ABSTRACTS . . . . E. S. Lutton, Editor

• Oils and Fats

R. A. Reiners, Abstractor

Impulse extraction removes fats and oils from animal and vegetable cellular material mechanically without heat. Anon. *Food Proc.* 14(1), 64, 69(1953). The Chayen process is described in which animal tissues and some vegetable seeds may be reduced to low oil content. The fat-bearing material, suspended in water, is passed through an impulse renderer in which water shock waves penetrate the material displacing the cold fat. The fat produced is of extremely high quality.

Recovery of fancy grade of tallow from cold impulse rendering of bones. Anon. *Food Proc.* 14(1), 65-68(1953). The commercial application of the Chayen cold rendering process to bones is described.

Simplifies continuous butter making—with smaller initial investment. Anon. *Food Proc.* 14(2), 76-77, 79(1953). A German-made machine of 880 lb./hr. capacity is described in which sweet cream is churned to yield a butter of good stability and flavor.

Biosynthesis of fats by yeasts. II. Composition of fat at various temperatures. A. Bass and J. Hospodka (Tech. Univ., Prague, Czech.). *Chem. Listy* 46, 243-5(1952). The fat produced by *Rhodotorula gracilis* is more saturated and of lower molecular weight when formed at higher temperatures. Thus different proportions of palmitic, oleic, linoleic, linolenic and C_{20-22} acids are formed at different temperatures. (*Chem. Abs.* 46, 168)

Determination of cholesterol in microgram quantities of tissue. D. J. Cavanaugh and D. Glick (Univ. Minn., Minneapolis). *Anal. Chem.* 24, 1839-41(1952). The colorimetric digitonin method has been adapted for the determination of cholesterol in small samples of tissue.

Influence of albumins on the stability of butter. P. Diatchenko. *Lait* 31, 505-10(1951). Deterioration in flavor and odor of several butter samples was investigated by organoleptic tests of fat and nonfat portions of the butter and by increase in amino N of the serum. The various types of off-flavor were found in the serum rather than in the fat, and these off-flavors were correlated with the increases in amino N. (*Chem. Abs.* 47, 227)

Flake feeding device for solvent extraction of oil-bearing materials. H. K. Gardner, E. L. D'Aquin, J. S. Parker, and E. A. Gastrock (So. Reg. Res. Lab. New Orleans, La.). *Ind. Eng. Chem.* 44, 2261-64(1952). A feeding device was developed for use in feeding flaked oil-bearing materials to a pilot plant size solvent extractor to provide a continuous uniform discharge of the material which can be varied over a 2.5 to 1 range; to form a positive seal plug to prevent the escape of solvent vapors at the point of entry of the material; and to cause a minimum breakage of the material into very small particles. The device operated satisfactorily with flakes from cottonseed, peanuts, okra seed, and rice bran.

Synthesis of unsaturated fatty acids: linoleic acid. W. J. Gensler and G. R. Thomas (Boston Univ., Boston, Mass.). *J. Am. Chem. Soc.* 73, 4601-4(1951). The CuCl-catalyzed coupling of propargyl bromides with acetylenic Grignard reagents gives a satisfactory yield of the 1,4-diyne system. (*Chem. Abs.* 47, 99)

Seasonal variations in fatty acid composition of New Zealand butterfat. R. P. Hansen and F. B. Shorland (Dept. Sci. Ind. Res., Wellington, New Zealand). *Biochem. J.* 52, 207-16(1952). Throughout the season, beginning in July, there was found to be a regular increase in the content of C_6-C_{14} saturated acids up to November, and thereafter a slow decline to the end of the season. The C_{18} unsaturated acids varied in the reverse directions to the C_6-C_{14} constituents. There was little difference in composition between butterfats taken during the same month in different years.

The branched-chain fatty acids in mutton fat. I. The isolation of (+)-14-methylhexadecanoic acid. R. P. Hansen, F. B. Shorland, and N. J. Cooke (Dept. Sci. Ind. Res., Wellington, New Zealand). *Biochem. J.* 52, 203-7(1952). (+)-14-Methylhexadecanoic acid has been shown to occur as a minor constituent in mutton fat.

