

• *New Products . . .*

(Continued from page 254A)

A convenient new method for 35 mm photography of chromatograms using ultraviolet has been developed. The process consists of a new camera-mounting metal bracket that is easily attached to or removed from the viewing port of Chromato-vue Cabinet C-5 with an extremely small site variation. The cabinet is manufactured by ULTRAVIOLET PRODUCTS, INC.; the bracket by LESTER A. DINE, INC. Free technical data describing the new equipment is available. This data also contains a basic information table, prepared by Eastman Kodak Company, on film exposures and filters to assist in ultraviolet chromatogram photography. Information can be obtained by writing Ultra-Violet Products, Inc., 5114 Walnut Grove Ave., San Gabriel, California 91778.

CAMAG INC. has announced the new compact HVE-61-000 High-Voltage Electrophoresis system for high speed analytical separations of many low molecular weight ions, including amino acids, peptides, amines, sugars, pharmaceuticals, steroids, inorganic ions and proteins. The unit features a unique, highly efficient cooling system which uses common tap water as the coolant, eliminating the need for a refrigeration unit. The HVE-61-000 is well suited to the separation of new compounds from mixtures as well as routine clinical separations. The complete CAMAG HVE-61-000 system includes the HVE cell, safety case, and a 5000 volt power supply which requires no warm-up and has protective safety features. For complete information, write to: CAMAG Inc., 11830 West Ripley Avenue, Milwaukee, Wis. 53226.

ROGER GILMONT INSTRUMENTS, INC., 161 Great Neck Rd., Great Neck, N.Y., announces the introduction of two new Teflon-Glass valves to its line of instruments. These valves are the ultimate in simplicity. They consist of a solid Teflon stem operating in a precision bore threaded Pyrex tube. Highest corrosion resistance is achieved because fluid is in contact with these materials only. Optional Viton O-ring seals are supplied so that the valves may be used under high vacua (10^{-6} Torr). Two styles are available: the quick opening type consisting of two sliding seals and the capillary type which contains a tapered tube orifice for applications demanding extremely fine control of fluid flow.

SUPELCO, INC., Bellefonte, Pa. announced the availability of several new silicones for use as gas chromatographic stationary phases. The most polar, OV-225, is a cyanopropyl phenyl substituted silicone which has been used successfully to 300 C. This material is significantly more polar than any of the OV silicones previously offered. The second new material OV-210 is a trifluoropropyl silicone which is selective for ketones and alcohols. It also has been used at temperatures up to 300 C.

A new barium sulfate paint that offers better spectrophotometer reflectance, easier coating and greater durability, together with an improved barium sulfate powder, has been introduced by EASTMAN ORGANIC CHEMICALS, Eastman Kodak Company. The new Eastman White Reflectance Paint is exceptionally efficient in the ultraviolet region where conventional magnesium oxide coatings are least efficient. The paint is easily spray-coated and is intended for use as an original or replacement coating for all integrating spheres on instruments such as reflectance spectrophotometers. Specially purified new Eastman White Reflectance Standard barium sulfate powder provides unsurpassed diffuse reflectance of radiant energy from about 200 nm in the ultraviolet region, to about 2,500 nm in the near infrared. This material is substantially better than freshly prepared Mg O, and its high atmospheric stability, uniformity and resistance to high-intensity radiation make it useful as a reflectance working standard for spectrophotometers, colorimeters and related instruments, all making possible reliable interlab comparison of reflectance data. For further information write to Eastman Organic Chemicals, Eastman Kodak Company, Rochester New York 14650.

Protein Foods to Combat Food Shortages

Texas A&M University has proposed establishment of a facility to investigate production of protein foods from various non-meat sources to combat growing food shortages throughout the world.

While most U.S. research has concentrated on products which can be made from soybean, A&M Engineering Dean Fred Benson said the university's program would include studies of other possible low-cost sources including cottonseed, peanuts, sunflower seeds, marine life and micro-biologically-produced protein.

Dr. Benson said support could be obtained from research groups such as agricultural engineering, dairy products, meat products, nutrition, biochemistry, biophysics, plant genetics, poultry products, chemical engineering, mechanical engineering, experimental statistics and microbiology.

