It was found that temperatures at which gellation begins ranged from 70 to 90°C. The introduction of an –OH group to the silver stearate soap prevented gelling altogether as silver-hydroxystearate did not gel. Silver caproate also did not gel in xylene. Other soaps made gave heavy gels with generally good stability.

Acknowledgment

The author is indebted for assistance in obtaining much of the data presented here to members of the laboratory staff of the M. W. Parsons Company. Acknowledgment is also due to Miss Louise M. Nappi for her enthusiastic cooperation during this work.

Summary

1. Silver soaps of several commercially available fatty acids, with varying percentages of different component acids, have been prepared.

2. Properties: oxide, water soluble matter, acetone soluble matter and thermal contraction or softening points. Appearance of these silver cups is reported.

3. Gelling characteristics of each of the soaps in xylene are reported.

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ABSTRACTS . . . . Don Whyte, Editor

• Oils and Fats

R. A. Reiners, Abstractor

Collaborative analysis of tung fruit by the whole fruit and component procedures. R. S. McKinney (U. S. Tung Oil Lab., Bogalusa, La.). *Proc. Am. Tung Oil Assoc.* **15**, Pt. 2, 25-30 (1949). Collaborative studies on 6 logs of tung fruit varying widely in content of moisture, hull, and oil have shown good agreement for the oil content when analyzed by either the whole fruit procedure or by the component procedure adopted as a tentative method for the analysis of tung fruit by the American Oil Chemists' Society. The highly significant differences observed in the results reported for the moisture content have indicated that serious errors may be encountered by calculating the oil content of tung fruit to a moisture-free basis. (*Chem. Abs.* **45**, 3173)

Investigation on the preparation of superior copra. I, II. Th. Morel (Centraal Inst. Tech. Onderzoekingen, Jakarta, Java). *Chem. Weekblad* **46**, 719-24, 733-9(1950). Superior copra is defined as a product of light color and good odor, taste, and keeping qualities, containing less than 5% water; the oil expressed from it has an acid no. of less than 0.3. Using a tunnel drier the fat acid content of the oil was 0.025-0.04% for a drying temperature of 75-105° and 0.045-0.8% for a drying temperature of 60°. Discoloration took place at 75-105°. Best results were obtained at 70° or lower with washed strips 0.5 cm. wide. (*Chem. Abs.* **45**, 3173)

The component acids of a hippopotamus fat. C. Barker and T. P. Hilditch (Univ., Liverpool). *J. Chem. Soc.* **1950**, 3141. The chief component acids of the fat of a hippopotamus were found to be myristic 2.3, palmitic 27.1 stearic 22.2, arachidic 1.1, hexadecenoic 2.2, oleic 39.3, linoleic 1.6, and linolenic 1.5% by weight.

Margarine manufacture. A dairy industry. A. J. C. Anderson. *Dairy Ind.* **15**, 611-16, 618(1950). Chemistry, physics, bacteriology and nutrition of margarine and its processing are discussed in comparison with butter. (*Biol. Abs.* **25G**(2), 43)

The component acids and glycerides of a badger fat. S. Gupta, T. P. Hilditch and M. L. Meara (Univ. Liverpool). *J. Chem. Soc.* **1950**, 3145. The chief component acids of badger body fat are myristic 5.7, palmitic 21.2, stearic 8.2, tetradecenoic 6.2, oleic 30.9, octadecadienoic 8.4, octadecatrienoic 3.9, and unsaturated C_{20} (mean unsaturation —5.1 H) 14.6% by weight. The triglyceride composition follows the principal of even distribution.

Flow rates through soybean flakes. D. Cornell and D. L. Katz (Univ. Michigan, Ann Arbor). *Ind. Eng. Chem.* **43**, 992(1951). The flow rate of hexane miscella percolating at flooding or higher rates through soybean flakes can be predicted providing that the miscella viscosity and density, bulk density of the bed, and the average diameter of the flakes are known. These data can be correlated by the procedure similar to that developed for porous beds. Predicted flow rates average 20% lower than observed values.

The fats: 1900-1950. An essay in historical chemistry. T. P. Hilditch (Univ., Liverpool). *Chem. Ind.* **1951**, 153). An historical review.

A rapid method for the determination of oil in potato chips. K. T. Williams and E. A. McComb (Western Reg. Res. Lab., Albany, Calif.). *Potato Chipper* 10(9), 5(1951). Coarsely ground potato chips are extracted 3 times with hot CCl_4 in a sintered glass crucible. The chips are then finely ground and extracted 3 more times with CCl_4. The oil is recovered from the extract and weighed. The precision is ± 0.5%.

Effect of heat on some constants of ghee. R. Chand and H. Ahmad. *Indian J. Med. Research* 38, 235-9(1950). On heating buffalo butter fat, the refractive index increases, there is a loss of volatile fatty acids and a decrease in unsaturation. The extent of these changes is dependent on the temperature and period of heating. (*Chem. Abs.* **45**, 2597)

A study of the effect of nordihydroguaiaretic acid on the oxygen absorption of the phospholipid fraction of milk. I. The effect of concentration of antioxidant. J. W. Stull, E. O. Herreid and P. H. Tracy (Illinois Agricultural Exp. Station, Urbana). *J. Dairy Sci.* 34, 181(1951). The optimum concentration of N.D.G.A. for the most effective antioxygenic action at 50° was 0.001 to 0.01% based on the phospholipid present.

II. Effect of synergists, metallic catalysts and pH. ***Ibid.*, 187.** Methionine, ascorbic and citric acids were found to be very effective synergists with N.D.G.A. The order of greatest catalytic effect was copper, nickel, iron and cobalt, but the differences were slight. When the system was buffered at pH 6.5 the antioxidant effect of N.D.G.A. was greatest.

Bromination of methyl linoleate with n-bromosuccinimide. S. Bergstrom and G. Hansson (Univ., Lund, Sweden). *Acta Chem. Scand.* 4, 435-43(1950). Methyl linoleate and N-bromosuccinimide were refluxed in dry CCl_4 in ultraviolet light and the reaction mechanism studied by means of absorption spectra. The author suggests that bromination under the conditions used is a free-radical reaction. (*Chem. Abs.* **45**, 2397)

The determination of the position of the double bond in mono-ethenoid fatty acids. P. H. Bergemann, J. G. Keppler and H. A. Boekenoogen (Unilever Lab., Zwijndrecht, Holland). *Rec. trav. chim.* **69**, 439-56(1950). The dibasic acids obtained by oxidation of mono-ethenoid fatty acids with either permanganate or ozone were separated by chromatography using a silica gel column pretreated with aqueous alcohol. Dehydrated dihydroricinoleic acid was shown to be a mixture of 11- and 12-octadecenoic acids. Vaccenic acid from butter fat proved to be 11-octadecenoic acid. The same acid from tung oil contained considerable 13-(probably), 12-, 10-, and 9-, as well as only 25-30% 11-octadecenoic acids. (*Chem. Abs.* **45**, 2397)

Viscosity data of organic liquids. J. W. M. Boelhouwer, G. W. Nederbragt and G. Verberg (Koninkl. Shell-Lab., Amsterdam).

