ABSTRACTS . . . R. A. REINERS, Editor

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• Oils and Fats

Preparation and isolation of fatty acids randomly labeled with C^{14}. H. K. Mangold and H. Schlenk(Hormel Institute, Univ. of Minnesota, Austin, Minnesota). *J. Biol. Chem.* **229**, 731–741(1957). *Chlorella pyrenoidosa* was grown in an atmosphere of CO_2 and $C^{14}O_2$. The lipides of the algae were isolated and separated into a neutral and an acid fraction. The components of the acid fraction were separated according to chain lengths by distillation of the fatty acid methyl esters. Subsequently, separation according to unsaturation was afforded by counter-current distribution. The following acids were isolated from the algal lipides in the form of their methyl esters, palmitic, palmitoleic, palmitolinoleic, and palmitolinolenic; stearic, oleic, linoleic, and linolenic. A minute amount of arachidic acid was isolated from a hydrogenated fraction.

A new antioxidant from yeast. Isolation and chemical studies. M. Forbes, F. Zilliken, G. Roberts and P. György(Dept. of Microbiology, Biochem. and Pediatrics, School of Medicine, Univ. of Penn., and the Sloan Kettering Institute for Cancer Research). *J. Am. Chem. Soc.* **80**, 385–389(1958). A new antioxidant of the empirical formula $C_{16}H_{12}O_5$ has been isolated in crystalline form from different types of yeast. The method of isolation of the substance, its biological activity and its physical and chemical properties as well as those of a crystalline dimethoxy derivative ($C_{17}H_{14}O_5$) and a crystalline degradation product are described.

Analysis of small amounts of fatty acids. Pasupati Mukerjee (Dept. of Chem., University of Southern California, Los Angeles, Calif.). *Science* **127**, 287(1958). Unlike the method of Coleman and Middlebrook, in which use is made of the interfacial enrichment of the dye, this method makes use of the preferential partition of the stoichiometric simple salts that dyes form with large organic ions into the organic phase. For lauric acid, estimation as the sodium salt of about 20 micromoles to approximately 1% accuracy can be carried out through the use of pinacyanol under proper conditions.

Review of chemistry and research potential of Simmondsia Chinensis (Jojoba) oil). N. B. Knoepfler and H. L. E. Vix (Southern Regional Research Laboratory, U. S. Department of Agriculture, New Orleans 19, La.). *J. Agr. and Food Chem.* **6**, 118–121(1958). The known chemistry and research potential of *Simmondsia chinensis* (Jojoba), a unique agricultural material that occurs only in the wild, is summarized. Its nuts contain 50% of an oil which is a liquid wax, similar in some respects to sperm whale oil. Current interest in this seed stems from the fact that the United States is dependent on foreign sources of plant wax. The cultivation of jojoba offers promise in reducing this dependence. Preliminary industrial evaluations of jojoba oil and hydrogenated wax are discussed.

Losses in essential oils during extraction: origin and ways of reducing such losses. A. Uzzan(Institut des Corps Gras, Paris). *Rev. franc. corps gras* **4**, 608–616(1957). The discussion of losses caused during extraction of fatty oils bring out the factors to be considered. They report that it has been possible to keep losses down to about 0.4% which is considered by experts as the minimum that can be obtained in commercial usage.

The separation and identification of saturated and unsaturated fatty acids from formic acid to C_{20} acid by gas-liquid chromatography. A. T. James(Nat. Inst. Med. Res., London). *Olii Minerali-Grassie Saponi-Colori e Vernici* **34**, 539–543(1957). The general principles of gas-liquid chromatography and its application to the separation of fatty acids are explained and various examples are given. The gas-liquid chromatogram provides a rapid means of separation and identification of all the fatty acids from C_1 to C_{20} on the microscale.

Column chromatography of soybean phosphatides. G. de Zotti and G. Jacini(Stazione Sperimentale Olii e Grassi, Milano, Italy). *Olii Minerali-Grassi e Saponi—Colori e Vernici* **34**, 533–535(1957). In this preliminary note examples of chromatography are given using some of the alcohol soluble soybean phosphatide fractions, with the purpose of isolating lecithins having a high choline content. After citing some investigative work in which alumina was used, the authors describe the results of column chromatography in which silicic acid is used in a sector column with methylcellosolve as an eluent.

Research on the soluble volatile acids of olive oil. A Corrao (Instituto di Industrie Agrarie dell'Universita di Palermo). *Olii Minerali-Grassi e Saponi-Colori e Vernici* **34**, 536–538 (1957). An investigation was carried out to study the nature of the soluble volatile acids separated from several specimens of fresh olive oil, by means of the Reichert-Meissl-Wollny technique as modified by Leffmann-Beam-Polenske. In the distillate the following acids were identified by means of paper chromatography: formic, acetic, propionic, butyric, valeric, capronic, and caprylic. Of special interest is the finding of soluble volatile acids having an odd number of carbon atoms. Such acids have not previously been found in fats of vegetable origin.

Reactions between cholesterol and some cations. J. F. Torres. *Rev. asoc. bioquím. arg.* **22**, 23–8(1957). The reactions between cholesterol and Fe, Mn, and Ni ions were studied. (*C. A.* **52**, 1330)

Constituents of rice brain oil. I. Isolation of phenolic substances. Masao Shimizu, Genkichi Ohta, Shinichi Kitahara, Genzo Tsunoo, and Shinichiro Sasahara(Daiichi Seiyaku Co., Tokyo). *Pharm. Bull. (Tokyo)* **5**, 36–9(1957). Oryzanol was isolated from crude rice bran oil.

II. Structure of oryzanol-A. Genkichi Ohta and Masao Shimizu. *Ibid.* 40–4. It was established that oryzanol is cycloartenyl ferulate. (*C. A.* **52**, 1190)

Storage of cottonseed. II. Changes in the chemical composition of cottonseed at low temperature (40–5°F.). Azhar Saleem and Anwar Hussain. *Agr. Pakistan* **7**, 223–9(1956). Moisture is the dominant factor in the deterioration of cottonseed in storage. Seed containing up to 12% water can be stored at low temperatures without deterioration. (*C. A.* **52**, 1652)

Pilchard oil. J. M. Whitcutt. *S. African Ind. Chem.* **11**, 175–7 (1957). Review with 23 references. (*C. A.* **52**, 1652)

Absence of ricinoleic acid in argemone oil from seed of Argemone mexicana (Indian habitat). Madan Murari and A. C. Roy (Sci. Coll., Patna). *J. Indian Chem. Soc., Ind. & News Ed.* **19**, 177–81(1956). No ricinoleic acid or other hydroxy compound were found among component fatty acids of Argemone oil from the seed of *A. mexicana* contrary to the reports by earlier workers. Removal of alkaloids was found to improve its drying properties. (*C. A.* **52**, 1652)

Fatty acids and glycerides of shark (Galeocerdo rayneri) liver oil. G. G. Kamath and N. G. Magar(Inst. Sci., Bombay). *J. Indian Chem. Soc., Ind. & News Ed.* **19**, 201–5(1956). The fatty acids of *G. rayneri* consist of 35.62 saturated and 64.38% unsaturated acids. The glycerides are distributed according to the even distribution pattern and are mainly of the mixed type. Analytical results of crystallization and oxidation methods are not in agreement (*C. A.* **52**, 1651)