The program would be coordinated by K. F. Mattil ('44) former associate director of research for Swift and Company. Mattil joined A&M last fall after serving 25 years with the large food firm.

Dr. Mattil said the A&M facility would include research, development, education, sample production, demonstration and extension service. Basic research, he added, would receive at least equal priority with applied research.

Whereas the U.S. devotes less than 20% of its national income to food, he said most countries—involving perhaps a majority of the world's population—must expend at least half their income to obtain sufficient food for a subsistence diet. In such diets, Dr. Mattil pointed out, substandard consumption of the protein foods is common. He emphasized that for various reasons there also are many people in the U.S. who fail to consume adequate quantities of protein foods. He said the prevalent reason is economics.

While a majority of people in the U.S. bask in an abundance of food, Dr. Mattil warned this may not always be the case. "It would be reasonable to presume that at some point in time," he noted, "the size of our population may exceed even our ability to supply an adequate amount of the protein foods that are now the accepted standards—meat, poultry, eggs and dairy products."

As the population per unit of available arable land increases, Mattil said the greatest pressure will be brought on the products of animal agriculture, since they are the least efficient to produce. "It requires substantially more units of land to produce animal proteins than it does to produce equivalent quantities of proteins from vegetable origin," he stressed.

Mattil said some of the major objectives of the proposed Texas A&M facility would be: (a) Separate and characterize important protein constituents of various oilseeds and other protein sources. (b) Develop practical processes for producing protein concentrates and isolates from unconventional sources. (c) Prepare unconventional protein concentrates that are compatible with the proteins of wheat to produce high-protein breads with quality characteristics at least equivalent to conventional breads. (d) Investigate means to increase the level of protein that can be used in beverages simulating milk or other types of commonly accepted drinks. (e) Produce proteins by microbiological processes from low-cost media other than petrochemicals. (f) Apply the developed protein concentrates and isolates to the creation of new food products, both simulating existing foods and creating entirely new concepts. (g) Modify natural proteins by chemical, physical and microbiological treatments to attain improved functional properties and new applications.

Ozone Research & Equipment Corp.

Ozone Testing, Research, Consultation

3840 N. 40th Ave., Phoenix, Arizona 85019

(Continued from page 270A)

LESSER KNOWN NIGERIAN EDIBLE OILS AND FATS. I. CHARACTERISTICS OF MELON SEED OILS. P. Girgis and F. Said (Univ. of Ife, Ibadan, Nigeria). *J. Sci. Food Agr.* 19, 615-6 (1968). Melon seed oil is found to be a semi-drying oil, consisting mainly of the glycerides of oleic (19%) and linoleic (55%) acids. Because of its high content of unsaturated fatty acids, it should be a good substitute for maize oil for use in diets intended to reduce high levels of blood cholesterol.

ANTIOXIDANT PROPERTIES OF LUCERNE EXTRACTS. A. Ben Aziz, S. Grossman, P. Budowski, I. Ascarelli and A. Bondi (Hebrew Univ., Rehovot, Israel). *J. Sci. Food Agr.* 19, 605-8 (1968). Aqueous extracts of fresh and dehydrated lucerne were found to exhibit heat-stable antioxidant activity toward the autoxidation of linoleic acid, the lipoxidase-catalyzed oxidation of linoleic acid and the lipoxidase-induced carotene oxidation. EDTA increased the antioxidant activity of lucerne extract in all three systems. Alone, EDTA inhibited linoleate autoxidation, but not lipoxidase-catalyzed linoleate oxidation, and was only partly inhibitory toward lipoxidase-induced carotene oxidation. The presence of ferulic acid in the acid hydrolyzate of lucerne extract could be demonstrated by chromatography. This acid, and the related coumaric and sinapic acids, were shown to inhibit lipoxidase activity. It is suggested that a ferulic acid derivative may play a role in the antioxidant effects observed with aqueous lucerne extracts.