Applied Sci. Research **A2**, 249-68(1950). Viscosities were measured for 1,10-decanediol, hexadecyl alcohol, stearic acid, ethyl palmitate, methyl stearate, ethyl stearate, 16-hentriacontanone, 16-hentriacontanol and tripalmitin. The viscosities and densities of the liquids at temperatures ranging from 20° to 300° are tabulated. The viscosity-temperature curves obtained are compared with those of n-paraffins. The esters of ethyl palmitate and ethyl stearate are as viscous as the paraffins of the same molecular weight. Methyl stearate is slightly more viscous than the paraffin of the same molecular weight. It appears that the polar group, being nearer one end of the chain of the molecule, is less shielded by the other parts of the molecule and has little effect on viscosity. Tripalmitin, a compound with 3 ester groups, has a relatively low viscosity. This is due to the branching of the molecule. The effect of ring structures and polar groups on viscosity is discussed. (*Chem. Abs.* **45**, 2281)

Condensation of oleic acid with formaldehyde. G. V. Pigulevskii and M. G. Tatarskaya (Leningrad State Univ.). *Zhur. Obshchei Khim.* **20**, 1456-67(1950). Oleic acid reacts with 3 moles of formaldehyde in the presence of sulfuric acid at low temperature (5° initially, 40-50° finally) to form a 6-membered ring at the 9-10 positions. The ring has one oxygen linkage and contains a hydroxy group. (*Chem. Abs.* **45**, 2480)

Determination of fatty acids and cholesterol in blood by the technique of Manuel [Avila] Mata of Cuba. Julia M. Reina. *Actas y trabajos congr. peruano quim., 3° Congr.* (Lima, Peru) **1**, 403(1949). After determining total lipids, cholesterol was determined colorimetrically. Average values in mg. per 100 cc. for fatty acids and cholesterol, respectively, were: normal males, 349, 171; normal females 323, 169. (*Chem. Abs.* **45**, 2535)

Preparation of cholesterol from wool grease by means of addition products. J. Th. Hackmann (Shell Lab., Amsterdam). *Rec. trav. chim.* **69**, 433-8(1950). Cholesterol forms with NaI, Na_2HPO_4, $CaCl_2$, $MgCl_2$, $ZnCl_2$, $MnCl_2$, $Mn(NO_3)_2$, $FeCl_2$, $CoCl_2$ and $NiCl_2$ insoluble addition products containg 2 moles cholesterol/mole salt. The formation of complexes with cholesterol is only possible in the presence of an alcohol solvent. The complex in isooctyl alcohol is solubilized by the constituents of the wool-grease alcohols. (*Chem. Abs.* **45**, 2494)

New processes in the fat industry. R. Rigamonti (Ist chim. ind. Politecnico Torino). *Chimica e industria* (Milan) **32**, 53-64(1950). A review with 26 references, on extraction, refining and hydrolysis of oils and fats, and the production of soap and of new products, such as detergents and emulsifiers, from fats. (*Chem. Abs.* **45**, 2687)

Synthesis of lubricating oils from fatty acids. S. Ishikawa, A. Someno, Y. Ikeda, A. Tomonari, A. Kaneko and M. Asai (Sci. Research Inst., Tokyo). *Repts. Sci. Research Inst.* (Tokyo) **24**, 239-43(1948). Stearic acid was pyrolyzed for 20 hours to crude olefin (yield 70%) which was fractionated after washing with water, 15% NaOH, and water again, and drying. The C_{10}-C_{15} fractions (72.3% of the olefin) having iodine no. 95.2-140.9 showed no keto reaction. The C_{10}-C_{15} (33.5%) plus C_{16}-C_{18} fractions (total 62.1%) fractionated from olefin similarly obtained from oleic acid had iodine no. 76.5-150.0. These products would make lubricating oils. The olefin fractions boiling below 300° (similarly obtained from coconut and shark-liver oils) were heated 8-10 hrs. at 80-90° with 5% $AlCl_3 \cdot 6H_2O$ to polymerize and after adding 10% of active clay, heated 3 hours longer up to 270°, while removing the light oils; the fractions boiling below 220° (3 mm.) were discarded. The residue was the lubricating oil. (*Chem. Abs.* **45**, 2657)

Revision of the standard methods of analysis for the fat and wax industry. VII. Use of bromophenol blue in the analysis of raw fats. Cl. Bauschinger. *Fette u. Seifen* **52**, 693-4(1950). Bromophenol blue is used to indicate the presence of free fat acids (yellow color) or of soaps (blue color) in fats and oils. (*Chem. Abs.* **45**, 2687)

Bone as raw material. G. Gernert. *Seifen-Ole-Fette-Wachse* **76**, 509-12, 531-3(1950). Procedures to obtain fat from bones by boiling with water, treatment in an autoclave, and solvent extraction are discussed. (*Chem. Abs.* **45**, 2688)

The chemical composition of natural fats. T. P. Hilditch (Univ., Liverpool, England). *Brit. J. Nutrition* **3**, 347-54(1949). A review. (*Chem. Abs.* **45**, 2688)

Mechanism of autoxidation of fats. III. Examination of the oxidation products of methyl linoleate. S. Mukherjee (Univ. Coll. Sci. Technol., Calcutta). *Indian Soap J.* **16**, 106-9(1950). By chromatographic separation, it was found that the hydrogenated autoxidation products of methyl linoleate consist primarily of a mixture of 13- and 9-methyl hydroxystearates. The autoxidation of methyl linoleate takes place possibly by oxidative attack at the methylene group between the double bonds at the 11th C atom, resulting in the formation of 11-hydroperoxide ester which rearranges to yield, respectively, 9- and 13-hydroperoxide esters with conjugated double bonds, from which, by hydrogenation, the corresponding 9- and 13-hydroxystearic acids are obtained. (*Chem. Abs.* **45**, 2689)