Report on fat in dairy products. Methods for standardizing the Babcock test. E. O. Herreid, L. H. Burgwald, B. L. Herrington, and E. L. Jack. *J. Assoc. Official Agr. Chem.* 35, 202-4 (1952). The Babcock method is slightly modified so that its results will agree more closely with those obtained by ether extraction.

Oxidative deterioration in dairy products. G. E. Holm (U. S. Bur. of Dairy Ind., Washington, D. C.). *Milk Plant Monthly* 40, No. 11, 38-42(1951). The types of deterioration in which lipides are involved are: rancidity, caused by the hydrolysis of glycerides; tallowiness, caused by oxidation of unsaturated fatty acid constituents of glycerides; ''oxidized'' flavors, generally ascribed to the oxidation of phospholipides; and fishiness, in the production of which hydrolysis as well as oxidation processes seem to be involved. The manner in which these reactions take place in the several dairy products is discussed. (*Chem. Abs.* 47, 226)

Method for determining peroxides in lipides. C. H. Lea (Univ. Cambridge). *J. Sci. Food Agr.* 3, 586-94(1952). The iodometric method is much less sensitive to the presence of atmospheric oxygen than either the ferric thiocyanate or 2,6-dichlorophenolindophenol methods. Nevertheless, the aerobic ferric thiocyanate method shows excellent reproducibility, requires much less material than the iodometric method, and under any one set of conditions gives results which appear directly proportional to the iodometric values.

Hydroxylation and epoxidation of rapeseed oil derivatives with subsequent pyrolysis and ammonolysis. O. L. Mageli, E. W. Patterson, and E. Y. Spencer (Univ. Saskatchewan, Saskatoon, Sask.). *Can. J. Chem.* 31, 23-29(1953). A method was developed to follow the hydroxylation of rapeseed oil and erucic acid derivatives with peracetic acid. Among the compounds synthesized were methyl 13,14-dihydroxybehenate, methyl 13, 14-oxidoerucate, ethyl 13,14-diacetoxybehenate, and methyl 13, 14(14,13)-hydroxyacetoxybehenate. These compounds were pyrolyzed at 300° in the presence of *p*-toluene sulfonic acid.

Use of buffer salts for improving the stability of butter. A. Makar'in. *Molochnaya Prom.* 13, No. 9, 24-7(1952). Addition of buffering salts serves to eliminate the effect of acidity on storability of butter. Additions of 0.05% $NaHCO_3$-0.1% Na_2HPO_4, 0.1%$NaHCO_3$-0.2%Na_2HPO_4, and 0.1% $NaHCO_3$-0.3% Na_2HPO_4 were tried in experimental runs which were kept for 2 yrs. at about −7°. The presence of diacetyl was not affected or slightly increased; good aroma was preserved and titratable acidity and pH were most satisfactory with the last formulation. (*Chem. Abs.* 47, 227)

The isolation from shark (Galeorhinus australis) liver oil of a multi-branched C_{18} saturated fatty acid fraction. Isabel M. Morice and F. B. Shorland (Dept. Sci. Ind. Res., Wellington, New Zealand). *Chemistry & Industry* 1952, 1267-8. A C_{18} multi-branched chain acid has been isolated but its structure has not been determined.

Vetiver oil from South Travancore. K. N. G. Nair and N. S. Varier. *Indian Soap J.* 17, 288(1952). Samples obtained by steam distillation of vetiver roots had the following average characteristics: d_{30} 1.0102, n_{30} 1.5180, saponification value 65.4, saponification value after acetylation 163.9, and acid value 22.2. The average yield was 0.45%. The quality of Travancore oil compares favorably with other Indian oils and production facilities will be installed in the near future.

Foreign animal fats in butter. L. Olivari. *Boll. lab. chim. provinciali* (Bologna) 2, 96-8(1951). Analysis of 130 samples of butter show that the separation of stearin and stearic acid from the ether layer upon standing of 15-20 hrs. at 18°, according to the method used, cannot be considered as a criterion for the adulteration of butter. (*Chem. Abs.* 47, 227)

Syntheses of antioxidants for fats and oils. I. K. Shishido and H. Kuyama (Kyoto Univ.). *Bull. Inst. Chem. Research, Kyoto Univ.* 25, 73-4(1951). Several dinuclear phenols with structures analogous to that of nordihydroguaiaretic acid (NDGA) were synthesized. (*Chem. Abs.* 47, 120)

