made during the coming year and that the committee be requested to study the methods which were outlined and described to us several years ago by Mr. Durst.

**CRUDE MILL OPERATIONS COMMITTEE:**

This committee made the following recommendations:

"1. That the lint determination method be continued, using the proposed shaker as developed by Mr. Smith, or its equivalent.

"2. That a study be made for improving cellulose determination."

These recommendations are made for the guidance of the incoming committee and require no action by the Society.

**OLIVE OIL COMMITTEE:**

This Committee likewise has no definite recommendations, but suggestions for further work, which will be referred to the incoming committee.

**SAMPLING COMMITTEE:**

The Chairman of this Committee was appointed so late in the year that they did not have a chance to get under way. This was certainly not the fault of our President, as he tried very hard to obtain a suitable chairman for this very important Committee.

**SOAP STOCK COMMITTEE:**

The chairman of this Committee likewise was appointed a very short time ago and it took some time to organize the Committee, so that they have nothing definite to report at this time.

**THE COMMITTEE ON THE STABILITY OF EDIBLE FATS AND OILS:**

This Committee merely reports progress and stated they were going to have something definite for us probably by the time of the Fall Meeting.

**SMALLEY FOUNDATION COMMITTEE:**

The few minor changes in the operation of the Smalley Foundation which were put into effect during the past year facilitated the handling of the reports. There were very few complaints on samples and on the whole the work progressed satisfactorily. No definite recommendations were given.

In addition to the reports enumerated we have had reports from the Committee on Reviewing Scientific Literature on Fats and Oils and from the Journal Committee, but these contain no recommendations and therefore, no action by the Society is required.

We want to again take this opportunity of expressing our appreciation to the chairmen and members of the various committees of the Society who have participated in the work of the year. In most cases they have made the work of the Uniform Methods and Planning Committee lighter by getting in their reports, so that consideration could be given to them prior to the gathering at the annual session.

EGBERT FREYER
P. E. RONZONE
M. L. SHEELY
H. P. TREVITHICK
J. J. VOLLERTSEN,
Chairman

# REPORT OF COMMITTEE ON REVIEW OF SCIENTIFIC LITERATURE ON FATS AND OILS

The report on the third Annual Review of Scientific Literature on Fats and Oils has already appeared in two sections in the March and April numbers of OIL AND SOAP. We believe this report speaks for itself and is entirely too lengthy to be read at one of the regular meetings of the Oil Chemists' Society.

The Committee wishes to acknowledge the work of Mr. M. M. Piskur, Chemical Librarian for Swift & Company. The value of this report, we believe, lies primarily in the thoroughness in which it covers the literature. It is this feature that the Committee particularly wants to credit to Mr. Piskur.

G. R GREENBANK
G. S. JAMIESON
H. A. MATTILL
R. C. NEWTON, Chairman.

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# ABSTRACTS

## Oils and Fats

*Edited by*
M. M. PISKUR and RUTH LINDAHL

**New Zealand Fish Oils.** F. B. Shorland. *Nature,* **140,** 223-4. A review.

**The Present Status of Refining and Synthesis of Fats and of Fat Acid Distillation.** E. Wecker. *Fette u. Seifen* **44,** 222-227 (1937). A review.

**Report on Oils, Fats and Waxes.** G. S. Jamieson. *J. Off. Agr. Chemists* **20,** 418-21 (1937). A collaborative study was made on the colorimetric methods devised by J. Fitelson for detection and approx. detn. of tea seed oil in admixture of olive oil and a qual. method by Siebenberg and Hubbard. The results show that the Fitelson test is accurate and they confirm the experiences of other workers that the estimation of the quantity present is more accurate with smaller than with larger amts. The test gives concordant, reproducible results in the hands of various analysts, including those inexperienced with the method. It was recommended that the method be made official. Other recommendations were: That both the Malfatti and the Stout and Schuette methods for preparation of aldehyde-free alcoholic KOH be substituted for the present procedure; that a collaborative study be made of methods for the determination of free fatty acids in both crude and refined fats and oils; that the refractometric method proposed for the detn. of the oil content of flaxseed be made official and that a collaborative study be made of the application of the refractometric method to the analysis of one or more of the other commercially important oil

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## Oils and Fats

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seeds; that a collaborative study be made of the Kaufmann thiocyanogen method; that the revised specifications of the National Bureau of Standards for the titer thermometer, to lengthen the thermometer to permit extension of the range to 66° C., be adopted as official.

