TABLE VII.
Difference Between Any Soap-A Spread and Any Soap-B Spread.
(From Tables IV and V)

Soap–A Spreads	Soap-B Spreads (Units of Soil Removed)																			
	32.1	33.3	33.3	33.8	32.9	33.1	33.4	34.2	33.8	34.1	33.7	33.7	33.1	31.8	33.6	34.1	33.9	34.0	34.4	33 4
31.6	0.5	1.7	1.7	2.2	1.3	1.5	1.8	2.6	2.2	2.5	2.1	2.1	1.5	0.2	2.0	2.5	2.3	2.4	2.8	1.8
32.2	–0.1	1.1	1.1	1.6	0.7	0.9	1.2	2.0	1.6	1.9	1.5	1.5	0.9	–0.4	1 4	1.9	1.7	1.8	2.2	1.2
33.0	–0.9	0.3	0.3	0.8	–0.1	0.1	0.4	1.2	0.8	1.1	0.7	0.7	0.1	–1.2	0.6	1.1	0.9	1.0	1.4	0.4
31.7	0.4	1.6	1.6	2.1	1.2	1.4	1.7	2.5	2.1	2.4	2.0	2.0	1.4	0.1	1.9	2.4	2.2	2.3	2 7	1.7
31.6	0.5	1.7	1.7	2.2	1.3	1.5	1.8	2.6	2.2	2.5	2.1	2.1	1.5	0.2	2.0	2.5	2.3	2.4	2.8	1.8
31.7	0.4	1.6	1.6	2.1	1.2	1.4	1.7	2.5	2.1	2.4	2.0	2.0	1.4	0.1	1.9	2.4	2.2	2.3	2.7	1.7
31.4	0.7	1.9	1.9	2.4	1.5	1.7	2.0	2.8	2.4	2.7	2.3	2.3	1.7	0.4	2.2	2.7	2.5	2.6	3.0	2.0
31.1	1.0	2.2	2.2	2.7	1.8	2.0	2.3	3.1	2.7	3.0	2.6	2.6	2.0	0.7	2.5	3.0	2.8	2.9	3.3	2.3
31.7	0.4	1.6	1.6	2.1	1.2	1.4	1.7	2.5	2.1	2.4	2.0	2.0	1.4	0.1	1.9	2.4	2.2	2.3	2.7	1.7
31.3	0.8	2.0	2.0	2.5	1.6	1.8	2.1	2.9	2.5	2.8	2.4	2.4	1.8	0.5	2.3	2.8	2.6	2.7	3.1	2.1
30.8	1.3	2.5	2.5	3.0	2.1	2.3	2.6	3.4	3.0	3.3	2.9	2.9	2.3	1.0	2 8	3.3	3.1	3.2	3.6	2.6
31.7	0.4	1.6	1.6	2.1	1.2	1.4	1.7	2.5	2.1	2.4	2.0	2.0	1.4	0.1	1.9	2.4	2.2	2.3	2.7	1.7
31.2	0.9	2.1	2.1	2.6	1.7	1.9	2.2	3.0	2.6	2.9	2.5	2.5	1.9	0.6	2.4	2.9	2.7	2.8	3.2	2.2
32.5	–0.4	0.8	0.8	1.3	0.4	0.6	0.9	1.7	1.3	1.6	1.2	1.2	0.6	–0.7	1.1	1.6	1.4	1.5	1.9	0.9
33.4	–1.3	–0.1	–0.1	0.4	–0.5	–0.3	0.0	0.8	0.4	0.7	0.3	0.3	–0.3	–1.6	0.2	0.7	0.5	0.6	1.0	0.0
32.6	–0.5	0.7	0.7	1.2	0.3	0.5	0.8	1.6	1.2	1.5	1.1	1.1	0.5	–0.8	1.0	1.5	1.3	1.4	1.8	0.8
31.3	0.8	2.0	2.0	2.5	1.6	1.8	2.1	2.9	2.5	2.8	2.4	2.4	1.8	0.5	2.3	2.8	2.6	2.7	3.1	2.1
31.1	1.0	2.2	2.2	2.7	1.8	2.0	2.3	3.1	2.7	3.0	2.6	2.6	2.0	0.7	2.5	3.0	2.8	2.9	3.3	2.3
31.0	1.1	2.3	2.3	2.8	1.9	2.1	2.4	3.2	2.8	3.1	2.7	2.7	2.1	0.8	2.6	3.1	2.9	3.0	3.4	2.4
31.7	0.4	1.6	1.6	2.1	1.2	1.4	1.7	2.5	2.1	2.4	2.0	2.0	1.4	0.1	1.9	2.4	2.2	2.3	2.7	1.7

In 382, or 95.5% of the total number of 400 cases, the Soap-B spread was higher than the Soap-A spread.

of soil removal; or about 6% when expressed as Detersive Efficiency.