The fat emulsion in milk from a chemical standpoint. H. H. Sommer (Univ. of Wisconsin, Madison). *Milk Dealer* 41, No. 1, 58-74(1951). Milk fat and butter fat are not strictly synonymous. Besides triglycerides, milk fat contains various lipides in traces, including 0.7-0.8 g. of phospholipides per 100 g. of fat. Triglycerides of milk fat contain 13-20 different fatty acids. The analytical evidence indicates that the glyceride composition of milk fat is in harmony with random distribution of the fatty acids. There is no good evidence to support the belief that the composition of fat globules differs according to their size, except that in the case of small globules the lipides that coat the surface constitute a larger fraction of the total globule. (*Chem. Abs.* **47**, 224)

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Modified lard and process of producing same. K. F. Mattil and F. A. Norris (Swift & Co.). *U. S. 2,625,478.* The process of treating lard to permanently alter the normal crystallization habit and to improve the appearance and keeping qualities thereof is claimed which comprises subjecting lard to a heat treatment at a temperature between about 120° and 260° for a period of between about one-half and six hours in the presence of a small amount of polyvalent metallic compound acting as a crystal modifying catalyst to alter the crystal habit of the lard without causing a significant amount of interesterification.

Process of producing modified lard. K. R. Mattil and F. A. Norris (Swift & Co.). *U. S. 2,625,479.* The process of U. S. 2,625,478 with a zinc salt as catalyst.

Process of producing modified lard. K. F. Mattil and F. A. Norris (Swift & Co.). *U. S. 2,625,480.* The process of U. S. 2,625,478 with a lead salt as catalyst.

Process of producing modified lard. K. F. Mattil and F. A. Norris (Swift & Co.). *U. S. 2,625,481.* The process of U. S. 2,625,478 with an iron salt as catalyst.

Process of producing modified lard. K. F. Mattil and F. A. Norris (Swift & Co.). *U. S. 2,625,482.* The process of U. S. 2,625,478 with a cobalt salt as catalyst.

Process of producing modified lard. K. F. Mattil and D. W. Nelson (Swift & Co.). *U. S. 2,625,483.* The process of U. S. 2,625,478 with alkali metal alcoholates and alkaline earth metal alcoholates as catalysts.

Lard crystal modification. W. E. Dominick, D. W. Nelson, and K. F. Mattil (Swift & Co.). *U. S. 2,625,484.* The process of U. S. 2,625,478 with alkali metal as catalyst.

Lard crystal modification process. W. E. Dominick and D. W. Nelson (Swift & Co.). *U. S. 2,625,485.* The process of U. S. 2,625,478 with alkali metal hydroxide as catalyst.

Process of producing modified lard. D. W. Nelson and K. F. Mattil (Swift & Co.). *U. S. 2,625,486.* The process of U. S. 2,625,478 with alkali metal hydride as catalyst.

Modification of lard. D. W. Nelson and K. F. Mattil (Swift & Co.). *U. S. 2,625,487.* The process of U. S. 2,625,478 with sodium amide as catalyst.

Butter oil process. I. J. Lundal and R. P. Robichaux (Cherry-Burrell Corp.). *U. S. 2,626,217.* Butter is melted in water at 110°F., neutralized, heated to 120-150°F., filtered and tempered to a separating temperature within the range 120-150°F. The tempered mixture is promptly separated and the butter oil pasteurized and chilled.

Method and apparatus for solvent extraction. G. R. Greenbank (French Oil Mach. Co.). *U. S. 2,626,265.* A method of charging solvent-wetted flakes to a basket-type extractor is described.

Stabilization of glyceride oils with starch phosphates. J. C. Cowan and C. D. Evans (Sec. of Agr.). *U. S. 2,626,951.* A new composition of matter is claimed comprising a glyceride oil and a stabilizing amount of starch phosphate.

Diglyceride preparation. W. Lange and F. J. Baur (The Procter & Gamble Co.). *U. S. 2,626,952.* A process is claimed of preparing 1,3-diglyceride of a higher fatty acid, by directed interesterification of the higher fatty acid triglyceride and glycerol in the presence of lower fatty acid triglyceride.

