



B. A. Greenwell

B. A. GREENWELL ('66) has been appointed general manager in the Chicago branch of The De Laval Separator Company; he has responsibility for sales, service, warehouse and shop functions. Before joining De Laval, he was president of his own company and worked for Votator Division of Chemetron Corporation and Linde Air Products Company. He has a degree in mechanical engineering from the University of Kentucky. He is a member of AOCS and a past president of the Chemical Equipment Sales Engineers Association of Chicago.



H. A. Molteni

A. MOLTENI ('50) has joined Rhodia Inc. as New Products Developments Manager, a new position in the firm's Flavor and Fragrance Department. Mr. Molteni will have primary responsibility for coordinating Rhodia's activities relating to the synthetic aromatic chemicals it will produce in a new plant now under construction in Brazosport, Texas (near Freeport), according to F. H. Sloan, Vice President. He comes to Rhodia from Drew Chemical Corp., where he spent 22 years in various technical and marketing positions. Previous experience included technical and plant-management functions at Millmaster Onyx (Jersey City) and Corn Products (Edgewater, N.J. and Argo, Ill.). A member of AOCS, the American Chemical Society, Society of Cosmetic Chemists, and Cosmetic Industry Buyers and Suppliers group, Mr. Molteni serves actively also with the Soap and Detergent Association and the Toilet Goods Association.



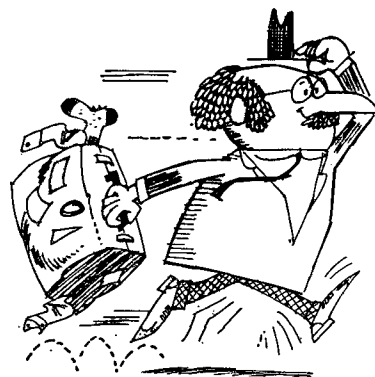
R. L. Klein

R. L. KLEIN ('60) has been appointed regional vice president of Durkee Famous Foods Industrial Group, according to A. J. Lathe, vice president, Durkee Industrial Foods Group, Glidden-Durkee Division of SCM Corporation. Mr. Klein becomes vice president of Durkee's southern industrial region with responsibility for 11 southern states and bordering areas and will be headquartered in Louisville, Ky. He has been with Durkee since 1960 and held several positions in the Chicago area before moving to

Louisville in 1969. Durkee markets a wide line of refined edible oil products to food manufacturers throughout the United States plus spices and other food products. Edible oil refineries are located in Chicago; Louisville; Joliet, Illinois, and Berkeley.

HAROLD E. HUBER ('58) has been appointed technical manager for chemicals by Chemetron Corporation's Votator division, Jeffersontown, Ky. Huber, who had been chemical

(Continued on page 585A)



Meetings

AOCS National Meetings

- May 2-6, 1971—Houston, Shamrock Hotel.
- Oct. 2-6, 1971—Atlantic City, Chalfonte-Haddon Hall Hotel.
- April 23-26, 1972—Los Angeles, Calif., Statler Hilton Hotel.
- Sept. 24-28, 1972—Ottawa, Canada, Cheateau Laurier Skyline Hotel.

AOCS Section Meetings

- Northeast Section—Dec. 8, 1970, Military Park Hotel, Newark, N.J.