Conclusions

1. A method for detergency tests has been described which, it is felt, yields a higher degree of reproducibility than the soiled fabric-Launderometer Method commonly employed.

In terms of Standard Deviation, the reproducibility of a determination was found to be about ±0.7 when results were expressed as units of black removed, and under the conditions described in this paper.

2. This method makes it possible to determine with reasonable assurance differences between detergents which are greater than 6% (Detersive Efficiency).

3. The simplicity of apparatus required for the test should make it available for use in other laboratories. There is also the possibility that any type of standard soiled fabric could be used in the test, inasmuch as the manner of using the soiled fabric more than the manner of preparing it, largely determines the reproducibility of the method. (This point is at present under investigation.)

4. The method, it is thought, might be adapted to measure relative efficiencies of various types of washing machines, as well as for evaluating detergents.

LITERATURE

(1) G. Peirce and coworkers. Unpublished work carried out in this laboratory.

(2) Van Zile, B. S. Oil & Soap *20*, 55-57 (1943).

Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

Refining edible fats and oils—procedures and problems. J. Davidsohn and A. Davidsohn. *Food Industries 16*, 717-8, 761-3 (1944).

The preparation of nutritionally valuable edible fats, a problem which can be solved technically. Hans Th. Twisselmann. *Fette u. Seifen 50*, 38-41 (1943). Undamaged raw beef tallow contains substances which will prevent deterioration. The admixt. of carefully prepd. premier jus with ordinary beef tallow considerably improves the keeping characteristics of the latter. This method permits the conversion of as much as 95% of the raw tallow to premier jus. The use of soybean oil as a stabilizer of refined oils is mentioned. (*Chem. Abs.*)

Physical constants of the methyl esters of some of the naturally occurring fat acids. Paul M. Althouse. *Univ. Microfilms* (Ann Arbor, Mich.), *Pub. No. 631*, 80 pp. (*Chem. Abs.*)

A rapid method for the determination of fat in cream containing 40-50% fat. A. Mohr and A. Pasveer. *Deut. Molkerei-Ztg. 63*, 602-3 (1942). Weigh 15 g. cream into a 250-cc. beaker and evap. the water over an open flame, detg. the end point by means of a watch glass placed over the beaker, cool the beaker and contents in a desiccator and weigh. Melt the fat and ext. with hot petr. ether, decant the residue 3 times with petr. ether. Calc. the fat content as 100 (water + solids—not fat). Because some fat is not extd., a correction factor of +0.1% is applied. The method is not applicable to cream of low fat content (20%) because during evapn. of the water, the milk solids are scorched. (*Chem. Abs.*)

Raman spectroscopy of fatty acids. A. van den Hende and R. Fonteyne. *Natuurw. Tijdschr. 25*, 24-9 (1943). The results of measurements of the Raman spectra of the following acids and esters are presented in tables and graphs: butyric acid, isobutyric acid, valeric acid, isovaleric acid, caproic acid, heptylic acid, octylic acid, nonylic acid, undecylic acid, lauric acid, myristic acid, palmitic acid, stearic acid, Et palmitate and Et stearate. (*Chem. Abs.*)

THE SOLUBILITIES OF THE NORMAL SATURATED FATTY ACIDS. II. C. W. Hoerr and A. W. Ralston. *J. Org. Chem. 9,* 329-37 (1944). The solubilities of the fatty acids from caprylic to stearic acids, inclusive, have been detd. in cyclohexane, tetrachloromethane, trichloromethane, EtOAc, BuOAc, CH_3OH, iso-ProOH, *n*-BuOH, nitroethane and acetonitrile. The acids are generally more sol. in trichloromethane than in any other solvent investigated. In CCl_4, $CHCl_3$ and cyclohexane, as with benzene, the fatty acids are paired with the next higher odd-numbered homolog being the more sol. of the pair. The solubilities of the fatty acids in cyclohexane are similar to their behavior in benzene in that they form eutectics with both solvents. The compns. and f.ps. of these eutectics are given. The acids are, in general, more sol. in methanol than in *n*-BuOH at higher temps., while at lower temps. the order is reversed. The fatty acids are somewhat more sol. in the lower alcs. than in the other solvents investigated, with the exception of trichloromethane. Except for their behavior in alcs., the fatty acids show a marked correlation between their solubilities and the polarities of the solvents. In the non-polar solvents, the solubilities of the acids are almost linearly dependent upon temp., but as the polarity of the solvent increases, the relation between concn. and temp. deviates considerably from linearity.