The abdominal fats of pigs. J. Janicki, A. Rutkowski and J. Szeliga (Univ. Poznan, Poland). *Przemysl Rolny i Spoz.* **4**, 242-9(1950). The pigs of total weight 100-160 kg. have 5.16-4.48% of abdominal fat tissue composed of fat lining of the small intestines (0.69-0.56, containing 72.2-87.1 fat), kidneys (3.59-3.02; 85.0-93.0 fat), stomach (0.43-0.39; 82.0-88.1 fat), pancreas (0.19-0.24; 54.0-81.2 fat), and of the bowel (0.26-0.27; 66.4-74.0% fat). The fats of pancreas and bowel linings (8.8% of all abdominal fats) cannot be considered as edible, because of very disagreeable flavor and odor. Constants of the pancreas lining fat, bowel lining fat and of the remaining fat are, respectively, m.p. 43.7, 41.8, —°C.; saponification values 176.6, 187.8, 188.8 to 192.4; acid number 2.61, —, 0.8 to 1.2; iodine number 45.9, —, 48.4 to 50; and Reichert-Meissl value 0.8, 0.8, 0.56 to 0.66. (*Chem. Abs.* **45**, 2689)

The oil and linamarin content in various varieties of flax seed. E. Andre, Marie Carbouere and M. Maille. *Compt. rend.* **231**, 590-2(1950). Twelve varieties of flax grain used for oil production were examined in regard to oil content. The linamarin content was indicated by the amount of HCN which was released by 1,000 g. of sample. (*Chem. Abs.* **45**, 2690)

Detection of deterioration products of autoxidizing milk fat by infrared spectrophotometry. A. S. Henick (Quartermaster Food and Container Inst., Chicago, Ill.). *Food Tech.* **5**, 145 (1951). The course of autoxidation of milk fat was studied by changes in the infrared absorption spectra of the volatile components, in the acceptability of the fat, and in its peroxide value. Spectral changes were detectable before a trained panel of observers could detect flavor changes. Flavor changes were marked before peroxide value changed appreciably. Loss of flavor was correlated with a specific absorption band, and the growth of off flavors with several others.

Constitution of the juice lipids of the Florida valencia orange (Citrus sinensis L.). L. J. Swift and M. K. Veldhuis (U. S. Citrus Products Station, Winter Haven, Florida). *Food Res.* **16**, 42(1951). Composition of the lipids in orange juice is as follows: unsaponifiable matter 14.8, isoamyl alcohol-soluble (resin acids) 12.4, free fatty acids 21.0, combined fatty acids 13.6, sterol glycoside 1.5%, lecithin 15.3% and cephalin 18.0%.

Properties and uses of metallic soaps utilized as dopes. A. Preobraejenski and A. Vassilievsky. *Oleagineux* **6**, 221-224 (1951). Metal soaps of most of the common metals were prepared from oleic, palmitic, and stearic acids. Their use as detergent additives and as thermal stabilizers for oils was discussed. Most of the other possible uses are also outlined.

Sunflower oilseed cake, composition, feeding value, and proteic efficiency. P. Rombauts. *Oleagineux* **6**, 203-210(1951). Sunflower oilseed cake is an excellent cattle food, being high in nitrogen, balanced in amino-acids, rich in vitamin B, and possessing a good phosphorous-calcium ration.

The non-saponifiable elements in fats. I. O. R. Lombard. *Oleagineux* **6**, 195-202(1951). A review of the nature, definition, and methods of study.

Considerations on the alteration of palm oil. Ch. Vanneck, M. Lonecin and D. Jacqmain. *Bull. Agricole du Congo Belge* **42**, No. 1, 57-64(1951). The change in palm oil during transport is due to hydrolysis of the oil which is autocatalyzed by fatty acids. In perfectly pure oil there is very little change, while the presence of excess water accelerates the process. The kinetics of the phenomenon were studied.

Experiments on the solubility of castor oil in petroleum ether. G. B. Martinenghi. *Olearia* **5**, 5-10(1951). The effect of various degrees of free acidity on the solubility of castor oil in hexane was studied. Solubility diagrams are given for the best extraction conditions. Solvent recovery was carried out by cooling the solution below 17°.

Physical-chemical factors in palm-oil extraction through washing and mixing. A. Filhes. *Oleagineux* **6**, 151-157(1951). The native methods of washing and pulping for the recovery of palm oil are discussed. The moisture content of the pulp should be held between 10 and 13% to obtain the highest oil yields. The temperature of the extraction water also has an important effect on the yield of oil (80° is the optimum).

Capric acid and its derivatives. I. Constituents of the Manchurian wild elm seed oil. S. Ishikawa and A. Someno (Tokyo Univ. Sci. Lit.). *J. Chem. Soc. Japan*, Pure Chem. Sect., **70**, 381-4(1949). From 520 g. of seed of *Ulmus manchurica* was obtained by ether extraction 140 g. of oil, d^{20} 0.9525, n^{20} 1.4552, saponification value 251, and iodine value 22.5. The fatty acid composition is: caprylic 2-11, capric 55-59, lauric 2-8, myristic 1-3, palmitic 12-21, and oleic 5-8% of the total acids. (*Chem. Abs.* **45**, 2690)

Studies on oil-bearing seeds, Gokuru. C. V. N. Rao (Nagpur Univ., India). *Indian Soap J.* **16**, 74-5(1950). The seeds of *Xanthium strumarium* contained oil (petroleum ether extract) 31.5, crude protein 29.5, crude fiber 10.4, ash 5.8, carbohydrates, moisture, etc. (by difference) 22.8%. The solvent-extracted oil had the following characteristics: d^{25} 0.91667, iodine value (Wijs) 122, saponification value 195, unsaponifiable matter 0.37%, acetyl value 2.00, Reichert-Meissl value 0.50, and Polenske value 0.12. (*Chem. Abs.* **45**, 2690)

Nonedible oils for industrial utilization. R. L. Dutt, *et al. Indian Soap J.* **16**, 71-3(1950). The following oils are described: punnal (calophyllum) (from *Calophyllum inophyllum*), kussum (macasser) (from *Schleichera trijuga*), Karanja seed (pongam, hongay) (from *Pongamia glabra*), nahar seed (from *Mesua ferrea*), rayna oil (from *Amoora rohitika*), and neem (margosa) (from *Melia azadirachta*). (*Chem. Abs.* **45**, 2690)

Synthetic fat. K. E. Schulte and W. Weisskopf (Deut. Forschungsanstalt Lebensmittelchem., Munich, Ger.). *Chimia* (Switz.) **5**, 1-8(1951). A review of the chemistry and physiology of the fatty acids obtained by paraffin oxidation and of the glycerides prepared from these acids. (*Chem. Abs.* **45**, 2687)

Steric hindrance and cis-trans isomerism in the diene reaction of conjugate-unsaturated fatty acids. The pandiene number. J. D. v Mikusch (F. Thorl's Vereinigte Harburger Olfabriken, Hamburg-Harburg, Ger.). *Angew. Chem.* **62**, 475-80(1950). The addition of the proper amounts of iodine in the Kaufmann and Baltes method for the determination of the diene no. permits the quantitative determination of the conjugate-unsaturated constituents in fatty acids. The term "pandiene no." is introduced and by comparison of this and the usual diene no. it becomes possible to study the distribution of isomers of conjugated compounds. Discussion of structures, steric studies of models, experimental details, and data are presented. (*Chem. Abs.* **45**, 2859)

Inside Glidden's new extraction plant. Anon. *Chem. Eng.* **58**, 212(1951). A brief description of Glidden's Indianapolis soybean extraction plant.