Other Organizations

- Dec. 1-2, 1970—Annual Meeting of the Society of Cosmetic Chemists, Americana Hotel, New York, N.Y.
- Dec. 1-2, 1970—Pharmaceutical Applications in Gas Chromatography Short Course, St. Louis Chapter of the American Chemical Society and Washing University, Division of Continuing Professional Education, Washing University, St. Louis, Mo.
- * Jan. 7-15, 1971—ASTM Committee D-26 on Halogenated Organic Solvents, Galt Ocean Mile Hotel and Schrafft's Hotel, Fort Lauderdale, Fla.
- * Jan. 13-16, 1971—ASTM Committee E-15 on Analysis and Testing of Industrial Chemicals, place to be announced, Atlanta, Ga.
- Jan. 16-17, 1971—26th Annual Convention of the Oil Technologists Association of India, Vigyan Bhawan, New Delhi, India.
- * Jan. 20-22, 1971—26th Annual Symposium on Instrumentation for the Process Industries, Texas A&M University, College Station, Texas.
- Jan. 24-27, 1971—National Exposition for Food Processors, McCormick Place, Chicago, Ill.
- Feb. 17-19, 1971—Sixth Annual Conference on the Use of Digital Computers in Process Control, Louisiana State University, Baton Rouge, La.
- * Feb. 18-20, 1971—A Course on Computers in Analytical Laboratories, Washington University, St. Louis, Mo.
- April 14-16, 1971—Fourth National Pollution Control Conference and Exposition, Houston Junior Chamber of Commerce, Cobo Hall, Detroit, Mich.
- * May 10-14, 1971—First Interdisciplinary Symposium on Flow—Its Measurement and Control in Science and Industry, William Penn Hotel, Pittsburgh, Pa.
- * May 24-25, 1971—Society of Cosmetic Chemists Semi-Annual Meeting, Washington Hilton Hotel, Washington, D.C.
- * June 15-18, 1971—National Conference of the Canadian Institute of Food Technology, Winnipeg Inn, Winnipeg, Manitoba, Canada.
- * June 21-24, 1971—Fifth Symposium on Temperature, National Bureau of Standards, Washington, D.C.
- * June 21-25, 1971—Oil and Colour Chemists' Association's 23rd Annual Technical Exhibition, Empire Hall, Olympia, London, W. 14, England.

*Additions to previous calendar.

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(Continued from page 575A)

FURTHER CHARACTERIZATION OF THE APOLIPOPROTEINS OF RAT PLASMA LIPOPROTEINS. T. P. Bersot, W. V. Brown, R. I. Levy, H. G. Windmueller, D. S. Fredrickson and V. S. LeQuire (Dept. of Pathol., Vanderbilt Univ. School of Med., Nashville, Tenn. 37203). *Biochemistry* 9, 3427-33 (1970). Rat plasma lipoproteins of very low density (VLDL), low density (LDL) and high density (HDL) were isolated and their protein components (apolipoproteins) prepared by ethanol-ether delipidation. These were solubilized in the presence of decyl sulfate and urea and sequentially fractionated by gel filtration and DEAE-cellulose chromatography. LDL contained a single apolipoprotein. This LDL apolipoprotein represented approximately 25% of the apolipoproteins of VLDL. The remaining VLDL apolipoproteins consisted of a large protein (mol wt > 25,000) unique to VLDL and a number of smaller proteins. Thus rat plasma lipoproteins contained at least four different apoproteins: one is common to LDL and VLDL, one is unique to VLDL, one is unique to HDL, plus a family of peptides shared by both very low density and high density lipoproteins.

EFFECT OF DIET ON FATTY ACID COMPOSITION OF MINIATURE SWINE ADIPOSE TISSUE LIPIDS. G. L. Baker, D. W. Anderson and S. A. Eash (Dept. of Pediatrics, Univ. of Iowa, Iowa City, Iowa 52240). *Am. J. Clin. Nutr.* 23, 926-31 (1970). Serial samples of aspirated adipose from miniature pigs either fed artificial diets or sow-fed were analyzed for fatty acid composition during the first 8 weeks of life. Those animals fed a medium-chain triglyceride diet were found to have an increased proportion of saturated fatty acids and greater concentrations of medium-chain fatty acids in adipose tissue lipids. The newborn pig is similar in some respects to the low birth weight infant and may serve as a model for study of adipose tissue compartment growth.