DISTRIBUTION OF FATTY ACIDS IN LIPIDS AS AN AID TO THE IDENTIFICATION OF ANIMAL TISSUES. I. A. W. Hubbard and W. D. Pocklington (Lab. of the Government Chemist, London, England). *J. Sci. Food Agr.* 19, 571-7 (1968). Fat was extracted from various cuts of meat, from domestic and foreign sources. The majority of the samples were from pork, beef and lamb, but specimens of rabbit, poultry and three African ruminants were also included. The fatty acid composition of the samples was determined by gas chromatography of their methyl esters, on polar and non-polar stationary phases. The use of such results both for the identification of the animal source of meat and of the purity of lard samples is discussed. It is suggested that the presence in lard of certain branched-chain fatty acids, characteristic of ruminant fat, provides evidence of adulteration with beef or mutton tallow.

ROSIN COMPOUNDS OF IMPROVED COLOR AND STABILITY. C. G. Wheeler (Arizona Chemical Co.). *U.S.* 3,423,389. The color and color retention of tall oils, tall oil fractions, rosins and rosin compounds are improved by adding about 0.01 to 1% of a phenol sulfide monomer or polymer and heating at 180-350C, preferably under a blanket of nitrogen, until products of better color characteristics are obtained.

PROCESS AND APPARATUS FOR IMPROVING FATS. F. Eichler, P. J. Seip and P. Czedik-Eysenberg (Lever Bros. Co.). *U.S.* 3,423,442. A liquid phase process for refining glyceride oils is described in which the liquid oil is treated with an aqueous liquid agent in a bed of chemically inert packing material of uniform depth under conditions providing numerous interfaces between the two liquids.

METHOD OF TREATMENT OF CRUDE ANIMAL FAT. A. Mayer. *U.S.* 3,424,587. A method is described for treating crude animal fats to produce animal feed concentrates by drying, comminuting, freezing and pulverizing such fats, followed by the addition of salt and other additives.

SOAPSTOCK ACIDULATION. F. M. Bloomberg and T. W. Hutchins (Arkansas Grain Corp.). *U.S.* 3,425,938. A method is described for acidulating a mixture of soapstock, water and mineral acid within a substantially confined area; transferring an overflow volume of the acidulated mixture to a confined settling area where the acid oil rises and the acid water settles; withdrawing an overflow volume of the acid oil from the settling area to storage and draining the acid water from the lower portion of the settling area to means where it may be neutralized and disposed of as waste. The method is operated continuously. Suitable mechanical equipment for operating the process is also described.

SAPONIFICATION GLYCERINE REFINING BY PLURAL STAGE FLASH DISTILLATION WITH LIVE STEAM. J. J. Graham (Badger Mfg. Co.). *U.S.* 3,427,230. A method for purifying crude saponification glycerine consists of mixing the crude glycerine with super-heated steam in a quantity and at a temperature and pressure suitable to flash the glycerine values and volatile impurities, separating the non-volatile impurities and separately condensing the glycerine from the vapors. The glycerine condensate is reflash admixed with a second quantity of live steam to vaporize additional impurities from a liquid purified and concentrated glycerine bottoms product.

CONDITIONING POWDER FOR DRYCLEANING SOLVENT. R. G. Riede and C. W. Cain, Jr. (Johns-Manville Corp.). *U.S.* 3,427,249. The removal of fatty acid soil from an organic drycleaning solvent is improved by using as a sweetener hydrothermal calcium silicate having a lime to silica ratio of about 1.5 to 2.0:1. A combination of about 5-15% by wt. of calcium silicate and about 85-95% by wt. of filter aid is mixed with the drycleaning solvent, and fatty acid soil is removed from the system by filtering.

PROCESS FOR RECOVERING FATTY ACIDS AND TRIGLYCERIDE OIL FROM SOAPSTOCK. J. E. Morren (Baker Perkins Inc.). *U.S.* 3,428,660. A process for recovering fatty acids and triglyceride oil from soapstock comprises continuously mixing the soapstock at 175-300F, preferably 200-270F, with an aqueous mineral acid such as sulfuric acid to obtain an acidulated mixture with the soap converted to free fatty acid and salt. The mixture, comprising an aqueous phase with the salt and excess acid and an oil phase containing fatty acids and triglyceride oil, is continuously passed into a centrifugal force field whereby the oil phase flows inwardly and countercurrently to an outwardly flowing stream of wash water, also continuously introduced into the field. The oil phase is removed at the inward position and the aqueous phase, containing the wash water, is removed from an outward position of the force field.