PATENTS

Method of refining milk and milk products. U. N. Petty. *U. S. 2,547,281.* The method of obtaining a highly refined milk fat is disclosed which comprises chilling milk to a temperature below freezing point of water, progressively sweating the chilled milk by subjecting the exposed surface of the chilled milk to vapor phase contact with live steam at such rate as to progressively attain the melting point of the milk fat, continuously removing the melted portion from the chilled portion, and separating the resulting water and non-fat solids from the fat.

Countercurrent extraction apparatus. J. D. Hamacher and R. W. Barns (Detrex Corp., Detroit, Mich.). *U. S. 2,547,577.* A horizontal extractor is described in which the screw conveyor has bristles along its edges.

Fines separator for solvent extraction systems. R. T. Anderson (V. D. Anderson Co.). *U. S. 2,548,333.* A method of settling the fines in the miscella is disclosed.

Selective extraction and fractionation of fatty materials. W. M. Leaders (Swift & Co.). *U. S. 2,548,434.* Seed meals, cracklings and bleaching earth are treated at 150-200°F. with 15-30 volumes of liquid propane per volume of oil to recover decolorized fatty materials.

Treating fatty acid nitriles to improve the odor thereof. J. Harwood and P. DuBrow (Armour and Co.). *U. S. 2,548,369.* Fatty acid nitriles containing at least 12 C atoms are deodorized by treatment with phosphoric acid at 25-100° for 2 to 6 hours. The precipitate formed by this treatment is removed and the nitriles recovered.

Plug seal for solvent extraction columns. C. W. Zies and F. W. Weigel (The V. D. Anderson Co.). *U. S. 2,549,997.* A continuous screw is described for the removal of extracted material from the bottom of the extraction column.

Clarifying butterfat. C. E. North. *U. S. 2,550,288.* A process for clarifying turbid liquid butterfat containing at least 99% fat is claimed in which the liquid fat is mixed with an aqueous solution containing at least 0.5% of an acid. This mixture is then separated by gravity and the fat washed with water.

Shortening composition and method of preparing the same. F. F. Hansen. *U. S. 2,550,558.* Phosphatides, on removal from vegetable oils, are hydrolyzed by hydrochloric acid to remove the choline or colamine and the phosphatide residue reacted with glycerol. This composition is then reincorporated in the vegetable oil to give a shortening of improved creaming properties and of increased resistance to rancidification.

Sterols from oils, fats, and fatty acids. S. T. Zavody (Drive Jiri Schicht), N. Podnik. *British 642,714.* Unsaponifiable material, obtained as residue after distillation of the fatty acid esters, was dissolved in methanol and was refluxed for 3 hours with 40% NaOH. On the addition of water the mixture was extracted with petroleum ether (b. 45-70°) in a percolator, the extract was washed with 40% methanol and concentrated, the residue extracted with hot methanol and the sterols were crystallized therefrom. (*Chem. Abs.* **45**, 2694)

Hydrogenation of fatty acids. S. T. Zavody (Drive Jiri Schicht), N. Podnik. *British 642,715.* Fatty acids or oils containing high proportions of them are hydrogenated, after esterification of the acids with mono- or dihydric alcohols, at 175° over a Ni catalyst followed by hydrolysis. Methanol, ethanol, and ethylene glycol may be used. The process is applied to fatty acids from the alkali refining of rapeseed oil. The hydrogenated acids have a m.p. of 57.7° and an iodine no. of 7.8, or a m.p. of 50° and an iodine no. of 38.5. (*Chem. Abs.* **45**, 3175)

Hydrogenating glycerides. Lever Brothers & Unilever Ltds. *British 645,551.* By the use of a specially prepared Ni catalyst, glycerides can be simultaneously hydrogenated and decolorized. This Ni catalyst is prepared by treating an aqueous solution of a soluble Ni salt, a soluble Al salt, and an alkali metal silicate at a temperature of at least 75°, gradually adding over a period of 30 min. an aqueous solution of an alkali carbonate, washing, drying, and pulverizing the precipitate, and then reducing with H at a temperature of 425-550°. The percentage of Ni in Ni catalyst should be 15-50, and the molecular ratio of Al_2O_3 to SiO_2 in Ni catalyst should fall between 4 to 45 and 16 to 45. Chlorides or nitrates of Ni and Al are preferred for the preparation of Ni catalyst. The preferred silicate should contain 2.5-4 moles of SiO_2 to 1 mole of Na_2O. NH_4, K, or Na carbonates or bicarbonates may be used in the preparation of Ni catalyst. In order to improve separation of Ni catalyst from the oil by filtration, up to 80% of the SiO_2 may be obtained from diatomaceous earth. A preferred Ni catalyst contains Ni 46.5, Al_2O_3 8.1, and SiO_2 45.4% and is used in an amount so that the Ni equals 0.10% of the glycerides. (*Chem. Abs.* **45**, 3175)

Esterification of fatty acids. S. T. Zavody (Drive Jiri Schicht), N. Podnik. *British 642,718.* Fatty acids, such as those from rapeseed oil or peanut oil, are esterified with monohydric alcohols containing up to 6 C atoms by heating the acids with an excess of alcohol in the presence of a sulfonic acid, such as 10-camphorsulfonic acid, 1- or 2-naphthalenesulfonic acid, 4,4'-diphenyldisulfonic acid or benzenesulfonic acid. (*Chem. Abs.* **45**, 3175)

Solvent extraction of fats or fatty acids. Pittsburgh Plate Glass Co. *British 644,917.* If extraction of fats or fatty acids with selected polar solvents is carried out under a blanket of inert gas, the resulting unsaturated fraction will be improved over that obtained by extraction without the gas blanket. Soybean, cottonseed, coconut, or linseed are cited as oils which can be extracted with furfural under a blanket of N or N-containing gas. The extraction may be by batch or continuous process. (*Chem. Abs.* **45**, 3174)

Extraction apparatus for olive pomace, oleaginous seeds, and the like. A. Bartolini. *Italian 444,418.* An apparatus based on the countercurrent principle is being planned. (*Chem. Abs.* **45**, 3176)