SYNTHESIS OF CHOLESTEROL FROM GLUCOSE-U¹⁴C IN THE LIVER AND EXTRAHEPATIC TISSUES OF THE MOUSE. G. R. Jansen, M. E. Zanetti and C. F. Hutchison (Merck Inst. for Therap. Res., Rahway, N.J.). *Arch. Biochem. Biophys.* 138, 433-42 (1970). The incorporation of glucose-U¹⁴C into cholesterol and other sterols of liver extrahepatic tissues has been studied in two experiments in mice fed a purified diet containing 20% corn oil or this diet supplemented with 1% cholesterol or 1% cholestyramine. In each experiment the mice were given 250 mg glucose-U¹⁴C orally and killed in 1 hr. In mice fed the basal diet 2-6 times more cholesterol synthesized from glucose-U¹⁴C was found in extrahepatic tissues than in the liver, with about 2/3 of the extrahepatic labelled cholesterol being found in the gastrointestinal tract. More Δ^7 -cholesterol was synthesized from glucose in extrahepatic tissues than the total amount of cholesterol synthesized in liver and carcass combined with approximately 2/3 of the newly synthesized Δ^7 -cholesterol found in the skin. Cholesterol feeding reduced the level of radioactivity in liver and carcass cholesterol 90-98% and 35-38% respectively, the overall reduction in cholesterol synthesis in cholesterol-fed mice being 45-55%. Cholestyramine feeding increased the incorporation of label into liver cholesterol 4- to 10-fold and into carcass cholesterol 60-70%. Based on the data obtained in these experiments it has been calculated that in mice fed the control diet, 35-43 μ g cholesterol was synthesized out of 250 mg glucose-U¹⁴C given. Of this newly synthesized cholesterol 5-13 μ g were isolated from liver and 30 μ g were isolated from liver and 30 μ g from extrahepatic tissues.

LIPID OXIDATION IN BIOLOGICAL MEMBRANES, I. LIPID OXIDATION IN SUBMITOCHONDRIAL PARTICLES AND MICROSOMES INDUCED BY CHAOTROPIC AGENTS. Y. Hatefi and W. G. Hanstein (Scripps Clinic and Res. Found., La Jolla, Cal.). *Arch. Biochem. Biophys.* 138, 73-86 (1970). Chaotropic agents (SCN⁻, guanidine-HCl, ClO₄⁻, I⁻, Br⁻, NO₃⁻, urea) destabilize the native structure of submitochondrial particles and microsomes and render these systems susceptible to lipid oxidation by molecular oxygen, the initial oxidation rate varying with the concentration and potency of the chaotropic agent (potency of these agents decreases in essentially the same order as given above). In

electron-transport particles and complexes, I, III and IV of the respiratory chain, chaotropic agent-induced lipid oxidation has a rapid initial rate followed by a slower rate. Preparations with a high cytochrome content are capable of lipid oxidation when incubated at 30C in the absence of any chaotropic agent. This uninduced reaction is particularly significant in preparations of cytochrome oxidase, which are capable of oxygen consumption at a rate of 1.76 μ moles O₂/mg of protein. Lipid oxidation in both submitochondrial particles and microsomes results in the production of malondialdehyde. Substrates impede lipid oxidation in electron-transport particles, and antimycin-A inhibits lipid oxidation in complex III. α -Tocopherol, Tiron and bathophenanthroline sulfonate also inhibit lipid oxidation. Results are discussed in relation to the structure, function and lipid composition of submitochondrial particles and microsomes.

II. KINETICS AND MECHANISM OF LIPID OXIDATION IN SUBMITOCHONDRIAL PARTICLES. W. G. Hanstein and Y. Hatefi. *Ibid.*, 87-95. Chaotropic agents induced lipid oxidation in submitochondrial particles and microsomes by destabilizing the native structure of these membranes. A plot of the rate of lipid oxidation vs. chaotrope concentration shows a cooperativity effect similar to that observed in the unfolding of a protein molecule by a perturbing agent. However, the magnitude of the activation parameters suggest that at high chaotrope concentration structure destabilization has little influence on the rate of lipid oxidation. Erythrocyte ghosts and *Bacillus subtilis* plasma membranes, which have a low content of acid-labile sulfide and cytochromes, resist lipid autoxidation. Kinetic data of lipid oxidation and labile sulfide loss in the presence of chaotropic agents are consistent with the possibility that iron-sulfur proteins, or their intermediate decomposition products, catalyze the initial, rapid phase of autoxidation in submitochondrial particles. Results are discussed in relation to the structure of membranes and the structure of water.

