TABLE VII

Summary of Results Obtained With Proposed Dry Extraction and Proposed Wet Extraction Methods.

	Number Samples	Proposed Dry Extraction Method % T.F.A.	Proposed Wet Extraction Method % T.F.A.
Corn Oil Soap Stock	1	52.11	52.25
Acid. Corn Oil Soap Stock	4	92.95	92.63
Soya Bean Oil Soap Stock	4	39.65	39.81
Acid. Soya Bean Oil Soap Stock	2	90.89	90.98
Cotton Seed Oil Soap Stock............	4	44.28	44.33
Acid. C/S Oil Soap Stock	1	94.51	94.27
Average of Soap Stock	9	43.42	43.53
Average of Acid. Soap Stock...........	7	92.51	92.33

stoppered cylinder with hot water, taking care not to exceed 130 cc. total volume in the cylinder. Add 3-5 drops of methyl orange indicator, acidify with dilute hydrochloric acid (1:1), carefully avoiding too large an excess. Mix gently by rotating the cylinder. When the cylinder has cooled to 50° C., add 125 cc. of petroleum ether. (See Specifications, Rule 272, Section 3.) It is not necessary for the fatty acids to have cleared thoroughly. Stopper cylinder and shake gently, then allow to stand until the petroleum ether layer has separated. Siphon off this petroleum ether layer through a 9 cm. paper (see Specifications, Rule 276, Section 2) into a 400 cc. beaker or directly into a tared Soxhlet flask. If this extract is cloudy it should be refiltered, but any subsequent cloudiness may be disregarded. Make at least four more extractions, using 25-30 cc. of petroleum ether and shaking the cylinder vigorously for at least 30 seconds for each extraction.

Filter each petroleum ether extract through the same filter paper as the first, allow the filter paper to drain well, transfer to an extraction tube, and extract with petroleum ether. If the extractions are transferred to the 400 cc. beaker rather than directly to the tared Soxhlet flask, all, when drawn off, should be added to the first extraction in the beaker, the combined extracts partially evaporated, and transferred to a tared Soxhlet flask. Wash all traces of the fatty acids from the beaker with petroleum ether from a wash bottle. If the extracts are filtered directly into the Soxhlet flask, it may be necessary to evaporate part of the solvent from the flask before adding the remaining extractions. Evaporate all petroleum ether and heat in oven at 100° C. to constant weight. Report as per cent "total fatty acids."

Recommendations: The committee recommends (1) that the method for analyzing soap stock and acidulated soap stock, except from copra or palm kernel oils, as outlined above, be suggested to replace the ones now given in the Methods of the American Oil Chemists' Society; (2) that the methods be designated as "Dry Extraction Method for Total Fatty Acids of All Soap Stock and Acidulated Soap Stock, except from Copra or Palm Kernel Oils," and "Wet Extraction Method for Total Fatty Acids of All Soap Stock and Acidulated Soap Stock, except from Copra or Palm Kernel Oils"; (3) that the term "petroleum ether" be adopted throughout all methods of the society for the solvent variously referred to as petroleum and petrolic ether; (4) the method for testing petroleum ether is not specified in the Methods of the American Oil Chemists' Society, but it is given in Rule 272, Section 3, of the Rules of the National Cotton Seed Products Association. These rules should be made identical.

The committee wishes to thank the following for sample materials:

A. E. Staley Mfg. Co., Decatur, Illinois.
Archer - Daniels - Midland Co., Minneapolis, Minn.
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The Southern Cotton Oil Co., Savannah, Ga.
Wilson & Co., Chattanooga, Tenn.

Respectfully submitted,
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ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

Use of animal cadavers for manufacture of technical fats and animal body meals. W. Steinmann. *Fette u. Seifen.* 45, 338-42 (1938).—Several rendering methods are described.

Continuous hydrogenation process for oils and fats. L. H. Manderstam. *Fette u. Seifen.* 45, 251 (1938).—The process is used by Technical Research Works (London), and was developed by Bolton and Lusk. The process is illustrated and described.

Amount of saturated fat acids in whale oil. J. Lund. *Fette u. Seifen.* 45, 290-2 (1938).—The catches from 1934-1937 contd. 18 to 23.2% satd. acids. Solid acids were 22-27.9% of I no. 16-22.3 and m.p.'s 48-50°. The data for blubber oil, bone oil and flesh oil of blue and fin whale are tabulated. The figures are within the above limits as reported for total catches.

