and oleic mold, formation takes place without development of methyl ketone. The molds yield Me-ketone with Undecan (I) acid (II) but not with oleic acid. It is suspected that the unsatd. acids of the oleic acid series behave similarly to the satd. members.

Studies on the polymerization of fatty oils. The polymerization of ethyl elaeostearate. A. Steger and J. van Loon. *Fettchem. Umschau* **43,** 17-21 (1936).—During the heating of Et elaeostearate at high temps. two types of reactions take place; i.e., (1) formation of high polymers and (2) cyclization and isomerization. With treatment at high temps. (above 300°) isomerization is most prevalent, and this is more so in presence of sulfur. The isomers formed are not capable of polymerization. Wood oil containing sulfur does not gel or the gelatinization may be severely hindered because of this isomerization.

PATENTS

Fats, etc. Swift and Co. Ger. 618,836, Sept. 17, 1935 (Cl. 53h. 1.01).—Fats, oils or their mixts., especially lard, is rendered stable by adding 1-5% of crude cottonseed oil. (*C. A.* **30,** 1251.)

Neutralizing oils. The Sharples Specialty Co. Fr. 787,555, Sept. 25, 1935.—App. is described for continuously mixing fatty oils and an alkali at high speed in carefully proportioned quantities and for sepg. the soap and neutral oil at suitable temp. (*C. A.* **30,** 1251.)

Oxidation products of castor oil. Melvin De Groote and Bernhard Keiser (to Tretolite Co.). U. S. 2,025,806, Dec. 21. Castor oil is oxidized with air at a temp. of about 120-150° and under a gage pressure of 25-125 lb., with 10-20% of octadeca-9, 11-dienoic acid glyceride as an autoöxidizer-catalyst. U. S. 2,025,807 relates to a similar oxidation of castor oil with air of normal moisture content, with use of hendecenoic acid glyceride as an autoöxidizer-catalyst. U. S. 2,025,808 involves the similar use of a-pinene as catalyst. U. S. 2,025,809 involves a like use of dipentene as catalyst. (*C. A.* **30,** 1251.)

Removing the "Catalyst taste" from hydrogenated oils. Dietrich Hildisch. U. S. 2,021,552, Nov. 19. —Hydrogenated oils such as those from fish oils and oils from other sea animals and from drying vegetable oils are treated with an alk. compd. such as NH_4 carbonate or carbamate, alkali metal carbonate, diethanolamine or triethanolamine (suitably at a temp. of about 70-130°) until evolution of gas ceases. (*C. A.* **30,** 637.)

Oils and fats. Sidney Musher. Fr. 785,927, Aug. 22, 1935.—These are preserved from rancidity by incorporating therewith or infusing thereunto a vegetable material such as barley, oats, maize, soybean seed, cottonseed or tournesol. The vegetable material is removed after the treatment. (*C. A.* **30,** 636.)

Method of refining fats and oils. V. Jersey. U. S. 2,029,722. Such oils as are derived from carrots, palms, sweet potatoes and are valued because of their vitamin A content, are refined with alkali in such a manner that alkali is added slowly to prevent a rise in temp. Cooling jackets or coils also surround the reaction vessel to assist in preventing rise in temp.

Soybean phosphatides. W. W. Ginn. (Chemical Novelties Corp., Cincinnati, Ohio.) U. S. 2,029,261 — Soybeans are hot pressed. The phosphatides are recovered from the oil by centrifuging.

Catalyst. W. W. Myddleton. U. S. 2,029,786. —The process of prepg. Ni catalyst consisting of mixing NiO with ethyl ortho-silicate adding NH_4OH to coagulate, breaking into granules and drying and finally reducing by the heating in presence of H_2.

Auto-oxidation and polymerization catalyst. F. Visser't Hooft. U. S. 2,032,554.—Dibenzoyl peroxide or a diacyl peroxide is added to oils used in paints.

Preparation of dehairing agent for animal hides and skins. Jan. W. Archibald. Australian 19,020. Five per cent S is added to an animal or vegetable oil and heated at 140-180° for 2 hrs. The sulfured oil is then sapond. with KOH. Dehairing is accomplished by soaking the softened skins in a 1% water soln. of the treated oil for about 20 hrs. and then removing the hair.

