ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR

THE PHYSICAL AND CHEMICAL CHARACTERICS OF LARDS AND OTHER FATS IN RELATION TO THEIR CULINARY VALUE. II. USE IN PLAIN CAKE. B. Lowe and P. M. Nelson. Agri. Expt. Sta., Iowa, Research Bulletin, 255, May, 1939.

HOW TO PRESERVE MEAT IN LARD. A. M. Child. *U. of Minn. Ext. Folder 66* (1938).

SAPONIFICATION VALUE OF WAXES BY USE OF MIXED SOLVENTS. M. Wand. *The Chemist Analyst, 28,* 53 (1939).

SOURCES OF OIL WHICH HAVE BEEN OVERLOOKED PREVIOUSLY. E. Wagner. *Seifensieder Ztg. 66,* 779-80 (1939). A tabulation of 48 plants growing in Germany, the oil content of their seeds, etc., its properties and uses. (*Chem. Abs.*)

BY-PRODUCTS AND RESIDUES IN PRODUCING VEGETABLE OILS. M. Singer. *Seifensieder Ztg. 66,* 720-2; 740-1; 760; 770-1; 800 (1939). Review. (*Chem. Abs.*)

CONDITION OF THE ITALIAN FAT AND FAT PRODUCTS INDUSTRY. S. Fachini. *Fette u. Seifen 46,* 518-20 (1939). Statistical information.

REMARKS ON THE WORK OF E. SCHMIDT, W. HAHN, H. DUTTENHOFER AND J. MAERKL: "DEACIDIFICATION OF ANIMAL AND VEGETABLE OILS AND FATS BY MEANS OF CARBODIIMIDES." Fritz Zetzsche and Artur Fredrich. *Ber. 72B,* 1477-81 (1939); Schmidt, et al. Schmidt and his co-workers report that in their proposed method for deacidifying oils and fats with carbodiimides (chiefly carbodi [cyclohexylimide] [1]) the free acids frequently sep. as cryst. ureides. These ppts., as a matter of fact, are not ureides but merely N, N′-dicyclohexylurea. (*Chem. Abs.*)

NEW METHOD OF PREVENTING RANCIDITY. P. P. Gray and I. Stone. *Food Industries, 2,* 626-628 (1939). The emulsification of a fat in foodstuffs is known to increase greatly its susceptibility to rancidity. Along with the development of rancidity there is a destruction of the fat soluble vitamins A and E. It is shown that rancidity and destruction of vitamins A and E can be retarded or prevented by introducing ascorbic acid (vitamin C) and related compounds into the aqueous phase of the emulsion. Results are presented showing the stabilization and flavor improvement of olive oil emulsions, mayonnaise, dried whole milk and egg yolk. Other uses such as the improvement of the keeping qualities of butter and other dairy products, pharmaceutical fish oil emulsions, frozen meats and fish are indicated.

RAPID METHOD OF DIRECT DETERMINATION OF WATER IN FRESH BUTTER. Nikolaos Natronikolaos. *Chim. Chronika* (*Greece*) *3,* 196 (1938) (in Greek).—Into a conical centrifuge tube put 1.5 cc. of 65° Be. H_2SO_4 and set in a beaker of warm water of such height that the tube reaches the brim. Add 5 g. of the butter. The water level should be not more than 2/3 the height of the tube. Melt the butter by gentle heating and stopper the tube. When completely melted remove and shake until an emulsion forms. Warm again by immersing in water and then centrifuge twice for 1-min. intervals. Heat again as before and read water content in cc. Subtract the amt. of H_2SO_4 used and multiply the result by 20 to get the percentage of water in the sample. (*Chem. Abs.*)

INCREASING THE STABILITY OF BUTTER. D. M. Pimenov. *Molochno-Maslodel'naya Prom. 5,* No. 3, 4-8 (1938); *Chimie & industrie 47,* 1188. By irradiating butter with x-rays for 10 min. it can be kept for a long time at ordinary temp. in an atm. of CO_2. Irradiation with ultraviolet light permits even longer keeping and increases the vitamin D content. The organoleptic properties of the butter are unaffected by this treatment. (*Chem. Abs.*)

ACID VALUES AND ACID RATIOS AS RELATED TO THE KEEPING QUALITY OF SALTED BUTTER. H. A. Bendixen. *Proc. Western Div., Am. Dairy Sci. Assoc. 24,* 50-61 (1938). The acid content, calcd. as lactic acid, for 28 samples of sweetcream butter with pH values above 6.0 was 0.07 to 0.13% when fresh, 0.072 to 0.145% after one week at 21° and 0.079 to 0.131% after one month at 0 to 5°. It averaged 0.096% when fresh, 0.196% after one week at 21° and 0.103% after storage one month at 0 to 5°. For 51 samples of neutralized cream butter these averages were 0.122, 0.140 and 0.132%. An increase in the acid ratio (fat acidity:butter acidity) during one week at 21° and during one month at 0 to 5° appeared to be closely related to poor keeping quality, especially with sweetcream butter. The av. acid ratios were higher after one month at 0° to 5° than after one week at 21°. (*Chem. Abs.*)