Fatty acids and glycerides of shark (Pristis) liver oil. G. G. Kamath and N. G. Magar(Inst. Sci., Bombay). *J. Indian Chem. Soc. Ind. & News Ed.* **19**, 171–6(1956). The fatty acids of Pristis liver oil consist of saturated 26.91 and unsaturated acids 73.09%. The glycerides consist of disaturated-monounsaturated, 17.14, mono-saturated-di-unsaturated 57.65, and triunsaturated 25.21%. The results of Kartha's oxidation analytical method are not in agreement with those obtained by the crystallization methods. (*C. A.* **52**, 1651)

Rational utilization of ucuhuba fat. I. Technical preliminary experiments on commercial ucuhuba fat. G. B. Martinenghi. *Brazil, Ministerio agr., Inst. oleos(Rio de Janeiro), Bol.* **13**, 68–83(1955). Brazilian commercial *Virola surinamensis* fat is of two qualities: one extracted by hot water and the other hot-pressed. The isolation of fatty acids from these fats were reported.

II. Technical process for fat extraction from ucuhuba seeds. *Ibid.* 84–98. Under the most favorable conditions reported, up to 66.5% fat was extracted from the seed.

III. Refining of ucuhuba fat. *Ibid.* 99–101. The alkaline refining of ucuhuba fat it very difficult as the soap does not settle out. Only petroleum ether extracted fats with acid value of less than 10 could be refined by using 24–37° Bé. sodium hydroxide and temperatures of 50–70°. The refining loss is large and the separated fat has an acid value of 2.

IV. Several methods of hydrolytic splitting of ucuhuba fat and distillation of the resulting acids. *Ibid.* 102–14. Splitting of ucuhuba fat for 40 hours with 2% Twitchell reagent yielded 78.5% distillable fatty acids. The mean molecular weight of the fatty acids is 238.

V. Glycerol yield of ucuhuba fat. *Ibid.* 115–20. Glycerol in 11.5% yield can be obtained from ucuhuba fat.

VI. Solvent deacidification and bleaching of ucuhuba fat. *Ibid.* 121–130. When solutions of ucuhuba fat in ethyl alcohol (homogeneous at 55–60°) are cooled, fractions of increasing acidity are obtained. Even the best of these (containing 3% acids) could not be bleached by bleaching earth or carbon (*C. A.* **52**, 1651)

Factors affecting the yield, fat absorption, and color of potato chips. R. N. Johnson(Ohio State Univ., Columbus). *Univ. Microfilms (Ann Arbor, Mich.)* **Publ. No. 22799**, 114 pp.; *Dissertation Abstr.* **17**, 2242–3(1957). (*C. A.* **52**, 1503)

Changes of frying oil by cooking. Koyo Higuchi. *Kasei-gaku Zasshi* **7**, 92–5(1956). Changes in iodine values and viscosity of soybean, rapeseed and sesame-seed oils on heating (185–200°) and cooking were studied. The order of deterioration which occurred readily was soybean, rapeseed, and sesame-seed oil in decreasing order of deterioration. The treatment of the used oil with Japanese acid clay, rather than a mixture of the clay and charcoal, was found to improve its quality. (*C. A.* **52**, 1502)

Spectrophotometric characteristics of expressed and refined Italian olive oil and their application to the determination of essential fatty acids. F. Minutilli and G. Ruggieri(Univ. Rome). *Ann. chim. (Rome)* **47**, 963–71(1957). Refined samples of olive oil have higher conjugated diene content, about 0.2% in crude olive oil and 0.25–0.6% in refined olive oil, owing to isomerization during refining processes. Contents of unconjugated acids are about 5–8% of linoleic and 0.3–0.6% linolenic acid in either type of oil. (*C. A.* **52**, 1502)

2-Thiobarbituric acid method for the measurement of rancidity in fishery products. II. The quantitative determination of malonaldehyde. R. O. Sinnhuber and T. C. Yu(Oregon Agr. Exp. Sta., Seafoods Lab., Astoria, Oregon). *Food Tech.* **12**, 9–12(1958). A quantitative, 2-thiobarbituric acid procedure for measurement of malonaldehyde, using the stable compound 1,1,3,3-tetraethoxypropane as a standard, is proposed. Acid hydrolysis of this compound yields malonaldehyde which reacts with 2-thiobarbituric acid, under conditions described, to afford a quantitative method for the determination of malonaldehyde. The method is sensitive to 10 micromoles of malonaldehyde in 100 ml. of solution. The mechanism of the development of malonaldehyde and the role of this compound in fat oxidation awaits positive identification and isolation of this material from oxidized fat.

High pressure hydrogenolysis of some high-molecular weight carboxylic compounds. Mohamed Abdel Gelil(Natl. Starch Co. Alexandria). *Oil and Soap (Egypt)* **3**, 368(1956). With 5% copper chromite catalyst, pressures of 250–300 kg. per sq. cm. and 300°, Egyptian beeswax, castor oil, and rosin were 98% converted to their corresponding alcohols and lanolin was only 67% converted. With castor oil 98% conversion is obtained in 2 hours at 250 kg. per sq. cm. The rate of hydrogenolysis at 370 kg. per sq. cm. was 88% in 45 minutes and 99% after another 30 minutes. (*C. A.* **52**, 1653)

Contributions to the problem of neat's-foot oils. M. Ceamis *Ind. uşcoară (Bucharest)* **4**, 284–7(1957). Specifications for good quality neat's-foot oil are discussed. (*C. A.* **52**, 1653)

Tung oil: gelification tests. Carlos Reis Mayerhoffer(Inst. óleos, Rio de Janeiro). *Brazil. Ministério agr., Inst óleos (Rio de Janeiro),* **Bol. No. 13**, 61–4(1955). The Browne Heat Test was found valueless to determine adulteration of tung oil with linseed oil. (*C. A.* **52**, 1653)

Tung oil: iodine value. Carlos Reis Mayerhoffer(Inst. óleos, Rio de Janeiro). *Brazil. Ministério agr., Inst. óleos (Rio de Janeiro),* **Bol. No. 13**, 51–60(1955). When determining the iodine value of tung oil by the A.O.A.C. method, the sample must not weigh more than 0.2 g. and the Wijs reagent excess must be at least 45%. Determination of the addition of linseed to tung oil by means of iodine value was unsuccessful. (*C. A.* **52**, 1653)

Influence of bleaching clays on the properties of peanut oil. Manik Lal Sen Gupta(Bengal Immunity Res. Inst., Calcutta). *J. Indian Chem. Soc., Ind. & News Ed.* **19**, 185–92(1956). In addition to decolorizing, absorbent earths may also induce changes in the properties of peanut oil, such as alteration in acid and peroxide values, ultraviolet absorption spectra, and the rate of peroxide formation on storage. Acidic clays increase the acid values of the oil, reduce peroxide values, and introduce triene conjugation, while neutral clays do not affect the oils in these respects. (*C. A.* **52**, 1653)

