ABSTRACTS

R.A. REINERS, Editor. Abstractors: N.E. Bednarcyk, J.E. Covey, J.C. Harris, Yoshio Hirano, S. Kawamura, D.A. Leo, F.A. Kummerow, E.G. Perkins, Biserka Matijasevic

• Fats and Oils

THE OCCURRENCE OF CYCLOPROPANE FATTY ACIDS IN THE PHOSPHOLIPIDS OF SHEEP RUMEN TISSUES. D.R. Body (Applied Biochem. Div., Dept. of Scientific and Industrial Res., Palmerston North, New Zealand). *FEBS Letters 27*, 5–8 (1972). Cyclopropane fatty acids have been found in some seed oils and in a variety of bacteria. They also make an important contribution to the fatty acid composition of some species of protozoa and certain insects. A comprehensive review on these acids and their derivatives has been published by Christie. As far as the author is aware, cyclopropane fatty acids have not been reported to occur naturally in mammalian tissues. However, in experiments carried out with rats fed on diets rich in cyclopropane fatty acids, metabolic derivatives of these constituents were found in their body fat. In this laboratory, the phospholipid fractions isolated from sheep rumen tissues have been examined and this communication reports the natural occurrence of cyclopropane fatty acids in this material. They appeared associated only with the phosphatidyl-ethanolamine fraction.

OXIDIZED FLAVOR IN MILK AND ITS SIMULATION. E.G. Hammond and R.G. Seals (Dept. of Food Technol., Iowa State Univ., Ames, Iowa 50010). *J. Dairy Sci.* **55**, 1567–9 (1972). The flavor of homogenized milk containing oct-1-en-3-one with and without octanal was compared with that of homogenized milk with a copper-induced oxidized flavor by 53 judges in nine laboratories. The results indicate that a mixture of oct-1-en-3-one and octanal added to milk at 1 or 10 ppb simulates oxidized milk flavor for 66% of judges detecting an off-flavor, compared with 67 to 84% for milk with copper-induced flavor. Of those judges detecting oxidized flavor, 60% considered the oct-1-en-3-one-octanal mixture typical of the defect, compared with 85% for the copper-induced oxidized flavor.

OLIVE OIL VERSUS OLIVE OIL. G. Loew (Bologna). *Seifen-Ole-Fette-Wachse* **98**(20), 667–70 (1972). A detailed report on the influence, origin, and preparation of this oil for its peculiar taste. Discussed is the question of essential fatty acids. Olive oil exactly corresponds to all requirements demanded of an edible oil.

INFLUENCE OF PRESSURE ON THE HYDROGENATION OF FATTY ACIDS. N.D. Klocke et al. (Combinat chem. Vahitov, Kazan). *Maslozir. Prom.* 1972 (6), 17–19. The influence of pressure on the velocity of fatty acid hydrogenation is examined. The experiments were done with distilled fatty acids obtained from cottonseed oil soapstock. Hydrogenation was conducted at 150–160C and at 40 atm. pressure; 0.5% Ni-catalyst was used. It was found that optimal pressure for industrial hydrogenation of fatty acids with nickel catalyst is 15–20 atm. (Rev. Franc. Corps Gras)

INFLUENCE OF DEAERATION AND VACUUM ON THE THERMAL STABILITY OF FRYING FAT. V.F. Usenke et al. (Inst. G.V. Plehanov Moscow and VNIIZ). *Pishchevaya Technol.* 1972(2), 80–81. In this work, the stabilization effect of deaeration and heating under vacuum on the changes of physical-chemical value of frying fats is examined. The experiments were done with partially hydrogenated sunflower oil. Deaeration reduced the oxygen content of the fat 90–95%. Deaeration was done in the column filled with Rasching rings. From the results obtained, it can be seen that the total content of polymers and oxidation products in the control sample and in the deaerated fat are increasing with the time of heating, while the sample heated under vacuum is practically unchanged. (Rev. Franc. Corps Gras)

NEW ADDITIVES FOR MARGARINE: EVOLUTION, ACCORDING TO THE PRESENT LEGISLATION. A. Uzzan and M.T. Juillet (ITERG-Paris). *Rev. Franc. Corps Gras* **19**, 513–21 (1972). After describing the different additives used today in margarine production and the reason why they are used, the list of additives allowed in France, Germany, Belgium, Italy, Luxembourg and The Netherlands is given and compared. The principle used to determine each type of additive is indicated. The significance of these regulations for the E.E.C. and the Codex Alimentarius FAO is discussed.

ENVIRONMENTAL PROBLEM OF RENDERING PLANT. P. Louit (Service de l'Environnement industriel Ministere de l'Environnement-Paris). *Rev. Franc. Corps Gras* **19**, 509–12 (1972). The rendering plants are classified according to the processes they use for obtaining animal fats. Sources of water pollution, odors and noises are reviewed and evaluated. A system is envisioned for the protection of environment about a rendering plant. In the conclusion, the author suggests that equipment designers should elaborate a new process for dry rendering.

TECHNOLOGICAL PROBLEMS IN A RENDERING PLANT. S. Menard (Soprorga-St-Denis). *Rev. Franc. Corps Gras* **19**, 501–8 (1972). The treatment of raw material—fatty tissue—as well as dry and wet rendering system are described. The quality of fats and cracklings depend on the rendering process used. Regarding the quality of the fat (color, FFA and degree of oxidation), the author concludes that the fat obtained by the wet rendering system is better; the yield is also higher.

COLLECTING AND SUPPLYING OF ANIMAL FATS. M. Mariette (Ministere de l'Agriculture Services Veterinaires de la Seine-St-Denis-Bobigny). *Rev. Franc. Corps Gras* **19**, 497–500 (1972). This paper describes precautions which must be taken in abattoirs during storage and during rendering to obtain a good quality animal fat. Hygienic rules which must be followed by the workmen are reviewed. The regulations, which are on the point of being issued by the French government regarding sanitary inspection of animal products, will be successful only with a special cooperative effort at the industrial level.

METHOD AND APPARATUS FOR MEASURING THE PEROXIDE CONTENT OF FATS. R.A. Marmor and L.C. Brandberg (Pillsbury Co.). *U.S. 3,705,012.* A fat solvent is placed in one compartment of a test receptacle; a solution of an indicator and sodium thiosulfate is contained in a second compartment. A predetermined amount of potassium iodide is added to the solvent, and the fat is then mixed with it. Finally, the mixture of fat and solvent is mixed with the solution of sodium thiosulfate and indicator. The presence of a deep blue color indicates a peroxide value above that which is usable.

EDIBLE FAT COMPOSITIONS. B.L. Caverly and J.B. Rossell (Lever Bros.). *U.S. 3,706,576.* An unrandomized fat blend suitable as a replacement for lauric fats is prepared from two hardened components. One of the components comprises at least 90% C_{16} and C_{18} fatty acids and the other comprises 30–75% C_{20} and C_{22} fatty acids. Both components have a C_{18} monoethenoic radical in at least 85% of the glyceride 2-positions and a trans index of 40–75.

ALL RAPESEED OIL SHORTENINGS. B.J. Bence (Procter & Gamble). *U.S. 3,706,578.* A stable rapeseed oil shortening based on a blend of separately hydrogenated hardstock and softstock is claimed. The hardstock has an I.V. of 0–20 and the softstock an I.V. of at least 85. Because the shortening is crystallized in the beta polymorphic phase, it is stable over a wide range of temperatures.

