanut meal was almost complete. Owing to the way in which the expts. developed, the addn. of alc. to the mixture of molasses and urea could not be expected to increase the utilization of urea N even if it did have that effect under other circumstances. When added to the basal diet very low in N, the N of both urea and peanut meal was used mainly to prevent the withdrawal of N from body reserves but partly for a small increase in milk yield. A. H. Johnson

Tissue storage and apparent absorption of alpha- and gamma-tocopherols by Holstein calves fed milk replacer. R. T. Chatterton, Jr., D. G. Hazzard, H. D. Eaton, B. A. Dehority, A. P. Griffo, Jr., and D. G. Gosslee (Connecticut Agr. Exptl. Sta., Storrs). *J. Dairy Sci.* 44, 1061–72 (1961).—γ- or α-Tocopherols were fed at levels of 1.0 and 3.0 mg./lb. of live wt./day to 12 Holstein male (22 ± 2 days old) calves for a 14-day period. γ-Tocopherol represented 49% of the value of α-tocopherol when utilizing plasma concn. as the criterion, 22% when using liver concn., and 44% when using heart concn. The calves receiving γ-tocopherol had a considerably higher proportion of other forms of tocopherol (esp. α) in their tissues than calves receiving the α form, thereby indicating a possible dietary interaction between the 2 forms. Based on apparent alimentary absorption, γ-tocopherol was found to be of slightly greater value than the α form. A. H. Johnson

Transformation of astaxanthin into vitamin A in the albino rat—formation in vivo and in vitro. René Grandaud, Renée Massonet, Thérèse Conquy, and Jacqueline Ridolfo (Fac. méd. pharm., Algiers, Algeria). *Compt. rend.* 252, 1854–6(1961); cf. *CA* 44, 6927*i*.—The eyes of Wistar rats maintained 40 days after weaning on a diet lacking vitamin A were able to convert astaxanthin diacetate to vitamin A. The conversion was demonstrated both after feeding of the compd. to deficient animals and after incubation of the compd. with the eyes of deficient animals. John S. Krebs

The effect of replacing wheat in a poor Indian diet by a blend of whole wheat flour, tapioca flour, and a low-fat peanut flour on the metabolism of N, Ca, and P in children. P. P. Kurien, S. Venkata Rao, T. R. Doraiswamy, R. Rajagopalan, M. Swaminathan, and V. Subrahmanyan (Central Food Technol. Research Inst., Mysore). *Ann. Biochem. Exptl. Med.* (Calcutta) 21, 13–16(1961).—The replacement of whole wheat flour which constituted 50% of cereals in the diet by the blended flour did not cause any change in the retention of N, Ca, and P in children. J. L. Lapuck

The supplementary value of coconut meal, peanut meal, chick-pea, low-cost protein food, and skim milk powder to tapioca-rice diet. P. K. Tasker, K. Indira, M. Narayana Rao, K. Indiramma, M. Swaminathan, and V. Subrahmanyan (Central Food Technol. Research Inst., Mysore). *Ann. Biochem. Exptl. Med.* (Calcutta) 21, 17–24(1961).—All of the supplements produced a marked improvement in the growth-promoting value of the tapioca-rice diet. The different protein foods caused a significant increase in the red blood cell count and hemoglobin content as compared

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The incorporation of sulfate into the sulfatides of the brain slices is considered to be the result of a total synthesis of new sulfatide. Roland F. Beers, Jr.

Observations on the conjugation in vitro of bilirubin in homogenates of liver of neonatal guinea pig. P. Careddu, T. Apollonio, and N. Cabassa (Univ. Ferrara, Italy). *Boll. Soc. Ital. Biol. Sper.* **36**, 130–3(1960).—The immaturity at birth of the liver enzyme system conjugating bilirubin with glucuronic acid was confirmed in the guinea pig. Conjugation by liver homogenate of the 2-day-old animal is approx. $^1/_4$ that of the adult, and the adult level is reached about 3 weeks after birth. Treatment of young guinea pigs with 50 mg./100 g./day K orotate did not modify conjugation by liver but subcutaneous injection of 1 mg./kg./day cortisone slightly increased conjugation capacity of liver. Conjugation by liver of *o*-aminophenol showed a parallel immaturity and it was not stimulated by K orotate treatment. J. B. E. Crew