Hardening of Brazilian oils. E. Simões Leite. *Brazil. Ministério agr., Inst. óleos (Rio de Janeiro),* **Bol. No. 13**, 207–26 (1955). Patauá and palm-kernel oils can be hardened (elaidinized) by heating with selenium under vacuum or carbon dioxide. Babassu and peanut oils cannot be hardened in this way. (*C. A.* **52**, 1653)

Pataua and olive oils. Maria de Lourdes Padua. *Brazil. Ministério agr., Inst. óleos(Rio de Janerio),* **Bol. No. 13**, 189–206 (1956). When olive oil is treated with an equal volume of 9% sodium chloride solution, an absorption peak appears at 230 mμ. Pataua oil does not show this peak. (*C. A.* **52**, 1652)

Variation with composition of refractive index of tung and linseed oil mixtures. S. Maurmo. *Brazil. Ministério agr., Inst. óleos(Rio de Janerio),* **Bol. No. 13**, 65–8(1955). The following equations hold for mixtures of tung oil with linseed oil, $n_D^{25} = 1.5180 - 0.00039(100-p)$, and $n_D^{366} = 1.5872 - 0.00082(100-p)$ where p = per cent tung oil. (*C. A.* **52**, 1652)

Cleaning cottonseed with the Bauer No. 199 cleaner. S. P. Clark(Texas A. & M. Coll. System, College Station). *Oil Mill Gaz.* **62**(6), 9–13(1957). Efficiency as affected by variables in processing is determined. (*C. A.* **52**, 1652)

Leucoanthocyanidin in cottonseed. K. Chander and T. R. Seshadri(Delhi Univ.). *J. Sci. Ind. Res. (India)* **16A**, 319–20 (1957). Cottonseed hulls contain appreciable quantities of leucodelphinidin. It is not found in the kernels. Damaged seed sometimes develops a red color which seems to be due to phlobaphenes derived from the leucoanthocyanidin. (*C. A.* **52**, 1652)

Radon solubility in fatty acids and triglycerides. E. Nussbaum and J. B. Hursh(Dept. Radiation Biology, Univ. Rochester, Rochester, N. Y.). *J. Phys. Chem.* **62**, 81–4(1958). Data are reported for the Ostwald solubility coefficient α' of radon in human fat, rat fatty acids, butter fat, olive oil, triacetin, tributyrin, trihexanoin, trioctanoin, and the following acids: formic, acetic, propionic, butyric, valeric, hexanoic, heptanoic, octanoic, nonanoic, decanoic, undecanoic, lauric, tridecanoic, acrylic, oleic and linoleic. At 37° α' increased with increasing number of carbon atoms per fatty acid molecule from 0.96 in formic acid to a broad plateau of 7.2 in the region of heptanoic acid. In oleic and linoleic acids α' was 6.7 and 6.3, respectively. In olive oil and in extracted animal fats α' ranged between 5.8 and 6.4.

Lesser known Indian vegetable fats. I. Oleic-rich fats. V. V. R. Subrahmanyam and K. T. Achaya(Regional Research Lab., Council of Scientific & Indus. Research, Hyderabad). *J. Sci. Food Agr.* **8**, 657–62(1957). By ester fractionation, fats derived from the seeds of soapnut, papaya, nux vomica, sweet almond and guava of Indian origin were found to have the following fatty acid composition, respectively: myristic —, 0.2, 0.9, 0.2, 1.2; palmitic 5.4, 17.2, 12.6, 8.9, 8.9; stearic 8.5, 3.6, 6.6, 4.0, 4.8; arachidic 20.7, —, 7.0, —, —; behenic 2.1, —, 1.7, —, —; hexadecenoic —, 1.3, —, —, —; oleic 55.1, 77.3, 62.0, 62.5, 53.9; linoleic 8.2, 0.4, 9.2, 24.4, 29.2; linolenic —, —, —, —, 1.1.

II. Linoleic-rich fats. *Ibid.*, 662–8. Seed fats from sweet orange, coffee (arabica), coffee (robusta) and teak were found to have the following fatty acid compositions, respectively: myristic 0.5, 2.0, 2.3, 0.2; palmitic 19.0, 28.8, 23.3, 11.0; stearic 8.0, 4.5, 6.5, 10.2; arachidic 0.8, 1.6, 2.5, 2.3; behenic —, 0.2, —, —; hexadecenoic 0.8, —, —, —; oleic 32.7, 18.9, 17.4, 29.5; linoleic 32.1, 44.0, 48.0, 46.4; linolenic 6.1, —, —, 0.4.

Exports are vital to the soybean producer. *Soybean Digest* **18**(4), 18–19(1958). Export market statistics for soybeans and soybean oil are reviewed briefly.

Process for the recovery of wool wax from wool scour liquor froths. L. F. Evans and W. E. Ewers(Commonwealth Scientific & Industrial Research Organization, Australia). *U. S. 2,820,803.* Froth from wool scour liquor is treated with sodium or potassium phosphate at a temperature of at least 85°. Wool wax is separated by centrifugation of the dispersion.

Method of defatting bacon skins. R. C. Gordon, Jr.(Armour & Co.). *U. S. 2,820,804.* Bacon skins are defatted by a process which permits subjecting the skins to mechanical agitation in dry steam at a temperature of at least 100° so that the fat is melted and expelled but the collagen is not converted to glue.

Process for recovering solids, fats and tankwater. P. P. Sharples (The Sharples Corp). *U. S. 2,823,214.* A slurry of slaughterhouse tankage and tankwater is freed from refuse, iron and unusually large bones, and is then subjected to the disintegrating action of impact with surfaces moving at high velocity.

The resultant mixture is heated to at least 180°F., centrifuged to remove particles larger than .015" mean diameter, heated to about 205°F., and recentrifuged to continuously separate fat from liquor.

Process for rendering animal fat. F. P. Downing(The Sharples Corp.). *U. S. 2,823,215.* In a process for rendering animal fat, the fat is reduced to a particle size of ¼ to ¾". The mass is heated to a temperature sufficiently high to melt the fat but not in excess of 160°F. Between 70 and 80% of the solids are removed by centrifugation. The particle size is then reduced to less than 0.035" and the mass is treated with live steam until the temperature is between 180 and 210°F., and the collagen has been partially hydrolyzed. Clarified fat is separated by centrifugation.

Production of lanolin alcohols. W. C. Ault, A. Eisner and J. T. Scanlan(U. S. A., Secy. Agr.). *U. S. 2,824,143.* Lanolin is reduced by reaction with sodium and alcohol. The lanolin alcohols are separated after conversion of the sodium soaps to barium soaps.