**A Diene Synthesis Applicable to the Sterol Group.** A. B. Meggy and R. Robinson. *Nature* **140,** 282 (1937). A diene synthesis which may help towards the synthesis of cholesterol and similar substances is described.

**The Use of Lard in Cake Baking.** D. G. Berrigan. *Cereal Chem.* **14,** 525-531 (1937). Points to be considered in using lard for cake baking are discussed.

**Review of New Process for Improving Oils for Coating Purposes.** A. Foulon. *Fette u. Seifen* **44,** 252-4 (1937).

**Lacquer Train Oil.** H. Pawelzik. *Fette u. Seifen* **44,** 254-6 (1937).

**Differentiation of Oils by Enzymic Hydrolysis. Agar Plate Method and Its Application to the Detection of Adulteration of Butterfat (Ghee).** K. Venkata Giri and P. N. Bhargava. *Ind. & Eng. Chem. Anal. Ed.* **29,** 395-6 (1937). About 3 cc. of a 3% agar media, 1 g. of butter sample and 1 cc. of acetic acid-acetate buffer are mixed vigorously in a test tube and poured into a petri dish. On solidification 1 drop of pancreas ext. was placed on the center of the agar plate and the enzyme was allowed to diffuse through the agar gel for 20 hrs. at room temp. The plate is flooded with 10 cc. of satd. soln. of $CuSO_4$ for 5 mins., poured out and rinsed. It is then flooded with 10 cc. of 0.01 N. I. soln. for 2 mins. and again rinsed with water. Two distinct zones surrounded by a violet background can be seen on the plate. Butter fat can be differentiated from other oils by its characteristic color zone. A comparison of samples shows that with adulteration the color of the test changed from a dirty yellow to bluish green.

**Determining the Active Oxygen and the Application of This Method for the Testing of Fats.** R. Strohecker, R. Vaubel and A. Tenner. *Fette u. Seifen* **44,** 246-250 (1937). An accelerated oxidizability test for stability is described. A comparison of hardened fish oils and lard showed that the fish oils acquire a greater peroxide value when exposed to the sun. This is suggested as a means of approximating the amt. of hardened fish oil in adulterated lard samples.

**Effect of Certain Solvents and of Sequence of Extraction on the Removal of Fat and Ash Constituents from the Bones of Chicks.** R. B. Dustman. *J. Off. Agri. Chemists* **20,** 469-475 (1937). A study was made of the relative effect of acetone, ether, absolute alcohol, and 95% alcohol on the removal of fatty material and ash from the bones of chickens. The solvents were used singly in various sequences. The results obtained were as follows: Acetone and ether removed approx. equivalent quantities of extractive. The ash content of the acetone ext. was lower than that of the ether ext. Absolute alc. and 95% alc. removed considerably more ext. and much more ash than did either acetone or ether. When absolute alc. preceded acetone and ether as the first solvent the total ext. was somewhat less than when the sequence was reversed. Ether or acetone used after 95% alc. removed only very small quants. of extractive, but 95% alc. used after ether or acetone removed much additional material.

**Quantitative Determination of Oil in Fish Flesh.** M. E. Stansby and J. M. Lemon. *Ind. & Eng. Chem. Anal. Ed.* **9,** 341-343 (1937). A method is described in which the drying and oil-extraction processes are combined by extracting the fish with acetone The crude oil thus obtained is purified by treatment with ethyl ether. A rapid semi-quantitative method is also described in which the oil is extracted by agitating the moist fish flesh with anhydrous sodium sulphate and ethyl ether. Data are presented to show that the widely quoted value of 7.1% for the oil content of the common mackerel is in error, a value of 12 to 15% being closer to the average oil content of this species.

**Report on Fat in Fish Meal.** R. W. Harrison. *J. Off. Agr. Chemists* **20,** 447-450 (1937). Fish oils are known to be quite highly unsatd. and readily susceptible to oxidation. It is possible, therefore, that the fat in fish meal will experience considerable change during storage, and in so doing become less sol. in the type of solvents now used for analysis. It was observed that the ether ext. values of fish meals in storage decrease as much as 50% over a period of 9 months. A method for detg. the actual fat content of the meal is necessary; that is, the solvent used should ext. all fat present, regardless of its condition. A variety of solvents will be studied.