UNSATURATED SYNTHETIC GLYCERIDES. VIII. UNSYMMETRICAL MIXED TRIGLYCERIDES CONTAINING LINOLEIC ACID. B. F. Daubert and A. R. Baldwin. *J. Am. Chem. Soc. 66,* 1507-9 (1944). Phys. and chem. data are reported for a series of 1-linoleyl-2-3-disatd. triglycerides and 1-monosatd.-2,3-dilinoleins.

THE COMPONENT ACIDS OF SEAL OIL. F. Burke and H. Jasperson. *J. Soc. Chem. Ind. 63,* 245-7 (1944). Blubber oil from the seal family (Phocidae) has been analyzed for component acids and has been shown to resemble whale oil in the range of acids, the content and nature of the C_{18} unsatd. acids and the degree of unsatn. of the C_{20-24} acids.

THE DETECTION OF HARDENED FATS. A. Bomer and B. Hagemann. *Fette u. Seifen 50,* 1-12 (1943). The substitution of Zn acetate for Pb acetate in the testing of solid fats by the Twitchell method resulted in a higher yield of solid fat acids. In addn., the Zn soaps are coarsely cryst. and can be washed better. This method of sepn. fails with olive oil. The Pb soaps show a greater difference in soly. between the soaps of oleic acid and those of elaidic acid; on the other hand, the Zn soaps of oleic acid have a lower temp. coeff. between 19 and 25°. Contrary to the findings of Grossfeld, no erucic acid could be detected in olive oil. The results obtained by Bertram in the detn. of solid fat acids by the method of Twitchell can be explained as due to the use of too large a sample. The semimicro-method of Grossfeld and Peter for testing for isooleic acid is sharply influenced by the crystn. temp. It is recommended that the crystn. be carried out in the water bath at 18°. When Zn acetate was used instead of Pb acetate in this method (in accordance with special directions) the same values were found for some individual fats, lower values for others and higher values for still others. This is probably due to the presence of different isooleic acids, the Pb and Zn soaps of which differ in soly. Procedures for micro- and semimicromethods are presented. (*Chem. Abs.*)

MARGARINE FORTIFIED WITH VITAMIN A. Council on Foods and Nutrition. *J. Am. Med. Assoc. 126,* 168 (1944). The Council takes this opportunity to reaffirm its confidence in the nutritional value of margarine contg. vitamin A as follows: Margarine contributes, primarily, fat to the diet. The fat is equal in digestibility and caloric value to other food fats. The standardized vitamin A content of fortified margarine was so set that it contributes this nutritional factor in amt. equiv. to av. butter in accordance with information available at that time. (Recent surveys indicate a higher av. value for butter.) The milk solids other than fat (1%) present in both butter and margarine are of negligible nutritional importance. When margarine is fortified with vitamin A the investigations that have been made lead to the conclusion that it can be substituted for butter in the ordinary diet without any nutritional disadvantage.

IMPORTANCE OF COPPER IN CERTAIN COLOR CHANGES IN BUTTER. R. V. Hussong and B. W. Hammer. *Food Res. 9,* 289-92 (1944). Various instances were encountered in which bleaching and tallowiness in butter were accompanied by high Cu contents and apparently were related to them; in one instance there were blue areas on the butter before the bleaching began. In one instance, the high Cu content in the butter apparently was due to Cu contaminated wraps which had areas of brown discoloration. Exptl. churnings made with added Cu, usually as CuCl, showed the relationship of added Cu to tallowiness in the butter and also to bleaching.

XYLITOL ESTERS OF FATTY ACIDS. J. F. Carson and W. D. MACLAY. *J. Am. Chem. Soc. 66,* 1609-10 (1944). A series of fatty acid esters of the pentahydric alc., xylitol, has been prepd. in connection with a study of plasticizers.