Fat acids from rice bran or corn germs. Y. Inaba. *Japan. 39('51).* The bran with 15-50% water, alone or with a buffer substance, is allowed to decompose at 20-45°. The oil containing mostly fat is then extracted. (*Chem. Abs.* **47**, 335)

Separation of wax from wax-containing oil. Y. Togawa, H. Ono, and M. Ogawa (Nippon Mining Co.). *Japan. 1228('51).* The wax-containing oil is heated above the melting point of the wax. The oil, together with air or inert gas, is dispersed in cooled water or in an oil-insoluble liquid. The emulsion is rapidly cooled and centrifuged for continuous separation of the wax from the oil. (*Chem. Abs.* **47**, 335)

Apparatus for continuous extraction of oil. R. Takahashi. *Japan. 1230('51).*

Hydrogenation of fats and oils. T. Tsuchiya, H. Akiyama, and S. Kinomura (Bureau of Industrial Technics). *Japan 1231 ('51).* A crude fat or oil is treated with aqueous NaOH or NH_4OH to make a soap solution from the free fat acids of the oil; the mixture is hydrogenated in the presence of catalyst. (*Chem. Abs.* **47**, 335)

• Biology and Nutrition

R. A. Reiners, Abstractor

The effect of fat level of the diet on general nutrition. IX. The relationship of radiation injury in the rat to the fat content of the diet. A. L. S. Cheng, G. D. Kryder, Lois Bergquist, and H. J. Deuel, Jr. (Univ. So. Calif., Los Angeles). *J. Nutrition* **48**, 161-82(1952). No differences were noted in the susceptibility of rats to x-irradiation injury as related to the fat content of the diet when the animals were subjected to 650 or 850 *r* in a single dose. However, when rats were treated with sublethal doses of x-rays at weekly intervals, the rats receiving fat in their diets were found to be more resistant than those on a fat free regimen. The protective effect was as satisfactory when cottonseed oil was incorporated in the diet at the 2% level as at the 15-30% level.

Further studies on the influence of tocopherol supplementation on the vitamin content of the milk fat, stability of milk and milk and fat production. V. N. Krukovsky and J. K. Loosli (Cornell Univ., Ithaca, N. Y.). *J. Dairy Sci.* **35**, 834-38(1952). Low tocopherol diets reduce the stability of the milk from Holstein cows. Supplementation of standard ration with 1-2 g. daily mixed tocopherols improves the stability of the milk. Tocopherol supplementation cannot be depended upon to maintain the tocopherol content of the fat under all conditions.

• Drying Oils

Stuart A. Harrison, Abstractor

Market survey of an industry. C. W. Berl. *Chem. Eng. Progress* **49**, No. 1, 40(1953). A survey of the paint, varnish, and lacquer industries is given for the period 1927 to 1947. One of the purposes of the survey is to establish significant trends in the industry.

The testing of impregnating insulating varnishes—2. H. W. Chatfield. *Paint Manuf.* 23, No. 1, 11(1953). Tests used in evaluating insulating varnishes are described.

Developments in the paint industry for 1952. G. S. Cook. *Paint Varnish Production* **43**, No. 1, 19(1953). A comprehensive review of the coating industries is given for 1952. The review is divided into five broad classifications: The Business Picture, The Government Picture, Products of Paint Industry, Oils and Fatty Acids, and Waxes.

Pentaerythritol and maleic resin varnishes. B. B. Gupta. *Paint India* 1, No. 12, 16, 35(1952). The use of the pentaerythritol ester of rosin and maleic treated rosin is discussed mainly from the viewpoint of procedures to be adopted in varnish making. (*Brit. Abs.* **BII** 1088 [1952])

Permeability by water of thin unsupported films of pure drying oils. B. L. Harris and A. Bialecki. *Official Digest Federation Paint and Varnish Production Clubs* No. 335, 884(1952). Dried films of twelve oils including nine oils made from pure fatty acids were studied for water permeability. Included in the study were ten alkyds made with different pure fatty acids. The permeability constant p was determined for the different films according to the relation $p = \frac{\Delta Q}{\Delta t}\frac{l}{A\Delta p}$ where $\frac{\Delta Q}{\Delta t} =$ mass rate of permeation, A = area, l = thickness, and Δp = concentration difference of vapor across the film. In general the permeability decreases in the order oleate > linoleate > linolenate or eleostearate. This work supports the theory that the more liquid-like (less firmly bound) the surface, the greater the permeability.