• Biochemistry and Nutrition

NUTRITIONAL VALUE OF SUNFLOWER OIL IN HUMAN DIET. M.T. Juillet (ITERG Paris). *Rev. Franc. Corps Gras* **19**, 523–31 (1972). Sunflower oil has high content in linoleic acid (average 66–70%) and its content of tocopherols (70–120mg/100g, 85.5% in the alpha form) is suitably high. The ratio of these two biologically important components is >0.8, a value that is considered desirable for good nutrition. Sunflower oil furnishes a high concentration of essential fatty acids and of vitamin E. This oil is not only very good for a normal nutrition but also useful in those cases where a particular diet is necessary, i.e. cholesterolemia, atherosclerosis, etc.

(Continued on page 124A)

Meetings

AOCS National Meetings

Apr. 29–May 2, 1973–New Orleans, La., Jung Hotel.

Sept. 16–19, 1973–Chicago, Ill., Pick Congress Hotel.

Apr. 28–May 1, 1974–Mexico City, Mexico, Maria Isabel Sheraton Hotel, Aristos Downtowner.

Sept. 29–Oct. 2, 1974–Philadelphia, Pa., Sheraton Hotel.

Apr. 27–30, 1975–Dallas, Tex., Statler Hilton.

Sept. 28–Oct. 1, 1975–Cincinnati, Ohio, Netherland Hilton.

AOCS Conference

June 17–21, 1973–Analysis of Lipids and Lipoproteins, Ramada Inn, Champaign, Ill. Contact: James Lyon, Executive Director, 508 S. Sixth, Champaign, Ill. 61820.

Other Organizations

Mar. 5–9, 1973–24th Pittsburgh Conference on Analytical Chemistry and Applied Spectroscopy, Cleveland Convention Center, Cleveland, Ohio. Contact: H.L. Retcofsky, Program Chairman, 1973 Pittsburgh Conference, U.S. Bureau of Mines, 4800 Forbes Ave., Pittsburgh, Pa. 15213.

Mar. 6–7, 1973–New York University First National Injection Blow Molding Conference, Barbizon Plaza Hotel, New York. Contact: William A. Kulok, Program Director, Div. of Business and Management, 600 Third Ave. 37 NR, New York, N.Y. 10016; phone (212) 687-8540.

Mar. 9–10, 1973–21st Annual Food Technology Conference, University of Missouri, Columbia. Contact: Robert A. Berger, Secretary, 2280 Chaffee Drive, St. Louis, Mo. 63141.

Mar. 10, 1973–19th Oklahoma Tetrasectional Meeting of the American Chemical Society, Sooner High School, Bartlesville. Contact: Paul S. Hudson, Phillips Petroleum Co. Research Center, Bldg. 92-G, Bartlesville, Okla. 74004; phone (918) 661-3565.

Mar. 14–16, 1973–Washington University Short Course in Computer Programing for Chemists, St. Louis. Contact: Washington University, Box 1048, St. Louis, Mo. 63130; phone (314) 863-0100, ext. 4778.

Mar. 15–16, 1973–Third Technical Conference on Estuaries of the Pacific Northwest, Oregon State University. Contact: Larry S. Slotta, Director, Ocean Engineering Programs, Department of Civil Engineering, Oregon State University, Corvallis, Ore. 97331.

Mar. 19–23, 1973–Corrosion/73 (international forum devoted to protection and performance of materials), Disneyland Hotel, Anaheim, Calif. Contact: National Association of Corrosion Engineers Headquarters, 2400 West Loop South, Houston, Tex. 77027; phone (713) 622-8980.

Mar. 19–23, 1973–New York University Program on Principles of Polymer Science and Technology, Barbizon Plaza Hotel, New York. Contact: William A. Kulok, Program Director, Div. of Business and Management, 600 Third Ave., 37 NR, New York, N.Y. 10016; phone (212) 687-8540.

Mar. 21, 1973–Chemical Institute of Canada Conference on Paint Technology for Environmental Control, Seaway Hotel, Toronto. Contact: Ray Crowne, Abrex Specialty Coatings, 280 Wyecroft Rd., Oakville, Ont., Can.

Mar. 22, 1973–Chemical Institute of Canada Conference on Paint Technology for Environmental Control, Ritz-Carlton Hotel, Montreal. Contact: Horace Philipp, Sherwin-Williams, P.O. Box 489, Montreal 101, P.Q., Can.

Mar. 22–23, 1973–New York Univer-

sity Third National Injection Molding Conference, Americana of Bal Harbour, Miami, Fla. Contact: William A. Kulok, Program Director, Div. of Business and Management, 600 Third Ave. 37 NR, New York, N.Y. 10016; phone (212) 687-8540.

Mar. 26–30, 1973–New York University Conference on Fundamentals of Plastics, New York. Contact: William A. Kulok, Program Director, New York University, Plastics Programs for Industry, 600 Third Ave. 37 NR, New York, N.Y. 10016; phone (212) 687-8540.

Apr. 10–11, 1973–New York University Second National Extrusion Conference, Barbizon Plaza Hotel, New York. Contact: William A. Kulok, Program Director, Div. of Business and Management, 600 Third Ave. 37 NR, New York, N.Y. 10016; phone (212) 687-8540.

Apr. 11–13, 1973–Poultry and Egg Institute of America Fact Finding Conference, Rivergate Exhibition Center, New Orleans, La. Contact: Poultry and Egg Institute of America, 67 E. Madison St., Chicago, Ill. 60603.

Apr. 23–27, 1973–American Institute of Chemical Engineers and Environmental Protection Agency Technology Transfer Conference on Complete Water Reuse, Mayflower Hotel, Washington, D.C. Contact: Meetings Dept., AIChE, 345 East 47th St., New York, N.Y. 10017.

Apr. 29–May 2, 1973–Fifth Annual Offshore Technology Conference, Astrohall, Houston, Tex. Contact: Offshore Technology Conference, 6200 N. Central Expressway, Dallas, Tex. 75206. Contact: OCCA-25, Wax Chandlers' Hall, Gresham Street, London, EC2V 7AB (01-606 1439), United Kingdom.

Apr. 30–May 2, 1973–Instrument Society of America Eighth Annual Maintenance Management Symposium, Marriott Motor Hotel, Philadelphia, Pa. Contact: Charles D. Bissel, Brooks Instrument Div., P.O. Box 176, Hatfield, Pa. 19440.

May 10–13, 1973–Symposium on Shampoos and Foam Bath Products, German Society for Cosmetology, Kurhotel, Bad Pyrmont, West Germany. Contact: G.A. Nowak, D-345 Holzminden, West Germany, Dr. Lehmann-Weg 12.

May 21–24, 1973–Oil and Colour Chemists' Association 25th Technical Exhibition, Empire Hall, Olympia, London, United Kingdom.

May 21–25, 1973–18th Summer In-

stitute in Water Pollution Control, "Biological Waste Treatment Mathematical Modeling of Natural Water Systems," Manhattan College, Bronx, N.Y. Contact: Donald J. O'Connor, Environmental Engineering & Science Program, Manhattan College, Bronx, N.Y. 10471.

June 3–6, 1973–American Institute of Chemical Engineers 75th National Meeting, Detroit Hilton, and Sheraton Cadillac Hotels, Detroit, Mich. Contact: F.J. Van Antwerpen, executive secretary, AIChE, 345 East 47th St., New York, N.Y. 10017.