BRANCHED-CHAIN FATTY ACIDS. III. NEW METHOD OF INTRODUCING THE BRANCHING METHYL GROUP. SYNTHESIS OF 15-METHYLOCTADECANOIC ACID AND 14-METHYLTETRACOSANOIC ACID. J. Cason, C. E. Adams, L. L. Bennett, Jr., and U. D. Register. *J. Am. Chem. Soc. 66,* 1764-7 (1944). There has been developed a satisfactory and general method for prepg. pure branched-chain esters which may serve as intermediates for prepn. of pure branched-chain alkyl halides. This method involves the prepn. of dialkylbutyrolactone from Grignard reagent and Et levulinate, followed by opening of the lactone ring with thionyl chloride.

THE SUITABILITY OF FATS SYNTHESIZED FROM FAT ACIDS OR FROM 6 TO 12 C ATOMS. I. PREPARATION OF THE SYNTHETIC FATS AND THEIR HYDROLYSIS BY PANCREATIC LIPASE. H. Kraut, A. Weischer and R. Hügel. *Biochem. Z. 316,* 96-107 (1943). Expts, were made with fats from various lower fat acids to det. the lipase action in alk. or acid medium and in a medium of variable pH. The hydrolysis is greater the smaller the mol. wt. of the triglyceride, but no appreciable difference was found between fat acids with even or odd C numbers. (*Chem. Abs.*)

A STUDY OF THE EFFECT OF DIETARY FAT AND FAT-SOLUBLE VITAMINS UPON MILK AND FAT SECRETION. H. L. Lucas, J. K. Loosli, and L. A. Maynard. *Cornell U. Agr. Expt. Sta. Memoir 251,* 12 pp. (1943). The level of 5.9 per cent of fat in the grain mixt.

increased the productions of milk, fat, and fat-corrected milk about 2.5% above the productions obtained on the grain mixt. contg. 2.2% of fat. This advantage was significant statistically. The vitamin supplement had no effect upon production nor did the presence or absence of the vitamins affect the magnitude of response to the different fat levels. Data are presented concerning the vitamin-A content of the blood and butterfat and the transfer of the dietary vitamin A to the milk. The vitamin supplement increased the levels of vitamin A in the blood and butterfat about 25 and 70% respectively.

STUDY OF THE BIOLOGICAL VALUE OF FATS BY BIOLOGICAL AND CHEMICAL METHODS. I. BIOLOGICAL VALUE OF SOME EDIBLE FATS AS JUDGED BY EASE OF DEPOSITION AND CHEMICAL CHARACTERISTICS. Benno Bleyer, Franz Fischler, Karl Ernst Schulte, Siegfried Walter Souci, Helmut Thaler, Klaus Beckmann and Hilda v. Nostitz. *Ernahrung 7*, 305-26 (1942). Some preliminary expts. with olive, coconut, soybean and whale oils are described. Wt. gains of mice fed various diets were detd. and the influence of fat used in the diet on the wt. gain was estd. (*Chem. Abs.*)

EFFECT OF GLYCERIDES OF HYDROXY FATTY ACIDS UPON GROWTH AND DEVELOPMENT. R. S. Harris, H. Sherman and E. E. Lockhart. *Arch. Biochem. 5*, 63-70 (1944). A synthetic glyceride contg. all of the acids as dihydroxy stearic acid was fed in nutritionally complete diets to weanling rats at levels of 2.2% and 2.5% in replacement of equal wts. of hydrogenated fats in control diets. The rats fed the hydroxy glyceride gained more wt. during test periods of 105 days and 175 days, and showed superior gain in wt. per g. of food intake, due to superior growth and development and not excess deposition of adipose, for the fat content of both groups was the same. There was a tendency for the rats fed the hydroxy glyceride to deposit less fat in the dermal tissues and for the control rats to deposit less fat in the carcass (muscle tissues, bones and peritoneum). The hydroxy fat influenced the compn. of the carcass fat of the rats analyzed after 105 days but had no measurable effect after 175 days. A similar expt. with tri-trihydroxy stearyl glyceride fed in a diet at a level of 2.2% indicated that this hydroxy glyceride had little if any capacity to influence the growth and development. The difference in effectiveness of tri-trihydroxy and tri-dihydroxy stearyl glycerides may be due entirely to differences in m.p. (90° vs. 70°). Hydroxy fatty acid glycerides exert a favorable effect upon the growth and development of rats on dietaries already presumed to be adequate.