Commentary on drying oils. L. A. Jordan. *Chemistry and Industry* No. 50, 1208(1952). A general discussion and review is given of the types and properties of drying oils and semi-drying oils. The philosophy and analytical methods of evaluating drying oils are discussed. The theories of thermal and oxidative polymerization are described in a general manner.

Drying oils—what price conjugation? L. A. Jordan. *J. Oil and Colour Chemists' Assoc.* 35, 577(1952). The historical development of the use of tung oil is reviewed briefly. In general, coatings made with artificially conjugated oils are inferior in certain respects to those made from tung oil. The differences show up largely in drying rate, hardness, and water resistance. One reason for the difference is that triene conjugation is more effective in promoting rapid drying, etc., than is diene conjugation. The autoxidation of tung oil is discussed. It is pointed out that in the case of tung oil there is no evidence for the formation of α-methylene hydroperoxides as occurs in non-conjugated fatty acids.

Analysis of isomerized oils. J. D. von Mikusch. *Industr. Vern.*, 6, 15(1952). Two new geometric isomers have been obtained by fractional crystallization of alkali-isomerized linoleic acid. They are believed to be cis-cis 9,11 octadecadienoic acid and cis-cis 10,12 octadecadienoic acid. Their properties are respectively: m.p. 19-20.2, 21.2-22.2 diene value 2,9; pandiene value 89,90; Woburn iodine value 182,183 n_D 1.4810; 1.4819. (*Brit. Abs.* **BII**, 1089[1952])

Newly discovered monoacids present in thermally polymerized linseed oil. J. Petit. *Compt. rend.* 234, 1690(1952). Thermally polymerized linseed oil was degraded into its constituent acids by saponification. The acidified products were separated into the volatile and non-volatile fractions by distillation under reduced pressure. The ethyl esters of the acids in the non-volatile fraction were separated by chromatographic analysis on alumina. Two fractions were obtained; one which was 85% of the total contained the C_{18} dimers and the other, 15% of the total was a mono-basic ester having two double bonds and a molecular weight of 485. This acid probably results from cracking and decarboxylation during the thermal treatment. (*Chem. Abs.* 47, 330)

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Production of drying oils. H. S. Bloch and R. C. Wackher. *U. S. 2,622,108.* An unsaturated fraction of a polymer gasoline (185 g. with boiling range of 28-225° and bromine number 132) is heated to 90-95 in an autoclave with diacetone alcohol (26 g.) and anhydrous hydrogen fluoride (196 g.). The hydrofluoric acid complex formed is separated, hydrolyzed and washed with water to give an unsaturated oil which dries to a tough hard film with or without driers. The oil contains a good proportion of the diacetone alcohol combined chemically. Other carbonyl compounds may be used.

Production of drying oils. H. S. Bloch and R. C. Wackher. *U. S. 2,622,109.* An unsaturated fraction of a polymer gasoline is reacted with allyl and vinyl compounds such as allyl alcohol, allyl phthalate and vinyl acetate in the presence of anhydrous hydrogen fluoride (see U. S. 2,622,108) to give unsaturated oils. Films of these oils dry hard and have good adhesion. Other mono-olefinic compounds are mentioned as co-monomers with the polymer gasoline.

Drying oils and process for making the same. W. E. Elwell. *U. S. 2,623,056.* Polyols such as glycerine, pentaerythritol, etc., are partially esterified with the fatty acids of a semi-drying oil. Generally the proportion of fatty acids is such that all but one of the hydroxyls on each molecule of polyol will be esterified. The remaining hydroxyl is esterified with a tetracarboxylic acid such as pyromellitic acid (1,2,4,5-benzene tetracarboxylic acid) or its anhydride. The resulting oil is suitable for use as a drying oil for coating purposes.

Polymerization process. G. M. Verley. *U. S. 2,623,890.* Mono olefines such as propylene and the butylenes are polymerized over a phosphoric acid-kieselguhr catalyst to give low molecular weight polymers. The polymers are mixed with an unsaturated oil, (e.g., linseed oil) and a boron trifluoride-ether complex as catalyst. The mixture is held at 45° for 5 hours while butadiene is passed in. The product is bleached and catalyst removed. Films of the resulting oils dry to tough, flexible coatings which are completely insoluble in hydrocarbon solvents.

