ABSTRACTS

Oils and Fats

Edited by
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of light and food. The minimum R. Q. is reached after 12 to 16 hrs. of starvation at 28.5° C. Minimum metabolic rate is reached in the afternoon after 20 hrs. of starvation.

Studies on the alleged toxic action of cod liver oil. E. Burack and H. M. Zimmerman. *J. Nutr.* **14,** 535-51 (1937). It is pointed out that in view of the small percentage of animals which yielded changes in the organs as a result of cod liver oil feeding at high levels, the claims that cod liver oil in therapeutic doses can exert injurious effects are not substantiated.

Drying oils. D. H. Killeffer. *Ind. & Eng. Chem.* **29,** 1365-6 (1937). Data on the production and imports of 5 important drying oils and their uses in the 3 important divisions of industry are presented. Lacquer, resin, etc., developments are briefly discussed.

Oxidation of unbodied linseed oil. C. C. Vernon and W. W. Rinne. *Ind. & Eng. Chem.* **29,** 1393-95 (1937). The 6 phenol-formaldehyde resins and mixtures of these resins with ester gum studied in this investigation showed marked antioxidant effect on pure alkali-refined linseed oil in the presence of driers. This effect was specific for each individual resin, and was confined to the induction period. This antioxidant effect was partially due, in 2 cases, to some oxidizable part or component of the resin, since it was markedly decreased when the resin was treated with oxidizing agents. This last fact was in accord with the theory of Moureu and Dufraisse relative to antioxygens, and indicated a possible treatment of such resins should their antioxygenic properties be undesirable. The resins studied were apparently free from simple phenols used in their manufacture, although one of the resin-ester gum mixtures yielded a considerable amt. of a complex phenol. The results of this investigation must not be compared to those attained with heat-bodied oils, since the oil used here was not heat-bodied. Neither must it be concluded that these resins prevented the complete drying of the oil, for the oil did dry eventually. The results of interest are those shown during the induction period of oxygen absorption.

PATENTS

Method of finishing shortening. T. M. Godfrey and V. Serbell (to Lever Bros. Co.). U. S. 2,101,496. The shortening fat is chilled to a semisolid and while heating it is aerated and pumped through a texturizing orifice.

Process for finishing fats. H. A. Keck (to Lever Bros. Co.) and S. 2,101,501. Same as 2,101,496 except that the orifice process is repeated.

Altered tung oil and process of making same. C. Ellis (to Ellis-Foster Co.). U. S. 2,101,791. The process of producing a varnish base which comprises heating a polyphenol with a tung oil material in the presence of an acid condensing agent at temp. sufficiently high to cause chemical reaction but not exceeding 150° C. until a sample cooled to room temp. is soft, rubbery, sticky solid and cooling the main portion of the reaction mass when this viscosity has been reached as indicated by the said cooled sample, and at a speed of cooling whereby gelation is prevented.

Polycarboxylic acid esters of polyunsaturated higher alcohols. J. H. Werntz (E. I. du Pont de Nemours & Co.), U. S. 2,101,227. An ester of a polycarboxylic acid wherein the hydrogen atom of at least one carboxyl group is replaced by the polyunsatd. hydrocarbon radical of an alc. contained by the reduction of fat acids from china-wood oil.

Hardening oils. Norwegian Patent No. 57,059, June 7, 1937. Dietrich Hildisch. The flesh of sea animals, e. g., whale blubber, is cut up and stored in a soln. of an acid, e. g., HCl, H_2SO_4, H_3PO_4 or HCOOH, of pH less than 5, particularly 1-3. When convenient the blubber is worked up and immediately afterward the hardening is carried out. To the acid may be added also benzoic acid and its derivs., HCHO and hexamethylenetetramine. (*Chem. Abs.*)