June 4–6, 1973–56th Canadian Chemical Conference and Exhibition, Chemical Institute of Canada, Queen Elizabeth Hotel, Montreal. Contact: CIC, 151 Slater St., Rm. 906, Ottawa, Ont. K1P 5H3, Can.

June 10–13, 1973–33rd Annual Meeting of the Institute of Food Technologists, Miami Beach Convention Hall, Miami Beach, Fla. Contact: E.H. Hoffman, IFT, Suite 2120, 221 N. LaSalle, Chicago, Ill. 60601.

June 11–15, 1973–Gordon Research Conference on Lipid Metabolism, Kimball Union Academy, Meriden, N.H. Contact: Alexander M. Cruickshank, director, Gordon Research Conferences, Pastore Chemical Lab., University of Rhode Island, Kingston, R.I. 02881.

June 11–15, 1973–Short Course on Advances in Emulsion Polymerization and Latex Technology, Lehigh University, Bethlehem, Pa. Contact: Gary Poehlein, Dept. of Chemical Engineering, Lehigh University, Bethlehem, Pa. 18015.

June 18–20, 1973–Seventh General Assembly of the International Union of Independent Laboratories, Wiesbaden, Germany. Contact: A. Herzka, Ashbourne House, Alberon Gardens, London, NW11 OBN, United Kingdom.

June 18–23, 1973–First Perfumery and Cosmetics Industries Intertrade Show, Parc des Expositions, Porte de Versailles, Paris, France. Contact: SIPEC, 80 Route de Saint-Cloud, 92500 Rueil-Malmaison, Paris, France.

June 19–23, 1973–Eastbourne Conference "Towards 2000," Grand Hotel, Eastbourne, United Kingdom. Contact: Oil and Colour Chemists' Association, Wax Chandlers' Hall, Gresham Street, London EC2V 7AB (01-606 1439), United Kingdom.

June 20–27, 1973–Alchema '73 and the European Meeting of Chemical Engineering, Frankfurt/Main, Germany.

June 25–29, 1973–MIT Summer School Program on Enzymes and Their Use in Analysis and Clinical Diagnosis, Massachusetts Institute of Technology, Cambridge, Mass. Contact: Director of the Summer Session, Rm. E19-356, MIT, Cambridge, Mass. 02139.

July 1–7, 1973–International Union of Biochemistry Ninth International Congress of Biochemistry, Stockholm International Fairs and Activity Center, Stockholm, Sweden. Contact: The Secretariat, Ninth International Congress of Biochemistry, c/o Svenska Kemstsamfundet, Wenner-Gren Center, 6 tr, S-113 46 Stockholm, Sweden.

July 2–6, 1973–Second Congress of the Association Internationale de la Couleur, University of York, England.

July 17–20, 1973–XVIth International Conference on the Biochemistry of Lipids, University of Nottingham, Nottingham. Contact: D.N. Brindley, Dept. of Biochemistry, University of Nottingham Medical School, Nottingham NG7 2RD, England.

July 22–28, 1973–Fifth Interamerican Congress of Chemical Engineering, Rio de Janeiro, Brazil. Contact: Jean-Michel Charrier, Dept. of Chemical Engineering, McGill University, Box 6070, Montreal 101, Can.

Sept. 2–7, 1973–Instituto Tecnologico Metalurgico "Emilio Jimeno" First International Congress on Mercury, University of Barcelona, Barcelona, Spain. Contact: Primer Congreso Internacional del Mercurio, Instituto Tecnologico Metalurgi co "Emilio Jimeno" de la Facultad de Ciencias, Universidad de Barcelona, Barcelona, 14, Spain.

Sept. 9–12, 1973–Fourth Joint Meeting of the Canadian Society for Chemical Engineering and the American Institute of Chemical Engineers, Hotel Vancouver, Vancouver, B.C. Contact: CSChE, 151 Slater St., Rm. 906, Ottawa, Ont. K1P 5H3, Can.

Sept. 10–13, 1973–International Microwave Power Institute Eighth Annual Microwave Power Symposium, Loughborough University of Technology. Contact: (Americas and Asia) R.A. Peterson, Raytheon Co., Microwave and Power Tube Division, Foundry Ave., Waltham, Mass. 02154; (Europe) R.B. Smith, School of Electrical and Electronic Engineering, University of Brad-

ford, Bradford 7, Yorkshire, United Kingdom.

Sept. 25–28, 1973–FILTECH 73 (International Filtration and Separation Exhibition), Olympia Hall, London, U.K. Contact: F. Wells, Shoemaker, Eaton-Dikeman, P.O. Box 126, Mount Holly Springs, Pa. 17065.

Sept. 27–29, 1973–Third International Symposium: Metal-Catalyzed Lipid Oxidation, Institut des Corps gras, Association francaise des Techniciens des Corps gras and Ecole Superieure d'Application des Corps gras, Paris, France. Contact: ITERG, 5, boulevard de Labour-Maubourg, 75007 - Paris, France.

Oct. 24–25, 1973–Symposium on Environmental Chemistry: Know-How and Chemicals in 1973-78, Brussels, Belgium. Contact: i.b./c.c. Administration, Nieuwelaan 65, B-1820 Strombeek, Belgium.

Oct. 25–28, 1973–Third International Symposium on Atherosclerosis, Kongresshalle, West Berlin, Germany. Contact: Kongressgesellschaft fur arztliche Fortbildung e.V., 1 Berlin 41, Wrangelstrasse 11-12, Germany.

Oct. 29–Nov. 2, 1973–Fourth International Conference on Atomic Spectroscopy, Toronto, Ont., Can.

Nov. 11–15, 1973–American Institute of Chemical Engineers 66th Annual Meeting, Bellevue Stratford Hotel, Philadelphia, Pa. Contact: F.J. Van Antwerpen, executive secretary, AIChE, 345 East 47th St., New York, N.Y.

Nov. 19–21, 1973–Symposium on Water Quality Parameters–Selection, Measurement and Monitoring, Analytical Chemistry Div., Chemical Institute of Canada, Burlington, Ont., Can. Contact: S. Barnes, Analytical Methods Research Div., Canada Centre for Inland Waters, Burlington, Ont., Can.

Dec. 10–12, 1973–Second Joint Conference on Sensing of Environmental Pollutants, Sheraton-Park Hotel, Washington, D.C. Contact: Philip N. Meade, Instrument Society of America, 400 Stanwix St., Pittsburgh, Pa. 15222. ■

Analytical methods meeting: Houston, April 26–27

AOCS members interested in analytical instrumentation, instrumental methods, and equipment should take note of the Gulf Coast Instrumental Analysis Group (IAG) meeting which has been scheduled to immediately precede the AOCS 64th Annual Meeting this spring.

Emphasis for the IAG meeting will be gas and liquid chromatography, mass spectrometry, X-ray, IR, atomic absorption, and UV spectroscopy. Papers will be of a practical nature and an informal atmosphere is encouraged. Methods dealing with air and water pollution are also to be included.

The meeting will be held April 26-27, 1973, at the Holiday Inn, 3131 West Loop South, Houston, Tex. Complete program details are scheduled for mailing in early March; requests should be sent to the secretary, M.L. Keene, Rubicon Chemicals, P.O. Box 517, Geismar, La. 70734.