Manufacture of styrene-modified alkyd resins. C. J. Meeske and D. Laganis. *B. P. 670,119.* Styrene modified alkyd resins, used to prepare clear or pigmented coating compositions are made by refluxing styrene monomer (20-60) with an oil modified alkyd resin (80-40) in an inert aromatic solvent. (*Brit. Abs.* **BIII**, 1090[1952])

New synthetic drying oils and coating compositions. E. O. Phillips and N. W. Hansom. *B. P. 673,082.* A process for the preparation of drying oils consists of esterifying a polyol, e.g., glycerol or pentaerythritol with a β,γ-mono-unsaturated fatty acid. (*Brit. Abs.* **BII**, 1091[1952])

• Waxes

E. F. Guttenberg, Abstractor

Some investigation of hydroxy oils, particularly castor oil. Dr. K. T. Achaya and Dr. S. A. Saletore (Central Laboratories for Scientific and Industrial Research, Hyderabad). *The Oils and Oilseeds Journal* 4, 34, March-April, 1952. An approximate estimation of hydroxy acids of glycerides in any oil can be found by use of the refractive index. It was found that upon acetylation of an oil the refractive index was lowered considerably. This lowering of refractive index is almost proportional to the amount of hydroxy group in the material under investigation. Relatively pure tri-ricinolein can be isolated from castor oil by repeated extraction with petroleum ether. The more unsaturated glycerides containing linoleic acid are gradually eliminated leaving the tri-ricinolein behind. A routine analytical method for estimation of component fatty acids in oils containing hydroxy acids has been developed in which no acetyl values are necessary.

Non-saponifiable constituents of Spanish broom. O. C. Musgrave, James Stark, and F. S. Spring. *Jour. Chem. Soc.*, 4393-7, Nov., 1952. An extract of Spanish broom (widely used in the French perfume industry) was obtained by digestion of the flowers with cold light petroleum followed by low-temperature removal of the solvent. The total extract (concrête) was an oily wax (0.09-0.18% of the dried flowers). Treatment of it with cold ethanol gives the alcohol-soluble "absolue" (approximately 40% of the concrête) and an insoluble wax. The non-saponifiable material from the broom wax was investigated (by chromatography) and the following constituents identified: a mixture of higher paraffins, a mixture of higher aliphatic alcohols, α, β, and δ-amyrin, lupeol, β-sitosterol, n-octadecane-1:18-diol, and n-hexacosane-1:26-diol. In addition, two unidentified alcohols were isolated.

The behavior of wool wax and its constituents in water-in-oil emulsions. J. Tiedt and E. V. Truter. *J. appl. Chem.* 2, 633-638 (Nov., 1952). It is shown that the esters of wool wax are devoid of emulsifying power, and that the ability of lanolin to hold water in the form of a water-in-oil emulsion is due, almost entirely, to the free alcohol content. Of the constituents of lanolin, the most powerful emulsifying agents are members of the α,β-glycol series. The emulsifying powers of cholesterol and of isocholesterol have been measured at various concentrations in liquid paraffin. The intensifying action of esters upon their respective alcohols has been attributed to the additional rigidity of the interfacial films.

The microdetermination of the iodine values of oils by the WIJS method. C. Whalley and M. Ellison. *J. Oil & Colour Chemists' Assoc.*, 596-600, Dec., 1952. The apparatus and the method used for the microdetermination of the iodine values of oils is described. A comparison of the results of macro- and micro-iodine value procedures is given.

• Detergents

Lenore Petchaft, Abstractor

Bleaching with chlorine compounds in the suds. Anon. *Mededel. Proefsta. Wasind.* No. 55, 11 pp. Laundering and bleaching tests on laboratory and technical scale were made with NaOCl (I), the sodium salt of p-toluenesulfomonochloroamide (II), and p-toluenesulfodichloroamide (III). The action of I, II, and III on the washing goods, if applied in the suds, depends on several difficultly controllable factors, e.g., the dirtiness of the linen and the speed of heating of the suds. Thus chemical damage caused by bleaching can be very high although stain removal is not very good. Bleaching with I in one of the rinses at a low temperature gives good stain removal and safety. (*Chem. Abs.* 46, 11720)

Some current problems in toilet soap manufacture. James Bather. *J. Soc. Cosmetic Chemists* 3, 226-31(1952). Current problems in toilet soap production are reviewed. These include aspects of soap perfuming such as economics, soap deterioration due to the composition of the soap base, manufacturing procedures or effect of additives, and discoloration problems.