Castor machine oils. A. L. Blount. (Union Oil Co.) U. S. 2,031,405.—Mixt. of castor oil and mineral contg. 0.1-5.0% mono-butyl ether of diethylene glycol and 1.0-5.0% of an aluminum soap of a higher satd. fat acid.

ABSTRACTS

Soaps

Edited by **M. L. SHEELY**

Estimation of Soap in Pharmaceutical Preparations. W. Stüwe. *Apoth. Ztg.* **50,** 1545-8 (1935).—Certain procedures are outlined and discussed for the examination of various soaps as potash, glycerinated liquid, potash spirit, liquid cresoli saponified, spirit saponified, camphorated spirit, medicated, jalap, camphorated liniment, ammoniated liniment, liquid formaldehyde and H_2O in medicinal. (*C. A.* **30,** 569.)

Hydrogenation of Fats in Presence of Nickel Carbonate and Formate Reduced in the Oil. E. Etinburg and M. Popov. *Masloboino Zhirovoe Delo* **11,** 363 (1935).—$NiCO_3$ can be used in the hydrogenation of high-grade oils with low-pressure steam for heating the oil before hydrogenation. A mixture of $NiCO_3$ and Ni formate can be used for the hydrogenation of low-grade oils when effective refining of the oil is not feasible. cf. *C. A.* **29,** 8369, 8373. (*C. A.* **30,** 889.)

Distilled Fatty Acids for Toilet Soap. *Perfumery and Essential Oil Review* 27, 1, 43 (January, 1936).—Among the more recent processes for distilling fatty acids the following may be noted: those of Hoffmann, Volkmar Hanig and Company, Stiepel, Bergell, and the so-called Dünnschict-Distillation (thin-layer distillation).

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Soaps

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In saponifying, either caustic soda lye or sodium carbonate (soda ash) may be used, the latter being the cheaper, and the usual methods of soap-boiling are followed, as with split fatty acids. It is very important to see that thorough stirring is provided for. It is not suggested that the fat charge should consist entirely of distilled fatty acids; a certain percentage of hardened fat, up to 30 per cent, and coconut oil to the extent of about 10 per cent, may be included in the charge. If necessary, before the final closing salting out, a small percentage, say 0.1 per cent of bleaching agent, may be added to the boil for bleaching purposes.

As already stated at the beginning, the distillation of fatty acids, especially in connection with the continuous deacidification and deodorization of fats, has made quite substantial progress during the last year or two. The modern plants used in these methods of treating oils and fats can be employed with advantage in the distillation of fatty acids; and this appears to be the case in Italy, for example, where the free fatty acids from inferior grades of olive oil are being purified.

Soap-Making Fatty Acids from Petroleum. *Perfumery and Essential Oil Record* **27**, 2, 93 (February, 1936).—The oxidation of petroleum hydrocarbons to form fatty acids suitable for soap-making continues to interest research workers on the Continent, as is shown by the publication of details of some recent patents granted to the I. G. Farbenind., A.G. One of these, a German patent abstracted in *Les Matieres Grasses*, claims oxidation of paraffin wax by treatment with the higher oxides of nitrogen at high pressure and temperature, products with acid values of about 200 and a nitrogen-content of 2.5 per cent being obtained. These are then saponified in an autoclave with an excess of 20 per cent sodium hydroxide solution, being heated for one hour at 230° C. under 25 atmospheres pressure, and the separated nitrogen compounds are removed by a current of inert gas. The alkaline soap is dissolved in water, any unoxidized paraffin wax removed, and the fatty acids separated by decomposing the soap with dilute mineral acid. These fatty acids are then suitable for soap manufacture.

In a second patent (British Patent Number 433,305) the oxidation products obtained by oxidation of paraffin wax or other fraction of petroleum, are dissolved in a water-insoluble solvent, e.g., benzine, benzene, cyclohexanol, carbon tetrachloride, etc., and the solution shaken with an aqueous solution of sodium, potassium, or ammonium hydroxide or carbonate, or ethanolamine. The aqueous solution of the soap formed is washed with solvent, and may then be used directly as a detergent, or may be spray-dried to form a soap powder.