Breakdown of food proteins in the rumen. H. Hendrickx (Rijkslandbouwhogeschool, Ghent, Belg.). *Bull. Inst. Agron. Stas. Recherches Gembloux* Extra Vol. **2**, 669–80(1960) (in French).—Gelatin (**I**), wheat gluten (**II**), or keratin (**III**) were admixed in a soln. (compn. given) contg. org. and inorg. compds. with a different carbohydrate (**IV**) in each case. The mixts. were incubated for 6 hrs. in an artificial rumen contg. paunch juice of bovines fasted for 48 hrs. before slaughtering. The **IV** components (named) were sol. in 10 cases and water-insol. in 6 cases. Sulfate-S^{35} was used to label proteins (**V**) formed in the incubation mixts. Since the S^{35} was actively incorporated into the **V** synthesized, the total resulting **V** were readily estd., and it was possible to differentiate between bacterial **V** and **V** formed by the animal enzymes. In general, the hydrolysis of the food **V** decreased in the order **I**, **II**, and **III** and was affected only to a minor extent by the individual **IV** present. The formation of bacterial **V** was roughly similar whether **I**, **II**, or **III** was used as food but the results were greatly affected by the form of **IV** present. Although cellulose is known to be fermented in the rumen, the formation of bacterial **V** was the lowest for any **IV** used and was approx. equal to that in control expts. with no added **IV**. Results are interpreted in relation to previous reports. 21 references. W. C. Tobie

Effects of hypothermia on enzyme activities in the rat. J. R. Beaton and T. Orme (Defence Research Med. Labs., Toronto, Can.). *Can. J. Biochem. and Physiol.* **39**, 1649–52(1961).—Rats were chilled over 30–40 min. to a rectal temp. of 15°. When various enzymes were estd. at 15°, no differences were found in enzymic activity in chilled rats compared to normal rats. When measured at 37°, the liver glucose-6-phosphatase, plasma alk. phosphatase, and glucose utilization by muscles were lower for chilled than for normal rats. Liver catalase and kidney phosphate-activated glutaminase did not differ. W. C. Tobie

Comparative study of the free adenylic and uridylic nucleotides in aortas of young and old bovines. E. Kempf, R. Fontaine, and P. Mandel (Univ. Strasbourg, France). *Compt. Rend. Soc. Biol.* **155**, 623–5(1961).—The concns. of mono-, di-, and triphosphates of adenine and uridine were all considerably lower in aortas of the old animals (quant. data given). L. E. Gilson

Transformation in vitro of astaxanthin into vitamin A by ocular tissue of the rat. R. Massonet, T. Conquy, and R. Grangaud (Univ. Algiers, Algeria). *Compt. Rend. Soc. Biol.* **155**, 747–50(1961).—Whole rat eyes incubated in serum contg. α-tocopherol and astaxanthin converted part of the latter into vitamin A. It is suggested that this reaction occurs in the retina. L. E. Gilson

Conversion of 17α-hydroxypregnenolone to cortisol. M. B. Lipsett and B. Hokfelt (Karolinska Hosp., Stockholm). *Experientia* **17**, 449–50(1961)(in English).—Human, rat, and guinea pig adrenal slices were individually incubated in saline-phosphate soln. at pH 7.4 for 3 hrs. at 37° with 17α-hydroxypregnenolone (**I**), trace amts. of cortisol (**II**), 11-deoxycortisol (**III**), 17α-hydroxyprogesterone (**IV**), progesterone (**V**), corticosterone (**VI**), dehydroepiandrosterone (**VII**) added, the mixts. extd. with 80% acetone, defatted with MeOH, the 3β-hydroxy steroids pptd. with digitonin, and the nonpptd. steroids chromatographed to yield: **II**, **III**, **IV**, **V**, **VI**, and **VII**, all products except **V** and **VI** being identified by acetylation and chromatography in Bush solvents with comparison against the carrier steroids. The human adrenal slices converted 9% of **I** to **II** and 6% of pregnenolone to **II**, whereas both steroids were equally converted by guinea pig adrenal slices. The results indicate the adrenal 3β-ol dehydrogenase system to be responsible for a major metabolic transformation of **I**. Donald Paritz