Evaluation of dishwashing detergents. Jay C. Harris (Monsanto Chemical Co., Dayton, O.). *Soap, Sanit. Chemicals* 28, No. 12, 45-7, 101(1952); 29, No. 1, 42-3, 77(1953). The literature on evaluation of dishwashing detergents (18 references) is reviewed critically and summary tables of the pertinent factors are given. These include tables on methods of evaluating soil removal, various surfaces tested, comparisons of various test washing machines, methods of application of soil to test surfaces, and various soiling compositions. It was found that there is less agreement on the soil to be used than on any other factor.

Perfume blends in soap. A. Krenowsky. *Perfumery Essent. Oil Record* 43, 451-2(1952). The problems involved in perfuming soap products based on reaction of aromatics with soap, the volatilization of aromatics, and oxidation reactions are discussed.

Viscometric study of the micelles of sodium dodecyl sulfate in dilute solutions. L. M. Kushner, B. C. Duncan, and J. I. Hoffman. *J. Research NBS* 49, 85-90(1952). Sodium dodecyl sulfate is synthesized, and concentrations up to 0.8% by weight in distilled water and in 0.01-0.12 M NaCl are studied by viscosity measurements, using a modified Ostwald viscometer. Surface tension and density measurements are also made, and a method is presented of determining monomer saturation concentration, i.e. that point at which micelles start to form, by the light absorption at 530 mμ of Toluidine Blue in presence of the detergent. By introducing the concept of this saturation concentration it is possible to determine the intrinsic viscosity of the micelles at each NaCl concentration. The dependence of intrinsic viscosity on salt concentration is discussed in terms of electroviscous and hydration effects; results suggest that micelles of this particular detergent are spherical.

Germicidal activity of hexachlorophene soap. J. W. Lord, Elsie M. Thomas and E. Parker. *Am. Perfumer Essent. Oil Rev.* 61, 73-5(1953). Serial basin hand-washing and contact-culture experiments have been applied in an interlaboratory study of the germicidal activity of soap containing 2 per cent hexachlorophene. Results show that the extent of reduction of the transient bacterial flora of the hands and forearms varies widely with different subjects and this variation is partly due to the presence of gram-negative organisms against which hexachlorophene is not so effective. On the other hand, the effect of hexachlorophene on the total or resident bacteria is much less variable, and an overall average reduction of 75 per cent was obtained.

Detergency. II. The removal of oil from wool fibers. W. W. Mansfield. *Austral. J. Appl. Sci.* 3, 193-200(1952). Using mixtures of paraffin oil with oleic acid, undecanol, glycerol monooleate, and tripalmitin, respectively, the removal of oil from wool fibers has been studied visually and by small-scale washing tests. It is shown that the addition of alkali to soap solutions hinders the removal of oil from wool unless the oil contains more than 5 per cent of interfacial-active compounds other than fatty acid. The hindrance is prevented by the addition of salt. The possibility of removing oleic acid-oil mixtures without the use of a detergent by aeration of the wool held under water has been demonstrated.

Detergents and skin damage. W. Schneider (University Skin Clinic, Tubingen, Germany). *Soap, Perfumery, Cosmetics* 26, 45-9(1953). The causes of skin damage by soap and detergents have been described and methods of combating it discussed. Synthetic detergents tend to exert a marked defatting and roughening action on the skin, although they do not interfere with its acid reaction. Soap attacks the acid coating of the skin and may provoke swelling. On the other hand, its defatting and drying action is less severe. Several German non-irritant detergents are described.