FATTY ACID SYNTHESIS IN DEVELOPING MOUSE LIVER. S. Smith and S. Abraham (Children's Hosp. Med. Center of Northern California, Oakland, Cal.). *Arch. Biochem. Biophys.* 136, 112-21 (1970). Fatty acid synthesis in developing mouse liver has been studied by measuring incorporation of labelled acetate and pyruvate into fatty acids by tissue slices (lipogenic activity) in conjunction with the determination of the activities of several enzymes involved in lipogenesis. Hepatic lipogenic activity, normally low in suckling pups, can be increased by weaning onto a fat-free diet on or after day 16 postpartum. Feeding a linoleate-deficient milk during days 6-15 postpartum produced greater hepatic lipogenic capacities than feeding linoleate-rich milk. The increase in hepatic lipogenic activity in mouse pups weaned onto a fat-free diet and the accompanying increase in the activities of citrate cleavage enzyme, acetyl CoA carboxylase, fatty acid synthetase and malic enzyme are dependent on the synthesis of new protein and new RNA. The activity increases of these enzymes at weaning follow different time courses, with fatty acid synthetase reaching maximum activity earliest.

INTERMEDIATES OF FATTY ACID SYNTHESIS: SITES OF BINDING TO THE PIGEON LIVER FATTY ACID SYNTHETASE. J. E. Nixon, G. T. Phillips, A. S. Abramovitz and J. W. Porter (Dept. of Physiol. Chem., Univ. of Wisconsin, Madison, Wis.). *Arch. Biochem. Biophys.* 138, 372-9 (1970). The pigeon-liver fatty acid synthetase complex contains three acetyl- and two malonyl-binding sites, one of which (B₁) appears to be a hydroxyl-containing compound. Acetyl and malonyl groups (transferred from their CoA esters) are bound to this site in increased amounts when the sulfhydryl sites that bind acyl groups to the enzyme are blocked with iodoacetoamide. The results suggest that B₁ is a primary or loading site for acetyl and malonyl groups. Competitive inhibition studies have shown both acetyl and malonyl groups competing for this site, suggesting that fatty acid synthetase may have a single loading site (B₁) for these groups. Similarly, acetyl and malonyl groups bind competitively to the 4'-phosphopantetheine (A₂) prosthetic group of the enzyme. A third site (B₂) binds acetyl, but not malonyl. The acetoacetyl moiety is bound to the A₂ site, its binding being dependent on the availability of the B₂ site for the binding of the acetyl group. A reduction of acetyl binding to this site by selective iodoacetoamide inhibition resulted in a parallel reduction in the formation of the acetoacetyl-enzyme. Incubation of the enzyme with malonyl-CoA and hexanoyl-CoA yields β -ketoctanoyl-enzyme. Reduction of β -ketoctanoyl-enzyme in the presence of NADPH yields octanoyl-enzyme, the octanoyl group being bound to the enzyme through thioester bonding at both the A₂ and B₂

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Soybean Harvest Losses Top \$84 Million

Last fall soybean growers left 13% of their total crop on the ground . . . 145 million bushels according to the National Soybean Crop Improvement Council. That's equal to \$362 million left among the soybean straw!

Loss figures are the result of field studies made in several states. Bob Judd of the Council estimates that farmers can earn \$15.00 and more per hour by doing a more careful job of harvesting.

Surveys of top soybean farmers conducted for four years in a row by the Council show that slower combine speed and beginning harvest when beans are at about 15% moisture are two of the best ways to reduce harvest losses.

Studies at Ohio State University, University of Illinois and Iowa State University also bear this out. "Thirteen to 15% moisture is best," say the engineers. "And when you slow ground speed down from 5 mph to 2.5 mph, you cut total losses in half. Speeds greater than 3 mph cause the big increase in losses."

W. R. Nave, Illinois agricultural engineer, has been researching harvest losses.

In the Illinois tests, high-speed movies showed a lot of shatter loss caused by the cross auger on the combine feed Table. Farmers can adjust auger speed so it moves material away from the cutterbar just fast enough to avoid this loss.