Effect of icterogenin on biliary secretion. T. Heikel, B. C. Knight, C. Rimington, H. D. Ritchie, and E. J. Williams (Univ. Coll. Hosp. Med. School, London). *Formation Breakdown Haemoglobin Proc., Symp. Leeds, Eng.* **1960**, 18–26 (Pub. 1961).—A review with 8 references. CA

Urobilinoids. D. C. Nicholson (King's Coll., London). *Formation Breakdown Haemoglobin Proc., Symp. Leeds, Eng.* **1960**, 27–50 (Pub. 1961).—A review with 75 references. CA

Body composition at sea level and high altitudes. E. Picon-Reategui, Rodolfo Lozano, and Jose Valdivieso (Fac. Med., Lima, Peru). *J. Appl. Physiol.* **16**, 589–92 (1961).—Total body H_2O, extracellular fluid, intracellular fluid, body fat, fat-free body mass, cell mass, cell solids, and mineral mass, expressed as % of body wt., were detd. in adult male residents at sea level and in residents at an alt. of 14,900 feet. The 2 groups differed significantly only in extracellular fluid, which was greater in the high altitude group. Frank A. Smith

Influence of ammonia on respiration. Attilio D. Renzetti, Jr., Barton A. Harris, and John F. Bowen (Veterans Admin. Hosp., Syracuse, N.Y.). *J. Appl. Physiol.* **16**, 703–8(1961).—Concns. of NH_3 in arterial blood were increased 20-fold over control values by intravenous infusion of glycine in human subjects. The net effect on respiration was one of depression perhaps by increasing the pH within chemosensitive cells. Respiratory acidosis was present. During the period of elevated blood NH_3, the respiratory control system was less responsive than normal to a CO_2 stimulus. Frank A. Smith

Organic acids and calcium in hyperventilation. D. Robert Axelrod (Veterans Admin. Hosp., Brooklyn, N.Y.). *J. Appl. Physiol.* **16**, 709–12(1961).—Hyperventilation in human subjects resulted in increased plasma levels of citric and lactic acids, a decrease in inorg. P, no change in glucose, and a slight rise in total Ca. Hyperventilation appears to affect intermediary metabolism, leading to the changes in the org. acids and P. Peripheral tissues appear to be the source of org. acids. Frank A. Smith

The effect of biliary drainage upon the synthesis of cholesterol in the liver. N. B. Myant and Howard A. Eder (Hammersmith Hosp., London). *J. Lipid Research* **2**, 363–8(1961).—Synthesis of cholesterol (**I**) and fatty acids (**II**) was measured *in vitro* in livers of rats from which bile had been drained for various periods of time, and in control intact rats. Cholic and chenodeoxycholic acids were excreted initially at a rate above 5 mg./hr., but this fell rapidly within 8 hrs. to a min. of about 1 mg./hr. where it remained until between the 20–30th hrs. when there was a secondary rise to a max. of approx. 3 mg./hr. After draining the bile for more than 12 hrs., there was an increase in synthesis of **I** from acetate (mean treated/control ratio, 2.4) but not from mevalonate, and a small decrease in synthesis of **II**. Liver **I** levels were unchanged. W. A. Creasey

Mathematical analysis of metabolism using an analog computer. I. Isotope kinetics of iodine metabolism in the thyroid gland. Nubuo Fukuda (Natl. Inst. Radiol. Sci., Tokyo) and Motoyosi Sugita. *J. Theoret. Biol.* **1**, 440–59(1961).—Analog computation was applied to a proposed fluid model which permits **I** metabolism to be expressed by a series of math. relations. This set of simultaneous equations accounts for 17 independent variables of **I** metabolism, which influence I^{131} uptake by thyroid gland. Computations were made of some situations resembling pathol. states in man. H. Dix