The viscosimetry of fats. H. P. Kaufmann and S. Funke. *Fette u. Seifen.* 45, 255-62 (1938).—Data on several pure glycerides and many oils are presented. With fat acids double bonds reduce the viscosity. Trans-comps. have higher viscosity than cis-compds. It was impossible to develop a formula for detg. viscosity from I and sapon. nos. Polymerization is detected by detg. viscosity. The value of viscosity detns. to industry is discussed.

Cause of analytical differences between refractometric and gravimetric fat determination methods. A. Scharrer and H. Lamel. *Fette u. Seifen.* 45, 262-6 (1938).—Results from the two methods vary from 0.2 to 0.4%. Using soy bean oil for the test the authors found that by the gravimetric method 10 times more phosphatides, a difference of .11, are extd. than by the refractometric method. The difference in unsaponifiable extd. by the two methods was 0.15%.

ABSTRACTS

Oils and Fats

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M. M. PISKUR and RUTH LINDAHL

Butyric acid no., total no. and residue no. of butterfats of butter samples sent to the 1937 World Dairy Congress at Berlin. J. Grossfeld, E. Schweizer and H. Damm. *Z. Untersuch. Lebensmittel* 76, 123-7 (1938).—The above characteristics of butters from many parts of the world are tabulated.

Report on oils, fats and waxes. G. S. Jamieson. *J. Assn. Off. Agr. Chem.* 21, 442-7 (1938).—It is recommended: (1) that the Fitelson method for the detection and estimation of tea seed oil be made official, (2) that the Kaufmann method for the detn. of SCN value of fats and oils be made official, (3) that the methods of the Natl. Cottonseed Products Assn. for detn. of free fatty acids in crude and refined oils be made official, (4) that collaborative study on refractive method of detg. oil content be made, and (5) that studies on Ac and OH values be discontinued for the present.

Catalytical fat hardening. III. Ni-Cu-catalyzers from pyridin complex salts of the formate. H. P. Kaufmann. *Fette u. Seifen.* 45, 304-6 (1938).—In the manuf. of the catalyst pyridin is used as a solvent for the formate pyridin-metal complexes. The Ni and copper formates are dissolved in pyridin, the catalyst carrier is added and the pyridin is removed by evap. in vacuum while stirring. The catalyst is reduced in the same manner as $NiCO_3$ catalyst.

Study of aluminum stearate. R. Cornil. *Ing. Chimiste* 22 (26) 1-25 (1938).—Test I.: 50 cc. 7N NaOH was boiled in a 1 L. flask with 100 g. of stearic acid; 130 cc. $Al_2(SO_4)_3$ (1 cc. = 0.025 Al) at 69-70° was added to the soln. also at 70°; and stirred. The ppt. was filtered and washed until the filtrate yielded no ppt. with $Al_2(SO_4)_3$ and $BaCl_2$. It was dried at 60 to 65°. The product contd. 32.5% free acids. Test II.: In the test Al (Ac), soln. of pH = 5 was used instead of $Al_2(SO_4)_3$. Products from this method contg. less than 20% free acid. It was considered that the pH plays an important role in the prepn. of Al-stearate. (*Chem. Zentr.*)

The attempts to prepare fats from sugar. H. Fink H. Haehn and W. Hoerburger. *Listy Cukrovar.* 56 319-20 (1938).—Sterile molasses contg. 4-6% sugar and spread in layers 1-2 cm. deep was inoculated with *Endomyces vernalis* at 20°. After a scum formed (2-3 days) the molasses was replaced by a fresh layer. On the 7th day the scum was washed and used in the prepn. of fat pastes or it was autolyzed at 50° for 2-3 days or treated with hot HCl and then extd. with ether. With a surface area of 4,350 sq. m. every 100 kg. of sugar yielded 15.5 kg. of fat. Because of the cost of the large no. of trays, the frequent inoculation of the nutrient medium from the air, and the frequent absence of a scum the com. adaptation of the process has been abandoned. Expts. with *Tortulic utilin* and with *Penicilium javanicum* are described. (*Chem.* Abs.)