This will be the 54th consecutive meeting of IAG, which was founded in 1946. The group has scheduled their spring meeting to permit AOCS members to attend more conveniently and less expensively. The only requirement for attendance is an active interest in instrumental analysis. ■

NOTICE

Albert M. Reynaud, Charles V. Bacon, Inc., 730 Barataria Blvd., P.O. Box 97, Marrero, La. 70072, has applied for a Referee Certificate on Cottonseed Oil, Soybean Oil, Other Fatty Oils and Tallow and Grease.

Interested parties wishing to comment on this certification should contact Edward R. Hahn, Chairman of the Examination Board, Hahn Laboratories, P.O. Box 1177, Columbia, S.C. 29202. ■

(Continued from page 119A)

ACETYL COENZYME A CARBOXYLASE. PURIFICATION AND PROPERTIES OF THE BOVINE ADIPOSE TISSUE ENZYME. J. Moss, Miwako Yamagishi, A.K. Kleinschmidt and M.D. Lane (Dept. of Physiol. Chem., Johns Hopkins Univ. Schl. of Med., Baltimore, Md. 21205). *Biochemistry* 11, 3779–86 (1972). Acetyl-CoA carboxylase has been purified over 1000-fold from bovine perirenal adipose tissue. Sedimentation velocity analysis indicates that the enzyme is homogeneous and can exist in polymeric and protomeric states. The bovine adipose tissue enzyme is activated by citrate and this activation is associated with an increase in maximal velocity of the carboxylase-catalyzed reaction with no significant effect on K_m values for ATP (Mg^{2+}), bicarbonate or acetyl-CoA.

STUDIES ON CALCIFEROL METABOLISM. V. THE OCCURRENCE AND BIOLOGICAL ACTIVITY OF 1,25-DIHYDROXY-VITAMIN D_3 IN BONE. R.G. Wong, J.F. Myrtle, Huan C. Tsai and A.W. NORMAN (Dept. of Biochem., Univ. of Cal., Riverside, Cal. 92502). *J. Biol. Chem.* 247, 5728–35 (1972). The administration of cholecalciferal (vitamin D_3) to rachitic chicks results in the production of two major polar metabolites, 25-hydroxycholecalciferol (25-OH-CC) and 1,25-dihydroxycholecalciferol (1,25-diOH-CC) and a number of other minor metabolites. Eighteen hours after a physiological dose (0.65 nmoles) of radioactive cholecalciferol, 80% of the radioactivity in the target intestine is present as 1,25-diOH-CC and 19% as 25-OH-CC. In the other major target organ, the skeletal system, 25% of the radioactivity is present in a form chromatographically identical to 1,25-diOH-CC, 50% as 25-OH-CC and 20% as unaltered CC. 1,25-DiOH-CC has been shown previously to be the probable metabolically active form of vitamin D_3 which initiates increased intestinal calcium transport.

ACTIVE VS. PASSIVE SENSITIZATION OF LIPOSOMES TOWARD ANTIBODY AND COMPLEMENT BY DINITROPHENYLATED DERIVATIVES OF PHOSPHATIDYLETHANOLAMINE. Kei-ichi Uemura and S.C. Kinsky (Dept. of Pharmacol. and Microbiol., Wash. Univ. Schl. of Med., St. Louis, Mo. 63110). *Biochemistry* 11, 4085–94 (1972). Dinitrophenylated derivatives of phosphatidylethanolamine, lysophosphatidylethanolamine and glycerophosphorylethanolamine have been synthesized for potential use as antigens in the preparation of immunologically responsive liposomal model membranes. These compounds were tested under conditions of active sensitization (antigen present at the time the model membrane was generated) and passive sensitization (antigen added after formation of liposomes). Both dinitrophenylated phosphatidylethanolamine and lysophosphatidylethanolamine were capable of actively sensitizing liposomes toward antibody-complement, whereas only the latter could passively sensitize liposomes.

A REQUIREMENT FOR CYTOCHROME b_5 IN MICROSOMAL STEARYL COENZYME A DESATURATION. P.W. Holloway and J.T. Katz (Dept. of Biochem., Univ. of Virginia Schl. of Med., Charlottesville, Va. 22901). *Biochemistry* 11, 3689–96 (1972). The stearyl coenzyme A desaturase activity of hen liver microsomes was resolved into two fractions by gel filtration in the presence of deoxycholate. Both the large molecular weight fraction (P_3) and the smaller molecular weight fraction (P_4G) were required for desaturase activity. This activity was stimulated by addition of NADH-cytochrome b_5 reductase and deoxycholate. The P_4G fraction contained lipid and cytochrome b_5. Removal of the lipid destroyed desaturase activity which could then be restored by addition of lipid dispersions. Partially purified cytochrome b_5 was prepared by the standard trypsin procedure (trypsin-cytochrome b_5) and by ion exchange and gel chromatography of a detergent extract of acetone-extracted microsomes (detergent-cytochrome b_5). Only detergent-cytochrome b_5 could replace P_4G in the desaturase assay. Maximal desaturase activity was obtained with P_3, NADH-cytochrome b_5 reductase, detergent-cytochrome b_5 lipid, and deoxycholate. The requirement for these components is further evidence for the involvement of the NADH-specific electron transport chain of microsomes in stearyl coenzyme A desaturation.

MODE OF CHOLESTEROL ACCUMULATION IN VARIOUS TISSUES OF RABBITS WITH VARIOUS SERUM CHOLESTEROL LEVELS. Kang-Jey Ho, Susan H. Eiland and C.B. Taylor (Dept. of Pathol., Univ. of Alabama in Birmingham, Med. Center, Birmingham, Ala. 35233). *Proc. Soc. Exptl. Biol. Med.* 141, 277–82 (1972). The individual serum cholesterol of 21 adult male New Zealand white rabbits were maintained constant at certain fixed levels ranging from 31 to 2486 mg/100 ml among the group for 60 days by frequent adjustment of their dietary cholesterol intake. The cholesterol contents of 15 different tissues of all rabbits were determined at the end of the 60 day experiment. Brain and muscle did not show any significant change in their cholesterol contents. The cholesterol contents of most tissues including liver, adrenal, testis, kidney, colon, small intestine, heart, pancreas and adipose tissue increased linearly in proportion to serum cholesterol levels, whereas that of skin, aorta, spleen and lung increased exponentially with the elevation of serum cholesterol levels. The study thus provided evidence of variations in the susceptibility of different tissues to deposition of excessive cholesterol.

ACYL CARRIER PROTEIN. XVIII. CHEMICAL SYNTHESIS AND CHARACTERIZATION OF A PROTEIN WITH ACYL CARRIER PROTEIN ACTIVITY. W.S. Hancock, D.J. Prescott, G.R. Marshall and P.R. Vagelos (Washington Univ. Schl. of Med., Depts. of Biol. Chem. and Physiol. and Biophys., St. Louis, Mo. 63110). *J. Biol. Chem.* 247, 6224–33 (1972). A protected linear polypeptide of 74 amino acids with the sequence of *Escherichia coli* 1 to 74 apo-acyl carrier protein (ACP) was synthesized by the automated solid phase method. The polypeptide was removed from the solid support and partially deprotected by treatment of the peptide-resin with hydrogen bromide and trifluoroacetic acid, and the product was purified by gel filtration. The removal of protecting groups was completed by hydrogenation, and the prosthetic group, 4′-phosphopantetheine, was introduced enzymatically with holo-ACP synthetase. Ion exchange chromatography of the product yielded a preparation in which 55% of the protein in the purified fraction contained the prosthetic group. This synthetic 1 to 74 holo-ACP was as active as native holo-ACP in the malonyl pantetheine-CO_2 exchange reaction which is dependent upon malonyl-coenzyme A-ACP transacylase and β-ketoacyl-ACP synthetase.