Recovery of wool wax. Leslie F. Evans and W. E. Ewers (Commonwealth Scientific and Ind. Res. Org.). *Australian 158,035.* Froth produced as a first stage in the recovery of wax from wool scour liquor is heated to 85° in the presence of sodium or potassium phosphates, acid or alkali being added to adjust the pH and thus control the acid number of the wax. The wax is separated from the resultant dispersion by centrifuging. (*C. A.* **52**, 1655)

Enanthole and undecylenic acid by thermal decomposition of castor oil. Boku Fujita. *Japan 12('57).* Castor oil (1 kg.) containing less than 0.1% water was emulsified with 20 g. water. The emulsion was poured dropwise into an evacuated copper tube heated at 450–500° to obtain 950 g. decomposition product. Fractionation of the decomposed oil yielded 270 g. enanthole, 380 g. undecylenic acid, and a rubberlike residue. (*C. A.* **52**, 1655)

Extraction of oil from olives. S. S. Il'in and I. I. Eitingon. *U.S.S.R. 102,241.* The raw material is treated with aqueous solution of hydrotropic substance or with a sodium alkyl sulfonate obtained by sulfonation of high molecular weight alcohols or with sodium xylenesulfonate. The resulting solution is diluted with water and the oil is separated from the dilute solution by known means. (*C. A.* **52**, 1508)

Apparatus for determination of the oil content of water. M. M. Yudilevich. *U.S.S.R. 102,417.* The oil content is determined by comparing the fluorescence of the water with that of control sample. The apparatus comprises two chambers, one of which houses a mercury lamp. Within the other is placed a tube containing the analyzed water and another containing the comparison solution. To the latter tube is added a water-oil mixture until the intensity of fluorescence in both tubes is equal. (*C. A.* **52**, 810)

FATTY ACID DERIVATIVES

Peroxides. V. Kinetics and products of decomposition of perlauric acid. W. E. Parker, L. P. Witnauer and D. Swern (Eastern Regional Research Lab.). *J. Am. Chem. Soc.* **80**, 323–327(1958). The kinetics of decomposition of perlauric acid have been determined in several solvents and the reactions have been shown to be first order. Lauric acid and oxygen are the main products of decomposition, with small amounts of an unidentified ester also being formed. The decomposition is a non-radical, concerted one favored by the stereochemistry of the percarboxyl group.

Preparation of fatty alcohols by metallic sodium reduction of vegetable oils. O. Romanus. *Brazil. Ministério agr., Inst. óleos (Rio de Janeiro),* **Bol. No. 13**, 227–84(1955). A review, with details of reduction of babassu and ucuhuba oils. (*C. A.* **52**, 1651)

Method of treating carbon electrodes with polymerizable oil. J. C. Burns Jr. (Diamond Alkali Co.). *U. S. 2,820,728.* A method is described for the impregnation of a carbon electrode with a polymerizable oil which is then polymerized *in situ* by heat under non-oxidative conditions.

Mixed hydroxy fatty acid-unsaturated fatty acid thickened grease compositions. L. F. King(Esso Research & Engineering Co.). *U. S. 2,820,762.* A lubricating grease is prepared from 80 to 92% by wt. of mineral base lubricating oil, 8 to 13% of a soda-lime soap composed of 12-hydroxy stearic acid and oleic acid salts containing small amounts of sodium phosphate and glycerine or glycol.

Fatty oil acid ester. C. A. Sprang and R. W. Webster(Emery Industries, Inc.). *U. S. 2,820,802.* A plasticizer for resins is prepared by the esterification of 2 mols of C_6 to C_{18} fatty acid, 4 to 8 mols of adipic or azelaic acid, and a molecular equivalent of propylene glycol or dipropylene glycol.

Process of making frozen desserts. L. D. Hilker(National Dairy Products Corp). *U. S. 2,821,480.* The frozen dessert is prepared with an emulsifier consisting of a major proportion of an edible aliphatic fatty acid monoester of an aliphatic polyhydric alcohol and a full aliphatic fatty acid ester of an aliphatic polyhydric alcohol.

Method of making 2-sulfoethyl esters of fatty acids. E. C. Britton and A. R. Sexton(Dow Chemical Co.). *U. S. 2,821,535.* A C_{12} to C_{18} fatty acid chloride is mixed with a salt of isethionic acid and heated at temperatures between 135° and 170°C. Evolved hydrogen chloride is removed as rapidly as it is formed. The product is the isethionate fatty acid ester.

Process of leather-fatting. R. Heyden, G. Dieckelmann, and J. Plapper(Bohme Fettchemie G.m.b.H.). *U. S. 2,822,235.* Retardation of discoloration of leather on exposure to light is achieved by fatting the leather with an aqueous emulsion of an epoxidized derivative of high molecular weight unsaturated fatty acids or esters of high molecular weight unsaturated fatty alcohols with monobasic or polybasic acids.

Moistureproof heat sealable wrapping sheet. P. H. Avery (Kalamazoo Vegetable Parchment Co.). *U. S. 2,822,287.* A moistureproof heat sealable wrapping sheet has one side coated with a varnish-like coating and the other side with a mixture of paraffin wax, hydrogenated castor oil, ethyl cellulose, phenolic resin, hydrogenated rosin and 1,1'-isopropylidenebis(*p*-phenyleneoxy)di-2-propanol.

Rodent repellent cordage impregnated with dodecyl alcohol. J. P. Barrett and E. W. Segebrecht(Armour & Co.). *U. S. 2,822,295.*

Rodent repellent material containing dodecylamine acetate. J. P. Barrett and E. W. Segebrecht(Armour & Co.). *U. S. 2,822,296.*

Ester interchange catalysts. J. H. Haslam(E. I. du Pont de Nemours & Co.). *U. S. 2,822,348.* The ester interchange catalyst is an alkyl orthotitanate.

Epoxidized vegetable oils. S. P. Rowland and R. F. Conyne(Rohm & Haas Co.). *U. S. 2,822,368.* An epoxidized vegetable oil having an oxirine-oxygen content of at least 4.5% is hydrogenated at a temperature between 0° and 150° until the iodine number of the product is about one.

Esters of 9,12-diketostearic acid, 9,12-diketo-10,11-octadecenoic acid and 9,12-diketo-10,11-epoxystearic acid. J. Nichols and E. S. Schipper(Ethicon, Inc.). *U. S. 2,822,369.* The desired esters have the general formula:

$$C_6H_{13}—CO—Z—CO—(CH_2)_7—COO—X—N=R(R')$$

in which R and R' are lower alkyl radicals, X is a lower alkylene radical and Z is a radical selected from the class consisting of ethylene, vinylene and epoxyethylene radicals.

Sulfurized low polyunsaturated oils and lubricants containing them. J. E. Farbak and P. Gibson(Swift & Co.). *U. S. 2,824,067.* The sulfurized triglyceride preferred for these lubricants is a partially hydrogenated unsaturated animal oil having a polyunsaturate content of no more than 5%, a pour point of about 30° to 40°F., a color not in excess of 6 N.P.A., and a sulfur content of 10 to 18%.

Purification of alpha, omega alkanedioic acids. V. P. Kuceski (The C. P. Hall Co.). *U. S. 2,824,122.* A mixture of two saturated dicarboxylic acids differing in polarity may be separated by esterification with alcohol under conditions whereby the less polar acid is preferentially esterified. *U. S. 2,824,123.* Mixtures of C_2 to C_{10} dicarboxylic acids are esterified with methanol. The esters are fractionated by distillation and low temperature crystallization.

