The work of Riemenschneider and others (3) on the synergistic effects of lecithin with fatty acid esters of d-isoascorbic acid and alpha-tocopherol are also well known. Probably not so well known is its use as an antioxidant in fish liver vitamin oils. Buxton (4) has recently reported excellent results in this field using mixtures of lecithin and alpha-tocopherol. New antioxidants, many of which show greater antioxidant activity on accelerated tests than lecithin, have appeared in recent years. But lecithin in spite of its lower protective properties has certain inherent advantages. It is readily soluble in fats and oils, is a wholesome edible product, has little or no effect on flavor, and is available at low cost. Lecithin will probably always be a considerable factor in the utilization of antioxidants. In the petroleum industry (6, 7) lecithin is used as a stabilizer for gasoline containing tetra ethyl lead and as an additive in lube oils. About 10 pounds of lecithin per 1,000 barrels of gasoline is used to inhibit clouding, also to counteract corrosion of fuel tanks and liners, particularly in aircraft. About 0.5% lecithin is used in lube oils.

As for applications that have to do with nutritional or medicinal uses, soybean lecithin contains approximately 3% of choline, recognized as an important dietary factor. Specifically, clinical tests have shown the effectiveness of lecithin in prevention of fatty livers and in the treatment of psoriasis. The utilization of vitamin A and carotene are also enhanced by lecithin. Research is being continued on this field, but already lecithin is being utilized in considerable quantities for both human and animal nutrition.

The uses outlined are all fairly well established; however, the versatility of lecithin and its present low cost have stimulated research for new uses in entirely new fields. The possibilities for new applications are virtually unlimited.

REFERENCES

1. Fischer, Earl K., and Gans, David M., "Dispersions of Finely Divided Solids in Liquid Media." "Colloid Chemistry," Vol. VI P., 286-326, J. Alexander.
2. Bartell, F. E., "Wetting of Solids by Liquids," "Colloid Chemistry," Vol. 3, p. 41-46, J. Alexander.
3. Riemenschneider, R. W., Turer, J., Wells, P. A., and Ault, W. C., Oil & Soap *21*, 47 (1944).
4. Buxton, L. O., Ind. & Eng. Chemistry *39*, 225 (1947).
5. Steiner, L. F., Arnold, C. H., and Fehey, J. H., U.S.D.A., Agr. Res. Adm., Bureau of Entomology and Plant Quarantine.
6. Sollman, I. E., U. S. Pat. 1,884,899.
7. Rathbun, R. B., U. S. Pat. 2,208,105.

☆ ☆ ☆ **ABSTRACTS** ☆ ☆ ☆

Oils and Fats

Edited by
M. M. PISKUR and MARIANNE KEATING

THE CHEMISTRY OF THE RESIN ACIDS. H. H. Zeiss (Ridbo Labs., Inc., Paterson, New Jersey). *Chem. Revs. 42,* 163-87 (1948).

SUNFLOWER OIL. Anon. *Food Manuf. 23,* 57-9 (1948). Description of plant erected in 1946 in Altona, 100 miles south of Winnipeg, for the purpose of increasing the supply of edible oils.

THE FATTY ALCOHOLS. L. Bert. *Soap Perfumery & Cosmetics 21,* 48-51 (1948).

CETYL ALCOHOL AND ITS APPLICATIONS IN SOAPS, COSMETICS, AND TOILET PREPARATIONS. Anon. *Soap Perfumery & Cosmetics 21,* 153, 152 (1948).

STUDIES ON METHODS OF EXTRACTING VITAMIN A AND OIL FROM FISHERY PRODUCTS. PART I. VITAMIN A POTENCIES OF OILS FROM GRAYFISH LIVERS OBTAINED BY EXTRACTION WITH PETROLEUM ETHER AND BY COOKING WITH WATER. D. Miyauchi and F. B. Sanford (Fishery Tech. Lab., Seattle, Washington). *Com. Fisheries Rev. 9,* No. 9, 19-20 (1947). Grayfish livers held at different temperatures were extracted with petroleum ether and by cooking with water. The vitamin A content of the oil extracted with petroleum ether was about 1% higher than for the oil extracted by cooking with water.