INACTIVATION OF HORMONE-SENSITIVE LIPASE IN EXTRACTS OF ADIPOSE TISSUE. Su-Chen Tsai and Martha Vaughan (Molecular Disease Branch, Natl. Heart and Lung Inst., Natl. Insts. of Health, Bethesda, Md. 20014). *J. Biol. Chem.* 247, 6253–68 (1972). When supernatant fluid fractions of rat adipose tissue homogenates prepared in water, 0.25 M sucrose, or 0.15 M KCl were incubated at 30C with ATP, $MgCl_2$ and Tris buffer (pH 7.4) lipase activity decreased. On passage over Sephadex G-25, all of the lipase activity of the fluid fraction emerged in the exclusion volume, but was inactivated by ATP and $MgCl_2$ only when material from the later column fractions was added back. Inactivation of the ammonium sulfate-precipitated hormone-sensitive lipase required ATP (>0.5 mM), $MgCl_2$ at a molar concentration in excess of that of ATP, and a factor(s) present in the same Sephadex G-25 fractions. Since inactivation was completely prevented by 50 μM EDTA in the presence of excess Mg^{++} ion, another cation may be required.

THE EFFECT OF SIDE CHAIN STRUCTURE ON THE INCORPORATION OF STEROIDS INTO LIPID BILAYERS (LIPOSOMES). R.W. Stevens and C. Green (Dept. of Biochem., Univ. of Liverpool, P.O. Box

(Continued on page 125A)

Jacobson to fill new post on Membership Committee

Glen A. Jacobson, of the Campbell Institute for Food Research, has accepted President Robert T. O'Connor's appointment as executive chairman of the AOCS Membership Committee. In this newly created committee post, Jacobson will be responsible for providing continuity in the committee's work, not only in screening and approving membership applications, but also in designing and implementing membership campaigns, member surveys and other activities within the scope of the Membership Committee.

By constitutional fiat, the Society vice-president, currently F.A. Norris, is designated chairman of the Membership Committee. The Governing Board, recognizing the need for greater continuity in this important committee's work, created the post of executive chairman at the 1972 Fall Meeting in Ottawa. The executive chairman, with the vice-president, will guide the work of the committee as it develops programs for implementation by the headquarters staff. The executive chairmanship, though designed to be a continuing post, is subject each year to the approval of the AOCS president. ■

(Continued from page 124A)

147, Liverpool L69 3BX, England). *FEBS Letters* 27, 145–8 (1972). A number of investigations have now been made into the relationship between the structure of steroid molecules and their ability to enter phospholipid bilayers or cellular membranes. However, most attention has been focussed on the steroid ring system and although it is known that modifications of the side chain at position 17 can greatly alter uptake steroids by natural or artificial membranes, no systematic study has been carried out. Here, we report an investigation into the incorporation of series of testosterone esters into liposomes formed from egg lecithin. The relationship between the incorporation and the lipophilic character of the esters was also explored. It was found that for esters with saturated, straight side chains, incorporation increased with chain length up to a maximum at 8 C atoms and then declined. Insertion of double bonds or branching of the chain lowered incorporation. The pattern of incorporation did not correlate with the lipophilic character of the steroids.

RAPID SERUM LIPOPROTEIN CHANGES IN SPIDER MONKEYS ON SHORT-TERM FEEDING OF HIGH CHOLESTEROL-HIGH SATURATED FAT DIET. S.R. Srinivasan, E.R. Dalferes, Jr., H. Ruiz, P.S. Pargaonkar, B. Radhakrishnamurthy and G.S. Berenson (Depts. of Med. and Biochem., Louisiana State Univ. Schl. of Med., New Orleans, La. 70112). *Proc. Soc. Exptl. Biol. Med.* **141**, 154–60 (1972). Serum lipoprotein changes resulting from high cholesterol (0.5% and 2.0%)-high saturated fat diets have been studied in spider monkeys (*Ateles geoffroyi*). Rapid increase in β-lipoprotein, significant elevation in α-lipoprotein, and marked variations in individual responses to cholesterol intake were observed during these dietary periods.

STUDIES ON THE BIOSYNTHESIS IN VIVO AND EXCRETION OF 16-UNSATURATED C_{19} STEROIDS IN THE BOAR. Y.A. Saat, D.B. Gower, F.A. Harrison and R.B. Heap (Dept. of Biochem., Guy's Hosp. Med. Schl., London SE1 9RT, U.K.). *Biochem. J.* **129**, 657–63 (1972). In one experiment [7α-^{3}H]pregnenolone was infused continuously for 12 min into the left spermatic artery of a sexually mature boar and blood was collected during this period by continuous drainage from the spermatic vein. After infusion, the testis was removed and immediately cooled to −196C. From both the testicular tissue and the spermatic venous plasma, ^{3}H-labelled 16-unsaturated C_{19} steroids were isolated and characterized and their radiochemical purity was established. 5α-Androst-11-en-3α- and 3β-ol occurred mainly as sulphate conjugates and to a lesser extent as free steroids. Only traces of these alcohols occurred as glucosiduronate conjugates. 5α-Androst-16-en-3-one was found in the free (ether-extractable) fraction. In a second experiment, a continuous close-arterial infusion of [7α-^{3}H]pregnenolone into the left testis was performed over a 200 min period and all the urine that accumulated during the infusion was collected for analysis. The absence of 5α-androst-16-en-3β-ol glucosiduronate in the spermatic venous blood and its presence in considerable amount in the urine may be attributed to hepatic glucuronyl transferase activity.

EFFECTS OF HEPARIN ON LIPOPROTEIN LIPASE FROM BOVINE MILK. P.-H. Iverius, U. Lindahl, T. Egelrud and T. Olivecrona (Inst. of Med. Chem., Univ. of Uppsala, S-751 22 Uppsala, Sweden). *J. Biol. Chem.* **247**, 6610–6 (1972). The effect of heparin on the activity of lipoprotein lipase from bovine milk was investigated under conditions varying with regard to ionic strength, purity of enzyme and mode of substrate activation. A crude enzyme (dialyzed skim milk) was studied along with a purified preparation obtained by affinity chromatography on a column of heparin-substituted agarose. Serum, high density lipoproteins (HDL_3) or very low density lipoproteins (VLDL) were used as activators. The data obtained indicate that heparin may increase the activity of lipoprotein lipase, but only under otherwise suboptimal conditions. It is concluded that heparin stabilizes rather than stimulates the enzyme; furthermore, the effect of inhibitors is partly or completely abolished.

THE INCORPORATION OF ^{14}C-GLYCEROL INTO ADIPOSE TISSUE LIPIDS OF WEANLING RATS WITH HYPOTHALAMIC OBESITY. S. Kasemsri, L.L. Bernardis, C. Chlouverakis and J.D. Schnatz (Depts. of Med. and Pathol., State Univ. of N.Y. at Buffalo and the E. J. Meyer Mem. Hosp., Buffalo, N.Y. 14215). *Proc. Soc. Exptl. Biol. Med.* **141**, 38–42 (1972). Adipose tissue of weanling rats with hypothalamic obesity (VMN) incorporated labeled glycerol into lipids, mainly triglycerides, at a faster rate than control. It is postulated that hyperinsulinemia, an important feature of this obesity syndrome, contributes to the increased utilization of glycerol for lipid synthesis.