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Bleaching palm oil for soap making. *Soap Gazette and Perfumer* **39,** No. 10, 16 (1937). Good quality palm oil can be bleached for soap making purposes by treatment with an absorbent earth. The treatment is carried out in a steamheated vacuum pan and the oil agitated with about 5 per cent of the bleaching earth at a temperature of 120-140° C. for one to two hours after which it is cooled and passed through a filter press to remove the used earth. The earth is extracted with a suitable solvent in order to recover the 30-50% of oil remaining in it. Some methods recommend the alkali refining of the oil to remove free fatty acids, followed by a treatment with sulphuric acid prior to the treatment with bleaching earth. Methods have been recommended in which the oil is stirred for two hours with 4 per cent of bleaching earth, filtered, and then treated with superheated steam at 0.5 atmosphere pressure until the free acidity falls to 0.5 per cent. For

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the further improvement of the color it has been recommended to partially hydrogenate the oil after a preliminary treatment with bleaching earth. (*Oil and Colour Trades J.*)

The influence of diluents on the action of soaps. Hans-Joachim Henk. *Seifensieder-Ztg.* **64,** 920-1 (1937). The addn. of water glass increases the alkalinity of the soap. With high increase in alkalinity the washing action of the soap is decreased. Hydrolysis of water glass causes pptn. of silicic acid. With hard water there is a pptn. of Ca-silicate. Sodium silicate filled soaps are irritating to the skin, yet no substitute for it has been found. Capillary active colloids as starch, $Al—(OH)_3$ and silicic acid are unsuitable. Decompn. products of starch and other carbohydrates have reducing properties and affect the color of textiles. Sodium caseinate may show some possibilities.

Textile soaps. H. Liebe. *Seifensieder-Ztg.* **64,** 879-81, 899-901 (1937). General discussion which includes several formulas.

Fat acid distillation and yield. Josef Hetzer. *Seifensieder-Ztg.* **64,** 530 (1937). Data are given showing yields obtained on distn. of soybean soap stock as acids. (*Chem. Abs.*)

Determination of free fat in soap. I. E. Solovin. *Masloboino Zhirovoe Delo* **13,** No. 3, 33 (1937). In the usual detn. of free fat in soaps, the method of dissolving a sample in alc. results in catalytic sapon. of the free fat by the contaminating free alkali. The recommended procedure consists in dissolving a sample in H_2O contg. a little Na_2SO_4 (up to 0.1 g.), followed by alternate extn. and shaking with Et_2O, washing with H_2O, evapn. of the Et_2O and drying and weighing the residue as usual. (*Chem. Abs.*)

A simplified technic for the determination of contact angles and its application to studies on wetting. E. Kneen and W. W. Benton. *J. Phys. Chem.* **41,** 1195-1203 (1937). A simple, adequate horizontal-plate technic for determining contact angles in the system solid-liquid-air is described and its accuracy demonstrated. Applications of this method are illustrated and discussed with reference to (a) the evaluation of the wetting capacity of soaps (b) the evalution of the degree of polarity of surfaces, (c) the wetting properties of cholesterol toward water, (d) the wetting capacity of leaf surfaces, and (e) the wetting properties of tooth surfaces.

Cosmetic or superfatted soaps. Hans-Joachim Henk. *Seifensieder-Ztg.* **64,** 267 (1937). The advantage of incorporating 3-5% of nonacidic materials, e. g., lanolin, cetyl alc., stearic alc. or stearic esters, in cosmetic soaps are briefly discussed. (*Chem. Abs.*)

Quantitative control of sulfonation processes. W. A. Simpson and J. C. Olsen. *Ind. & Eng. Chem.* **29,** 1350-3 (1937). Many conditions affect the results obtained in a sulfonation reaction. Control of these conditions affects not only the yield of the desired products but also the isomers formed and a considerable variety of by-products. A description is presented of the analytical steps necessary to determine the sulfones, relative amts. of mono- and disulfonic acids from various ring systems. A number of practical sulfonations are also included, with the indicated analytical control.