SEPARATION AND DETERMINATION OF THE STRAIGHT-CHAIN SATURATED FATTY ACIDS C_5 TO C_{10} BY PARTITION CHROMATOGRAPHY. L. L. Ramsey and W. I. Patterson (Food and Drug Admin., Federal Security Agency, Washington, D. C.). *J. Assoc. Official Agr. Chem. 31,* 139-50 (1948). The fatty acids are separated on a column of silicic acid, using methanol as the immobile solvent, 2,2,4-trimethylpentane as the mobile solvent, and bromocresol green as the indicator. The separator acids are titrated with standard Na ethylate and tentatively identified by their threshold volumes; and the identification in each case is confirmed by adding an approximately equal amount of an authentic sample of the suspected acid and testing the chromatographic homogeneity of the mixture on a fresh column. It appears that the method may be suitable for routine use in the study of fermentation, food decomposition, the composition of certain fats, and the composition of natural and synthetic flavors and esters.

FURANS IN VEGETABLE OIL REFINING. S. W. Gloyer (Pittsburgh Plate Glass Co., Milwaukee, Wis.). *Ind. & Eng. Chem. 40,* 228-36 (1948). Furfural in conjunction with naphtha was used in the fractionation of free fatty acids to obtain fractions composed of 85-98% drying acids from soya and linseed acids. The furfural extraction process has also been employed in the concentration of vitamin A from liver oils. A concentrate in 19% yield containing 82,000 units of vitamin A per gram was obtained from a dogfish liver oil having a potency of 17,500 units of vitamin A per gram. Potencies of 150,000 units of vitamin A per gram have been obtained by lowering the yield of extract. These concentrates have also had removed much of the fishy odor and taste associated with the original oil. Tall oil has been fractionated to yield a fraction with only 1.3% rosin acid and 2.9% unsaponifiable matter, the remainder being fatty acid ester. This process involves the preferential esterification of the fatty acids followed by fractionation with a mixture of furfural and naphtha.

FACTORS AFFECTING THE QUALITY OF CAKES MADE WITH OIL. H. B. Ohlrogge and G. Sunderlin (Purdue Univ., Lafayette, Ind.). *J. Am. Diet. Assoc. 24,* 213-

16 (1948). The greatest improvement in the quality of cakes made with oil came from stirring in a sponge or meringue made of the stiffly beaten whole egg or egg white and one-fourth of the sugar late in the mixing process. Combining the other ingredients by the muffin method, mixing until smooth, and then blending in an egg white-sugar meringue was a simple, practical method, of mixing which produced high-scoring cakes. For ten of the eleven methods of mixing in which a sponge or meringue was used, the cakes scored higher than those mixed by any of the twelve other methods. The time or method of adding the egg yolk did not consistently influence batter structure or cake quality. All the batters mixed with soybean oil, even those of high relative viscosity producing good quality cakes, were found to be of the oil-in-water emulsion structure. There was high correlation between relative viscosity of the batter and acceptability score and between moisture absorption and acceptability score.

HYDROGENATION OF CASTOR OIL. C. Paquot and H. Richet (Corps. Gras, Bellevue). *Oleagineux 3,* 26-8 (1948). Hydrogenation of castor oil without dehydroxylation permits converting it to a solid of mp. 85-88°. The most favorable conditions for this are pressure of 100-150 kgs. and temperature of 100-110°. Similar results are obtained at 20 kgs. pressure and 150°. Higher hydrogenation temperatures are conducive to dehydroxylation.

HYDROXYLATED STEARIC ACIDS. II. THE PERIODATE OXIDATION OF THE 9,10-DIHYDROXYSTEARIC ACIDS AND THE 1,9,10-TRIHYDROXYOCTADECANES. H. Wittcoff, O. A. Moe, and M. H. Iwen (General Mills, Inc). *J. Am. Chem. Soc. 70,* 742-4 (1948). The results of periodate oxidation have been used to show that the hydroxyl groups are more proximal in the low-melting forms of the 9,10-dihydroxystearic acids and the 1,9,10-trihydroxyoctadecanes than in the high-melting forms. The low-melting form of 9,10-dihydroxystearic acid has been shown to form a cyclic, acidic complex with boric acid, whereas the high-melting form does not.