**Cottonseed Oil Pressing Costs Cut.** C. A. Perkins and R. B. Taylor. *Food Indus.* **9,** 435-437, 472 (1937). Cooking cottonseed meats under pressure and at increased temp. lowers processing time and gives higher yield of oil without loss in quality. Results of several studies on pressing are presented.

**Differences in the Chromogenic Properties of Fresh Water and Marine Fish Liver Oils.** A. E. Gillam, E. Lederer, V. Rosanova, and I. M. Heilbron. *Nature* **140,** 233 (1937). Although most fresh-water fish liver oils show only one band near 693 *mu* in chloroformic antimony trichloride, the absorption near 620 *mu* is always appreciable. Thus the 693-620 intensity ratio seems to average 2:1, whereas for marine fish it is usually less than 0.2:1.

**Corrosion Stability of Metallic Construction Material Against Hot Fat Acids.** E. Baerlecken. *Fette u. Seifen* **44,** 228-9 (1937). Five steels, Al and Cu, were tested for their resistance to corrosion by hot stearic acid, hot oleic acid and hot mixt. of soap and fat acids. Best results were obtained with a steel contg. C-0.1, Cr-18, Ni-8 and Mo-1.5%.

**Refining of Oils.** I. A. A. Zinov'ev. *Maslobeino Zhirovoe Delo* **12,** 543-5 (1936). In the process of refining of oils with excess alkali and NaCl by heating the mixt. with live steam for 1-2 hrs. according to Russ.

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pat. 38,721, 98-9% of the 20-5% oil retained in the soapstock emulsion can be recovered by adding 2.5-3 parts of 1-1.2% NaCl and heating the emulsion at 90-5° (live steam can be used) with stirring. The last traces of soap in the oil can be removed by repeated washings with 1% NaCl. **II.** A. A. Zinov'ev and T. Plyushcheva. *Ibid.* 583-5. The method applied to refining of hog-bone oil gave a satisfactory pale oil, requiring no bleaching with activated clays or C. **III.** A. A. Zinov'ev and A. Delonova. *Ibid.* **13,** 28-9 (1937). The method used in refining of cottonseed oil. (*Chem. Abs.*)

**The Hydrogenation of Fish Oils at Low Pressure.** I. Ryosei Koyama. *J. Soc. Chem. Ind., Japan* **40,** Suppl. binding 29-30 (1937). Hydrogenation of sardine oil at low $H_2$ pressure (up to 6.5 atm.) in the presence of a Ni catalyst resulted in a considerable decrease of the I no. after 4-5.5 hrs., an increase of isocleic acid after 3.5 hrs. to a max. at 4.5 hrs. and subsequent gradual decrease. The hardened samples were sapond., the unsapond. matter was sepd. by extn. with $Et_2O$ and the sapond. matter decompd. with HC1 and examd. by the Twitchell method. Detailed exptl. data are given. (*Chem. Abs.*)

**Utilization of the By-Products in the Preparation of Soybean Oil by the Alcohol-Extraction Method. I. Sugars.** Yosaburo Iwasa. *J. Agr. Chem. Soc. Japan* **13,** 225-30 (1937). The soybeans were extd. with alc. for the prepn. of the oil. A sirup was sepd. from the oil in the alc. extn. It consisted of $H_2O$ 17.43, carbohydrates 70.09, protein 5.20, fat 2.28 and ash 5.00%. Glucose, fructose, galactose, rhamnose, arabinose, glucuronic acid, sucrose and stachyose were found in the sirup. The ratio of sucrose to stachyose was 3.50:1.90. **II. Saponin.** *Ibid.* 231-2.—Saponin was pptd. by the addn. of $H_2SO_4$ to the sirup above mentioned. It was a crystal decompg. at 220-25°. It was hydrolyzed into rhamnose, arabinose, galactose, glucuronic acid and sapogenin. **III. Fermentation of the sirup.** Ibid. 233-5.—Various alc.-fermentation microorganisms were inoculated on the aq. soln. of the sirup freed from saponin. The alc. production by *Saccharomyces ellipsoideus* was most superior. In this case the addn. of 0.1% of $CoCl_2$ as the activator was most favorable. (*Chem. Abs.*)