Studies on cottonseeds. III. Production of gasoline from cottonseed-oil foot. Yung-Sheng Chao. *J. Chem. Eng.* (China) **4,** 169-72 (1937). cf. C. A. 30, 4902; 31, 2845. Cottonseed-oil foot stock, obtained from oil refined with NaOH and contg. about 40% H_2O, 40% fatty matter and 20% alkali and impurities, is dried first in the sun and then in an oven. The dried product is powd. and then dry distd., yielding a gasoline substitute among other products. This gasoline, after refining, is essentially the same as natural gasoline except for its odor and high I value. Very satisfactory results are obtained with it on actual road tests. From 400 lbs. of the original wet foot stock 5 gallons of refined gasoline, 7.3 gal. of crude kerosene, 77.8 lbs. of coke, 31.5 lbs. of Na_2CO_3, 13.2 lbs. of ammonia liquor and 489 cu. ft. of combustible gas can be obtained. IV. Extraction of cottonseed protein. Kechung Chang and Yung-Sheng Chao. Ibid. 173-6. Oil-free cottonseed meal is extd. with 10% NaCl soln. to give 16.7% by wt. of an almost colorless protein material. From the residue of this extn., extn. with 0.5% NaOH yields 14.1% more of a slightly yellowish protein. (*Chem. Abs.*)

Catalysts in soap boiling. Paul I. Smith. *Am. Perfumer* **35,** No. 1, 70 (1937). The use of catalysts in soap boiling has been exptl. thus far. It can be summarized by saying that the rate of sapon. is inversely proportional to the fraction of unsatd. glycerides present in the animal or vegetable fat. Small quantities, from 0.5 to 1%, of certain aromatic derivs. of phenols, cresols, naphthols, etc., have an accelerating effect on sapon. but are undesirable on account of odor. Bentonite is useful and hastens sapon. by inducing the fat to emulsify more thoroughly with the lye. (*Chem. Abs.*)

PATENTS

Soap from marine oil. U. S. Patent No. 2,100,146. Sigval Schmidt-Neilsen, Trondjem, and Arne Flood, Larvik, Norway. Process for the manufacture of soaps from unoxidized and unhydrogenated marine oils comprising the step of heating the marine oils without added catalysts and in the absence of oxygen to a temperature between about 250° C. and 300° C. in closed vessels, the said heating being continued for a period of time not less than 48 hours so as to bring about a substantial decrease of the iodine number by intramolecular saturation of the glyceride molecules and subjecting the resulting product to saponification by the aid of added alkali. (*Soap Gazette & Perfumer.*)

Ketones. A. W. Ralston (Armour & Co.). U. S. 2,101,559-60. Fatty acid chlorides are reacted with carbazole or substituted carbazoles or thiophenes to

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give aralkyl ketones. The products are waxy solids that may be used for electrical insulation, polishing or antifoaming compounds.

Liquid soap. U. S. Patent No. 2,089,305, Aug. 10. Kurt Stickdorn. A liquid soap of good stability is made with approx. 40% fat acid content and comprising as principal ingredients the K salts of a mixt. of unsatd. fat acids having 12-18 C atoms in the mol. and the reaction products of adipic acid, normal primary aliphatic alc. having 1-4 C atoms in the mol. and KOH, the reaction product being of the order of 10% of the wt. of the K salts. (*Chem. Abs.*)

Polyhydric alcohol-polybasic acid resin. U. S. Patent No. 2,088,612, Aug. 3. Israel Rosenblum. An oil-sol. resin is produced by heating glycerol with a satd. volatile monobasic aliphatic acid having up to 5 C atoms, such as HOAc (suitably at a temp. of about 135°) until partial reaction has taken place and an acid-reacting mixt. is obtained, causing this mixt. to react with a polycarboxylic aliphatic acid such as maleic anhydride and with acid obtained by hydrolysis of an oil, fat or wax such as linseed-oil fatty acids and then continuing the heating in the presence of a solvent such as coal-tar naphtha until substantially all of the volatile monobasic acid has been expelled. (*Chem. Abs.*)

Synthetic resins and balsams. U. S. Patent No. 2,089,196, Aug. 10. Carleton Ellis (to Ellis-Foster Co.). A nondrying glyceride oil such as blown castor oil, coconut oil, or palmkernel oil, is caused to react with a polyhydric alc. such as glycerol, polyglycerol or a glycol and with an acid such as segacic or azelaic acid or phthalic anhydride by heating the materials together to 300°, for the production of products sol. in various org. solvents and suitable for use in lacquers together with nitrocellulose. Various examples with details and modifications are given. (*Chem. Abs.*)