New bacteriostat for soap. R. S. Shumard, D. J. Beaver, and M. C. Hunter (Monsanto Chemical Co., St. Louis, Mo.). *Soap, Sanit. Chemicals* 29, No. 1, 34-7, 90(1953). A unique bacteriostatic agent, 2,2′-thiobis (4,6-dichlorophenol), "Actamer" has been described. This colorless, tasteless and essentially odorless, white crystalline product is practically insoluble in water, but quite soluble in a number of organic solvents. Accelerated stability studies indicate that it is unusually stable. Vapor pressure data and ionization constant are presented. "Actamer" has exhibited antimicrobial activity in both in vitro and in vivo tests. It is particularly effective against gram-positive bacteria and specifically the cocci that make up the normal bacterial flora of the skin. By application tests, "Actamer" used daily in bar soap at two per cent level, has been shown to reduce the number of resident skin bacteria of 12 subjects an average of 97.4 per cent after 12 days. No other compound has been found to have stronger skin substantive properties without some undesirable effects. The acute oral toxicity, cumulative oral toxicity and cutaneous toxicity of "Actamer" have been shown to be unexpectedly low.

The sulfonation of alkyl benzene. Helmut Stupel (Seifenfabric Hochdorf, Hochdorf, Switzerland). *Soap, Perfumery, Cosmetics* 25, 1278-82(1952). The theoretical prerequisites in the sulfonation of alkyl benzene are discussed. The alkylate is of importance with regard to the quality of the sulfonate. It is obtained by the Friedel-Crafts reaction or the reaction of olefins with benzene. Within the methods of sulfonation, a distinction is drawn between neutralization with 40 per cent final product and water wash with 80 per cent final product. The amount and concentration of the sulfonating medium depend on the temperature; color and the proportion of non-sulfonated material depend on the time the sulfonated mass is left standing.

PATENTS

Liquid detergent composition. Herbert L. Sanders (General Aniline & Film Corp.). *U. S. 2,618,607.* A liquid detergent composition suitable for use in mechanical dishwashers, which gives substantially no foam is obtained from a composition containing N-palmitoyl-N-cyclohexyl taurate, tetrapotassium pyrophosphate, sodium metasilicate and water.

Process and apparatus for modifying the physical characteristics of plastic materials. Donald E. Marshall (Micro Processing Equipment, Inc.). *U. S. 2,619,680.* A process and apparatus are described for converting plastic materials having a crystalline phase, such as soap, into compacted ultra-microcrystalline material by employing a rapidly moving carrier band for drawing thin soap films by molecular attraction through narrow apertures of slots under tearing and dispersing conditions to produce intense shearing and compacting.

Method of compacting soap into sound bars. Donald E. Marshall (Micro Processing Equipment Inc.). *U. S. 2,621,368.* Finely powdered soap is compacted into bars by placing a measured quantity of the soap in a die, subjecting the soap in the die to an initial forming pressure, subjecting the compact to a succession of intermittent applications of pressure with each pressure application slightly greater than the preceding one to seal the surface and entrap the air contained and to knit the compact into a monolithic soap bar.

Tetraborate detergent composition and method of making the same. Herbert L. Sanders (General Aniline & Film Corp.). *U. S. 2,623,856.* A dry free-flowing low-density hollow-beaded detergent composition is prepared by making a paste of an alkali metal tetraborate with a small amount of water and from 20 to 40% by weight of the tetraborate of a liquid non-ionic surface active polyglycol ether, heating with constant stirring to form small dense beads having particle size of about 0.1 mm., then heating the small dense beads to form hollow beads.

Composition for laundering textiles and for imparting a whitening effect thereon. Richard Thomas Bromborough (Lever Brothers Co.). *U. S. 2,624,710.* A composition with improved whitening effect of greater stability and durability can be obtained by using a suitable detergent and a blue-fluorescent compound which is a derivative of a di-aminobenzoylaminostilbene-sulfonic acid in which at least one of the hydrogen atoms in each of the NH_2 radicals attached to the terminal rings is substituted by an organic radical which does not contain an NH_2 radical directly attached to an aromatic nucleus.

Alkyl thiophene sulfonate detergents. Carl B. Linn (Universal Oil Products Co.). *U. S. 2,624,742.* A new type of detergent is prepared by a combined alkylation-sulfonation process for producing alkyl thiophene sulfonic acids such as dodecyl-thiophene sulfonate, in higher yields with little or no decomposition of the thiophene starting material.

Improvements in disinfectant and detergent compositions. W. Gregory & Co., Ltd. *Brit. 676,895.* The detergent comprises a cetyl trimethyl ammonium halide, a non-ionic neutral wetting agent, an alkali phosphate and an alkali silicate. This composition is odorless and non-irritating.