There are specific areas to concentrate on to reduce soybean harvest losses.

Pre-harvest losses—avoid shatter loss and lodged beans by starting to combine when the bean crop is mature (14-15% moisture).

In most seasons there is enough good soybean harvest weather to finish combining before bean moisture gets down to 10%. So it is better to reduce speed to 3 mph.

Harvest more acres per day by combining early in the morning and later in the evening when there is a heavy dew. A variable speed cylinder on the combine permits increasing cylinder speed when the dew is heavy; reduce cylinder speed as pods dry off.

Combine header losses—make combine reel and sickle work together. Cutterbar should be sharp and any worn parts replaced so it will work smoothly with the least possible vibration.

Reel speed should be geared to forward ground speed and reel height adjusted to the height of soybean crop.

Shatter losses can be drastically reduced by running the reel 15 to 20 in. above ground and at a speed 25% greater than ground speed.

Top soybean growers who answered the National Soybean Crop Improvement Surveys reported that cutting low and getting under low podding beans helped them save several extra bushels per acre.

Many use automatic header controls or a floating header to cut as close to the ground as possible. Hydraulic reel lifts, like automatic header controls, are essential for doing a peak harvesting job with self-propelled combines, they reported.

It is sometimes necessary to run the cutterbar high to avoid picking up

stones and damaging the combine cylinder. A stone trap ahead of the cylinder will end this risk.

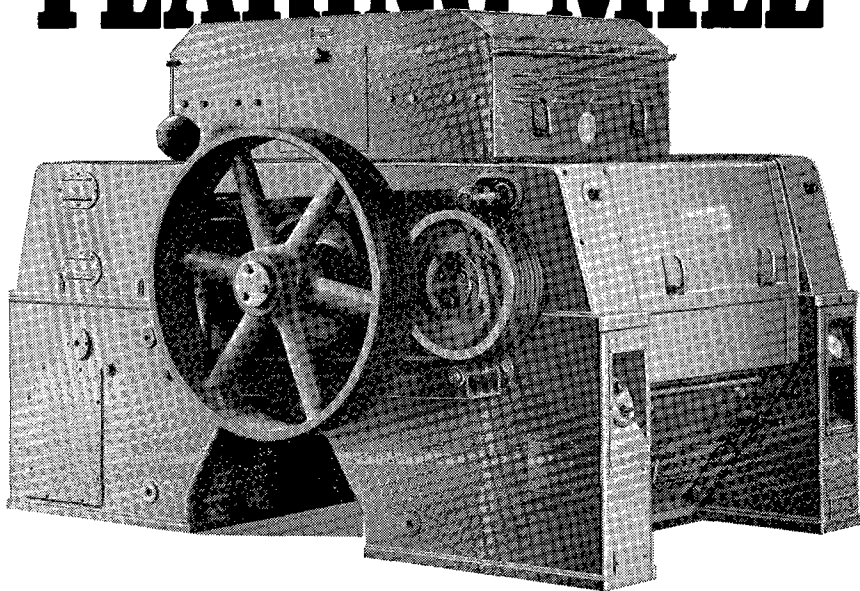
Threshing and separating losses are losses that can be reduced by adjustments on the combine. Beans separate from pods easily so cylinder speed should be slowed and concaves opened if cracked beans are appearing in the hopper.

A lot of material coming through the tailings elevator means separator adjustment should be checked. Soybeans are almost certain to crack if sent through a second time.

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(Continued from page 582A)

sites. The location of intermediates on specific prosthetic groups of the enzyme is utilized to deduce both the order of the intermediate reactions and the role played by each prosthetic group during fatty acid synthesis.