Separation of azelaic acid from mixtures of various dicarboxylic acids. N. C. Hill and V. P. Kuceski(The C. P. Hall Co.). *U. S. 2,824,134.* Azelaic acid is separated by fractional crystallization from the products of the oxidation of acylic hydrocarbons and oxygen-containing derivatives.

Purification of dicarboxylic acids. G. B. Corcoran(The C. P. Hall Co.). *U. S. 2,824,135.* Purified suberic acid is separated from its mixture with azelaic acid by treatment with nitric acid at a temperature of at least 70° and then cooling the mixture to a temperature not below 35° so the suberic acid crystallizes out but most of the azelaic acid remains in solution.

Separation of higher alcohols. Toshi Nakajima and Kiichi Kosuge(Soken Chem. Co.). *Japan 7069('55).* Mixture of 300 g. higher alcohols obtained from sperm oil of iodine number 60.2 is dissolved in 1200 g. n-hexane, cooled at −8°, the crystals filtered, and the filtrate evaporated to dryness to yield 184 g. unsaturated higher alcohol chiefly of oleyl alcohol.

From the crystals, 100 g. saturated higher alcohol chiefly consisting of cetyl alcohol is obtained. Liquid hydrocarbons of paraffin series having lower boiling points than n-hexane are also applicable. (*C. A.* 52, 1199)

• Biology and Nutrition

Effects of antioxidants, DPPD and BHT, on health, production and reproduction of laying hens. T. E. Shellenberger, D. B. Parrish and P. E. Sanford(Kansas Agricultural Experiment Station, Manhattan, Kansas). *Poultry Sci.* 36, 1313–1316 (1957). A study was made of the effects of the addition of the antioxidants DPPD and BHT to feeds on health, production and reproductive performance of laying hens. Vitamin A and carotenoid pigment contents of eggs, liver, and blood serum also were determined. These antioxidants did not have an adverse effect on the hens. Vitamin A and carotenoid pigment contents were higher in eggs, liver and blood serum of hens getting the antioxidants.

Precursors of squalene and cholesterol. F. Dituri, J. L. Rabinowitz, R. P. Hullin, and S. Gurin(Dept. of Biochem., School of Medicine, Univ. of Pennsylvania, Philadelphia, Pennsylvania). *J. Biol. Chem.* 229, 825–836(1957). Homogenates of rat liver have been shown to incorporate 2-C^{14}-mevalonic acid into squalene and cholesterol. Biosynthetic C^{14}-squalene was ozonized and the radioactivity of the cleavage products determined. The results suggest that mevalonic acid is incorporated directly into squalene with little randomization of isotope before polymerization. The evidence also suggests that condensation occurs between carbon atom 5 of one molecule and carbon 2 of a second molecule, with decarboxylation possibly taking place during or after polymerization.

Metabolism of essential fatty acdis. VII. Conversion of γ-linolenic acid to arachidonic acid. J. F. Mead and D. R. Howton(Atomic Energy Project, School of Medicine, Univ. of Calif., Los Angeles, California). *J. Biol. Chem.* 229, 575-582(1957). Methyl γ-linolenate-1-C^{14} was fed to rats, and the fatty acids of depot and organ lipides of the rats were separated chromatographically and counted. The sole highly active fatty acid was arachidonic, which, after hydrogenation and degradation in three steps, was found to have 97% of the activity in carbon atom 3. These results support the hypothesis that γ-linolenic acid is an intermediate in the conversion of linoleic acid to arachidonic acid.

Composition of cardiolipin. F. A. H. Rice(Department of Microbiology, Johns Hopkins University, Baltimore, Maryland). *Science* 127, 338-340(1958). The results are such as would be expected if the usual preparations of cardiolipin were mixtures in which the components differed in their fatty acid moiety.

The lipide composition of a purified cytochrome preparation of pig heart. G. V. Marinetti, J. Kochen, J. Erbland and E. Stotz (Dept. of Biochem., The Univ. of Rochester School of Medicine and Dentistry, Rochester, New York). *J. Biol. Chem.* 229, 1027–1035(1957). The lipide composition of a purified cytochrome preparation of pig heart was determined and found to contain 16% of total lipides (dry weight basis). The lipides consisted of 3.85% cholesterol plus cholesterol esters, 13.8% neutral fat plus free fatty acids, 33.2% phosphatides, and 51.2% of unidentified lipides. The cytochrome preparation contained an unusually high concentration of lysophosphatides and had no detectable amount of sphingomyelin or cerebrosides. The major phosphatides, which were analyzed by chromatographic methods, were lecithin, phosphatidylethanolamine, lysolecithin, and lysocephalins. Phosphatidylserine and inositol phosphatide were minor constituents. Several lipide fractions extracted from the cytochrome preparation were active in reducing cytochrome c.

The effect of high levels of dietary energy and protein on the performance of laying hens. T. M. MacIntyre and J. R. Aitken (Canada Dept. of Agriculture, Nappan, Nova Scotia). *Poultry Sci.* 36, 1211–1216(1957). Two feeding trials with laying hens were conducted to determine the effects of high energy and high protein in the diet on egg production, feed efficiency, egg quality, egg weight, body weight, and mortality. Protein levels of 20.0–21.3% were compared with levels of 15.4–16.5%. Energy levels ranged from 700–940 calories per pound. Body weight was highest when high protein and high energy were combined, but was the same for all other diets. Since this diet did not increase egg production, it is suggested that body weight may be a more sensitive criterion of nutritional status in laying hens than is egg production.

Studies on the vitamin E requirement of turkeys for reproduction. L. S. Jensen and J. McGinnis(Dept. of Poultry Science, State College of Washington, Pullman). *Poultry Sci.* 36, 1344–1350(1957). The quantitative requirement of Broad Breasted Bronze turkey breeder hens for vitamin E has been studied, using an all-mash practical ration containing 1% fish liver oil. Fertility was not affected by a vitamin E deficiency. No plateau in hatchability of fertile eggs was reached with levels of added vitamin E up to 24 I. U. per pound. The absolute requirement of the turkey breeder hens was between 12 and 24 I. U. per pound conditioned by the following assumptions: (1) That the higher level of vitamin E promoted maximum hatchability; (2) that all the natural vitamin E was destroyed by the addition of fish liver oil; and (3) that the fish liver oil did not increase the metabolic requirement for vitamin E. Butylated hydroxy toluene promoted hatchability equivalent to between 3 and 6 I. U. of vitamin E per pound.

Effect of nonionic emulsifiers on experimental dietary injury of the liver in rats. P. György, M. Forbes, and H. Goldblatt (Nutritional Laboratory, Dept. of Pediatrics, School of Medicine, Univ. of Pennsylvania, Philadelphia Pa., and Beaumont Memorial Research Laboratories, Mount Sinai Hospital, Cleveland, Ohio). *J. Agr. and Food Chem.* 6, 139–142(1958). The intestinal flora may influence experimental and clinical injury of the liver. Because it has been claimed that emulsifiers may change the intestinal flora, their effect on experimental hepatic injury was studied. Emulsifiers of the polyoxyethylene series, and monoglycerides in doses of 1% of total food intake, had no influence on development of experimental hepatic necrosis. Even in doses up to 10% no effect was noticed on experimental cirrhosis of the liver. Some emulsifiers in doses of 5 and 10% slightly retarded production of experimental hepatic necrosis. It is improbable that in the doses used in practice these emulsifiers have a deleterious effect on the liver.