• Biology and Nutrition

R. A. Reiners, Abstractor

The effect of fatty acids on the growth of strains of Lactobacillus bifidus. R. M. Tomarelli, R. F. Norris, C. S. Rose and P. Gyorgy (Univ. Penn., Philadelphia). *J. Biol. Chem.* 187, 197-204(1950). The growth of straight rod and bifid strains of *L. bifidus* was inhibited by the fatty acids. Lauric and myristic acids were the most toxic; caproic and palmitic acids were less toxic. Caproic, caprylic, stearic, propionic, butyric, valeric, isovaleric, and isocaproic acids were not inhibitory. (*Chem. Abs.* 45, 3028)

The nutritional value of butter. E. H. Groot. *Mededel. Lab. Physiol. Chem. Univ. Amsterdam en Nederlands Inst. Volksvdoed.* 11, No. 14, 84 pp.(1948-49). The growth promoting action of summer butter, not caused by known vitamins, was proven. The phospholipid fraction is not responsible. (*Chem. Abs.* 45, 2554)

Sources of ergosterol. I. Search for wood-decaying microbes. T. Wada (Sci. Research Inst., Tokyo). *Repts. Sci. Research Inst.* (Japan) 24, 383-4(1948). The ethyl ether extract of the caps of *Schizophyllum commune*, *Poria vaporaria*, and *Lenzites styracina* grown on barley-broth-agar slants contained only traces of ergosterol.

II. Ergosterol produced by Penicillium notatum. *Ibid.* 25, 103-4(1949). A pure culture of *P. notatum* was extracted with ethyl ether and the fatty portion was saponified with 20% ethanol-KOH. From the ethyl ether extract of the aqueous soap solution there was obtained a precipitate which was recrystallized from ethanol and further from acetone to needles of pure ergosterol.

III. Production of ergosterol by Aspergillus sydowi. *Ibid.* 26, 97-9(1950). *A. sydowi* produced about 2% (of its own dry weight) of ergosterol which was easily separated from fat as provitamin D_2 with practically no admixture of other phytosterols. (*Chem. Abs.* 45, 2542)

The physiology of essential fatty acids. F. J. van Dam. *Mededel. Lab. Physiol. Chem. Univ. Amsterdam en Nederlands Inst. Volksvoed.* 11, No. 7, 83 pp.(1948-49). Young rats (3 weeks) were put on a diet deficient in the essential fatty acids, and developed scaly tails and feet within 4 weeks. Administration of vaccenic acid did not restore the rats to normal. (*Chem. Abs.* 45, 2553)

Vitamin-enrichment of German margarine: the problem of azo dues as food colors. K. H. Wagner (Univ., Frankfurt a. M., Ger.). *Intern. Z. Vitaminforsch*, 22, 289-308(1950). The occurrence of avitaminosis A is due to the slight content of vitamin A in German food. Aniline dyes have been recognized as carcinogenic and should be banned as food colors. The enrichment of margarine with vitamins or with β-carotene has been developed since 1941. (*Chem. Abs.* 45, 2598)

Cholesterol and cholesterol esters in butter. C. Nieman, E. H. Groot and W. J. Rooselaar (Univ., Amsterdam). *Acta Physiol et Pharmacol. Neerland.* 1, 488-501(1950). Cholesterol esters were found in butter. The highest concentrations, 0.10-0.12%, were found in the butter produced in May. Total cholesterol found in winter butterfat (0.30%) was lower than that found in spring butterfat (0.37%). The average free cholesterol found in all butterfat was 0.23-0.25%. (*Chem. Abs.* 45, 2598)

Vitamin A potency of Oregon butter. P. H. Weswig, J. R. Haag and Ruth Simmons. *Oregon Agr. Exp. Sta. Tech. Bull.* 17, 1-12(1949). The vitamin A potency of Oregon butter ranges from 11,800 I. U. per pound of 81% butter in February to over 18,000 I. U. in June [*Biol. Abs.* 24G(12), 33]

The augmentation of the provitamin A potency of carotene when fed in margarine. H. J. Deuel, Jr., S. M. Greenberg and Evelyn E. Savage (Univ. So. Calif., Los Angeles) and D. Melnick (Best Foods, Inc.). *J. Nutrition* 43, 371(1951). Vitamin A promotes a growth response of the same order of magnitude when fed in either cottonseed or in margarine to vitamin A-depleted rats. Carotene when administered in margarine is responsible for a greater than theoretical response. In margarine the availability of vitamin A from carotene is 30% greater than when fed in cottonseed oil despite supplementation of the latter with tocopherol. Both vitamin A and carotene are relatively stable in margarine, even when held at room temperature over a prolonged period.

Vitamin E in the nutrition of cattle. Anon. *Nutrition Rev.* 9, 76(1951). Recent work indicates that rations extremely low in vitamin E can be fed to cattle over extended periods without causing reproductive disturbances.

Studies on the chronic oral toxicity of cottonseed meal and cottonseed pigment glands. A. M. Ambrose and Dorothy J. Robbins (U. S. Dept. Agriculture, Albany, Calif.). *J. Nutrition* 43, 357(1951). Cottonseed meal free of pigment glands was shown to be devoid of any toxic principle as judged by the growth of rats. Two samples of pigment glands of approximately the same gossypol content were found to have different toxicities. The sample showing lowered toxicity was from seeds which were processed about 6 months after the other sample was processed. The reliability of gossypol analysis as an indication of toxicity is questioned.

The effect of heat treatment on the nutritional value of some vegetable oils. E. W. Crampton, Florence A. Farmer and F. M. Berryhill (McGill Univ., Quebec). *J. Nutrition* 43, 431 (1951). Oils were heat polymerized at 275° under CO_2 for various times up to 30 hours. Linseed, rapeseed, corn, peanut, soybean and herring oils were found on heat treatment to depress rat growth and efficiency of feed utilization. The lowered nutritive value of these oils varied in severity with the degree of unsaturation of the oil, the length of time of heating and the level at which the heated oil is incorporated in the diet.

Research affecting the feeding of soybean oil meal. J. W. Hayward (Archer-Daniels-Midland Co.). *Feedstuffs* 22, 36-48(1950). Production of soybean oil meal in the next year or so is expected to be about 70% by solvent and 30% by screw-press methods. Supplementation of soybean meal with vitamin B_{12} is discussed. (*Biol. Abs.* 25J (2), 11)

Fat emulsions for oral nutrition. III. Use of orally administered fat emulsions as caloric supplements in man. M. Shoshkes, T. V. van Itallie, R. P. Geyer and F. J. Stare (Harvard Medical School, Boston). *J. Am. Diet. Assoc.* 27, 197(1951). A stabilized aqueous emulsion of 40% peanut oil and 10% dextrose having a particle size of 0.5-1.0 microns was found to be reasonably palatable and fairly well tolerated. It is useful in the oral administration of concentrated supplementary calories.