Citric acid metabolism in slices and homogenates of cortical bone. Stephen M. Krane, Kenneth I. Shine, and Mary B. Pyle (Harvard Med. School, Boston). *Parathyroids, Proc. Symposium, Houston, Texas* **1960**, 298–309 (Pub. 1961).—Slices and homogenates of embryonic chick bone utilized citrate (**I**); $K_{max.}$ was calcd. to be $2 \times 10^{-3} M$. Addn. of di- or triphosphopyridine nucleotides to homogenates increased the rate. Ca depressed **I** utilization. It was postulated that this effect of Ca may suppress **I** oxidn. *in vivo* and that the increase in blood **I** produced by parathyroid hormone may be secondary to bone dissolution. Burton J. Kallman

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a period of 3 hrs. These results show that conditions appear to be more favorable for the conversion of urea to bacterial protein in the rumen when starch is fed than when sugar is given, in so far as the simultaneous availability of N, a suitable C source, and energy is concerned. Irwin Sankoff

New aspects in investigations of glycogen metabolism. E. L. Rozenfel'd and I. S. Lukomskaya (Inst. Biol. and Med. Chem., Moscow). *Molekul. Biol., Akad. Nauk SSSR, Inst. Radiats. i Fiz.-Khim. Biol.* 1964, 333–41(Russ). A review with 51 references. SRTT

Inhibition of anaerobic glycolysis by liver extract in Ehrlich ascites carcinoma cells in mice. Erwin Negelein and Franz Noll (Deut. Akad. Wiss., Berlin). *Naturwissenschaften* 52(6), 138–9(1965)(Ger). The title effect was detd. by manometry at 35° in bicarbonate–Ringer soln. contg. mouse liver slices and L-glutamate (I). With 0.0074*M* I, max. inhibition of glycolysis was 70% and was prevented by O. Inhibition was traced to the liver I-pyruvate transaminase which removed glycolytic pyruvate and prevented its oxidn. of DPNH. The DPN-to-DPNH ratio, thus shifted in the cells, inhibited triosephosphate dehydrogenation and hence anaerobic glycolysis. W. A. Peabody *b*

Metabolism of the eye. Yoshi Kurachi (Univ. Kanazawa, Japan). *Nippon Ganka Gakkei Zasshi* 67(10), 1241–84(1963)(Japan). Rabbit retina gave large *in vitro* values for Q_{O_2}, Q_{CO_2}, and $Q^{N_2}_{CO_2}$, while embryonic retina gave lower values. The corneal $Q^{O_2}_{CO_2}$ was not influenced *in vivo* by subconjunctival NaCl soln., although after 1 hr. Q_{O_2} was reduced 60%, while retinal metabolism was decreased 10% in 1 hr. and increased 24% in 6 hrs. Subconjunctival vitamin B_2 or oral iodolecithin increased, while thiamine or cortisone decreased, retinal metabolism. Cortisone decreased corneal metabolism. Anterior pituitary hormone or implantation of the anterior pituitary increased retinal Q_{O_2} and $Q^{O_2}_{CO_2}$ and slightly stimulated the regeneration of visual purple, although implantation slightly decreased Q_{O_2} and slightly increased $Q^{O_2}_{CO_2}$ in the light-adapted retina. Thyroid hormone and epinephrine-HCl increased retinal Q_{O_2} and $Q^{O_2}_{CO_2}$, while cortisone or castration decreased both. Q_{O_2} and $Q^{O_2}_{CO_2}$ was increased in male and decreased in female rabbits by testosterone, while in the female both were decreased by FSH and LH. The prophase and anaphase of pregnancy show an increase and decrease, resp., in retinal metabolism. Thiamine deficiency decreased retinal Q_{O_2}, but not $Q^{O_2}_{CO_2}$. Pigment distribution was studied in frog and chicken retinas, and homogenates of retina were shown to metabolize glucose, galactose, maltose, and glycogen. Phosphorylase activity was highest in the supernatant and hexokinase activity was slightly less than in the brain, these 2 activities showing good correlation and being higher in microsomal and mitochondrial fractions than in supernatant and nuclear prepns. Creatine phosphate and inorg. P decreased and increased, resp., in the light-adapted retina, but high-energy phosphate could not be maintained in the absence of respiration of glycolysis. ^{32}P uptake was slower in the retina than in liver, being more rapid in the light-adapted retina. GKJY *c d e*