The fatty acids obtained by oxidation of petroleum hydrocarbons differ from those present in the natural oils and fats in that they contain an uneven number of carbon atoms, and yet another patent by the same firm (British Patent Number 433,132) claims the use of the zinc and magnesium soaps obtained from these fatty acids, containing an odd number of carbon atoms, in the preparation of cosmetics, the pure color and softness and fineness of such soaps making them particularly suitable for the purpose.

Starch and Animal Glue in the Soap Industry. Fritz Ohl. *Gelatine, Leim. Klebstoffe* **3**, 168-71 (1935).—Soaps can be improved by the addition of starch, casein or hide glue. Nineteen patents and characteristics of the products are discussed. (*C. A.* **30**, 893.)

Purification of Contact Glycerol Waters with Barium Carbonate and Iron Shavings. P. Andronov. *Masloboino Zhirovoe Delo* **11**, 353-5 (1935).—Treating acid glycerol waters with Fe shavings and a strong air current at 90° and neutralizing the filtrate with $Ba(OH)_4$ gave the best results with glycerol, d_{20} 1.244, 1.14% ash and organic contents. Treating glycerol waters with $BaCO_3$ before or after neutralization with $Ca(OH)$ is of no marked advantage. (*C. A.* **30**, 892.)

Saponification of Fats with Formation of Concentrated Glycerol Waters. M. Nikiforov. *Masloboino Zhirovoe Delo* **11**, 355-7 (1935).—A procedure is described for a repeated use of glycerol waters in the saponification of fats with kerosene as a contact agent. (*C. A.* **30**, 886.)

Glycerine-Preservation of Lard. C. H. Lea. Dept. Sci. Ind. Research, Rept., Food Investigation Board 38-43 (1935).—Efficient antioxidants for the preservation of lard are glycerine, asparagine, sodium citrate and sodium malonate. (*Soap* **XII** [2], 67.)

PATENTS

Process of Manufacturing Soaps. U. S. 2,027,936, January 14, 1936. Walter Schrauth, Berlin-Dahlem, Germany, assignor by mesne assignments, to "Unichem" Chemikalien Handels, A-G., Zurich, Switzerland. —The process of producing soap from sperm oil which comprises saponifying the sperm oil and oxidizing the alcohols formed by treating the material with concentrated alkali at a temperature approximating 200 to 280° C., the quantity of the alkali being approximately 1 to 2 per cent greater than that indicated by stoichiometric calculations for the reaction. (*Soap* **XII** [3], 71.)

Soap. German 620,391, October 21, 1935 (Cl. 23e, 1).—In effecting such processes in the soap industry as are normally carried out at 180° or above, heating is effected by direct introduction of steam which has been compressed sufficiently to raise its condensation temperature above the process temperature. Local overheating is thus avoided, and the danger of explosion is reduced. (*C. A.* **30**, 894.)

Soap. Austrian 143,654, November 25, 1935 (Cl. 23b). Herbert Krause.—In the manufacture of soap from fat compositions containing liquid fatty oils or fats acids having an I number of 70 or more, the tendency of the product to deteriorate during storage is restrained by adding to the soap small proportions of glycerol (or other alcohol) and a water-soluble phosphate, preferably Na_3PO_4. These additions are made at any stage in the manufacture of soap, following the removal of excess alkali and salt. (*C. A.* **30**, 1252.)

Polyglycerol Esters of Aliphatic Acids of Relatively High Molecular Weight. U. S. 2,023,388, Dec. 3, 1935. Benjamin R. Harris.—Numerous examples are given of the production of esters having wetting, emulsifying or antispattering properties, etc., the general mode of manufacture of which is to polymerize glycerol to a

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desired molecular magnitude, whether it be diglycerol, triglycerol, tetraglycerol or higher polymerized glycerols or mixtures thereof, by heating glycerol by itself or in the presence of a catalyst, then freeing the polyglycerol or polyglycerol mixture of unpolymerized glycerol, if any be present, and finally esterifying the polyglycerol material, free of glycerol, with a fatty acid or a fatty acid mixture by causing the two to react with or without the presence of an esterification catalyst, or alternatively with acyl halides or acid anhydrides in or without the presence of a catalyst or condensing agent. As being new compounds, general claim is made to esters of a polyglycerol and a relatively high-molecular "monobasic" aliphatic acid, the ester containing at least one free hydroxy group. (*C. A.* **30,** 733.)