Conjugated hydrogenation of linseed oil with ethyl alcohol. V. M. Puzanov. *J. Applied Chem.* (*U. S. S. R.*) 11, 670-3. The Lyubarskii method was used. Refined linseed oil (150 g.) of acid no. 0.4, I no. 147.0 and contg. satd. acids 5.3%, was used with 20 g. of EtOH. At the limit of satn. with H there was a high content of linoleic acid in the hydrogenation product; this is probably characteristic of all oils contg. linolenic acid, since oil contg. no linolenic acid is easily hydrogenated to oleic acid. The presence of Cu in the catalyst (a) retarded the decompn. of MeCHO to CO and CH_4, (b) only slightly promoted the formation of isoöleic acid (the yield 6.4 and 4.8% resp.), (c) gave, with a catalyst without carrier a product of acid no. 2.6 and (d) retarded the formation of satd. acids. (*Chem. Abs.*)

PATENTS

Purifying fatty oil. Sharples Specialty Co. Ger. 660,273 Cl. 23a Gr. 3. A continuous method of refining comprises continuously mixing oil and caustic, passing the mixture through a heating phase and continually centrifuging out the foots.

Process for refining vegetable oils and the like. S. L. Langedijk and W. Coltof (to Shell Devel. Co.). U. S. 2,126,334. Fats and oils are refined with hydrated amines of the class consisting of aliphatic and aralkyl amines free from hydroxyl groups.

Refining oils. Paul J. Beyer. Fr. 824,700. Feb. 14, 1938. Mineral and vegetable oils and fats are mixed and stirred with a 1st alk. lye and then subjected to the action of a 2nd alk. lye to ppt. impurities such as oxidases, albumins and parenchymas, which are removed by washing and decantation. The oil or fat is then given an acid treatment, washed and dried. (*Chem Abs.*)

Hardening fats and oils. Soc. Carl. Schlieper. Fr. 825,542. Glycerides of fat acids such as olive, colza, mustard, peanut, castor, soy, sweet almond, cottonseed and coconut oil are solidified with elevation of their f. p., by heating them with small amts. of esters formed of fatty acids of high mol. wt. and alcs. of high mol. wt. while adding a hot or even boiling soln. of salts of phosphoric acids. (*Chem. Abs.*)

Hydrogenation of higher fatty acids. W. Normann and G. von Schuckmann. U. S. 2,127,367. In hydrogenation at high temps. and pressures a catalyst poison is used to regulate the catalyst so that reduction of carboxylic radical alone is affected.

Sulphated aliphatic compounds. F. W. Muncie (to Colgate-Palmolive-Peet Co.). U. S. 2,127,567. Fat acids or fats are reacted with derivs. of isobutylene and then sulfonated.

Process of hydrogenating fatty acids. O. Brucke (to Amer. Lurgi Corp.). U. S. 2,127,716. Selective hydrogenation of highly unsatd. fat acids is obtained by hydrogenation at 80 to 130° C. at a pressure of 25 atm. of H_2.

Process of bleaching oils. B. Clayton and B. H. Thurman. U. S. Reissue pat. 20,838. Oils are heated to temp. necessary to reduce color and vaporize volatile constituents; the pressure is reduced and the oil cooled before a material change in viscosity.

Oil and fat deodorization. R. C. Newton and W. F. Bollens (to Indus. Patents Corp.). U. S. 2,124,707. A deodorizer is supplied with an open ended upwardly flaring cone terminating at the bottom in an elongated neck, means for introducing a gaseous medium in said neck and a plurality of perforated plates mounted upon a rotatable shaft positioned within said cone whereby said gaseous medium may be disintegrated into small bubbles within the mass of oil.

Treatment of soya bean oil. A. K. Epstein. U. S. 2,128,925-6-7. The methods of improving soy bean oil, particularly with respect to extending its prereversion period comprise adding (1) mono- and/or diglycerides, (2) phosphoric acid esters of patents 2,026,785 and 2,052,029 or (3) mixt. of compds. under 1 and 2, and deodorizing with steam under vacuum.

Fat and oil. K. Ludecke. Ger. 662,794. In the production of fats from sugars and other carbohydrates the carbohydrates are mixed with seeds and warmed to 60° before fermenting.

Distilling, purifying and preserving oils and fats. K. C. Hickman (to Eastman Kodak Co.). Brit. 480,885. An antioxidant which distills with the oil is added to the oil to protect the distillate.

Shortening. Indus. Pats. Corp. Brit. 481,619. A small amt. of hydrogenated refined soy bean oil is used to stabilize lard against rancidity.

Shortening composition. C. E. Morris (to Armour & Co.). U. S. 2,125,849. The shortening is composed of edible fat contg. small amts. of lecithin and triethanolamine, the triethanolamine acting as a stabilizing agent.