The vitamin A requirement of the turkey poult fed a purified diet. R. van Reen, M. W. Taylor and W. C. Russell (Rutgers Univ., New Brunswick, N. J.). *J. Nutrition* 43, 235(1951). Jersey Buff turkey poults when fed a purified diet required 500 I. U./100 g. ration to prevent gross external and internal signs of A-avitaminosis.

On the conversion of palmitic acid to stearic acid in animal tissues. I. Zabin (Univ. Chicago, Chicago, Ill.). *J. Biol. Chem.* 189, 355(1951). Stearic acid, separated by fractional distillation of the methyl esters of saturated fatty acids of rat liver after incubation with carboxyl-labeled acetate, contained almost all of the isotopic carbon in the carboxyl position. Chain elongation apparently occurred by addition of 2 carbon atoms to the carboxyl end of palmitic acid.

Participation of phospholipides in lymphatic transport of absorbed fatty acids. B. Bloom, I. L. Chaikoff, W. O. Reinhardt and W. G. Dauben (Univ. Calif. Berkeley). *J. Biol. Chem.* 189, 261(1951). Palmitic acid, the carboxyl carbon of which was labeled with C^{14}, was introduced into rats in the intestinal lymphatics or thoracic ducts. As much as 96% of the C^{14}-labeled fatty acid which was recovered in the lymph was present in forms other than phospholipides. It was concluded that phospholipides are not important transport forms for absorbed palmitic acid.

Nutritional therapy with fat acids. G. Weitzel (Max-Planck-Ges., Gottingen, Ger.). *Fette u. Seifen* 52, 670-5(1950). The use of fat acids in chemotherapy is reviewed. A mixture of the glycerides of the fat acids of 8, 10, and 12 C atoms was effective in treating psoriasis. A daily dose of 50 ml. of the mixture was given for 2-3 months while the intake of other fats was lowered to less than 50 g./day. (*Chem. Abs.* 45, 3048)

Route of absorption of free fatty acids and triglycerides from the intestine. R. Reiser and M. J. Bryson (Texas Agricultural and Mech. Coll., College Station). *J. Biol. Chem.* 189, 87(1951). Trilinolein prepared from conjugated linoleic acid and a mixture of Wesson oil and conjugated linoleic acid were fed to rats and it was concluded that free fatty acids are absorbed by the same route as triglycerides.

Effect of heated linseed oil on reproduction and lactation in the rat. Florence A. Farmer, E. W. Crampton, and Margaret I. Siddal (McGill Univ., Quebec). *Science* 113, 408(1951). Reproduction and lactation in the female rat are impaired by diets containing 10% of linseed oil heated at 275° for 4 hours in the absence of oxygen.

Superiority of butterfat (ghee) as an edible fat. J. S. Shukla. *Indian Soap J.* 16, 76-81(1950). A discussion. (*Chem. Abs.* 45, 2597)

PATENTS

Method for producing high-purity soybean protein. H. O. Renner (J. R. Short Milling Co.). *U. S. 2,543,467.* High purity protein can be produced from oil free soybean flakes by extracting with an alkoxy ethanol, removing this extract, extracting the residue with an aqueous solution of pH 7-11 and precipitating the protein from this extract.

Method of detoxifying castor bean proteins. H. E. Saunders (The Sherwin-Williams Co.). *U. S. 2,547,980.* Castor bean pomace is detoxified by suspending it in water of pH 9 to 11, heating it at 80° to 95° for 5 to 25 minutes, cooling, reducing the pH to 3.8 to 4.0 and recovering the insoluble material.

Method of processing oil and the product produced. C. E. Lane (The Borden Co.). *U. S. 2,550,570.* A method of converting a precursor of vitamin A to the vitamin is described which comprises forming a mixture of a marine fish liver oil and enzyme of the small intestine of the fish, establishing the pH within the range 7 to 9, maintaining contact of the oil with the enzyme, within the pH range stated, until there is a substantial increase in the vitamin A content of the oil, and then separating the treated oil from non-oily material without change of state.

• Drying Oils

Stuart A. Harrison, Abstractor

Attempts to prepare synthetic drying oils. Dehydration of dihydroxy stearic acid and its glycerol ester. R. K. Kochar and S. Dutt. *Indian Soap J.* 16, 97(1950). When dihydroxystearic acid was dehydrated at 210-230° in the presence of various catalysts ($NaHSO_4$, $KHSO_4$, con. H_2SO_4 on pumice and a 1:1 mixture of con. H_2SO_4 and acetic anhydride on pumice) products were obtained which did not dry under ordinary conditions. The iodine value of such products did not exceed 40.5. Similar products were obtained from the glycerol and methyl esters of the acid. It is postulated that instead of the expected quantitative formation of the conjugated double linkages, large amounts of intramolecular and intermolecular condensations take place, the proportion of unsaturated compound formed being comparatively small. (*Chem. Abs.* 45, 3167)

Wrinkling. C. Boller and U. Lichthardt. *Farbe u. Lack* 56, 528(1950). A paint prepared from 25 pts. Beckosol 250, 25 pts. Beckosol 450, 30 pts. China wood oil stand oil, 50 pts. white spirits, 1.5 pts. Co-Pb-Mn drier, 1.5 pts. Co. drier and 30 pts. TiO_2 dried with undesirable wrinkling. Reducing the mixture with 20-35 vol. % of white spirits gave a film with little or no tendency to wrinkle but at the expense of hiding gloss and resistance to flow. Further tests showed that if the paint was further reduced with 7.5 vol. % of 1,2,3,4-tetrahydronaphthalene and 7.5 pts. of white spirits a smooth film was obtained. (*Chem. Abs.* 45, 3167)

