ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

Analysis of chaulmoogra oils. I. Carpotroche brasiliensis (Sapucainha) oil. H. I. Cole and H. T. Cardoso. *J. Amer. Chem. Soc.* **60,** 614-17 (1938).—Compn.: hydnocarpic acid 45.0, Chaulmoogric acid 24.4, palmitic acid 6.6, gorlic or dehydrochaulmoogric 15.4, oleic acid 6.3, keto acids ..., "Tarry acids" none, residue (decompn. products of distillation) 2.3. **II. Oncoba echinata (Gorli) oil.** *Ibid.* 617-9. The percentage compn. of the fatty acid is as follows: palmitic acid 7.8, oleic acid 2.2, gorlic acid 14.7, and chaulmoogric acid 74.9 (loss 0.4%).

PATENTS

Extracting fats. I. C. Kernot. Brit. 468,061.—Fat is extracted from waste meat or offal by hydraulic pressing at high temperatures and in presses constructed so that the charge and pressure equipment are submerged in water; the fat floats and may be skimmed.

Fatty oils rich in vitamins. K. Kawai. Brit. 465,547.—Fish and animal livers are dissolved by heating with aqueous alkali solns. and the oil which floats is collected.

Process of treating animal fat. L. H. Reyerson. U. S. 2,107,505.—To supplant the usual rendering, animal fat is subjected to a current of electricity, passing across the animal fat between electrodes and at the same time treating with hydrogen whereby the material is both heated and the fat hydrogenated.

Whale oil and cattle feed. D. A. Hansen. Brit. 457,348.—Whale meat is subdivided, heated to 35 to 65° C., and pressed to remove the oil. The residue is dried for use as livestock feed.

Food fats. H. C. Lundsgaard. Brit. 468,810.—In production of margarine the ripened milk is satd. with CO_2 at 0-5° C. and this is emulsified with the fat by emulsifiers in a closed container filled with gaseous CO_2. The aim of the process is to improve stability of the product.

Margarine. F. Seelein. Ger. 651,699 Cl. 53h Gr. 1/02.—Milk is cultured, salt added and the ppt. removed. This product can be mixed with fat in the prepn. of margarine in place of the usual cultured milk.

Emulsions. H. Schou. Brit. 472,086.—Condensation products of higher fat acids and polysaccharides are used as emulsifiers for water-and-oil type emulsions.

Emulsions. Soc. pour l'ind. chem. a Bale. Brit. 469,642.—The reaction products of dimethylcyclohexylamine and fat acids are used as emulsifiers.

Splitting fats. Procter & Gamble Co. Brit. 466,596.—Fat is split by heating water and fat separately under pressure between 300 and 600° F. and passing the water and fat continuously in a countercurrent direction in a suitable chamber; the period of contact in said chamber being sufficient to cause substantial splitting of fat into fat acids and glycerin.

Splitting and hydrogenating fats. H. Kaufmann. Brit. 468,170.—Simultaneous splitting and hydrogenation of oil is carried out by hydrogenating in the presence of an amount of water equal to that of the oil.

Stabilization of animal and vegetable fats and oils. H. Bradshaw (to E. I. du Pont). U. S. 2,104,070.—Syringic acids and their alkyl esters are used as antioxidants.

Stabilization of animal and vegetable fats and oils. G. H. Latham (to E. I. du Pont). U. S. 2,104,084.—Vanillyl alcohol, coniferyl alcohol and similar compounds are used as antioxidants.

Stabilizing oils and fats. E. I. du Pont de Nemours & Co. Brit. 470,573.—Sugar amines such as laurylglucamine, amylglycamine, methylfructamine, methylgalactamine, methylglucamine stearate, etc., are used as stabilizers.

Cellulose mixed esters composition containing higher fat acid esters. H. B. Smith (Eastman Kodak Co.). U. S. 2,108,452.—Esters of fat acids with monohydric alcohols of 1-4 carbon atoms are used as plasticizers for cellulose compositions.