STEAROLIC ACID. Homer Adkins and R. E. Burks, Jr. *Org. Synthesis 27,* 76-8 (1947). The dibromide from 35 g. Me oleate in 50 ml. AmOH and 40 g. KOH (85% purity), heated 4 hours at 150°, the AmOH removed by distillation at atmospheric pressure, and the residue acidified with concentrated HCl, gives 33-42% stearolic acid. (*Chem. Abs. 42,* 1561.)

SYNTHESES OF LONG-CHAIN ALIPHATIC ESTERS. I. SYNTHESES OF SATURATED ESTERS OF MONOALCOHOLS. C. Paquot and F. Bouquet (Lab. des Corps gras de Bellevue C.N.R.S.). *Bull. soc. chim. France, 1947,* 321-2. Long-chain esters, e.g. Et laurate, Et myristate, Et palmitate, Et stearate, hexadecylacetate, and hexadecyl palmitate, are obtained in better than 90% yields by adding the acid chloride in anhydrous ether to the alcohol (10% excess) in anhydrous ether in the presence of 3-5% excess Mg ribbon, refluxing a few hours, and decomposing the resulting complex with water or concentrated NH_4Cl solution. In decomposing the complex, much heat is liberated and $Mg(OH)_2$ precipitates. The authors suggest that Mg is combined in the complex in a way similar to that of the Grignard compound. (*Chem. Abs. 42,* 521.)

SPECIFIC UNSATURATED FATTY ACIDS IN THE PRODUCTION OF ACID-FAST PIGMENT IN THE VITAMIN E-DEFICIENT RAT AND THE PROTECTIVE ACTION OF TOCOPHEROLS. L. J. Filer, Jr., R. E. Rumery, and K. E. Mason (Univ. of Rochester School of Med. and Dentistry, Rochester, N. Y.). *Biol. Antioxidants, Trans. 1st Conf. 1946,* 67-77. Rats fed vitamin E-deficient diets to which either cod liver or linseed oil has been added develop early and severe pigmentation of the adipose tissue. By using as criteria the presence of pigment in adipose tissue, dystropic lesions in skeletal muscle, and degenerative changes in testes it was found that α-tocopherol was about 6 times as active *in vivo* as γ-tocopherol, in preventing the appearance of such toxic changes. The data suggest that vitamin E may serve otherwise than strictly as an antioxidant. (*Chem. Abs. 42,* 1641.)

FAT RANCIDITY AND BIOLOGICAL ANTIOXIDANTS. Richard H. Barnes (Sharp and Dohme, Inc., Glenolden, Pa.). *Biol. Antioxidants, Trans. 1st Conf. 1946,* 49-55. Feeding rancid fat caused a marked depression of the growth rate of rats on purified diets. When the rancid fat was replaced with fresh lard the rats grew normally; other supplements had less effect. The stability of rat body fat was not affected by feeding antioxidants. Feeding tung oil decreased the stability while butterfat gave increased body fat stability. The keeping time (stability) of the body fat of young rats on a vitamin E-deficient diet could be related to the tocopherol content of the fat. By such data it was shown that in such rats α- and β-tocopherol are better deposited than the γ-isomer. (*Chem Abs. 42,* 1640.)

THE MECHANISM OF FATTY ACID OXIDATION. L. F. Leloir (Inst. de Invest. Bioquim., Fundac, Campomar, Buenos Aires). *Enzymologia, 12,* 263-76 (1948). A review of the recent literature on fatty acid oxidation in animal tissues shows that most of the experimental facts can be explained by assuming that fatty acids are beta-oxidized to a reactive two-carbon compound. This compound which would also be formed in pyruvate oxidation would be able to react with different substances. With acetic acid it would yield aceto-acetic acid and with oxaloacetic or a related compound it would enter the tricarboxylic acid cycle leading to its complete oxidation. In some microorganisms the mechanism may be similar.