• Fatty Acid Derivatives

CHEESE, PHOSPHATE AND POLYGLYCERYL PARTIAL ESTER COMPOSITION. C. W. Tatter and P. P. Noznick (Beatrice Foods Co.). *U.S.* 3,421,904. Emulsified cheese compositions are prepared by admixing water, a water soluble non-toxic phosphate, a fermented type cheese and a polyglyceryl partial ester of a higher fatty acid. The product can be spray dried.

POLYURETHANE FOAMS UTILIZING AN OXYETHYLATED TALL OIL FOAM STABILIZER. W. R. Andrews and J. L. Meehan (Olin Mathieson Chemical Corp.). *U.S.* 3,423,339. Oxyethylated tall oil in an amount between about 0.3 and 3.0% by wt. of the foam reactants is employed as a foam stabilizer for polyurethane foams.

PROCESS FOR PREPARATION OF IODINATED LECITHIN. K. Makabe (Daiichi Yakuhin Sangyo Kabushiki Kaisha). *U.S.* 3,423,441. Iodinated lecithin is prepared by adding iodine and coarse particles of at least one of the metals magnesium, zinc, aluminum, titanium, manganese, nickel, cobalt, cadmium and copper to lecithin dissolved in glacial acetic acid and heating the resultant mixture with stirring. The product is useful as an iodine-containing medical preparation.

N-BENZYL HIGHER FATTY ALKYL DILOWERALKYL QUATERNARY AMMONIUM HALIDE HAIR RINSE. E. P. Birkelo and T. N. Johnson (Rayette-Faberge, Inc.). *U.S.* 3,423,504. A quaternary ammonium compound mixture comprises an aqueous solution of higher fatty alkyl dilower alkyl benzyl ammonium halide and from 1 to 20% by wt. of the quaternary compound of a higher fatty acid amide, each of the higher fatty components having 10 to 22 C atoms.

WATER-CONTAINING COATING COMPOSITION COMPRISING A SALT OF AN ANHYDRIDE COPOLYMER PARTIAL ESTER. M. Skoultehi and B. D. Jubilee (Nat. Starch and Chem. Corp.). *U.S.* 3,425,977. Novel water-soluble, surface coating compositions are characterized by their ability to crosslink upon being air-dried so as to yield solvent-resistant films with excellent adhesion to a variety of substrates. Such coating compositions are based upon novel polymeric derivatives resulting from the reaction between a vinyl polymer containing anhydride groups within its molecule and an ester-alcohol derived from an unsaturated fatty acid.

(Continued on page 274A)

HAHN LABORATORIES

Consulting and Analytical
Chemists

1111 Flora St. P.O. Box 1177 Columbia, S.C. 29202

(Continued from page 272A)

ANTI-FOGGING FILM COMPRISING VINYL CHLORIDE POLYMER, GLYCEROL MONOSTEARATE AND INCOMPATIBLE PLASTICIZER. G. M. Adams and D. Tijnelis (Union Carbide Corp.). *U.S. 3,425,976*. An anti-fog vinyl chloride polymeric film is obtained by incorporating in a plasticized vinyl chloride polymer a monoglyceride of fat-forming fatty acids or mixtures of monoglycerides and diglycerides of fat-forming fatty acids in an amount sufficient to impart anti-fogging characteristics to the film. The plasticizer system employed consists of at least 25 parts of a plasticizer which is incompatible with the anti-fog additive. If both compatible and incompatible plasticizers are used, the ratio of the latter to the former should be at least 2.5 to 1.