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Soaps

Edited by M. L. SHEELY

New method for determining the content of fat and other organic acids, unsaponified fat and unsaponifiable substances in soap. B. G. Ravich. *Zavodskaya Lab.* **6,** 822-3 (1937).—A preliminary report on the possibility of detg. the sum of org. matter in soaps by comparing the calorific values of the sample and 100% oleic soap. The detns. are made in a bomb calorimeter. (*Chem. Abs.*)

Wetting and detergency. J. H. W. Booth. *Chemistry and Industry,* 1120 (1937).—In the symposium (Feb., 1937) of the Intern. Soc. Leather Trade Chem. on wetting and detergency, it was suggested that the pptn. of soap by hard H_2O is overcome by the increased soly. of the detergent in the presence of $C_6H_{11}OH$; curves were presented showing increased soly. with increasing soap concn. B. states that the system is more complex and gives a miscibility diagram for soap, creosote and H_2O at 15°. The shape of the boundaries alters with temp. Also, a mixt. of approx. equal wts. of pine oil and soap forms clear solns. in H_2O only below a soap concn. of H/8 at 15° and in a narrow temp. range. It was suggested that the soly. of a soap is increased by micelle formation even if it results from the addition of H_2O in sol. oil, whereas B. feels that micelle formation is the device by which unionized soap is brought into soln. by ionized soap mols. It is suggested that a pure soap micelle consists of a bundle of parallel mols. Thus if 2 mols. are in intimate contact, they might be expected to act as a dibasis mol. having 2 ionization consts., one larger and one smaller than the original. Data are presented to support the theory of soln. of oils in the hydrocarbon portion of soaps. (*Chem. Abs.*)

Direct method of determining the solubility of

ABSTRACTS

soap

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soaps. R. K. Gobhil and N. G. Chatterji. *Indian Soap J.* **4**, 105-10 (1937).—The method is as follows: 0.5 g. of soap is cut with a cork borer 0.65 cm. in diam. and as nearly as possible 1.4 cm. long. The soap is placed in a wire-gauze cage (64 meshes per in.) which in turn is placed in 1l. of distd. H_2O at 40° in a beaker equipped with a stirrer running at the rate of 300 r.p.m. The time taken for complete soln. is noted. Five tables of results are given. The m.p. of the fat acids or the percentage of the fat anhydrides in a soap does not give any reliable information with regard to its soly. Glycerol transparent soaps have a higher rate of soln. than ordinary unmilled soaps made from similar fat stock. Milling gives rise to an enormous increase in the rate of soln. which is probably due to a change into a more easily sol. modification. (*Chem. Abs.*)

Soap bases and fine soaps. Hermada. *Seifensieder-Ztg.* **64**, 939-41 (1937).—Failure to dry the chips tc the proper moisture content (recommended value 9%) may cause cracks or other defects in the finished milled soap. (*Chem. Abs.*)

Fatty acids in new paper process. *Chemical Industries* **42**, 296 (1938).—A new process for the manufacture of a paper which combines whiteness and gloss with good printability is described in Zellstoff und Papier, December, 1937. Manufacture of such a paper is possible without entailing the usual disadvantages by means of adding to the paper stock barium combined with fatty acids.

Activation of testosterone by higher fatty acids and their acid sodium salts. M. Ehrenstein and E. L. Corey. *J. Biol. Chem.* **122**, 297-302 (1938).—The effect of testosterone may be considerably enhanced by combining the hormone either with free higher fatty acids (palmitic or stearic) or their corresponding acid Na salts (1 part of acid : 1 of the Na salt). Rather low doses up to 22 mg. daily, of the latter mixt. proved much more efficient than equiv. amts. of the free acids. With medium doses the effect was practically the same with the free acids and the mixts., but with large doses (75 mg.) only the free acid increased the activating effect. A satisfactory explanation of the action of the salts cannot be given at present. (*Chem. Abs.*)