THE EFFECT OF COCARBOXYLASE ON THE CONVERSION OF FAT TO CARBOHYDRATE. L. E. Edwards. *Science 100*, 268-70 (1944). The course of the conversion is from acetoacetic acid to citric acid, or another member of the cycle, and thence to glucose. The action of cocarboxylase probably is a complicated one, but its use in the depancreatized dog clarifies the principal steps by which the conversion proceeds. Doubtless the same reactions occur in the normal subject fed high fat diets, but because insulin is present the glucose formed is for the most part immediately oxidized and therefore no change in the R. Q., or at most very small changes, are detectable.

EFFECT OF THE COMPOSITION OF THE DIET ON THE RIBOFLAVIN REQUIREMENT OF THE RAT. G. J. Mannering, D. Orsini and C. A. Elvehjem. *J. Nutr. 28*, 141-56 (1944). When the riboflavin intake is sub-optimal, rats receiving a diet rich in dextrin or cornstarch show greater wt. increases than do animals receiving diets characterized by their content of sucrose, cellulose, lactose or lard. Lactose is not entirely without effect in this respect. The feeding of high levels of dietary fat to riboflavin deficient rats results in a spastic paralysis of the hind quarters, a condition not noted with any degree of severity when riboflavin-low rations of high carbohydrate content are employed. Riboflavin deficient rats survive for shorter periods of time when fed a high fat ration than when maintained on a high carbohydrate diet.

STUDIES ON KETOSIS. XXIII. THE METABOLISM OF ISOTOPIC TRIBUTYRIN AND PARTIALLY HYDROGENATED LINSEED OIL. Margaret Gulick Morehouse. *J. Biol. Chem. 155*, 33-8 (1944). Tributyrin was found to be much more rapidly metabolized than the oil, having almost disappeared from the tissue fat at 36 hrs. and completely at 60 hrs. Partially hydrogenated linseed oil was still present in the tissue fat to the extent of 20% of the amt. fed after 112 hrs. Moreover, the max. amt. of tributyrin in the tissue fat was 12% of that administered while the max. value found in the tests with the isotopic oil was 53% of the quantity fed. On the basis of a single expt. it would appear that the deuterium in the tissue fat after the feeding of isotopic tributyrin could be entirely accounted for in the distillable fraction. This would indicate that no direct conversion of tributyrin to long chain fat occurs. The expts. indicate a temporary storage of the butyrate molecule, but whether this is retained as tributyrin, component of a mixed triglyceride, or as butyric acid could not be learned.

FATTY ACID METABOLISM. THE MECHANISM OF KETONE BODY SYNTHESIS FROM FATTY ACIDS, WITH ISOTOPIC CARBON AS TRACER. Sidney Weinhouse, Grace Medes and Normàn F. Floyd. *J. Biol. Chem. 155*, 143-51 (1944). When *n*-octanoic acid, labeled by the incorporation of "C^{13}" in the carboxyl group, was incubated in vitro with liver slices from fasted rats, the resultant acetoacetic acid contained the excess "C^{13}" equally distributed between the carbonyl and carboxyl C atoms. The results offer unequivocal evidence that the ketone bodies are formed by condensation of a 2-C intermediary resulting from β oxidation of the fatty acid. Although the nature of the 2-C intermediary formed by β oxidation is unknown as yet, the most probable substance is acetic acid. Only 20-25% of the octanoic acid which disappeared could be accounted for either by ketone body formation or by complete oxidation of CO_2.

HEMOLYTIC DEPRESSION OF THE ERYTHROCYTE NUMBER BY THE FEEDING OF FAT WITH CHOLINE. J. E. Davis. *Am. J. Physiol. 142*, 213-15 (1944). The daily oral administration of 60 g. of lard and 10 mg. per kg. of choline hydrochloride to 4 normal dogs caused rapid, significant reductions in their erythrocyte counts and hemoglobin percentages. In 3 of the dogs, the erythrocyte nos. were observed to be diminished by 15 to 27% within the first 24 hrs. Icterus indices were significantly elevated concomitantly. Discontinuation of fat feeding alone, or of both fat and choline administration resulted in rapid returns of erythrocyte nos. to normal. These results are interpreted by assuming that the choline acts as a brake on the bone marrow in preventing any great acceleration of erythropoiesis, while the fat furnishes hemolytic agents (perhaps soaps and fatty acids) which increase red cell destruction.