TUNISIAN OLIVE OILS AND FITELSON'S REACTION FOR TEASEED OIL. R. Marcille. *Ann. fals. 32,* 171-5 (1939). Some pure olive oils from Northern Tunis give with Fitelson's test (C. A. *30,* 7371) a red coloration which may be almost as deep as that produced with olive oils contg. up to 15% teaseed oil. (*Chem. Abs.*)

HYDROGENATION OF SOYBEAN OIL UNDER HIGHER PRESSURE. VI. PRODUCTION OF UNSATURATED HIGHER ALCOHOLS. Yuiti Sinozaki and Sizuo Sumi. *J. Agr. Chem. Soc. Japan 14,* 1113-16 (1938). Soybean oil was hydrogenated with Zn-Cr catalyst under high pressure. Higher alcs., mainly oleyl, were produced at 300-400°, of iodine value above 110. VII. Mechanism of the production of higher alcohol. Ibid. 1117-22. When soybean oil was hydrogenated under higher pressure, H_2O was produced below 300°. The temp. for the production of higher alcs. was the same for free fat acid as for the oil. VIII. Conditions for the production of unsaturated higher fatty alcohols. Yuiti Sinozaki and Siniti Adati. Ibid. 1123-8. When the soybean oil was treated with H_2 and Zn-Cr catalyst at 320-40° for 6-10 hrs., the production of unsatd. fat was max. IX. Influence of the method of preparation of Zn-Cr catalyst for the production of unsaturated higher fatty alcohols. Yuiti Sinozaki and Sizuo Sumi. Ibid. 1129-34. The activity of the catalyst was greatest when the ratio of Cr_2O_3 to ZnO was 1:1. (*Chem. Abs.*)

A METHOD FOR THE APPROXIMATE DETERMINATION OF SOME OF THE UNSATURATED MINOR COMPONENT ACIDS OF PIG AND OTHER FATS. T. P. Hilditch and W. H. Pedelty. *Analyst 64,* 640-47 (1939). The recommended method comprises saponification, detg.

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wt. of fat acids, separation of insol. Li salts from acetone, bromination of acids in the sol. Li soaps and detn. of the %, I value, and SCN value of acids from insol. Li salts. Method of calcg. is given.

Formation of mono- and diglycerides. R. M. Erastova. *Org. Chem. Ind.* (*U.S.S.R.*) *6,* 151-3 (1939). A preliminary communication. The best results in the prepn. of diglycerides from linseed and cottonseed oils were obtained with a slight excess of glycerol by heating, with const. stirring, at 280° for 15 min. in the presence of 0.1% PbO. (*Chem. Abs.*)

Determination of glycerol. N. Schoorl. *Pharm. Weekblad 76,* 777-82 (1939). If only a slight excess of $CuCl_2$ is added to the glycerol the formation of the Cu complex will be incomplete. On the other hand, the results will also be low if a large excess of $CuCl_2$ is added, presumably because the complex is adsorbed on the ppt. The addn. of an excess of Cu between these 2 extremes gives accurate results. Detn. of glycerol: Place 10 cc. of the sample contg. not more than 500 mg. glycerol in a 500-cc. flask. Add 10 cc. 7.5 N NaOH and 60 cc. MeOH. Then add a 10% alc. soln. of $CuCl_2$ until no more ppt. forms, and add the same amt. of the $CuCl_2$ soln. again. Cool to room temp. and bring the vol. to 100 c.c. with MeOH. Centrifuge and siphon off the clear supernatant liquid. Evap. the liquid to a few cc. (The MeOH should be completely removed). Add 8-10 cc. 4 N H_2SO_4, 1 g. KI and 10 cc. water. Titrate with 0.1 N $Na_2S_2O_3$. One cc. 0.1 N $Na_2S_2O_3 = 9.2$ mg. glycerol. (*Chem. Abs.*)

The synthesis of fat from protein by the albino rat. R. Hoagland and Geo. G. Snider. *J. Nutr. 18,* 440 (1939). The total quantity of fatty acid in the seven rats at the end of the experiment was greater by 47.92 gm. than the total quantity in the seven litter mates at the beginning of the experiment. The results of these experiments show conclusively that the albino rat can synthesize fat from protein, in corroboration of Longnecker's report.