SERUM CHOLESTEROL RESPONSES TO HYPOTHALAMIC STIMULATION AND FATTY ACID ADMINISTRATION IN THE RAT. W.H. Gutstein and G. Farrell (Dept. of Pathol., N.Y. Med. College, N.Y., N.Y. 10029). *Proc. Soc. Exptl. Biol. Med.* **141**, 137–40 (1972). Responses of serum cholesterol concentration to electric stimulation of the lateral hypothalamus were determined in fasted rats given stearic, oleic or linoleic acid by direct duodenal instillation. Greatest percentage increase occurred in the saturated, with intermediate and zero responses in the mono- and diunsaturated fatty acid groups respectively, suggesting that the double bond number of the carbon chain influenced the response.

HYPOCHOLESTEROLEMIC EFFECT OF HUMAN GROWTH HORMONE IN CORONARY-PRONE (TYPE A) HYPERCHOLESTEROLEMIC SUBJECTS. M. Friedman, S.O. Byers, R.H. Rosenman and Choh Hao Li (Harold Brunn Inst., Mt. Zion Hosp. and Med. Center, San Francisco, Cal. 94115). *Proc. Soc. Exptl. Biol. Med.* **141**, 76–80 (1972). The administration of human growth hormone to four hypercholesterolemic, coronary prone (i.e., exhibiting Type A behavior pattern) subjects led to a significant fall in their average serum cholesterol level and a significant rise in their average serum triglyceride and prebeta lipoprotein levels. The glucose tolerance was impaired significantly but transiently during HGH treatment.

THE EFFECTS OF PHENAZINEMETHOSULFATE AND METHYLENE BLUE ON HUMAN PLATELET PHOSPHOLIPID SYNTHESIS. P.K. Schick, T.H. Spaet and E.R. Jaffe (Depts. of Med., The Med. College of Pennsylvania, Philadelphia, Pa. 19129). *Proc. Soc. Exptl. Biol. Med.* **141**, 114–8 (1972). In the present study phenazinemethosulfate (PMS) and methylene blue (MB) were shown to induce a pattern of glycerol incorporation into platelet phospholipids which resembles the pattern that Lewis and Majerus observed when platelets were incubated with thrombin. MB induced the release of platelet serotonin, but PMS did not cause the release of this amine. The thrombin and MB-enhanced synthesis of platelet phosphatidylserine (PS) and associated release of platelet serotonin may be interrelated.

ON THE SUBUNIT STRUCTURE OF THE PROTEIN OF HUMAN SERUM HIGH DENSITY LIPOPROTEIN. I. A STUDY OF ITS MAJOR POLYPEPTIDE COMPONENT (SEPHADEX FRACTION III). Celina Edelstein, Chang T. Lim and A.M. Scanu (Depts. of Med. and Biochem., Univ. of Chicago Pritzker Schl. of Med., and Argonne Cancer Res. Hosp., Chicago, Ill. 60637). *J. Biol. Chem.* **247**,

5842-9 (1972). Fraction III, separated and purified from delipidated human serum high density lipoprotein of d 1.063 to 1.125 g per ml (HDL_2) by gel filtration in 8 M urea, was further fractionated by ion exchange chromatography (DEAE) in 8 M urea into two major broad components, III_a and III_b, in ratios varying from individual to individual and exhibiting a slight difference in mobility by polyacrylamide gel electrophoresis or disc gel electrofocusing. The molecular weight of each of the two fractions was about 27,000 as assessed by sodium dodecyl sulfate-polyacrylamide electrophoresis in the presence or absence of 8 M urea. The results of the present studies were taken to indicate that HDL_2 contains at least two polymorphic forms of III having equimolecular weight, but differing slightly in chemical composition and associated together by noncovalent linkage.

II. A STUDY OF SEPHADEX FRACTION IV. A.M. Scanu, Chang T. Lim and Celina Edelstein. *Ibid.*, 5850–5. Fraction IV, separated and purified from delipidated human serum high density lipoprotein of d 1.063 to 1.125 g per ml (HDL_2) by gel filtration in 8 M urea, was further studied before and after reduction with β-mercaptoethanol (β-ME), or reduction and carboxymethylation (iodoacetamide). Both the reduced (R-IV) and the reduced and S-carboxymethylated (SC-IV) preparations exhibited a single band by polyacrylamide gel electrophoresis with a molecular weight of about 8500, a figure corroborated by Sephadex G-200-8 M urea and agarose-guanidine HCl column chromatography. It is concluded that Fraction IV, as separated and purified from apo HDL_2 by Sephadex chromatography, is made up of chemically very similar, and possibly identical protomers each having the same molecular weight (about 7500). The data also indicate that in HDL_2 these protomers are paired by a single disulfide linkage into dimers of equivalent weight.

INTERACTIONS OF INSULIN, CORTICOSTERONE AND PROLACTIN IN PROMOTING MILK-FAT SYNTHESIS BY MAMMARY EXPLANTS FROM PREGNANT RABBITS. Isabel A. Forsyth, C.R. Strong and R. Dils (Natl. Inst. for Res. in Dairying, Shinfield, Reading RG2 9AT, U.K.). *Biochem. J.* 129, 929–35 (1972). The rate of fatty acid synthesis by mammary explants from rabbits pregnant for 16 days or from rabbits pseudopregnant for 11 days was stimulated up to 15-fold by culturing for 2–4 days with prolactin. This treatment initiated the predominant synthesis of C8:0 and C10:0 fatty acids, which are characteristic of rabbit milk. Inclusion of insulin in the culture medium increased the rate of synthesis of these medium-chain fatty acids. By contrast the inclusion of corticosterone led to the predominant synthesis of long-chain fatty acids.

GLYCOSPHINGOLIPIDS IN CULTURED HUMAN SKIN FIBROBLASTS. II. CHARACTERIZATION AND METABOLISM IN FIBROBLASTS FROM PATIENTS WITH INBORN ERRORS OF GLYCOSPHINGOLIPID AND MUCOPOLYSACCHARIDE METABOLISM. Glyn Dawson, R. Matalon and A. Dorfman (Depts. of Biochem. and Pediatrics, Joseph P. Kennedy, Jr. Mental Retardation Res. Center, Pritzker Schl. of Med., Univ. of Chicago, Chicago, Ill. 60637). *J. Biol. Chem.* 247, 5951–8 (1972). Fibroblasts cultured from skin biopsies obtained from patients with inherited storage diseases exhibited the specific lysosomal hydrolase deficiency found in the patient's tissues. Combined thin-layer and gas-liquid chromatography of the glycosphingolipids isolated from such fibroblasts showed variations in the concentration of the seven glycosphingolipids found in normal fibroblasts, GL-1a, GL-1b, GL-2a, GL-3, GL-4, G_{M3}, and G_{D3}. In three diseases in which visceral accumulation of glycosphingolipid has been demonstrated, namely, Fabry's disease, lactosylceramidosis and Gaucher's disease, two to 4-fold elevations of the glycosphingolipids, GL-3, GL-2a and GL-1a, respectively, were found in the cultured skin fibroblasts. A marked abnormality of G_{M3} and G_{D3} catabolism was demonstrated in fibroblasts from three patients with I-cell disease, an unusual genetic disorder in which there is a generalized lysosomal hydrolase deficiency.