SIMILARITY OF THE ACID-FAST PIGMENT CEROID AND OXIDIZED UNSATURATED FAT. K. M. Endicott. *Arch. Path. 37*, 49-53 (1944). An acid fast basophilic lipoid was found in rats injected with cod-liver or linseed oil. This closely resembles the material found in the lungs in lipoid pneumonia and is probably identical with ceroid, the lipoid pigment of rats with dietary cirrhosis. Such a substance can be made *in vitro* by prolonged oxidation of these oils with $K_2Cr_2O_7$. (*Chem. Abs.*)

THE SIZING OF ACETATE RAYON WITH LINSEED OIL EMULSIONS. E. Sauer and G. Geldmacher. *Kolloid-Z. 100*, 425-35 (1942). Data on sizing and possibilities of fiber damages caused by sizes are presented. Aq. linseed oil emulsions with and without driers and softening agents were applied to lustrous and to delustered acetate rayon. As softening agents were used glues, oils, waxes, soap, Turkey-red oil, stearic acid, paraffin oil and Na caseinate; as drier, Pb-Co-Soligen. (*Chem. Abs.*)

THE EFFECT OF LINSEED OIL ON COTTON DUCK AND ITS RELATIONSHIP TO THE PERFORMANCE AND DURABILITY OF RAILWAY WAGON SHEETS. M. S. J. Twiselton. *J. Soc. Chem. Ind. 63*, 220-3 (1944).

HOW INSOLUBLE ARE YOUR GREASES? H. A. McConville. *Gen. Elec. Rev. 47*, 48-50 (1944). Solv. is found to depend not only on the type of the soap base, but also on the temp. and the type of water. Testing equipment and methods are given.

PATENTS

PROCESS FOR HYDROGENATING EDIBLE OILS. W. J. Paterson (Lever Bros.). *U. S. 2,357,352.* A method of simultaneously decolorizing, stabilizing and hardening glyceride oils comprises treating the oil at an elevated temp. with H_2 in the presence of a catalyst comprising Ni and Cu-Cr-oxide.

PROCESS FOR THE SEPARATION OF THE CONSTITUENTS OF TALL OIL. F. H. Gayer and C. E. Fawkes (Continental Research Corp.). *U. S. 2,356,988.* The process of sepg. fatty acids from resin acids contained in tall oil comprises converting the fatty acids into their alkyl esters, substantially completely neutralizing the resin acids with an aq. alkali and adjusting the aq. content of the resulting soap soln. to provide a resin acid concn. of from about 10 to about 5%, heating the mixt. to cause a sepn. of 2 layers and recovering the upper layer composed of the major portion of the fatty acid esters and unsaponifiable matter.

PROCESS FOR REFINING TALL OIL. F. H. Gayer and C. E. Fawkes (Continental Research Corp.). *U. S. 2,359,415.* The process of sepg. sulfated compds. from a solvent soln. of H_2SO_4 refined tall oil comprises admixing therewith a dil. aq. soln. of Na_3PO_4 of from about 0.1 to about 5% concn. in a vol. of from at least 50% to about 200% of the mineral acid concn. of the tall oil soln. and proportionately regulated to cause concn. therein and sepn. thereby of a major amt. of said sulfated compds.

PROCESS OF TREATING GLYCERIDE OILS. B. A. Dombrow (National Oil Products Co.). *U. S. 2,357,881.* A process of treating a fish oil to recover a fraction rich in unsatd. triglycerides comprises contacting a fish oil with a monohydroxy unsubstituted alc. of from 1-3 C atoms, permitting the mass to stand whereby 2 layers form and sep. the layers.

TREATMENT OF TALL OIL. R. G. Dressler, R. E. Vivian and T. Hasselstrom. *U. S. 2,358,004.* The process comprises a heat treatment with Ni catalyst to remove some of the abeitic acid, the fat acids are esterified with alc. and the solvent sepd.

STABILIZATION OF FATTY MATERIALS. G. W. Phelps and H. C. Black (Industrial Patents Corp.). *U. S. 2,357,543.* The process comprises steam deodorizing a relatively non-volatile fatty material in the presence of an oil of the class consisting of hydrogenated refined soybean oil and hydrogenated refined sesame oil, said oil having a m.p. of at least 100° F.