On the vitamin K requirement of turkey poults. P. Griminger (Dept. of Poultry Husbandry, University of Nebraska, Lincoln). *Poultry Sci.* 36, 1227–1235(1957). Supplementation of a diet deficient in vitamin K with 0.8 mg. per pound of feed of menadione, or an equal amount of menadione sodium bisulfite complex (MSBC), containing 33% 2-methyl-1, 4-naphthoquinone, was necessary to reduce plasma prothrombin times of poults during their first weeks to normal. Thus water-soluble MSBC was three times as effective, per mole of 2-methyl-1, 4-naphthoquinone, as was fat-soluble menadione.

Carotenoids in man. IV. Carotenoid stores in normal adults. D. H. Blankenhorn(Metabolism Lab. of the Dept. of Medicine, Univ. of Cincinnati College of Medicine, Cincinnati, Ohio). *J. Biol. Chem.* 229, 809–816(1957). The concentration of total carotenoids in normal human tissues is reported. Estimates are given for total carotenoid storage and storage of vitamin A precursors in normal man.

Stabilization of alfalfa carotenoids with N, N'-diaryl-alpha, omega-diaminoalkanes. L. A. Gugliemelli and H. L. Mitchell (Kansas Agricultural Experiment Station, Manhattan, Kan.). *J. Agr. and Food Chem.* 6, 126–128(1958). Several N, N'-diaryl-α, ω-diaminoalkanes were synthesized and tested as antioxidants for the carotenoids of alfalfa. Increasing the length of the aliphatic portion of the molecule improved the antioxidant activity of the compounds, indicating lipide solubility to be an important factor. Compounds having methoxy groups in the para positions were more active than the corresponding methyl-substituted compounds, which in turn were more active than the unsubstituted substances.

Quantitative determination of lipide-ethanolamine and lipide-serine and their distribution in rat and pig tissues. Shoshichi Nojima and Nobuyuki Utsugi(Natl. Inst. Health, Tokyo). *J. Biochem. (Tokyo)* 44, 565–73(1957). For the determination of ethanolamine and serine in lipides, a specific and sensitive method is reported. (*C. A.* 52, 1333)

Elucidation of fatty acid formation by microörganisms. K. Bernhard, L. Abisch and H. Wagner(Univ. Basel, Switz.). *Helv. chim. Acta* 40, 1292–8(1957). Studies were made by an isotope technique on the mechanism of formation of fatty acids in plants by using *Phycomyces blakesleeanus.* (*C. A.* 52, 1344)

Experimental atherosclerosis. IV. Serum fibrinolysin activity in cholesterol atherosclerosis. G. N. Srivastava, R. N. Chakravarti, and S. H. Zaidi(Central Drug Res. Inst., Lucknow). *Indian J. Med. Res.* 45, 311-4(1957). Fibrinolysin activity was decreased in rabbits during the 6th and 9th week of cholesterol feeding. It was restored at 12 weeks when the atheroma had developed.

V. Therapeutic effect of ascorbic acid and vitamin B in cholesterol atherosclerosis. R. N. Chakravarti and U. N. De. *Ibid.* 315–8. In rabbits receiving an atherogenic diet, vitamin B_{12} and ascorbic acid produced a greater degree of inhibition of

atheroma than ascorbic acid alone. Vitamin B_{12} increased free cholesterol and the free to total cholesterol ratio in serum. (*C. A.* **52**, 1388)

Determination of the available caloric content of rapeseed oil by rat growth. E. J. Middleton and J. A. Campbell(Food & Drug Labs., Dept. Nat. Health & Welfare, Ottawa). *Can. J. Biochem. & Physiol.* **36**, 203–208(1958). The available metabolic energy of rapeseed oil, semihydrogenated rapeseed oil, and corn oil was measured in terms of 7-day body-weight gains of weanling rats fed a calorically restricted diet. Standard bio-assay procedures were used with lard as a reference standard. The oils were fed at three levels equivalent to 5, 9, and 17% of the diet by weight. Growth responses to the three oils and to lard were similar and the calculated caloric content of the oils showed no significant difference from that of lard. A 1-week assay was as precise as a 5-week assay.

Phospholipide metabolism in cell fractions of regenerating liver. Elinor Levin, R. M. Johnson and S. Albert(Richard Cohn Radiobiology Lab., Detorit Inst. of Cancer Res., College of Med., Wayne State Univ., Detroit, Mich.). *Arch. Biochem. & Biophys.* **73**, 247–254(1958). The P^{32} uptake in a number of phosphorus-containing fractions of the nuclei, mitochondria, microsomes, and supernatant of liver cells was investigated in normal rat liver and during the premitotic and mitotic phases of liver "regeneration" following partial hepatectomy. The cephalins of all the cell fractions of the normal liver incorporated P^{32} much faster than the lecithins, while the sphingomyelins incorporated it relatively slowly. The increased P^{32} uptake of the phospholipides observed earlier to be associated with mitotic activity can be accounted for by an increased P^{32} uptake by the cephalins of the nucleus, by the lecithins of the mitochondria, microsomes, supernatant, and possibly the nuclei, and by the sphingomyelins of the supernatant.

Hydrolysis of vitamin A esters by rat liver homogenates. D. H. Laughland(Div. of Chem., Canada Dept. of Ag., Ottawa, Can.). *Arch. Biochem. Biophys.* **73**, 95–99(1958). The ability of liver homogenates prepared from vitamin A-deficient and normal rats to hydrolyze various vitamin A esters has been studied. No difference was observed in the hydrolytic activity of these homogenates. Vitamin A acetate and butyrate are hydrolyzed to the greatest extent, hexanoate only slightly, and octanoate, decanoate, laurate, myristate, and palmitate not at all under the conditions used.

Distribution of inositol in subcellular fractions of yeast cells. G. J. Ridgway and H. C. Douglas(Dept. Microbiol., School of Medicine, U. Washington, Seattle). *J. Bacteriol.* **75**, 85–8 (1958). Analyses of subcellular fractions of *Saccharomyces carlsbergensis* and *Kloeckera brevis* indicated that 60 to 70% of the cellular inositol is present in the cytoplasmic particles. The distribution of lipid between the soluble and particulate components of the cytoplasm was similar to that of inositol. About 40% of the bound inositol of the cytoplasmic particles could be extracted with cold 2:1 chloroform-methanol or boiling 3:1 ethanol-ether.

Aqueous dispersions of fat soluble vitamins. A. E. Sobel. *U. S. 2,816,855.* An isotonic aqueous dispersion suitable for intravenous administration to animals is prepared to contain 0.005 to 0.06 g. per ml. of sorethytan monooleate and 0.0001 to 0.1% by wt. of vitamin A ester.