**High-Pressure Hardening (Hydrogenation) of Fatty Oils by Means of Mixed Catalysts Which Contain Considerable Amounts of Copper.** Ryosei Koyama. *J. Soc. Chem. Ind., Japan* **40,** Suppl. binding 25-9 (1937) (in German).—Nine catalysts, contg. 5-100% Ni, 0-95 Cu and some $Al_2O_3$ and $Fe_2O_3$, with kieselguhr as a carrier were investigated. Numerous data on the hardening of soybean oil, sardine oil and herring oil are presented. The actions of a $CuCO_3$ catalyst, a Mn-Cu catalyst and a Co-Cu catalyst are also described. With soybean oil, the proportion 70 Cu-30 Ni gave the best results, and catalysts which were not pre-treated with $H_2$ were the best. With sardine and herring oils, however, pre-treatment with $H_2$ was beneficial. Mn, Co and $CuCO_3$ catalysts were less active than those contg. Ni. Seven references. (*Chem. Abs.*)

**Oat Flour as an Antioxidant.** *Ind. & Eng. Chem.* **29,** 951-952 (1937). The results indicate that it is possible to secure substantial inhibiting effect to formation of peroxides in the fat of potato chips by dusting 5% Avenex over their surfaces; and parchment paper, wax paper and board materials surface-coated with lard, by treatment of such packaging materials with Avenex.

**New Method for the Conversion of Vegetable Oils to Motor Fuel. M. Friedwald.** *Rev. pétrolifère* No. **734,** 597-9 (1937). The Legé process (Fr. patent applied for) comprises the heat-treatment of oleaginous fruits, e. g., peanuts, copra, cottonseed, etc., at 500-550° in a furnace having the form of a spiral and rotating on a horizontal axis. The acid oil obtained is redistd. in the presence of catalysts (not specified) whereby the carboxyl groups are broken up, to yield 42-50% of crude oil and 15-20% coke on the original charge. The crude oil is said to contain 35% gasoline, 20% kerosene, 30% gas oil and 15% fats and paraffin. (*Chem. Abs.*)

**Granular Active Earths.** A. Berczeller. *Öle, Fette, Wachse, Seife, Kosmetik* **1937,** No. 7, 3-5. The measurement of the exothermic reaction between terpentine and an earth is suitable for evaluating the activity of the earth. During the test the terpentine is polymerized, increasing the density, which also can serve as a criterion for evaluating the earth. The test is performed in a 150 mm. long and 18 mm. wide test tube which is surrounded by insulation and a larger container. The apparatus is dried at 125°. Material and apparatus is cooled to 20°. One g. of earth is placed in the test tube followed by 5cc. of terpentine. The max. rise in temp. is recorded. Data on 9 earths show temp. rises to 170 to 192; the time required for the max. rise varied from 69 to 263 secs. Moisture adversely affects the test. Some earths color the terpentine yellow, others give it a yellowish-blue fluorescence. (*Chem. Abs.*)

### PATENTS

**An Improved Extraction Process for Vegetable Oils.** Ges. zur Verwertung Fauth'scher Patent m.b.H. Brit. 459,763. Comminution and extraction of material are combined into one process by carrying out the comminution in the solvent or solvent vapor itself.

**Apparatus for Treatment of Soya Beans and Other Materials.** Michele Bonotto (Am. Soya Products Corp.) U. S. 2,086,181. A continuous solvent extraction process is described.

**Butter Substitute.** H. D. Wendt (to Milk Processes, Inc.). U. S. 2,085,134. A butter substitute comprises a plastic cream contg. butter fat in the dispersed phase in a concn. of 65 to 85% in the liquid vehicle, a proportion of an alkali metal salt of citric acid (0.1 to 0.3%) and a proportion of gelatine (0.1 to 0.3%).

**Improved Margarine.** A. K. Epstein and B. R. Harris. U. S. 2,089,470. A mixt. of lecithin and a diglyceride of a fatty acid is used as an emulsifying agent.

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**Stable Emulsion and Method of Producing the Same.** W. Schrauth. U. S. 2,086,479. The emulsifying agent consists of mono- and/or diglycerides and sulfonated alcohols.

**Hydrotropic Fatty Material and Method of Making the Same.** W. Kritchevsky. U. S. 2,089,212. Hydrotropic fatty materials are prepd. by mixing together alkylolamine and a higher fatty acid, in a ratio of at least 2 mols. of alkylolamine to one mol. of fatty acid, and heating the mixt. at a temp. above 100°C. and below the temp. of decompn. of the resulting hydrotropic fatty material.