The acceleration and retardation of the drying of linseed oil. J. d'Ans and K. Meir. *Farbe u. Lack* 57, 7(1951). During air drying, films of linseed oil gain weight rapidly until a maximum is reached, followed by a period of either slow gain or no gain. The period required to reach the maximum weight at 20-25° was 9 days for films without drier, 1 day for films containing 0.6% Pb and more than 15 days for films containing .1 mol of diphenylamine per Kg of oil. A film of linseed oil on an iron panel reaches maximum weight sooner than a film on glass and the weight gain is twice as great. Though the gain in weight was the same, a film on paraffin-coated glass stayed tacky. Weight increase was the same in thicker films (32μ, 80μ) as in a thin film (8μ) but the initial rate of gain was greater in the thin film. However, a film of linseed oil 8μ thick gained weight and dried no faster than a film of linseed varnish 80μ thick. This indicates that oxygen reactivity, not oxygen diffusion, controls the rate of weight gain. Fillers such as glass powder, titanium dioxide, or barium sulfate also increased the weight gain rate. This is thought to be the result of increased molecular orientation. Linseed oil fatty acids gained weight faster than the glycol ester but no faster than the pentaerythritol ester. The ethyl ester of linseed oil had a low weight maximum and then lost weight. Drier (0.6% Pb) though it accelerates the weight gain rates of films of esters of linseed acids does not increase the rate on the free acids. (*Chem. Abs.* 45, 3166)

Siccatives. I. Kinetic investigations of the metal-catalyzed autoxidation of methyl linoleate. B. Anderson. *Arkiv Kemi* 2, No. 33, 451(1950). The rate of oxygen absorption by methyl linoleate in the presence of various concentrations of Co, Mn and Pb caprylates and the mechanism of the reaction are investigated. Following an induction period the rate increases to a constant value v, related to the drier concentration by the equation $v^2 + \alpha u = \beta C$ where C = the concentration of drier and α and β are independent of C but vary with concentration of methyl linoleate. The length of the induction period is greater the higher C and increases in the order Co, Pb, Mn. This fact confirms the belief that the induction period is related to the oxidation of the metal catalyst to a higher valence. Analysis for peroxide indicates that over 90% of the oxygen absorbed is converted to peroxide. The mechanism proposed is the same as that proposed for uncatalyzed autoxidation of methyl linoleate except that the chain carrier is an addition product of the metal catalyst instead of a peroxide radical of methyl linoleate (*Chem. Abs.* 45, 2686)

The role of the vehicle in paints for submerged surfaces. A. C. Elm. *Paint, Oil, Chem. Rev.* 114, No. 5, 13(1951). The purpose of painting under water structures is two fold: (1) The prevention of the attachment of marine growths. (2) The prevention of corrosion of the exposed metal surfaces. This paper deals with the second problem. Paints serve as barriers to the electrolitic process which causes corrosion. Organic films are permeable to moisture, however, the permeability may be reduced by 1/3 to 2/3 by the addition of dispersed pigments. It has been shown, however, that water permeability and electrolytic resistance of a paint film are not particularly related. The diffusion of ions through the film is the important factor. Results indicate that measurement of the relative rate of diffusion of sodium chloride through a film is a good measure of its electrolytic resistance. Adhesion is also extremely important in a vehicle to achieve good protection.

Film forming materials investigation—on the solid state. M. Kronstein. *Paint and Varnish Production* 41, No. 4, 8(1951). This paper extends earlier work reported on the study of the physical changes taking place during the gelation of oils. There is a characteristic peak formation in the diffraction X-ray spectrum of a number of substances as they approach and reach the solid insoluble state. These materials include linseed oil, alkyds, a number of waxes, styrene and methyl cellulose. Linseed oil and tung oil are compared on gelation. Linseed oil forms a coherent rubber-like gel while tung oil tends to form a considerable amount of non-coherent particles. This non-coherency is shown in tests of the electrical break down of the film. Additional heating of a tung oil film showed breakdown at much lower voltages than linseed films heated the same time. This is attributed to discontinuity of the tung oil film.

PATENTS

Alkyd resins. O. S. Linkletter and J. L. Johnson. *U. S. 2,533,270.* An alkyd resin suitable for decorating textiles can be made by the following procedure: Pentaerythritol (0.6 mol) and dehydrated castor oil fatty acids (1 mol) are esterified at 220-230° to an acid number of 5 or less. To this partial ester (356 pts.) are added 208 pts. of "Petrex" acid, a terpene maleic anhydride adduct, 48 pts. of technical 1,1,1-trimethylol propane and 5.6 pts. of calcium naphthenate as esterification catalyst. The mixture is slowly heated to 200° and maintained there for one hour. The reaction is completed at 220-230°. The product has a gel time of 20 seconds on a cure plate at 190° and an acid number of 22-26. After reduction to a 50% solution in hydrocarbon solvent the alkyd has excellent water-in-oil emulsifying properties. Textiles decorated with it have good alkali resistance.

Drying oil-dimer copolymers. A. H. Gleason. *U. S. 2,536,845.* Linseed and/or tung oil are caused to react with 1-vinyl cyclohexene or the cyclic dimer of piperylene at 250-400° until a resin forms. (*Chem. Abs.* 45, 2718)

Dehydration of esters of hydroxylated fatty acids. T. Berger & Sons. *British 644,406.* Esters of hydroxylated fatty acids such as raw castor oil are completely dehydrated in about one hour by heating them with about 3% of pulverized 2-naphthol-6 or 8 sulfonic acid between 190 and 260°. The dehydrated esters are light colored, miscible with lubricating oils, and are good drying oils. (*Chem. Abs.* **45**, 3171)

• Waxes

E. H. McMullen, Abstractor

Production of wax from some Hungarian coals. Teodora Valatin. *Magyar Kem. Lapja* **4**, 510-12(1949). Various types of Hungarian brown coals were treated with either benzene or a mixture of benzene and alcohol. The bitumen yield averaged 4.1-10.0%, the highest values were obtained from a lustrous variety of Dorog brown coal (Forna III). The bitumen separated from this coal contained resin 20-25, wax 32-35, and pitch 40-45%. The refined wax was light brown, melting at 80-83°, acid number 105-115, saponification number 120-130, and content of unsaponifiable substances 20%. The relatively high acid number can be lowered by esterification with various alcohols. Turpentine and other solvents were absorbed with difficulty by the refined wax (*Chem. Abs.* **44**, 3146)

Extractives from ponderosa pine bark. E. F. Kurth (Oregon Forest Products Laboratory, Corvallis, Ore.) and James K. Hubbard. *Ind. & Eng. Chem.* **43**, 4, 896(1951). Wax equivalent to about 5% of the dry weight of ponderosa pine bark was obtained by extraction with hexane and benzene. The wax is composed of fatty alcohols, fatty acids, and resin acids.