Heat requirements for glycerol distillation. M. Iwai and Sei-ichi Ueno. *J. Soc. Chem. Ind., Japan* **40**, 430-2B (1937).—Glycerol was distd. in a vacuum steam distn. unit, operating continuously under typical mfg. conditions. Three kinds of glycerol were used, soap lye crude, sapon. crude and distd. glycerol. The heat of vaporization of the distd. glycerol was found to be 401 B.t.u. per lb. at 77 mm. pressure. For the impure glycerol it seems necessary to use a range of 400-700 B.t.u. per lb. of distd. glycerol at about 75 to 100 mm. (*Chem. Abs.*)

PATENTS

Steam distilling liquids. Fr. 814,392, June 21, 1937. Metallgesellschaft A.-G.—In a continuous steam distn. of liquids of high b.p., particularly fat acids, glycerol and mineral oils, or in removing impurities by steam from oils and fats, using at least 2 consecutive distn. steps, a quantity of the substance to be treated, several times greater than what is introduced and evacuated without interruption, is circulated in at least one of the vaporization stages and this substance is raised above the level of the liquid, a part of what is raised being intercepted and led off to the following stage. App. is described. (*Chem. Abs.*)

Cleansing, emulsifying and foaming agents. Fr. 812,793, May 18, 1937. Colgate-Palmolive-Peet Co.—Compds. are used of the formula $(RO)_zX(-SO_4-)_wY_v$, where R is an acyl radical of at least 4 C atoms, X is the residue of a polyhydroxylated aliphatic substance belonging to the category of glycerol, polyglycerols, glycol, polyglycols, hydroxycarboxylic acids, sugars, ales, or acids derived from sugars, this residue binding the acyl radical to the sulfate group, Y the radical of an org. N base and z, w and v are small whole nos. Examples are the ethanolamine salt of propylene glycol sulfate esterified with myristic acid, triethanolamine salt of diethylene-glycol monoesterified by oleic acid, triamylamine salt of ethylene glycol sulfate esterified by oleic acid, triethanolamine salt of glycerol sulfate dietherified by oleic alc. and monoethanolamine salt of dipalmitin sulfate. (*Chem. Abs.*)

Coating for preventing ice from adhering to surfaces such as wood, metal or glass. U. S. 2,101,472, Dec. 7. Frederick A. Kormann.—A coating exuding glycerol is formed of the latter together with about half its wt. of collagenous material such as glue, gelatin and casein. (*Chem. Abs.*)

Manufacture of peroxide compounds of fatty alcohol pyrophosphoric esters. German Pat. No. 649,322, Bohme Fettchemie-Ges, m.b.H.—It is known that the sodium salt of pyrophoric acid forms a very stable complex with hydrogen peroxide, and even after prolonged storage loses very little of its active oxygen content. It has now been found that the pyrophosphoric ester of fatty alcohols is a suitable for active oxygen, and forms with hydrogen peroxide or other inorganic percompounds complexes of remarkable stability and oxygen retention. Owing to the valuable bleaching power and strong capillary activity such complexes are particularly suitable in the preparation of washing and bleaching agents; and the free oxygen is more than usually effective when obtained in this form. In an example 400 g. of a mixture of alcohols, obtained by reduction of coconut fatty acids is esterified with 180 g. of pure pyrophosphoric acid at 100-110° and the reaction mixture neutralized with 80 g. sodium hydroxide, and after crystallizing out from alcohol and ether an alcoholic pyrophosphate is obtained which may be mixed with 40 per cent hydrogen peroxide (664 g. of the ester with 215 c.c. of the peroxide), with addition of about 50 c.c. of alcohol at 40°. (*Soap Perfumery and Cosmetics.*)

Improvement in liquid potash soaps. U. S. 2,081,617, Hall Laboratories, Inc.—It is known that sodium soaps may be improved by addition of sodium metaphosphate which possesses the property of preventing precipitation of the hardness formers in hard water. Similar valuable effects can be obtained with potash soaps by addition thereto of a mixture of potassium and sodium metaphosphates, in which the molecular ratio of the potassium metaphosphate to the corresponding sodium salt is 1:1 or 3:2. (*Soap Perfumery and Cosmetics.*)

Manchuria Has Large Supplies of Soybeans

Supplies of soybeans available in Manchuria during the current marketing season (October-September, 1937-38) are the largest in several years, according to a report received by the Bureau of Agricultural Economics from its office in Shanghai.