**Production of Alkylamines.** R. R. Bottoms (to the Girdler Corp.). U. S. 2,085,785. A process of making alkylamines, which comprises reacting a lower alkanol with an ammonium halide in the presence of added water and of a halide of metal having an atomic number between 24 and 29 as a catalyst.

**Process of Preparing Monohydric Alcohols.** A. W. Ralston and J. Harwood (to Armour and Co.). U. S. 2,086,239. An alkyl nitrile having at least 6 C-atoms is converted into its corresponding amine and then this is treated, while in acid soln. with a nitrite of an alkali-forming metal.

**Preparation of a Nitrile of an Aliphatic Acid.** H. F. Oxley and E. B. Thomas (to Brit. Celanese, Ltd.). Brit. 464,106. Process for the manuf. of lower fatty acid nitriles which comprises heating the $NH_4$ salt of the corresponding aliphatic acid in admixture with a quantity of the same acid in the free state so as to form the nitrile by decompn. of the $NH_4$ salt and to distil off the nitrile as it is produced.

**Catalyst and Catalytic Process.** P. L. Salzberg (to E. I. du Pont de Nemours & Co.). U. S. 2,089,-433. The method of prepg. a catalyst which comprises heating to its spontaneous decompn. temp. a multiple chromate of a nitrogen base and a hydrogenating metal whose oxide is sol. in ammonia and thereafter extg. the resulting chromite compn. with aqueous $NH_3$. In an example, the hydrogenation of cocoanut oil to alcs. with use of this catalyst is described.

# ABSTRACTS

## Soaps

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

**Solvent Soaps.** *The Oil and Colour Trades Journal,* Aug. 20, **545** (1937). These types of soaps are reviewed by a writer in Rev. gen. mat. Col. (Feb., 1937).

The incorporation of solvents in soaps to strengthen their detergent action has been practiced for some years. These products can be divided into a number of groups.

(1) Soaps containing Benzene, Toluene, Xylene or Solvent Naphtha.—These are used in dry cleaning. Castor oil soap absorbs an appreciable quantity of benzene. A castor oil soap containing 20 per cent fatty acids and a little rosin will absorb about 8 per cent of its weight of benzene, 11 per cent toluene or 12 per cent xylene. One type of soap used for this purpose is made from oleine and tallow containing 20 per cent fatty acids. This soap will permit the incorporation of 6-8 per cent benzene, 10 per cent toluene and 12 per cent xylene. Solvent soap of this kind is frequently used for degreasing in order to reinforce the action of coconut oil and oleine soap used in degreasing and felting of wool. Usually, potassium carbonate is added to increase detergent action. (Not exceeding 8 per cent on the weight of soap.)

(2) Soaps containing Chlorinated Solvents.—These are often preferred to benzene-containing soaps, as they are non-inflammable. As in the case of benzene, the soap which absorbs most chlorinated solvents is potassium castor oil soap containing 20 per cent fatty acids. It is difficult to incorporate more than 10 per cent tri-chorethylene. This solvent plus carbon tetrachloride or solvent naphtha mixes better with the soap.

Oleins and coconut oil soaps do not absorb the chlorinated hydrocarbons well and, because of this difficulty of incorporation, it is usual to use a mixture of sulphonated castor oil and castor oil soap. This mixture acts very well.

(3) Soaps containing turpentine, eucalyptus or camphor oil are used in the textile industry for removing stains. Turpentine soap, which is readily made by mixing 10 per cent turpentine with a castor oil soap containing 20 per cent fatty acids, has some interest in the cotton industry, for, although it has less solvent action than tetraline soaps, it penetrates very well.

(4) Soaps containing Tetralin and Decalin.—These, first prepared during the war period, have since undergone great developments. 7-12 per cent of these solvents may be readily incorporated in soft oleine soap. The solubility of these solvents in coconut oil soap is greater than this. Indeed, a potash soap made from coconut oil having a pH of 8 can absorb 20 per cent decaline. If the pH is 11-12, the amount of the solvent absorbed is only 11-15 per cent. A mixed castor-coconut oil soft soap absorbs 20 per cent of decalin or tetralin, giving a product very stable to boiling.

(5) Miscellaneous.—These are products which, used in comparatively small quantities, have the effect of improving solvent-containing soaps. Alcohol, carnauba wax, cyclohexanol, methyl cyclohexanol, ethanolamine. di-ethyl amine ethyl oleylamine, are examples of these products. The chlorinated aromatic hydrocarbons, such