Enzymic adaptation related to carbohydrate metabolism in the animal body. Norio Shimazono (Tokyo Biochem. Res. Found.). *U.S. Dept. Com., Office Tech. Serv.* AD 432391, 21 pp.(1962/63)(Eng). Fasting and refeeding was carried out with male rats to det. the enzymic adaptation of the pentose phosphate pathway in rat tissue. Rats were starved for 5 days and then refed with a high-carbohydrate or fat diet before sacrifice. The supernatant fractions of homogenized tissues were used for enzyme assays. Glucose-6-phosphate dehydrogenase (I) and 6-phosphogluconate dehydrogenase (II) were assayed spectrophotometrically at 340 mμ. I, II, and 6-phosphogluconolactone activity increased in liver tissue after refeeding of a high-carbohydrate diet with a 14-fold increase in I being shown. Results were less dramatic with the high-fat diet. The activity of I was found to be the rate-limiting step. There was no essential difference between fasted and refed rats in the purification of the liver enzyme with the activity recovery and the specific activity increase in the purification procedure being the same in both cases. Michaelis consts. were similar in fasted and refed rats. Enzyme activators and inhibitors do not play an important role in this adaptation phenomenon. Formation of I and II was inhibited in rats refed with a high-carbohydrate diet after intraperitoneal administration of 8-azaguanine. Irwin Sankoff *f g*

The aromatization of neutral steroids in pregnant women. IV. Lack of estrogen formation from progesterone. R. Jaffe, R. Pion, G. Eriksson, N. Wiqvist, and E. Diczfalusy (Karolinska Sjukhuset, Stockholm). *Acta Endocrinol.* 48(3), 413–22(1965)(Eng); cf. *CA* 61, 922*e*. By using a variety of exptl. techniques, very little estrone, 17β-estradiol, or estriol-like radioactive material could be detected in the placenta, fetal tissues, and urine of pregnant women following the administration of labeled progesterone. The concept that progesterone is not a significant precursor of placental estrogens is supported. Walter Tkaczyk *h*

Testosterone production and metabolic clearance rates with volumes of distribution in normal adult men and women. R. Horton, J. Shinsako, and P. H. Forsham (Univ. of California Med. Center, San Francisco). *Acta Endocrinol.* 48(3), 446–58 (1965)(Eng). The relation between the production rate of testosterone (I) from analysis of a urinary metabolite, testosterone glucuronoside (II), and the production rate of steroid in plasma was investigated. The metabolic clearance rate (M.C.R.) following single injection of tritiated I was 980 ± 120/day in 5 males and 760 and 840/day in 2 females. The product M.C.R. and mean plasma I indicates a plasma production rate of 6.9 mg./day in males and a max. 0.8 mg./day in females. The urinary production rate was 6.5 ± 1.9 mg./day in males and 1.9 ± 0.9 mg./day in females. Walter Tkaczyk

In vitro studies of the transformation of astaxanthin into vitamin A [in tissues] of the white rat. R. Massonnet, T. Conquy, and R. R. Grangaud. *Ann. Nutr. Aliment.* 19(1), C655–C659 (1965). Conversion of astaxanthin into retinol occurs only in tissues of the retina. 12 references. J. Dufrenoy

Incorporation of phosphate-^{32}P in rabbit kidney lecithins as a function of lecithin unsaturation. C. F. Wurster, Jr., and J. H. Copenhaver, Jr. (Dartmouth Coll., Hanover, N.H.). *Biochim. Biophys. Acta* 98(2), 351–5(1965)(Eng). Kidney slices were incubated with inorg. ^{32}P-labeled phosphate, and reductive ozonolysis was employed to determine the ^{32}P incorporation into disatd., α′-satd.-β-unsatd., α′-unsatd.-β-satd., and diunsatd. lecithins. The highest ^{32}P incorporation occurred with the disatd. lecithins, and the lowest was found among the α′-satd.-β-unsatd. lecithins. RCCF