ANTIOXIDANT. W. M. Smith and C. J. Wilson (Standard Oil Development Co.). *U. S. 2,358,833.* The method of retarding the oxidation of an org. material subject to deterioration by atm. O_2 which comprises incorporating in said material a small amt. of the aldehydic oxidation product of the tertiary Bu ether of *o*-tertiary Bu *p*-cresol.

VACUUM DISTILLATION PROCEDURE. K. C. D. Hickman and J. C. Hecker (Distillation Products, Inc.). *U. S. 2,343,666.*

CENTRIFUGAL STILL. K. C. D. Hickman (Distillation Products, Inc.). *U. S. 2,343,667.*

FLASH DISTILLATION STILL FOR FAT ACIDS. M. H. Ittner (Colgate-Palmolive-Peet Co). *U. S. 2,357,829.*

VITAMINIZING FLUID. F. N. Peters and E. G. Rupp (Quaker Oats Co.). *U. S. 2,356,350.* A stabilized emulsified vitaminizing fluid suitable for the fortification of foodstuffs comprises a fat-sol. vitamin dispersed in an aq. vehicle, said fluid contg. a water-sol., non-heat-coagulable proteinaceous material consisting of an alcoholic fermentation residue in an amt. sufficient to stabilize the emulsion against "breaking."

HIGHER MOLECULAR ALCOHOLS. H. Bertsch (American Hyalsol Corp.). *U. S. 2,344,671.* The process of improving the properties of polishing creams, metal working prepns. and dispersions, each of which contains a pigment, comprises incorporating therein as the base material for dispersing the pigment a fat alc.

TEXTILE TREATMENT. R. W. Maxwell (E. I. du Pont de Nemours & Co.). *U. S. 2,358,871.* Process of increasing the water resistance of a cellulosic textile fabric comprises impregnating the same with a preformed acetate of an N-monomethylolamide of a fat acid and baking the same.

METAL CUTTING OIL EMULSION. K. O. Alsmark. *U. S. 2,359,503.* A mineral oil-olein mixt. of acid value 70 is sapond. in 2 steps intermediated by an addn. of water, the first step is carried out at 100°, the second at 50° and the final pH of the product is between 8 and 9.

FINISHING TEXTILES WITH ALKYD RESIN EMULSIONS. D. W. Light and A. D. Nute (American Cyanamid Co.). *U. S. 2,357,526.*

MODIFIED DRYING OIL. B. C. Pratt and H. S. Rothrock (E. I. duPont deNemours). *U. S. 2,358,475.* Process for prepg. materials of improved drying properties comprises heating a drying oil compn. at 20°-250° with 0.1-5% based on the drying oil of an aliphatic diisocyanate.

COATING COMPOSITION. G. O. Burr (Regents of the University of Minnesota). *U. S. 2,358,623.* A coating compn. comprising a resin, a diluent, drier and a soybean oil product including a mixt. of the esters of a polyhydric alc. and a soybean oil which has been subjected to a treatment for the conjugation of the polyene fatty acids, said product is characterized by the presence of isomers of 10,12-octadecadienoic and isomers of 10,12,14-octadecatrienoic acid residues.

METHOD OF MANUFACTURING CERTAIN ACYLATED POLYAMINO ETHERS. M. De Groote and B. Keiser (Petrolite Corp.). *U. S. 2,354,578-80.* Method of manufg. acylated polyaminoether having one fat acid radical and 2 basic amino N atoms is described. The products are used for the demulsification of crude oil emulsions.

Abstracts

Soaps

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SOAP-BOILING EQUILIBRIA FOR SODIUM STEARATE. THE NEW PHASE, KETTLE WAX. James W. McBain, Kenneth Gardner and Robert D. Vold. *Ind. & Eng. Chem. 36,* 808-810 (1944). Earlier work has established the range of existence of the four chief recognized phases in soap boiling. Ternary systems have been described in terms of (1) curd fibers, (2) neat soap phase (liquid crystalline soap solution), (3) a similar but separate middle soap, and (4) isotropic solutions with complicated boundaries extending into lye or brine containing almost no soap. However, it is now proved by a variety of methods, including direct analysis, that a new waxlike form, termed "kettle wax phase", exists in a predominant position in the ternary diagram at soap boiling temperatures even with the highest pure soap, sodium stearate. Only with the highest concentrations of salt are curd fibers of sodium stearate formed at 90°C. Therefore a general description of ternary systems involves soap, water, and electrolyte.