Technological aspects of lanolin. I. W. Malstrom. *Amer. Perfum.* **55**, 379-380, 385(1950). Methods of production and physical and chemical properties of lanolin are described. The effect of the free and combined cholesterol on the water-absorbing power has been examined. Analyses and water-absorptions of 12 commercial samples of varying types indicate that there is no relation between free, combined, or total cholesterol content and the water-absorption. (*Brit. Abs.* BII, Sept., **1950**, 820)

Synthetic waxes. A. Scipioni. *Chim. e Industr.* **32**, 161-164 (1950). Methods of preparing synthetic waxes are reviewed in three groups: (i) wax-like products prepared from aromatic and aliphatic hydrocarbons, chlorinated hydrocarbons, alcohols, ketones, amides, esters, and by condensation and polymerization; (ii) true synthetic waxes obtained by esterifying higher fatty alcohols with fatty acids of high molecular weight, usually catalytically; and (iii) derivatives of Montan wax, products of the I. G. Farbenindustrie. (*Brit. Abs.* BII, Sept., **1950**, 820)

Cetyl alcohol manufacture: new method. O. N. Jitkow. *Perfum. essent. Oil Rec.* **41**, 212(1950). Spermaceti is heated with a solution of potassium hydroxide in ethylene glycol in a stainless steel still and the ethylene glycol is distilled off at atmospheric pressure. Distillation of the residue at reduced pressure yields a distillate which when chilled and pressed gives the theoretical amount of pure cetyl alcohol. The residual soap in the still has lathering qualities equal to those of a good toilet soap. (*Brit. Abs. BII, Sept.*, **1950**, 822)

• Detergents

Lenore Petchaft, Abstractor

Bath products. Milton A. Lesser. *Soap Sanit. Chemicals* **27**, No. 2, 46-9, 143, 145, 147, No. 3, 46-7, 139(1951). Review of types, preparation, properties and uses of such bath products as bath salts, bath powders, effervescent bath products, foaming products and foam builders, and liquid preparations including bath oil, milk baths and bubble baths.

Phosphates as soap additives. P. I. Smith. *Am. Perfumer Essent. Oil Rev.* **57**, 223-4(1951). Phosphates are excellent soap builders due to the following properties: they increase emulsifying values and help to build up more suds, they prevent the formation of insoluble hard water soaps, they improve the cleansing action of soap and have a useful stabilizing effect on detergent solutions, they exercise a valuable free-rinsing effect in detergent solutions when used in laundering, their nonhygroscopic properties tend to prevent caking of soap powders, and they have a very mild effect on the skin.

The degree of polymerization and the degree of damage, its determination and its importance for detergency industry. Widaly. *Seifen-Ole-Fette-Wachse* **76**, 507-9(1950). The importance of the average degree of polymerization (number of glucose radicals), its determination, the determination of the degree of damage according to Eisenhut and its importance for the evaluation of detergents are briefly discussed. (*Chem. Abs.* **45**, 2691)

Determination of active ingredients in laundering compounds. A. Hintermaier (Fa. Henkel u. Cie., Dusseldorf, Ger.). *Fette u. Seifen* **52**, 689-93(1950). The alcohol-soluble material is determined by refluxing the sample once with 100 ml. and twice with 50 ml. EtOH, filtering the extracts, and distilling off the EtOH; if the extracts contain alkali, they are neutralized with H_2SO_4 and then made just alkaline with 0.5 N alcoholic KOH before filtration. Lauryl pyridinium compounds are determined by dissolving a 50-g. sample in 200 ml. warm H_2O, making up to 1 l. with H_2O, adding 20 ml. of this solution to a 500-ml. volumetric flask containing 50 ml. of 0.05 N $K_4Fe(CN)_6$ and 80 ml. 20% H_2SO_4, making up to 500 ml. with water, shaking, filtering, discarding the first portion, pipetting 200 ml. of the filtrate into a 1 l. Erlenmeyer flask, adding an equal amount of water and 3 drops of diphenylamine indicator, and titrating with 0.05 N $KMnO_4$. Separation of alkyl mono- and disulfonates is carried out by adding saturated $BaCl_2$ solution to an aqueous solution of the sample; the Ba salt of the monosulfonate is precipitated while the Ba salts of the disulfonates are very soluble. Sulfonates are determined by titrating an aqueous solution of the sample with 0.2% trypaflavin solution until the solution no longer foams. (*Chem. Abs.* **45**, 2692)

Alkaline carbonates and free alkalies in soaps containing neutral glycerides, and their volumetric determination in nonresinous soaps. A. Accinelli (Staz. sper. ind. Olii e Grassi, Milan, Italy). *Olii minerali, grassi e saponi, colori e vernici* **27**, 51-4 (1950). **Determination in the resinous soaps.** *Ibid.* 61-2. Five grams of soap (finely cut) are placed in 150 cc. distilled H_2O, and shaken to complete solution. Ten grams of solid NaCl is used to break the emulsion, the 2 solutions are separated in a separatory funnel, and the ether solution washed 2-3 times with H_2O containing 2-3 g. NaCl. An aliquot of the aqueous solution (which does not contain glycerides) treated with solid $BaCl_2$ to precipitate carbonates and Ba salts of the fatty acids; then titrate with 0.1 N HCl (phenolphthalein) to determine the free alkalies; titrate another aliquot with the same acid to determine the sum of free alkalies and alkaline carbonates. The method can be used for both pure and resinous soaps; in the latter case, the amount of NaCl to be added to break the emulsion should be increased to 140 g. (*Chem. Abs.* **45**, 2238)

Detergency. I. Low-temperature scouring of greasy wool. W. W. Mansfield (Commonwealth Sci. & Ind. Research Organization, Melbourne). *Australian J. Applied Sci.* **1**, 330-47(1950). Soap-soda scouring of greasy wool is difficult below 40°, as the removal of wool wax from the fibers is hindered by the high viscosity of the wax. Mixtures of wax and solvent are fluid enough to be deterged from wool fibers at room temperatures while addition of a small amount of emulsified solvent (e.g. 1% oleic acid in benzene) to the soap solution enables wool to be scoured at about 20°. A laboratory investigation is described in which the effects of the following on detergent efficiency were studied: solvent concentration, emulsifier concentration, temperature, age of emulsion, and nature of solvent. The mechanism of the detergent action is discussed. (*Chem. Abs.* **45**, 3174)

PATENTS

Production of nonionic detergents from oxidized wax and olefin oxide. J. A. Nevison and W. K. Griesinger (Atlantic Refining Co.). *U. S. 2,542,697.* Method of producing non-ionic detergents by subjecting hydrocarbon wax to oxidation, reacting the entire oxidation mixture including unoxidized wax with ethylene oxide to convert the oxidized wax components into water-soluble, oxygenated products, and separating these products from the unoxidized wax.

Cold process for producing an improved soap composition. R. W. Peterson. *U. S. 2,547,280.* An improved cold process method for soap manufacture in which the raw materials are preconditioned by formation of an emulsion of the fatty acid in an aqueous solution of a weak organic acid such as acetic, preliminary to saponification, resulting in a soap of improved properties.