Estrone solutions containing ethyl lactate and castor oil. H. Richter(Schering, A. G.). *U. S. 2,822,316.* A solution stable at room temperature is obtained by dissolving estrone in a mixture of equal parts by volume of ethyl lactate and castor oil.

• Drying Oils and Paints

A comparative study of the drying properties of varnishes made of dehydrated castor oil and tung oil. Diptikalyan Chowdhuri and B. K. Mukherji(Univ. Calcutta). *J. Indian Chem. Soc., Ind. & News Ed.* **19**, 149–52(1956). The properties (viscosity, acid value, percentage conjugation, color, induction period, time for drying and appearance) of dehydrated castor oil, isomerized dehydrated castor oil and tung oil films were determined. The properties of the varnishes prepared from the above oils are described. The data show that varnishes made with isomerized dehydrated castor oil possess better qualities than that with dehydrated castor oil but is inferior to tung oil in some characteristics. (*C. A.* **52**, 1646)

Dispersion and tinting strength of iron oxide. M. Kronstein and M. Treade(Res. Div., Col. of Eng., New York Univ.). *Paint and Varnish Production* **48**, 50(1958). The influence of soybean lecithin on the dispersion and tinting strength properties of iron oxide pigments in an enamel vehicle has been studied. The conclusion of the authors is that dispersions of iron oxides in a test vehicle vary in their color effect depending upon the amount of lecithin added during the milling operation. The authors also studied the effect of pigment dispersion as it affects tinting strength. The results show that the tinting strength of iron oxide pigments increased with increased pigment dispersion and that this increase in tinting strength varies for different pigments.

Combined stain, filler and drying oil. M. W. Kiebler, Jr., R. Baukema, and A. Zier(The Glidden Co.). *U. S. 2,820,711.* Linseed oil is condensed with an α,β-unsaturated dicarboxylic acid, such as maleic or fumaric. The product is partially (40 to 70%) neutralized with ammonia. This material forms a clear aqueous solution when mixed with ethylene glycol monobutyl ether and water. This solution when applied to a non-porous surface yields a dry, adherent, water-resistant protective film.

Ester of tung oil fatty acids, rosin and methyl alpha-D-glucoside. B. E. Lederman(Midland Chemical Corp.). *U. S. 2,821,523.* A wrinkle drying coating composition is prepared from the fatty acid esters of methyl α-D-glucoside combined with rosin and tung oil fatty acids.

Freeze-resistant polymer-containing latex paint. V. A. Miller, R. L. Bebb, and J. H. Musch(The Firestone Tire & Rubber Co.). *U. S. 2,822,341.* A synthetic polymer latex adapted to withstand freezing and thawing without coagulating is obtained by the polymerization of the ethylenic compound in an aqueous medium containing 0.5 to 5.0 parts by weight (based on monomer) of modified glyceryl monoricinoleate and 0.5 parts of a water soluble salt of persulfuric acid. The glyceryl monoricinoleate is prepared by the reaction of one mole of glycerol with one mole of ricinoleic acid in the presence of sufficient potassium hydroxide to yield an esterified product containing about 3 to 8 percent of potassium ricinoleate.

Bodied 12-keto octadecenoic acid glycerides. J. Nichols(Ethicon, Inc.). *U. S. 2,822,371.* A bodied oil is prepared by the chemical interaction of the unsaturated carbonyl groups in the triglycerides of 12-keto-oleic and 12-keto-10-octadecenoic acids.

Polyamide-epoxy resin reaction product. D. E. Floyd(General Mills, Inc.). *U. S. 2,823,189.* An epoxy resin prepared from a polyhydric phenol and epichlorohydrin is condensed with a polymeric polyamide derived from a mixture of polymeric fatty acids, dimerized rosin and a polyalkylene polyamine.

Hammer metal finish and resinous film-forming material therefor. A. Marcis and P. D. Haas(The Glidden Co.). *U. S. 2,823,190.* A resinous film-forming material particularly adapted for use in a hammer finish for metals is prepared from vinyl toluene, divinyl benzene and an oil modified alkyd resin.

Epoxy resin-amine pitch composition. C. Mellick(Dearborn Chemical Co.). *U. S. 2,824,078.* The desired composition is prepared from an epoxide phenolic resin and a polyamine consisting of the primary and secondary amines prepared from fatty acid pitch.

Quick drying linseed oil and low-acid alkyd resins. H. Whiteside. *Australian 158,929.* Raw or alkali-refined oil is very gently stirred with zinc dust (½ lb. per 10 gal.) at temperatures up to 149° (e.g. for 5 days at room temperature or 24 hours at 149°), allowed to settle, and decanted. Films from a mixture with usual driers dry "dust free" in 4 hours. Esterification with phthalic, maleic, or adipic acid yields an alkyd resin of low acid number. (*C. A.* **52**, 1648)

• Detergents

The critical micelle concentration of sodium dodecyl sulfate in ethanol-water mixtures. B. D. Flockhard(Univ. College, Dublin, Ireland). *J. Colloid Sci.* **12**, 557–65(1957). The critical micelle concentration of sodium dodecyl sulfate in water passes through a minimum as the temperature is raised. Addition of ethanol has a marked effect. In ethanol-water mixtures above 20° the c.m.c. increases with temperature, the temperature coefficient becoming increasingly greater as the alcohol concentration rises. Below 20° unambiguous c.m.c. values can be obtained only in mixtures containing up to 9% of ethanol. In the latter solvent the c.m.c. is initially temperature independent. With mixtures containing more than 9% of ethanol the $\lambda - \sqrt{c}$ curve exhibits a maximum if the temperature is under 20°. The The effects of short chain alcohols and of temperature on the c.m.c. and the significance of the maximum in λ are discussed in relation to theories of micellar structure.

Determination of small amounts of pyrophosphate in soluble orthophosphates. W. B. Chess and D. N. Bernhart(Victor Chem. Works), Chicago Heights, Ill.). *Anal. Chem.* 30, 111–2(1958). A fast and sensitive colorimetric method is described for determining pyrophosphate present in less than 1% concentration in orthophosphate. The complexing effect of pyrophosphate on iron is measured by the 1,10-phenanthroline colorimetric method for iron.

Surface activity of the sodium sulfonates of some di-n-alkoxybenzenes. I. 1,4-Di-n-alkoxybenzenes. J. B. Gallent(Davidson College, Davidson, N. C.). *J. Org. Chem.* 23, 75–6(1958). A series of 1,4-di-*n*-alkoxybenzenes were prepared and sulfonated, and the sulfonates were identified by the titration of their *p*-toluidine salts. The surface tension of the Na-sulfonates was determined at 25° by means of a Du Nouy tensiometer.