The 1937 crop is officially estimated at 153,330,000 bushels. Adding the estimated October 1, 1937, carryover of 6,246,000 bushels gives a total supply for the season of 159,576,000 bushels. The 1936 crop of 152,375,000 bushels gave a total supply of 154,212,000 bushels for the 1936-37 season.

Unofficial sources in Manchuria are of the opinion that the combined exports of beans and bean products during the 1937-38 marketing year will be greater than those of 1936-37. Actual exports from October through January, however, were substantially below those for the corresponding 4 months of the 1936-37 season; shipments, compared with those for the corresponding period of 1936-37 in parentheses, have been in short tons as follows: soybeans 800,000 (1,015,000); bean cake and meal 260,000 (248,000) and bean oil 22,000 (18,000) tons.

The slow export movement from October through July was attributed to the high prices quoted to foreign buyers. As a result, considerable supplies have accumulated at coastal points. Dairen prices, however, have recently declined in line with the general downward trend in vegetable oil prices in world markets. It is therefore expected that the export business during the balance of the season will show considerably more activity.

The exportable surplus on February 1, compared with that of February 1, 1937, in parentheses is estimated as follows: soybeans 1,640,000 (1,180,000) short tons; bean cake and meal 730,000 (610,000) tons and bean oil 60,000 (55,000) tons.

Japanese purchases of Manchurian soybeans and soybean products are expected to reach new high levels this season, since such purchases can be financed in Japanese currency thus making possible a considerable saving in foreign exchange. Moreover, indications are that Japan plans to use increased quantities of Manchurian soybean cake as a commercial fertilizer.

Sales to Germany are also expected to show an increase, particularly in view of the recent extension of the Manchoukuo-German Trade Pact. Purchases by China, hitherto one of the important export outlets, will probably be considerably smaller. Shipments to the United States, mostly cake and oil, will probably be about the same as last season especially if soybean oil prices do not increase above existing levels.

Government Experts to Visit Gulf Coast Tung Belt

Tung trees are now generally in bloom throughout the Gulf Coast tung belt, a factor which may result in a poor crop of nuts during the current year, C. C. Concannon, Chief of the Commerce Department's Chemical Division, stated recently as he left Washington for his annual field survey of progress being made by this new southern industry.

Early blooming is not desirable, he stated, as blossoms are very sensitive to frost. Practically the entire crop, he pointed out, was destroyed last year by unfavorable weather which followed early blooming.

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Manchuria Has Large Supplies of Soybeans

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If weather continues favorable, however, several million pounds of oil will be produced from the 1938 crop.

The tung nut, according to Mr. Concannon, is the source of a unique drying oil which is used extensively in the manufacture of varnishes, linoleums, oil cloths, printing inks, electrical insulations, and as waterproofing for rain coats, umbrellas, and for a host of other purposes. Except for relatively small quantities now being produced in Gulf Coast states, where more than 100,000 acres are planted to tung trees, the United States is entirely dependent upon China for this essential raw material.

Imports of tung oil have increased steadily in recent years, and in 1937 more than 175,000,000 pounds invoiced at $20,000,000, were entered into the United States for consumption, official statistics reveal.

This oil can and is being produced in the United States where climatic and soil conditions are favorable and chemical analysis shows the American product to be superior in every respect to the Chinese oil, Mr. Concannon declared.

He stated that much money has been squandered in ill-advised tung orchard promotion and suggested that orchardists and prospective investors inform themselves thoroughly concerning the prospects for profits before investing time or money in any such plan. He pointed out that the fundamental requirements of climate and soil are now generally known and that Government experts are giving increasing attention to the problem with the view to safeguarding future developments.