Emulsion. H. Schrader and H. Stahl. (Th. Goldschmidt A.-G.). Ger. 663,065 Cl. 23 Gr. 2. The emulsifying agent comprises mono- and di-glycerides and compds. of split proteins and fat acids.

Emulsifying agent and method of preparing same. K. T. Steik and S. C. Fulton (to Standard Oil Devel. Co.). U. S. 2,126,054. The emulsifying agent comprises a portion of sulfonates derived from petroleum and a portion of alc. amine soap.

Distillation process. K. C. D. Hickman and J. C. Hecker. U. S. 2,126,467. App. for shortpath high vacuum distn. is described.

Medicinal oleaginous distillation. K. C. D. Hickman. U. S. 2,126,466. Unsatd. glycerides of medicinal value are separated from vegetable oils by shortpath distillation.

Process of treating vegetable and animal oils and product obtained thereby. I. M. Colbeth (to the Baker Castor Oil Co.). U. S. 2,125,544. A tough resilient product that flows slowly when it is cold is prepd. from castor oil by heating the oil with boron compds. until the foaming stops.

ABSTRACTS

Soaps

***Edited by* M. L. SHEELY**

Rancidity prevention in soaps. Paul I. Smith. *Seifensieder-Ztg.* **65**, 568, 588-9 (1938).—Sodium thiosulfate is one of the most well-known antioxidants for soap. However, it has disadvantages in that it affects perfume chemicals, yields sulfur precipitates in the presence of some chemicals used in soap, produces discolorations in presence of traces of iron or copper salts, and it is corrosive. The improvement of soap stability is connected with good manufacturing technic. The quality of fats and basic chemicals, and suitability of superfatting agents are important. Poor quality supplies may contain metallic and other impurities which accelerate oxidation. The superfatting agent should be very stable. The kettle soap should contain 0.1% free alkali. Small amounts of salt are important because they, as buffers, reduce the effect of the free alkalinity. Perfumes and perfume chemicals which have antioxidative properties should be preferred. Select packing material that will not add metallic contamination and that will give protection from the accelerating action of certain light rays. In regard to antioxidants the following had been proposed: (1) borax, (2) sodium thiosulfate, (3) sodium hydrosulfite, (4) sodium sulfite, (5) salicylic acid, (6) sodium salicylate, (7) benzoic acid and (8) sodium benzoate, (9) stannous chloride, (10) stannous oxide, (11) sodium stannate, (12) magnesium silicate and (13) paraformaldehyde as well as treatment of oils with oil antioxidants.

Cold-process soaps. J. Davidsohn and A. Davidsohn. *Soap, Perfumery and Cosmetics* **11**, 601-5 (1938).—The description includes: Equipment required, saponification process, quantity of lye required and filling. A semi-warm process is also completely described.

Soap color psychology. Gerd Klaass. *Soap, Perfumery and Cosmetics* **11**, 542-4 (1938).—The importance of color as a soap sales factor was investigated. At two bath houses where bathers had access to 2,000 bars of soaps of several colors, the soaps were exhausted in the following color order: (1) white, (2) orange-red and yellow-green, (3) blue-green, (4) violet, (5) orange, (6) yellow, (7) red and (8) blue. One hundred persons, 50 men and 50 women were asked to select their preference of 6 soaps. The replies were:

	Men	Women
White, 11	7	4
Orange-red, 18	5	13
Yellow-green, 27	19	8
Blue-green, 18	12	6
Green, 12	6	6
Violet, 14	1	13

The latter test indicates that colors between yellow and green are those preferred for colored soap.

Structure of lubricating greases. A. S. C. Lawrence. *J. Inst. Petroleum Tech.* **24**, No. 174, 207-20 (1938).—Soap-oil systems may be either (1) a true soln. whose viscosity is but little higher than that of the oil alone, (2) true gel, a homogeneous, transparent, elastic substance or (3) pseudo-gel or paste of soap crystallites suspended in oil. Soda- and Al-base greases are of the third type; Ca-base grease is probably a gel. The temp. range of rigidity required is one of the factors deciding the choice of soap. Pressure feeding is not necessary if the soap is so chosen that the m.p. or liquefying temp. is below the temp. of the bearing. Soaps are not dissolved by the oil on heating; the soap lattice opens up and the oil penetrates between the hydrocarbon chains. Free fatty acids added to the