THE MECHANISM OF SYNTHESIS OF FATTY ACIDS BY THE PIGEON LIVER ENZYME SYSTEM. G. T. Phillips, J. E. Nixon, J. A. Dorsey, P. H. W. Butterworth, C. J. Chesterton and J. W. Porter. *Ibid.* 380-91. The evidence in support of the postulation of three major sites of binding of acetyl and two of malonyl groups to the pigeon liver fatty acid synthetase is critically reviewed. Analyses of the chemical, properties of these sites, both free and esterified with acetylmalonyl groups, and amino acid analyses of the peptides containing these sites, has led to their identification as the -SH groups of 4'-phosphopantetheine and cysteine and the hydroxyl group of a hydroxyamino acid. The enzymatic synthesis of other enzyme-bound intermediates of fatty acid synthesis has also been effected, and the sites of binding of each intermediate to the protein has been determined. From data on the sites of binding of intermediates to the fatty acid synthetase and the order of transfer from one site to another a mechanism of fatty acid synthesis is postulated.

INFLUENCE OF DIETARY LIPID ON LIPOGENESIS AND ON THE ACTIVITY OF MALIC ENZYME AND CITRATE CLEAVAGE ENZYME IN LIVER OF THE GROWING CHICK. Y. Yeh, G. A. Leveille and Joyce H. Wiley (Lab. of Nutr. Biochem., Dept. of Animal Sci., Univ. of Ill. at Champaign-Urbana, Ill. 61801). *J. Nutr.* 100, 917-23 (1970). The effects of both acute and chronic fat feeding on hepatic lipogenesis and on the activity of related enzymes have been evaluated in the growing chick. The results clearly show that hepatic fatty acid synthesis is markedly reduced within 1 hour after oral corn oil administration. A similar reduction in fatty acid synthesis by liver slices was observed from acetate-1-¹⁴C or glucose-U-¹⁴C in spite of the fact that glucose was consistently incorporated to a lesser extent than acetate. Malic enzyme and citrate cleavage enzyme were not altered within 2 hours of corn oil feeding. In chronic fat feeding studies, increasing the level of dietary fat signifi-

cantly reduced hepatic lipogenesis from acetate-1-¹⁴C or glucose-U-¹⁴C as measured in vitro or in vivo. Increasing the level of dietary fat from 2 to 10% depressed the specific activity of both malic enzyme and citrate cleavage enzyme by about 50%.

¹⁴C-1-PALMITATE INCORPORATION BY RAT LUNG: EFFECT OF NITROGEN DIOXIDE. T. Thomas, Jr. and R. A. Rhoades (Center for Air Environ. Studies and Lab. for Human Perf. Res., Penn. State Univ., Univ. Park, Penna. 16802). *Proc. Soc. Exp. Biol. Med.* 134, 1181-83 (1970). The effect of breathing nitrogen dioxide (NO₂) on the in vivo incorporation and turnover of ¹⁴C-1-palmitate in rat lung lecithin was studied. Continuous exposure to 5 ppm of NO₂ for 14 days markedly decreased lecithin turnover. The suggestion is made that changes in lecithin turnover may lead to alterations in the surface-active material on the alveolar surface which in turn may account for some of the damage observed in NO₂-exposed lungs.

AUTOXIDATION OF CHOLESTEROL VIA HYDROPEROXIDE INTERMEDIATES. J. E. Van Lier and L. L. Smith (Dept. of Biochem., Univ. Texas Med. Branch, Galveston, Texas 77550). *J. Org. Chem.* 35, 2627-32 (1970). The autoxidation of cholesterol in air is shown to proceed both via the previously recognized photoinduced singlet oxygen attack on the A/B-ring system to give the well-known sequence of autoxidation products of cholesterol, and also by a biradical oxygen attack resulting in the formation of cholesterol 20 α - and 25-hydroperoxides and their putative degradation products cholest-5-ene-3 β , 25-diol, cholest-5-ene-3 β , 20 α -diol, chol-5-ene-3 β -ol, preng-5-ene-3 β , 20 α -diol, preng-5-en-3 β -ol, 3 β -hydroxypreg-5-en-20-one, androst-5-ene-3 β , 17 β -diol, androst-5-en-3 β -ol and 3 β -hydroxyandrost-5-en-17-one.