THE ACYLATION OF GLYCEROPHOSPHATE IN RAT LIVER MITOCHONDRIA AND MICROSOMES AS A FUNCTION OF FATTY ACID CHAIN-LENGTH. L.N.W. Daae (Inst. of Clin. Biochem., Univ. of Oslo, Rikshospitalet, Oslo, Norway). *FEBS Letters* 27, 46–8 (1972). In 1953 Kornberg and Pricer described the enzymatic acylation of glycero-3-phosphate. They found the saturated straight-chain C_{16}-C_{18} acids to be the best substrates, and phosphatidic acid was the reaction product. Glycerophosphate acylation takes place both in the endoplasmatic reticulum and in the outer membranes of mitochondria. Recent work in this laboratory has shown that the fatty acid specificity of the mitochondrial glycerophosphate acylation is different from that of the endoplasmatic reticulum. The mitochondrial enzyme shows a distinct preference for palmityl-CoA, and 1-palmitylglycerophosphate (lysophosphatidic acid) is the main reaction product. In incubations with microsomes unsaturated C_{18} acids are the most efficient substrates and phosphatidic acids are their main reaction products. These new observations have recently been confirmed. In the present paper we report that there are also specificity differences depending on the chain-length of the saturated fatty acids in the two systems for glycero-3-phosphate acylation.

Cu^{++}-DEPENDENT THIOL STIMULATION OF GLUCOSE METABOLISM IN WHITE FAT CELLS. M.P. Czech and J.N. Fain (Div. of Biol. and Med. Sciences, Brown Univ., Providence, R.I. 02912). *J. Biol. Chem.* 247, 6218–23 (1972). EDTA, added either alone or with equimolar concentrations of $CaCl_2$ or $MgCl_2$, was without effect on the increase in fat cell glucose oxidation due to insulin, vitamin K_5, menadione or sucrose hyperosmolarity. In contrast, EDTA markedly inhibited the action of cysteine, glutathione and an "insulin-like" factor from serum on fat cell glucose metabolism. The inhibition by EDTA was greater on high concentrations of cysteine (1.5 or 2 mM) than lower concentrations (0.5 or 1 mM). In fat cells incubated in a 3% albumin medium which had been incubated for 30 min with 2 mM cysteine prior to addition of EDTA and cells, EDTA was ineffective in blocking the action of cysteine. These results indicate that the stimulatory effects of cysteine on white fat cell glucose utilization involve a mechanism dependent on the presence of divalent copper.

STEROID-PROTEIN INTERACTIONS. XXVI. STUDIES ON THE POLYMERIC NATURE OF THE CORTICOSTEROID-BINDING GLOBULIN OF THE RABBIT. G.J. Chader, Nancy Rust, R.M. Burton and U. Westphal (Biochem. Dept., Univ. of Louisville, Schl. of Med., Health Sci. Center, Louisville, Ky. 40201). *J. Biol. Chem.* 247, 6581–8 (1972). The rabbit corticosteroid-binding globulin (CBG), fully saturated with corticosteroid, was separated by Sephadex G-200 filtration into a corticoid-binding monomer and a steroid-free tetramer. Polymerization could be enhanced by removal of the steroid from CBG or by prolonged storage. Partial depolymerization and reactivation of the inactive tetramer was obtained by incubation with a relatively large quantity of cortisol; the restored binding affinity was associated with the monomeric species.

HIGH SPEED LIQUID CHROMATOGRAPHY OF DERIVATIZED URINARY 17-KETO STEROIDS. F.A. Fitzpatrick, S. Siggia and J. Dingman, Sr. (Dept. of Chem., Univ. of Mass., Amherst, Mass. 01002). *Anal. Chem.* 44, 2211–6 (1972). The 2,4-dinitrophenylhydrazine derivatives of 4 epimeric forms of androsterone and dehydroepiandrosterone have been separated from each other by high speed liquid chromatography. Total analysis time at a flow rate of 0.5 ml/min of isooctane is less than 36 minutes on a 1-meter × 1.8-mm i.d. column. Samples of urine and blood hydrolysates have been derivatized with DNPH and analyzed by the same technique. The 11-hydroxy-17-keto steroids were analyzed by reversed phase liquid chromatography using a "permanently" bonded octadecylsilane support material. The clinical potential of the method is discussed.

New sales opportunities in Taiwan and Poland

Japan's recent agreement with the Peoples Republic of China included their reducing trade with Taiwan. This has created a new sales opportunity for U.S. manufacturers.

Poland plans to increase purchases from $2 million to $150 million per year. They are particularly interested in food processing machinery, machine tools, earth moving machinery, chemical processing plants and steel making equipment.

The U.S. Department of Commerce also opened a U.S. Trade Development and Information Office in Warsaw in October, the first in Eastern Europe. ■

PHOSPHORESCENCE STUDY OF EXCITED TRIPLET STATE PROPERTIES OF SOME K VITAMINS AND THEIR ANALYTICAL USEFULNESS. J.J. Aaron and J.D. Winefordner (Dept. of Chem., Univ. of Florida, Gainesville, Fla. 32601). *Anal. Chem.* 44, 2122–7 (1972). Phosphorescence excitation and emission spectra and lifetimes of Vitamins K_1, K_3 and K_5 have been determined at 77K in several solvents (n-hexane, methanol, ethanol and mixtures methanol-water). Phosphorescence bands are attributed to n, π^* triplet states for vitamin K_5. Phosphorescence analytical characteristics of those vitamins are given for six different solvents. Limits of detection range between 0.07 and 1.5 μg/ml, according to the structure of the vitamin, but are not significantly influenced by the nature of the solvent. The usefulness of phosphorimetry for the quantitative determination of vitamins K_1 and K_3 is compared with other analytical methods and is shown to compete favorably with those methods.

PROSTAGLANDINS. S. Bergstrom and J. Sjovall. *U.S. 3,706,789.* The prostaglandins $PGF_{2\alpha}$ and $PGF_2\beta$ and their salts, esters, and alkanoates are disclosed. These compounds are useful for a variety of pharmacological purposes, including smooth muscle stimulants and as cardiovascular agents.

RESPONSE OF RAT TISSUE LIPASES TO PHYSICAL TRAINING AND EXERCISE. E.W. Askew, G.L. Dohm, R.L. Huston, R.W. Sneed and R.P. Dowdy (Chem. Div., U.S. Army Med. Res. and Nutr. Lab., Fitzsimons Gen. Hosp., Denver, Col. 80240). *Proc. Soc. Exptl. Biol. Med.* 141, 123–9 (1972). The results of this study indicate that physical training causes an adaptive increase in epinephrine-stimulated fatty acid mobilization potential in adipose tissue of rested animals. Exhaustion caused an increase in ESL activity of similar magnitude in untrained animals. The exercise effect was not additive with the training effect when trained animals were exercised or exhausted. Lipoprotein lipase was unaffected by training and increased in heart and muscle of untrained animals following exhaustion. Trained animals exhibited a similar but smaller trend toward increased LPL activity with exercise or exhaustion. Taken together, the results of this study are compatible with the concept that exercise increases lipolysis in adipose tissue and LPL mediated triglyceride fatty acid uptake by muscular tissues. Physical training appeared to increase the responsiveness of adipose tissue to adrenergic stimulation. An increased adipokinetic response by adipose tissue of trained animals would be compatible with the observation in this and other studies that training increases the capacity of muscular tissue for fatty acid oxidation.