DIBASIC ACIDS CONTAINING ETHER LINKAGE. I. PLASTICIZING ACTIVITIES OF ESTERS AND N-SUBSTITUTED AMIDES OF 1,2-BIS (CARBOXYALKOXY)-ETHANES AND -PROPANES. Yoshio Abe, Chihiro Kato, Daisaku Hiso, Tomoyuki Aoki and Hisao Miyagawa (Keio Univ., Tokyo). *Yukagaku* 18, 31-6 (1969). Three dibasic alkoxy acids, 1,2-bis(carboxymethoxy)-ethane, 1,2-bis(β -carboxyethoxy)-ethane, and 1,2-bis(β -carboxyethoxy)-propane were prepared by the cyanoethylation of ethylene and propyleneglycol, and by the oxidation of triethylene glycol with nitric acid. Reaction of these acids with octyl-, dodecyl-, benzoyl-, and 2-ethylhexyl alcohols gives diesters. Diamides were also obtained by the reaction of dimethyl esters of these dibasic acids with octyl-, dodecyl- and benzyl-amines. Diesters and diamides thus obtained were investigated for use of PVC plasticizer. They were excellent in low temperature performance. The diamides of the didodecyl ester of 1,2-bis(β -carboxyethoxy)-propane had good thermal stability with excellent low temperature characteristics.

HYDROLYSIS OF MONOESTERS OF DICARBOXYLIC ACIDS WITHOUT SPLITTING OF ESTERS OF MONOCARBOXYLIC OR DIESTERS OF DICARBOXYLIC ACIDS. R. Schöllner. *Plaste u. Kautschuk* 14, No. 8, 592 (1967). The esters are hydrolysed by passage through a column of a strongly basic anion exchange resin using dioxan as solvent. Monoesters of dicarboxylic acids (monooctadecyl succinate) are quantitatively hydrolysed, whereas diesters, or esters of monocarboxylic acids, are unchanged. (Rev. Current Lit. Paint Allied Ind. No. 317)

REACTION OF ESTERS OF STEARIC ACID WITH ETHYLENEDIAMINE IN ALCOHOLIC SOLUTION. Gaku Izumi and Masayoshi Kita (Gov. Ind., Research Inst., Nagoya). *Yukagaku* 18, 27-31 (1969). Reaction of methyl stearate or ethyl stearate and ethylenediamine in ethanol gave interesterification product and a part of substituted amino group but the reaction with chlorohydrin stearate gave largely substituted amidation product.

• Biochemistry and Nutrition

THE TRANSPORT OF RETINOL IN HUMAN PLASMA. S. Johannesen, J. O. Alvsaker and S. G. Laland (Dept. of Biochem., Univ. of Oslo, Blindern, Norway). *FEBS Letters* 2, 146-48 (1969). Evidence in support of the view that tryptophan-rich prealbumin may serve as the specific transport protein for retinol in human plasma has previously been reported. Since thyroxine is transported partly by this protein, thyroxine and retinol would then share the same transport protein. In order to investigate this further, the retinol-containing protein in human plasma was re-examined. The results obtained show that retinol in human plasma is not linked to tryptophan-rich prealbumin as previously suggested but to an immunologically related protein with an $S_{20,w}$ value of 1.85 (ultracentrifugation) as compared to 4.6 of tryptophan-rich prealbumin. In disc electrophoresis the retinol-binding protein was localized to the α_2 globulin position. *In vitro* experiments further revealed that it did not bind thyroxine in contrast to tryptophan-rich prealbumin.

LABELING OF MARROW CELLS OF VITAMIN E-DEFICIENT MONKEYS BY ^3H -PRECURSORS OF NUCLEIC ACIDS AND PROTEIN. C. Hanna, O. Neufeld, and C. Fitch (Depts. of Pharm. and Med., Univ. of Arkansas School of Med., Little Rock, Ark. 72201). *Proc. Soc. Exp. Biol. Med.* 130, 167-71 (1969). The incorporation of ^3H -labeled thymidine, deoxyuridine, uridine, and L-leucine into bone marrow cells of vitamin E-deficient and control monkeys was measured in autoradiographic studies. During vitamin E-deficiency there was an increase in the grain count per labeled cell of most cell types in the erythroid and myeloid series, while the percentage of ^3H -labeled cells was not altered from control values. Multinucleated erythroid cells in the bone marrow of vitamin E-deficient monkeys were not labeled by thymidine- ^3H . These findings are evidence that active erythropoiesis associated with premature death of erythroid cells occurs in the hypercellular bone marrow of anemic vitamin E-deficient monkeys.