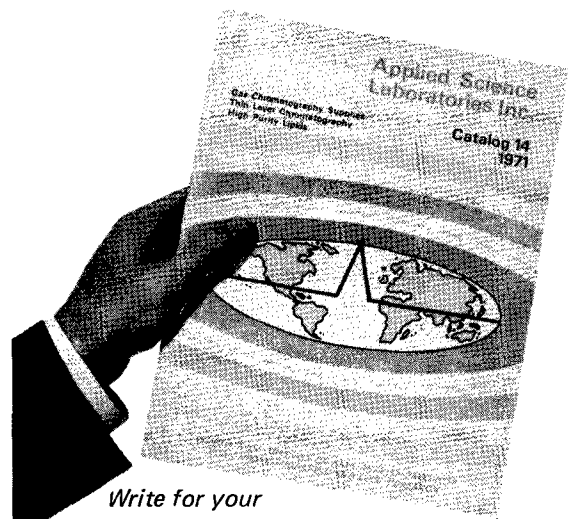
DIETARY OBESITY IN RATS: BODY WEIGHT AND BODY FAT IN SEVEN STRAINS OF RATS. Rachel Schemmel, O. Mickelsen and J. L. Gill (Dept. of Foods and Nutr. and Dept. of Dairy, Mich. State Univ., East Lansing, Mich. 48823). *J. Nutr.* 100, 1041-48 (1970). Ten male and ten female rats from each of seven strains were fed a grain ration for 10 or 20 weeks from weaning. Body weight and body fat of these rats were compared with those of 20 rats of the same age and sex fed a ration containing 60% hydrogenated fat. Also, five male and five female rats of the same seven strains were killed at weaning. Mean weaning weights and the percentage of body fat for the seven strains of rats were similar. Mean weights of five male rats fed grain for 20 weeks ranged from 304 g for S 5B/Pl rats to 445 g for Osborne-Mendel rats; for five female rats, mean weights ranged from 163 g for S 5B/Pl to 301 g for Osborne-Mendel rats. Male rats fed the high fat ration ranged in weight from 346 g for S 5B/Pl to 693 g for Osborne-Mendel males. Females fed the high fat ration ranged in weight from 170 g for S 5B/Pl to 452 g for Osborne-Mendel rats. After 20 weeks of experiment (at 23 weeks of age), carcasses of both male and female rats fed grain contained from 10(S 5B/Pl) to 16% fat (Sprague-Dawley). Rats fed high fat ranged from 14 (S 5B/Pl) to 40% (Osborne-Mendel) body fat. For rats of the same sex and age, body weight was influenced nearly equally by genetics (strain differences) and ration, but the percentage of body fat was influenced largely by the ration (74% of variation due to ration difference).

EFFECT OF HIGH CARBOHYDRATE, PROTEIN AND FAT DIETS AND HIGH ALTITUDE ON GROWTH AND CALORIC INTAKE OF RATS. D. D. Schnakenberg and R. F. Burlington (U.S. Army Med. Res. and Nutr. Lab., Fitzsimons General Hosp., Denver, Colorado 80240). *Proc. Soc. Exp. Biol. Med.* 134, 905-908 (1970). Diminished growth rates were observed in rats exposed to an altitude of 4300 m and fed diets high in either carbohydrate, fat or protein. This effect was attributed to altitude-induced anorexia and to alterations in nutrient utilization. A high protein diet is apparently the least desirable for the support of growth in rats at high altitude.

EFFECTS OF MATERNAL DIETARY LIPOTROPES ON PRENATAL AND NEONATAL RATS. P. M. Newberne, Anitti Ahlstrom and Adrianne E. Rogers (Dept. of Nutr. and Food Sci., Mass. Inst. of Technol., Cambridge, Mass. 02139). *J. Nutr.* 100, 1089-98 (1970). The purpose of this study was to investigate the effects of severe and marginal deficiencies of lipotropes on the developing rat embryo. Groups of female rats were fed diets varying in methionine and choline content with and without vitamin B₁₂. The diet low in choline and methionine supplemented with vitamin B₁₂ constituted a marginally deficient diet which supported conception, implantation and fetal growth in a normal fashion and prevented neonatal hydrocephaly. With-

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