THE MEASUREMENT OF FOAM STABILITY. A. P. Brady and S. Ross. *J. Am. Chem. Soc. 66,* 1348-56 (1944). A foam meter for the measurement of foam stabilities at different temps. is described, employing bubbling as the method of producing the foam. Foam stabilities of several types of materials are measured and reported.

FOAM STABILITY OF SOLUTIONS OF SOAPS OF PURE FATTY ACIDS. G. D. Miles and J. Ross. *J. Phys. Chem. 48,* 280-90 (1944). The effect of alterations in pH upon relative foam stability has been examd. for 0.1%solns. of Na caprate, laurate, myristate, palmitate and stearate. Relative foam stability as a function of concn. has been measured at 57° for solns. of Na caprate, laurate, myristate, palmitate, stearate, undecylenate, oleate, elaidate and ricinoleate at the pH where each soln. showed max. foam. The pH range associated with the max. foam stability for these soaps as a function of concn. was detd. at 57°. The influence of Ca and Mg soaps upon the foam stability of solns. of the corresponding Na soaps was examd. The compn. of the Ca and Mg soap was detd. indirectly by measurements of foam stability. The effect of temp. upon the relationship of pH to foam stability was studied for Na caprate and laurate. The effect of temp. on the foam stability of all the soaps mentioned in the second sentence (above) was ascertained for the range of 27-82°. The effect of pH on the foam stability of mixts. of Na laurate and palmitate was detd. Good foam stability was obtained for a few solns. contg. 2 materials neither of which, alone, is a particularly good foam stabilizer.

CRYSTALLIZATION OF BINARY AND COMMERCIAL SOAP SYSTEMS. R. H. Ferguson and H. Nordsieck. *Ind. Eng. Chem. 36,* 748-52 (1944). Although the short spacings of x-ray diffraction patterns have proved most suitable for identification of at least 4 crystn. modifications of Na soap, it is necessary to turn to the long spacings in order to ascertain the crystn. behavior of the individual fatty constituents of mixed and com. soaps. Fractional crystn. may occur when there is a sufficient difference in chain length between the 2 components, but even here the fractions are solid soln. phases and not pure components. It appears to be the general rule that com. soap crystallizes as a solid soln. No evidence of fractional crystn. has been observed in com. soap.

SODIUM ALCOHOL SULFATES PROPERTIES INVOLVING SURFACE ACTIVITY. E. E. Dreger, G. I. Keim, G. D. Miles, L. Shedlovsky and J. Ross. *Ind. Eng. Chem. 36,* 610-17 (1944). The prepn. and properties are described for alternate members of a homologous and of an isomeric series of purified Na salts of secondary alc. sulfates, contg. from 11 to 19 C atoms, and for a straight hydrocarbon chain with the SO_4 group in various positions. The purified Na salts of the primary alc. sulfates with 10, 12, 14, and 16 C atoms are also examined. Measurements have been made of the surface tension and foaming, wetting, and detersive properties of solns. of these compds. in water and with added electrolytes. Solubilities of Na salts of the secondary and primary alc. sulfates studied are reported at 5° intervals from 20° to 40° C. The data are discussed from the point of view of correlating changes in the properties involving surface activity when the structure and mol. wt. of the compd. are changed.

AT THE SOAP PAN. NEW SERIES: No. 5. Joseph M. Vallance. *Soap, Perfumery & Cosmetics. 17,* 496-7 (1944). A method is described for the manufacture of a toilet soap base which includes a multiple graining process and improved glycerin recovery. The sweating of soaps is discussed and the negative effects of such addition agents as proteins, rosin and hydroquinone are told. Soaps for solid soap dentifrices are surveyed and formulations are given.

DETERGENTS IN CORN INOCCULATION. *Soap 20,* No. 9, 135 (1944). Detergents such as triethanolamine oleate and monobutylamine oleate have been used to advantage in inocculating corn from disease organism in test work. They gave low tensitometer reading, low phytocidal and fungicidal action and allowed the production of a high percentage of infection of a severe type.

LOW-TEMPERATURE SAPONIFICATION IN ANHYDROUS SYSTEMS. Wilfred Gallay and Ira E. Puddington. *Can. J. Research 22B,* 76-89 (1944). Finely dispersed NaOH suspended in mineral oil effected almost complete sapon. of fats and fatty acids at 60°. Finely