Fatty livers as a result of thiamin administration in vitamin B_1 deficiency of the rat and the chick. R. W. Engel and P. H. Phillips. *J. Nutr. 18,* 329-38 (1939). When thiamin was administered to vitamin B_1 deficient chicks or rats hydropic degeneration and fatty metamorphosis occurred in the parenchyma of the liver cells. This histologic reaction in the liver was not prevented by choline, lipocaic or by diets high in fat or in casein. Thiamin therapy in experimental vitamin B_1 deficiency causes an excessive production of free fat in the liver cell which disrupts the normal cell structure.

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Refining fats and oils. Elact. Ges. electrische App. G. m.b.H. *Ger. 677,062 Cl. 23a Gr. 3.* Fats and oils are neutralized, decolorized, and deodorized by treatment with alkaline skim milk. The process comprises emulsification followed by electrical de-emulsification.

Refining fats or soapy material obtained from sewage. Adrien de Vreese in Escanaffles. *Ger. 669,709 Cl. 85c Gr. 1.* The fat acids are pptd. with $CaSO_4$ and $Ca(OH)_2$ and the Ca is removed with alkaline earth salt solns.

Refining fats and oils. Jean Paul Beyer. *Brit. 498,209.* The process comprised treatment with caustic alkalies followed by treatment with alkali silicate, decanting, washing and treatment with K-alum.

Fermentation process for improving vegetable and animal oils and fats as well as other glycerides of the fatty acids. W. Ekhard. *U. S. 2,172,531.* Fats and oils are improved by subjecting them in the presence of carbohydrates to the action of bact. or ferments which produce organic acids.

Refining edible oils. Vaman R. Kokatnur and Oliver S. Plantinga. *Can. 382,087,* June 13, 1939. Edible oil, e.g., corn oil, is treated with org. peroxide derived from the foots of the refining process at 50-60° and in the presence of a precipitant for mucilaginous material, e.g., fuller's earth, which neutralizes free acids without producing soaps sol. in the treated material. Several examples are described. (*Chem. Abs.*)

Treatment of animal or vegetable waste products. Anton Trexler. *Austrian 156,269* June 10, 1939 (Cl. 53c). Solid waste products of animal or vegetable origin are freed from fats by treatment in a centrifuge with a dry gas stream heated to at least 200°, e. g., to 200-450°. The process may be applied to the production of defatted albuminous materials useful as fodder. App. is described. (*Chem. Abs.*)

Distillation of fats and oils. K. W. R. Apostel. *Brit. 500,375.* Distn. is with counter-current heating gas in several stages through which the fats or oils and the gas flow. Distn. is horizontal in each stage and the materials flow in thin layers.

Preservation of organic materials containing oils. S. Musher (to Musher Foundations Inc.). *U. S. 2,176,022-38.* Unbleached cereal and other seed flours are used as antioxidants for fats and fat contg. food.

Recovery of fatty acids and nitrates. I. G. Farbenind. A. G. *Brit. 500,746.* Na-soaps of oxidized paraffin wax are treated with HNO_3, the salt soln. is concnd. and after separation of fat acids the nitrates are crystd.

Antioxidants. E. W. Fawcett and Imperial Chemical Industries Limited. *Brit. 501,194.* The antioxidants are obtained by short path distn. of oils.

Cooling fats and fatty emulsions. J. Brix-Hansen. *Brit. 502,304.* In the cooling operation the liquid fat is conveyed by pressure between two stationary spaced cooling surfaces, between which there is a rotating perforated surface that also contains scraping members which act on both cooling surfaces.

Deoiling bleaching earth. H. Leue. *Ger. 670,830 Cl. 12i Gr. 38.* Bleaching earth is deoiled by heating it with solns. of alkali silicates. The ratio of SiO_2 to metal oxide should not be greater than 2:1.

De-emulsifier. H. Powell. *U. S. 2,175,699.* Monoglycerylricinoleate is used as a de-emulsifier for mineral oil.

Higher alcohols. I. G. Farbenind. A. G. *Ger. 675,658. Cl. 120 Gr. 5.02.* High mol. wt. alcs. are prepd. from low mol. aldehydes by condensation in the presence of oxides or hydroxides of metals of the second and third groups of the periodic system.

Cake. M. B. Katzman (to The Emulsol Corp.) *U. S. 2,176,077-8.* Reaction products of tetra-phosphoric acid with alcs. derived from fats are added to cake mixes or batters.

Preparation of alkylolamine derivatives. M. B. Katzman and A. K. Ejstein (to The Emulsol Corp.). *U. S. 2,173,448.* Esters of alkylamines with fat acids are prepd. by heating the compds. in the presence of steam.

Egg composition. M. B. Katzman (to The Emulsol Corp.) *U. S. 2,176,078.* Reaction products of phosphoric acid and fat alcs. are added to eggs.