• Drying Oils and Paints

DIELS-ALDER ADDUCTS FROM SAFFLOWER FATTY ACIDS. ITACONIC ACID AS DIENOPHILE. G.S.R. Sastry, B.G.K. Murthy and J.S. Aggarwal (Regional Res. Lab., Hyderabad, India). *Farbe u. Lack* 78(10), 927–9 (1972). The Diels-Alder reaction between alkali conjugated safflower fatty acids or their methyl esters and itaconic acid, its anhydride or dimethyl itaconate was studied under various experimental conditions. The principal product, when itaconic acid or its anhydride was used, was a mixture of the adducts of itaconic anhydride and itaconic acid in different proportions, obtained in yields of 61–63%. When dimethyl itaconic was used, the product was a trimethyl ester adduct obtained in similar yields. The method of isolation from the reaction products and characterization of the adducts are described. The trimethyl ester adduct was epoxidized.

TRAFFIC PAINT COMPOSITIONS. J.A. Lopez (Shell Oil Co.). *U.S. 3,706,684.* Rapid dry, one package epoxy traffic paint compositions which require no curing agent and also exhibit minimal dirt pick up comprise (1) an organic solvent, (2) a pigment, and (3) a condensation product comprising near equal molar ratios of a polyepoxide and a dimer acid. The polyepoxide is a blend of two separately prepared glycidyl polyethers of a polyhydric phenol, one being a liquid and the other a solid.

• Detergents

DESIGN OF A CONTINUOUS MANUFACTURING PROCESS FOR AN OIL-IN-WATER COSMETIC CREAM. N.P. Redmond and P.W. Haltenberger (Noxell Corp., 11050 York Road, Baltimore, Md. 21203). *J. Soc. Cosmet. Chem.* 23(10), 637–55 (1972). An important factor in the decision to consider the continuous manufacture of a cosmetic cream is product volume or demand. In arriving at a final process design and selection of equipment, emphasis is placed upon the determination of the basic chemistry responsible for the stability and characteristic consistency identified with the product under study, and determination of the relative importance of process and ingredient variations. Calorimetry and fractional factorial designed experiments conducted to study emulsification and crystallization behavior are described. Results lead to the conclusion that the fatty acid soap and fatty acid complexes present in the emulsion play an important role in determining product consistency and stability while moderate variations in other components have little or no effect. The types of equipment and process designs considered for the continuous process study are discussed, including results of actual pilot-scale experiments.

SCANNING ELECTRON MICROSCOPY AND OTHER NEW APPROACHES TO HAIR SPRAY EVALUATION. R.P. Ayer and and J.A. Thompson ("Freon" Products Lab., E.I. du Pont de Nemours & Co., Wilmington, Del. 19898). *J. Soc. Cosmet. Chem.* 23(10), 617–36 (1972). The scanning electrom microscope and its utility for studying hair spray films are described. The scanning electron microscope is an invaluable tool for studying the coatability of hair spray films on individual or small groups of hair fibers. Coatability can be improved by addition of certain surfactants to hair spray formulations and can be correlated qualitatively to hair spray properties such as luster, appearance and flaking.

AZIRIDINE CHEMISTRY—APPLICATIONS FOR COSMETICS. J. Woodard (Dow Chem. Co., Midland, Mich.). *J. Soc. Cosmet. Chem.* 23(10), 593–603 (1972). Aziridines are relatively new to the cosmetic industry but there are many areas which can utilize their properties and chemistry. Substantivity is a very desirable property in both hair and skin applications. Using a radioactive tracer technique, polyethylenimine was shown to be highly substantive to hair. Aminoethylation of starch has been described and this same technology might successfully make proteins more substantive to hair and skin. Examination offers a whole new group of antimicrobials and surfactants.

FATTY ACID SALTS FOR THE COSMETIC INDUSTRY. T. Kunzmann.

(Continued on page 128A)

This Issue's Index to Advertisers

• Abstracts. . .

(Continued from page 127A)

Seifen-Ole-Fette-Wachse 98(19), 635–7 (1972). Because of the wide variation possible in structure of fatty acids and their salts and derivatives they have found much usage in cosmetic formulations as emulsifiers, skin-softeners, adhesives for dulling purposes and as cleaners.

THE HLB-SYSTEM EFFECT FOR PERFUME SOLUBILIZATION WITH WATER BY MEANS OF EMULSIFIERS. E. Rochl (Naarden), *Seifen-Ole-Fette-Wachse* 98(19), 627–30 (1972). Experiments proved that specific emulsifier mixtures are especially fitted for perfume solubilization. Varying systems of emulsifier mixtures with different HLB values have been tested and one with a value of 15.1 gave useful results.

PURIFICATION OF ALKARYL PHOSPHATES. G.A. Rampy, N.C. Parsons and M.H. Ryder (FMC Corp.). *U.S. 3,706,823.* Hindered phenol impurities which cause color development in alkaryl phosphates, *e.g.* 2,6-dialkylphenols, are removed by reaction with excess PCl_5 to form the alkaryl phosphoric chlorides. These chlorides are then removed by treatment with water, preferably combined with alkali.

DETERGENT COMPOSITION. J. Rawlinson (Lever Bros.). *U.S. 3,707,502.* Detergent compositions containing sodium nitrilotriacetate, peroxy-compounds and alkali metal salts of mono- and dihydroxamic acids, are disclosed. The hydroxamic acid salts are effective inhibitors of the corrosion of copper and its alloys by aqueous solutions of the detergents.

STABILIZED LIQUID DETERGENT COMPOSITION. T.G. Kenny (Lever Bros.). *U.S. 3,707,503.* Stable, controlled-sudsing, heavy duty liquid detergent compositions containing anionic detergents such as biodegradable alkyl or aryl sulfonates and sulfates or alkyl polyethoxy sulfonates are disclosed. They are prepared by the inclusion of small amounts of an alkali metal salt of a fatty acid such as myristic or coco fatty acids with an alkanolamide such as lauric diethanolamide. The weight ratio of fatty acid to alkanolamide is about 1:2 or 1:11.

ELECTROKINETIC INTERPRETATION OF THE ADSORPTION OF IONIC SURFACTANTS ON SOLID SURFACES. PART I: POTENTIAL DETERMINING H^+ AND OH^- IONS. B. Dobias (Seat of Phys. Chem., Regensburg U.). *Tenside* 9(6), 322–7 (1972). The adsorption isotherms of a number of surfactants on silica and alumina at different concentrations and pH values were examined. The potential determining ions for these minerals are the H^+ and OH^- ions. The surface area required by the surfactant is discussed in conjunction with the pH value, the association of the hydrocarbon radicals and the dissociation of the organic molecule.

SURFACE ACTIVE SULFONATES. H. Robinette, Jr. (Robinette Res. Labs.). *U.S. 3,706,791.* Surface active alkane sulfonates are prepared by agitating an aqueous solution of a bisulfite and an alcoholic solution of an olefin of 7–20 carbon atoms in the presence of a small quantity of a diazo or azobis compound which serves as a free radical forming initiating catalyst. The products are stable to hydrolysis and heat, have excellent color and are useful as textile softeners, anti-static agents, emulsifying agents, wetting agents, biodegradable detergents and lubricants. ■