THE EFFECTS OF INSULIN ON LIPOLYSIS EVOKED BY CYCLIC AMP AND ITS DIBUTYRYL ANALOG. H. Goodman (Dept. of Physio., Harvard Med. School, Boston, Mass.). *Proc. Soc. Exp. Biol. Med.* 130, 97-100 (1969). Glycerol production by segments of epididymal fat from normal rats was used as a measure of lipolysis. Theophylline (0.3 mg/ml) produced a striking increase in lipolysis. Further addition of cyclic adenosine 3',5'-monophosphate (CAMP) at a concentration of 10^{-2}M caused an even greater increase in glycerol production. Insulin (1mU/ml) slightly reduced the lipolytic effects of theophylline and completely abolished lipolysis in response to CAMP. The dibutyryl analog of CAMP (10^{-3}M) also increased lipolysis and its effects were also potentiated by theophylline. Insulin failed to reduce and in some experiments even enhanced the lipolytic action of dibutyryl CAMP. Imidazole reduced lipolysis in response to both nucleotides. The findings indicate that CAMP and its dibutyryl analog may behave quite differently under some circumstances and underscore the need for caution in drawing physiological conclusions based on findings with DBCAMP alone.

DIGESTIVE ACTIVITY OF LYSOSOMES. III. THE DIGESTION OF LIPIDS BY EXTRACTS OF RAT LIVER LYSOSOMES. S. Fowler and C. De Duve (Rockefeller Univ., New York City 10021). *J. Biol. Chem.* 244, 471-481 (1969). The ability of rat liver lysosomes to digest various lipids has been investigated. The lysosomes were isolated from the livers of rats treated with Triton WR-1339 and were essentially free of other cell components. They were able to deacylate extensively phosphatidylethanolamine, phosphatidylethanolamine, phosphatidylserine, phosphatidylinositol, lysophosphatidylethanolamine, lysophosphatidylethanolamine, phosphatidic acid, cardiolipin, tripalmitin, 1,2-dipalmitin, 1,3-dipalmitin and 1-monopalmitin, when incubated with these substrates at 37C in 0.1 M acetate buffer, pH 4.3 to 4.6. Extensive digestion of the lipids and proteins of both microsomes and mitochondria occurs upon prolonged incubation of these cell components with purified lysosomes at pH 4.3. RNA appears to be broken down under these conditions. Thus it is clear that lysosomes can accomplish the important digestive functions with which they are credited. However, the manner in which some of the products of this process, especially the phosphodiester, are cleared from the particles raises a problem of physiological importance.

ADRENAL CHOLESTEROL: LOCALIZATION BY ELECTRON-MICROSCOPE AUTORADIOGRAPHY. H. L. Moses, W. W. Davis, A. S. Rosenthal and L. D. Garren (N.I.H., Bethesda, Md. 20218). *Science* 163, 1203-05 (1969). As determined by electron-microscope autoradiography of adrenal glands containing tritiated cholesterol and by modified differential centrifugation techniques, 70 to 80% of adrenal cholesterol is contained within lipid droplets of rat adrenal cortical cells.

ANALOGUES OF GERANYL PYROPHOSPHATE AS INHIBITORS OF PRENYLTRANSFERASE. G. Popjak, P. W. Holloway, R. P. M. Bond and M. Roberts (Shell Research Ltd., Milstead Lab., Chem. Enzymology and Woodstock Agr. Res. Centre, Sittingbourne, Kent, England). *Biochem. J.* 111, 333-43 (1969). Six analogues of geranyl pyrophosphate (the monophosphates of geraniol and tetrahydrogeraniol, and the pyrophosphates of nerol, octan-1-ol, tetrahydrogeraniol and citronellol) were synthesized, and were found to be inhibitors of pig liver prenyl-(geranyl)-transferase. The effects of each analogue were analysed in kinetic experiments, which showed the pyrophosphates of citronellol, tetrahydrogeraniol and octanol-1-ol to be the most potent inhibitors. The results are interpreted to support a previous hypothesis that the main forces in the binding of substrates to prenyltransferase are non-specific lipophilic forces and a pyrophosphate-binding force.

THE POPE TESTING LABORATORIES
Analytical Chemists

2618½ Main

P.O. Box 903

Dallas, Tex.