Acid substituted hydroxy alkyl-amines and process of making same. W. Kritchevsky. *U. S. 2,173,058.* Method of prepg. an ester comprising triethanolamine in which one H of the OH groups is substituted by a higher fat acid radical.

Isomerising fatty oils and fats. N. V. De-Bataafsche Petroleum Maatschappij. *Brit. 502,390.* Fats and oils are hardened by isomerization. Isomerization is by treating with SO_2 at 100-200° C. and at press. sufficient to maintain the SO_2 in a liquid state.

Polymerization of drying oil. S. Caplan (to Harvel Research Corp.). *U. S. 2,176,058.* Diethyl sulfate is dissolved in China wood oil and the charge is heated at about 105°C. to a predetermined degree of polymerization.

Polymerized nitriles and processes of preparing the same. A. W. Ralston (to Armour & Co.). *U. S. 2,175,092.* The process comprises reacting fatty acid nitriles with Al Cl_3 and hydrolyzing the resulting reaction product.

Process of producing nitriles. Otto Nicodemus and Otto Wulff (to I. G. Farbenindustrie Aktiengesellschaft). *U. S. 2,177,619.* Fatty acids or their volatilized esters and NH_3 are passed over a dehydrating catalyst at a temp. between 320°-420° C. to produce nitriles.

Alcoholysis of glycerides. Virgil L. Hansley (to E. I. du Pont de Nemours & Co.). *U. S. 2,177,407.* Fatty acids and monohydric aliphatic alcs. are reacted in absence of catalyst at 175° to 300° C. under press. corresponding to the above temps.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

Further investigations in the soap industry. Jar. Hojka. *Ceskoslov. Mydlar Vonavkar 16,* 62-3(1938) *Chem. Obzor* 14, *Abstracts* 187. H. discusses some expts. with Tetrom B, a prepn. consisting principally of tetrahydroxymethane, which combines with acids and OH groups, forming compds. of unusual properties. The compds. formed with long-chain hydrocarbons will have some significance in the soap industry.

Soap detergency study. R. L. Dutta and P. K. Ghose. *Indian Soap J. 6,* 4-5(1939). A normally grained soap in which the entire stock charge is converted into a neat soap shows far greater detergency than a fitted soap. Experimental results show that although no great difference in the constants could be noticed, the nigre has a much greater detergency than the fit, and the detergency of the original soap equals that of the nigre. The figures obtained after standard detergency tests were:

	Optimum Concentration
Original soap	0.15%
Fitted soap	0.25%
Nigre	0.15%

It can be deduced that some molecular fatty acids favoring wetting and some highly unsaturated fatty acids favoring emulsification had passed into the nigre thereby maintaining its detergency to the level of the original soap mixture and lowering the detergency of the fitted soap to a considerable degree.

Sweating of soaps. P. N. Das Gupta. *Indian Soap J. 5,* 324-6(1939). As a result of a study of different workers, the causes of sweating of milled toilet soaps can be stated as follows: (1) presence of free glycerol, (2) presence of low-mol, fat acid soaps, (3) presence of oleate soap and (4) presence of free alkali.

Irritation of the throat from cigaret smoking. H. C. Ballenger. *Arch. Otolaryngol. 29,* 115; *Med. Times 67,* 232-3(1939). No relation was found between irritation produced by cigarets and the hygroscopic agent used in their manufacture (diethylene and glycol and glycerol).

PATENTS

Making soap. Lorenz Patents Corporation. *Brit. 504,117.* This corresponds to *Fr. 828,022.* The anhyd. soap falls as a dry powder to the floor and is removed by a screw conveyor through a door. In *Brit. 504,118,* the temp. of the super-heated steam is maintained above the m.p. of the anhyd. soap, the reaction being effected in a retort at subatm. pressure. In app. described, the soap particles are fed by a rotary hopper into a chamber beneath the retort that is filled with inert gas at a temp. below the melting point of the soap, the soap being thereby sepd. into particles that harden as they fall to the bottom of the chamber.

Separating a glycerol-water mixture. Karl Muller and Volkmar Hanig and Comp. *Ger. 674,525.* In sepg. a mixt. of glycerol and water by fractionation, the steam laden with glycerol is passed into a mech. separator, such as a centrifugal separator, prior to entry into the condenser. App. is described.

Synthetic resins. Kenneth R. Brown to the Atlas Powder Company. *Brit. 505,016.* Resins are prepared by heating together under esterifying conditions polybasic org. acids capable of withstanding resinification temps. without decomposition prior to resin formation (or their anhydrides) and a straight-chain hexahydric alc. or a polyhydroxy inner ether derived therefrom, the ratio of equivs. of acid to alc. or ether being not greater than about 3:1. In examples, mannitol is condensed with malic acid or phthalic anhydride (1) and sorbitol is condensed with I or