Statistical-mechanical theory of micelle formation in detergent solutions. C. A. J. Hoeve and G. C. Benson(Natl. Research Labs., Ottawa, Can.). *J. Phys. Chem.* 61, 1149–58(1957). In the case of nonionic detergents, possible distributions of micellar sizes with a fairly sharp maximum were derived on the basis of a liquid-like structure for the interior of the micelle. When large micelles are formed, the predicted shape is platelike rather than rodlike. The case of ionic detergents in the absence of extraneous salt is much more difficult, owing to long-range electrical forces. In previous work the activity coefficients in the equation of the mass law, have, at least in principle, been estimated incorrectly. The interpretation of experimental results on the basis of constancy of micellar size and single-ion concentration above the critical micelle concentration may not be justified. (*C. A.* 52, 837)

Testing the effect of soaps and detergents on live human skin. O. Jacobi. *Drug & Cosmetic Ind.* 81, 754–6, 851–5(1957). A number of test methods are described which are used for the investigation of the influence of soaps and detergents on the skin. These include such methods as microscopic examination, use of the dermatogram, electrode measurement of pH, determination of water content of the skin, wettability of the skin surface and water absorption capacity, determination of sebum levels, and various patch tests. 50 references.

Nonionic detergents in the washing of wool and recovery of lanolin. B. Lievens and R. Bovy. *Parfums, cosmet., savons* 138, 27–30(1957). The use of nonionic detergents permits a continuous process for washing wool which results in a product of absolutely regular quality, under conditions of temperature and pH such that the S bridges of the keratin are not affected. Smaller quantities of water may be used, and the correspondingly lower thermal requirements lead to operating economies. The lanolin may be separated from the wash liquor by multiple high-speed centrifugation in a state of high purity, and with a good color. (*C. A.* 51, 18659)

High active dialkylolamides. A. T. Pugh(Lankro Chemicals Ltd. Eccles, Manchester, Engl.). *Manuf. Chemist* 28, 557–9 (1957). Derivatives of various ethanolamines and fatty acids have been used as detergent additives to increase foam stability. The preparation and properties of the three classes, monoalkylolamides, monoalkylolamides condensed with ethylene oxide, and dialkylolamides are described. The highly active coconut diethanolamide has interesting properties as an emulsifying agent. It is very useful when used in conjunction with other products such as non-ionics or certain dodecyl benzene sulfonates.

Dirt removal from cotton. R. E. Wagg and C. J. Britt. *Nature* 180, 38(1957). The relative efficiencies of various detergents showed marked similarities whether measured by removal of graphite (as determined by change in reflectance) or of radioactive stearic acid from a soiling mixture applied to cotton fibers. Even in the presence of excess of strong alkali, the removal of stearic acid depended partly upon the detergent used.

Apparatus for measurement of wetting power of detergents. R. Desalme. *Rev. franc. corps gras* 4, 545–547(1957). An apparatus is described in which the wetting power of detergents can be measured. The method requires the use of an exactly measured container and the padding or packing must be known. The authors describe the method of operation and point out that it is easy to clean and operate. Values obtained by use of this apparatus with several detergents are given.

Recent contributions of Mazzoni system in the soap improvement and its raw materials. G. Mazzoni. *Grasas y Aceites,* 8, 222–5(1957). The author describes the new continuous and automatic system of saponification of fatty acids, especially the ones requiring distillation; and also described are the continuous plant stages for drying and refining soaps *in vacuo.* The author gives two patterns of these plants.

Polyethylene glycols as laundering aids. W. Fong and H. P. Lundgren(Secretary of Agriculture). *U. S. 2,806,001.* Soil is removed from textile and its redeposition is minimized by washing the material with a solution of water, about 0.05% to about 0.5% of a sodium alkyl benzene sulfonate, the alkyl group containing 12 to 18 carbon atoms, and a soil suspending agent consisting of about 0.001% to 0.1% concentration of a polyethylene glycol having an average molecular weight of 6000 to 7500.

Soaps and their methods of preparation. L. E. G. H. Fromont. *U. S. 2,820,768.* A mixed, hard, transparent soap is prepared consisting of a transparent alkali metal soap, a triethanolammonium salt of a soap-forming fatty acid having no less than 18 carbon atoms, and an excess quantity of triethanolamine, said mixed soap having a pH value of approximately 7.5 in 10% aqueous solution and being capable of neutralizing a substantial quantity of an acid and of a base without its foaming power and its pH being affected.

Production of wetting, emulsifying and washing agent. H. Feichtinger and H. Tummes(Ruhrchemie Aktiengesellschaft). *U. S. 2,821,536.* It has been found that wetting, emulsifying and washing agents of versatile applicability in the textile and related industries may be obtained by sulfo-chlorinating mineral salts of aliphatic amines, hydrolyzing the sulfo-chlorination product formed, and reacting the aqueous solution obtained by the hydrolysis with a higher molecular weight fatty acid chloride under alkaline reaction conditions.

Preparation of detergent mixtures. R. D. Stayner(California Research Corp.) *U. S. 2,822,335.* Mixtures of detergent alkylolamide sulfates and monoalkyl benzene sulfonate suitable for the formulation of detergent composition characterized by improved foam performance can be prepared by first sulfonating an alkyl benzene material to provide a mixture of monoalkyl benzene sulfonic acid and sulfuric acid, and subsequently sulfating an alkylolamide or alkylolamides of higher fatty acids in the sulfonation reaction product mixture.

Wetting, emulsifying and washing agents. Ruhrchemie A. G. *Brit. 778,719.* A process is described for the production of substances having wetting, emulsifying or detergent properties. It comprises subjecting an aliphatic amine hydrochloride to sulfochlorination in an inert, liquid medium, hydrolyzing the sulfochlorination product in an aqueous medium, and reacting the product of hydrolysis in an alkaline medium with an aliphatic carboxylic acid chloride containing at least nine carbon atoms in the molecule.

Preventing soap odor spoilage. Unilever Ltd. *Brit. 782,932.* It has been found that the deterioration in odor of soap, which occurs during storage, can be retarded effectively by the incorporation of a small proportion of certain hydrazide compounds in an amount of 0.1 to 1 per cent by weight of soap.

Condensed phosphates in detergents. Unilever Ltd. *Brit. 783,193.* It has been found that free-flowing and noncaking detergent powders can be prepared by using in the slurry a mixture of two condensed phosphates in certain proportions. It is recommended that the ratio of the weight of tetrasodium pyrophosphate to the weight of sodium polymetaphosphate be between 4:1 and 1:1.

Treatment of soapstock. Unilever Ltd. *Brit. 774,532.* It has been found that the separation of fatty matter from split soapstock containing phosphatides can be acheived in a comparatively short time by dispersing a protein in the soapstock before splitting it with acid. In most cases the minimum amount of protein necessary to produce an appreciable effect is of the order of 0.01 per cent based on the weight of material used. The protein used is preferably casein such as sodium caseinate.

Stabilization of soap. Unilever Ltd. *Brit. 782,932.* It has been found that the deterioration in odor of soap, which occurs during storage, can be retarded effectively by the incorporation of a small proportion of certain hydrazide compounds in an amount of 0.1 to 1 per cent by weight of soap.

Carob gum syndetergents. W. A. Scholten's Chem. Fabr. *Brit. 786,252.* It has been found that the various ethers of carob bean gum will readily dissolve in solutions of synthetic surface-active substances and that even in small percentages are capable of considerably increasing the viscosity of both dilute and concentrated solutions of such substances.