Variations of the pH of Aqueous Soap Solutions as a Function of the Free Alkali Content. Vizern Guillot. *Seifensieder-Ztg.* **62,** 525-6 (1935).—See *C. A.* **29,** 6453. (*C. A.* **30,** 893.)

Purifying Fatty Oils. British Patent 427,880. —For freeing animal or vegetable oils and fats from fatty acids which have been converted into fatty acid soaps by the addition of caustic or carbonated alkali, or from mucinous substances, phosphatides, bitter principles, etc., the separation of the soaps and other impurities is effected by means of concentrated alcoholic solutions of salts such as sodium chloride, nitrate, formate or acetate which do not form insoluble compounds with the substances to be separated. The alcoholic solution may contain 40-80 per cent of water; as a rule, it is maintained practically saturated with the salt; and it is preferred to use such solution at 45-70° C. The procedure may be as follows: The mucins, etc., are first precipitated in the oil; sufficient alkali is then added to convert the free fatty acids into soaps; the oil is then actively stirred with addition of aqueous alcohol and a concentrated salt solution sufficient to dissolve the soap flakes, the mucins, etc., being at the same time taken up in the alcoholic salt solution; the soap solution together with the impurities are separated from the oil, and the alcohol distilled off before or after addition of mineral acid in order to obtain eventually free fatty acid. Alternatively, the impurities precipitated in the oil at the pre-refining treatment may be first separated from the oil; or such treatment may be omitted, the crude oil being directly subjected to the treatment. Treatment with alcoholic salt solution may be employed for the purpose of separating the mucins, phosphatides and bitter principles from the crude oil prior to its neutralization, such impurities being coagulated in or extracted from the oil which separates quickly. The addition of the alcoholic salt solutions may take place before or during the refining, or before, during or after the neutralization; and the alcohol and the salt in the form of an aqueous or alcoholic solution may be added separately and if desired at different stages of the process. Soap stocks which have been freed from the bulk of the oil by decantation may be subjected to the process. Before extraction with alcoholic salt solution, the soap flakes floating in the oil may be dried by the application of a vacuum. (*Soap Gazette and Perfumer* **37,** 11, 21, 1935.)

New Type F.A.C. Color Standards Are Now Available

The Fat Analysis Committee of the American Chemical Society and the American Oil Chemists' Society has adopted a new type of solution for use in its standard set of colors for commercial oils and fats.

The new standards are sealed in ampules instead of the former stoppered tube closed with sealing wax. They are prepared as water or acid solutions of inorganic salts in place of the former solutions of organic dyes in glycerin. Their advantage lies particularly in their resistance to the action of light.

These new type standards are now ready for distribution. I, therefore, wish to take this opportunity to ask all holders of color sets to send them in for replacement. Sets should be addressed to me at Swift & Company, Chemical Laboratory, U. S. Yards, Chicago. The usual nominal reconditioning charge will be made.

W. H. Irwin, Chairman
Fat Analysis Committee.

Soap-Frame Stripper. U. S. 2,020,755, November 12, 1935. John Woesner (to Cincinnati Soap Company).—Structural, mechanical and operative details. (*C. A.* **30,** 633.)

Curd Soap and Attempts at Improving Its Quality. R. Krings. *Seifensieder-Ztg.* **62,** 739-41 (1935). —Methods for making soap under present-day German conditions are discussed. (*C. A.* **30,** 893.)

American Chemical Society Convention

The Convention of the American Chemical Society will be held at Kansas City, Missouri, April 13 to 17. The following papers, which will probably be of interest to readers of Oil and Soap, will be presented.

N. T. Spoerri. The Solvent Extration of Soybeans.

E. E. Ware. Soybean Oil and the Paint Industry.

M. M. Durkee. The Utilization of Soybean Oil in the Food Industry.

E. B. Working. The Chemistry of the Phosphatides and Their Utilization in Industry.

R. C. Newton. The Detection and Control of Oxidation in Fats.

George O. Burr. Dietary Essentials in Fats.

A. A. Horvath. Soybean Oil for Soap Making.

George R. Greenbank and George E. Holm. Colorimetric Methods of Determining the Keeping Quality of Fats and Oils.

W. A. Gallup, A. M. Kuhlman, and E. Weaver. Further Observations of the Superiority of Cod Liver Oil as a Vitamin A Supplement in Cottonseed Meal Rations for Calves.