Interaction of individual phospholipids between rat plasma and erythrocytes in vitro. Toshio Sakagami, Osamu Minari, and Tadao Orii (Med. Coll., Sapporo, Japan). *Biochim. Biophys. Acta* 98(2), 356–64(1965)(Eng). Lecithin, sphingomyelin, and lysolecithin in erythrocytes were actively exchanged with these phospholipids in plasma. During a 2-hr. incubation of erythrocytes with plasma, appreciable change in the amt. of total phospholipids was not observed. The synthesis of phospholipid from ^{32}P-labeled inorg. phosphate and the breakdown into nonlipid P compds. *in situ* were of no significance for the exchange of phospholipids. Individual phospholipids were not always exchanged at the same rate. The extent of exchange was greatest for lysolecithin. The exchanges of lecithin and sphingomyelin were less active, although the former was more active than the latter. *In vitro* expts. suggested that *in vivo* the phospholipids of mature circulating erythrocytes were metabolized predominantly through exchange with the plasma phospholipids rather than by synthesis and breakdown *in situ*. RCCF

Lipid metabolism in cultured cells. IV. Serum α-globulins and cellular cholesterol exchange. J. M. Bailey (George Washington Univ., School of Med., Washington, D.C.). *Exptl. Cell Res.* 37(1), 175–82(1965)(Eng); cf. *CA* 62, 6909*e*. When mammalian cells are cultured in the presence of serum, exogenous cholesterol can be taken up and excreted by the cells. Since serum proteins are necessary for this exchange, expts. were designed to det. the specific serum fraction which is responsible. MB III mouse lymphoblasts were prelabeled with cholesterol-^{14}C and grown in a balanced salt medium plus the serum fraction to be tested. The amount of cholesterol which was excreted into the medium was determined in the presence of the following calf serum fractions: γ-globulins, β-globulins, albumin, and α-globulins which were isolated by ion exchange chromatography on DEAE-cellulose. Cholesterol was excreted into the medium only in the presence of fractions contg. α-globulins. Cohn fractions of human serum when tested with L-strain mouse fibroblasts gave similar results. Upon fractionation of serum on DEAE-cellulose, cholesterol was found assocd. with the α-globulin fractions. It was suggested that lipids are nonselectively taken up by the cells and the excess, nonutilizable lipids subsequently excreted. α-Globulins, by virtue of their cholesterol binding properties, probably catalyze this exchange. Eugene E. Grebner

Metabolism of essential fatty acids in the pregnant animal. I. The influence of high-fat diet on metabolism of essential fatty acid cholesterol esters in pregnant Wistar strain albino rats. Toshio Nishimura, Shuko Furuta, Tatsuo Hattori, and Akira Yoshida (Univ. Med. School, Kyoto, Japan). *Horumon To Rinsho* 13(1), 31–8(1965)(Japan). Pregnant animals showed higher amts. of linoleic acid (I), linolenic acid (II) and arachidonic acid (III) on a wet wt. basis than the nonpregnant group. The embryos were markedly rich in essential fatty acid cholesterol esters (IV), esp. in III. Feeding a high-fat diet increased II and I in the liver of the control group, and III in placenta of the pregnant group, but it gave only a slight rise of IV in the embryos. A possible conversion of I to III in liver of the pregnant animals is suggested. **II. The influence of low-fat diet and of fat-deprived diet on metabolism of essential fatty acid cholesterol esters in pregnant Wistar strain albino rats.** *Ibid.* 105–9. Feeding a low-fat diet decreased IV more, esp. those of I and III in serum and liver of the pregnant animals, than those of the nonpregnant group, but it lowered IV of the placenta and embryo to a far less extent. When a diet deprived of fat was fed from the 2nd week of pregnancy, the I and III contents of the embryo were not significantly decreased. The IV fraction is presumably stored in the very beginning period of embryonal