Higher aliphatic alcohols. German Patent No. 648,510, Aug. 3, 1937 (Cl. 12o 5.02). Bohme Fettchemie- G. m. b. H. (Wilhelm Normann, inventor). These are formed by the catalytic reduction of free fatty acids contg. more than 8 C atoms, by H at raised temp. and pressure, $CuCO_3$ being used as the catalyst. (*Chem. Abs.*)

Wetting-out, washing, cleansing, lathering and dispersing agents for textile materials, etc. U. S. Patent No. 2,094,489, Sept. 28. Richard Hueter (to "Unichem" Chemikalien Handels A.-G.). Higher mol. alcs. such as those derived from coconut oil are treated with epichlorohydrin in the presence of H_2SO_4 and the resulting product is treated with Na_2SO_3 to produce sulfonic acids suitable for use in cleansing raw wool, etc. (e. g., in admixt. with cyclohexanol, and functioning even in the presence of Ca soaps in the wool). As initial materials, alcs. derived from palm-kernel oil, castor oil, etc., also may be used, and the products may be used in cleansing or dyeing rayon. (*Chem. Abs.*)

Cleansing agent. Fr. Patent No. 810,847, Mar. 31, 1937. Colgate-Palmolive-Peet Co. A cleansing agent is made by the reaction of 1 mol. of a fat oil, 2 mols. of almost anhyd. glycerol and more than 3 mols. of fuming H_2SO_4, and neutralizing the product. Thus a product is obtained by the reaction of coconut oil 216, glycerol 64 and H_2SO_4 (102.8%), 526 parts and neutralized with NaOH. It is used in making soaps, dentifrices, etc. (*Chem. Abs.*)

Powdered or molded soap. Brit. Patent Spec. 473,220. Adolf Welter. A process for the manufacture of soap by mixing a fatty acid at a temperature slightly above its melting point with an amount of calcined alkali carbonate which is approximately twice the amount theoretically necessary for complete saponification. Water is added in amounts of about two to fifty per cent calculated on the fatty acid. Solutions of salts may be added instead of pure water. The process proceeds so smoothly and completely that it may be carried out as a continuous process. In such event, the solidified reaction mass which is no longer sticky is passed through a mill and converted into thin, fine strips. (*Perfumery and Essential Oil Rec.*)

Soaps formed by Cold Processing. U. S. 2,087,267, July 20. Julius Schaal. A mixt. of beef tallow 200 and coconut oil 50, heated to about 50° and stirred, is treated with H_2O_2 soln. 1.2 parts and, while it is continually stirred, there is also added a preheated soln. at a temp. of about 90° and which is formed of flake NaOH 38.65 and water 40 parts; the stirring is discontinued upon thickening, and spontaneous exothermic reaction is allowed to proceed until the temp. reaches about 120°, with intermittent stirring to control the reaction, and after the reaction has subsided there is gradually added, with further stirring, a preheated soln. at a temp. of 90° which is formed of water 8, sol. silicate 5 and a NaOH soln. of the strength previously used 1 part for producing a soap product of such alky. as to give a pink color with phenolphthalein soln.

A New Washing Agent of Liquid Polyglycol or Polyglyceral Ether Series with Calcined Salt. I. G. Farb. Ind. A. G., Brit. Pat. No. 469,334.—This invention is based on the observation that a calcined salt which has been obtained by subjecting an alkali metal salt of a mineral acid to calcination with escape of a gaseous phase, for instance, water or carbon dioxide or both, possesses, obviously on account of the formation of hollow spaces within the particles, an excellent adsorbent power for liquid and semi-liquid products. Mixtures, which consist of polyglycel-ethers and of calcined alkali metal salts of mineral acids, for instance, of sulphuric acid, carbonic acid, pyro-phosphoric acid or boric acid, are stable and distributable and are distinguished by lack of adhesiveness and by not wetting through the paper packing. (*Perfumery & Essential Oil Record.*)