COMPARISON OF VITAMIN A LIVER STORAGE FOLLOWING ADMINISTRATION OF VITAMIN A IN OILY AND AQUEOUS MEDIA. A. E. Sobel, M. Sherman, *et al.* (Lab. of the Jewish Hospital of Brooklyn, New York). *J. Nutr. 35,* 225-38 (1948). There was no definite relationship between serum levels and liver storage, except that vitamin A deficient animals gave low serum values. Liver storage was 3 times as great in groups fed the unsaponifiable fraction of fish liver oil dispersed in water as compared with the same fraction administered in maize oil. Liver storage of groups fed distilled natural esters in maize oil was about 1.5 times as great as that deposited in groups fed the unsaponifiable fraction in maize oil. Distilled esters dispersed in water gave 2.2 times the deposit as compared to distilled esters in maize oil. Apparently vitamin A is more effective when dispersed in aqueous media than in oily solutions. This indicates the importance of considering the nature of the diluent material in the biological evaluation of vitamin A.

EFFECT OF SESAME OIL ON "VEGETABLE GHEE" FORTIFIED WITH VITAMIN A. U. P. Basu and N. Ray (Bengal Immunity Research Lab., Calcutta). *Science and Culture 13,* 73-4 (1947). Oleomargarine contg.

5% sesame oil and fortified with vitamin A decreases in vitamin A content upon exposure to air at 40° more rapidly than oleomargarine contg. no sesame oil. (*Chem. Abs. 42,* 1361.)

EFFECTS OF OXIDIZED FATS IN THE DIET OF THE RAT. Bruce Kennelly and F. W. Quackenbush (Purdue Univ., Lafayette, Ind.). *Biol. Antioxidants, Trans. 1st Conf. 1946,* 56-9. Addition of oxidized lard or oxidized corn oil to the diet of rats gave decreased growth rates and low fertility. No such effects were noted when the same oxidized fats were fed 3 times weekly by dropper. This suggests that the oxidized fat destroys some essential component of the non-lipid portion of the diet. (*Chem. Abs. 42,* 1640-1).

STUDIES ON THE COMPARATIVE NUTRITIVE VALUE OF FATS. X. ON THE REPUTED GROWTH-PROMOTING ACTIVITY OF VACCENIC ACID. H. J. Deuel *et al.* (Univ. So. California, Los Angeles). *J. Nutr. 35,* 301-14 (1948). No differences in the rate of growth of male and female rats were noted over a 6-week period when the diet contained butterfat or cottonseed oil. The growth rate receiving rape-seed oil diets was somewhat less and the efficiency of utilization of these diets poorer than those obtained on the butter or cottonseed oil diets. It is believed that the less efficient utilization of the rape-seed oil diet is to be attributed to the poor digestibility of the fat which may be due to its characteristically high content of erucic acid. No stimulating effect on growth was produced by the administration of vaccenic acid or hydrogenated China wood oil to the rats on the rape-seed oil diet. Moreover, no increased growth resulted in the cottonseed oil group when a supplement of vaccenic acid was fed. It is concluded that vaccenic acid plays no specific role in relation to growth of the rat.

RESEARCH ON A GROWTH-PROMOTING FACTOR FOR RATS PRESENT IN SUMMER BUTTER. I. A. Kentie (Nederlands Inst. Volksvoed. and Physiol. Chem. Lab. Univ. Amsterdam). *Netherlands Milk & Dairy J., 1,* 118-27 (1948). This factor can be adsorbed on fuller's earth. This factor loses its growth-promoting properties upon complete hydrogenation.

THE DIGESTIBILITY OF RAPE-SEED OIL IN THE RAT. H. J. Deuel, A. L. S. Cheng and M. G. Morehouse (Univ. So. Calif., Los Angeles). *J. Nutr. 35,* 295-300 (1948). Rape-seed oil has been found to have the lowest coefficient of digestibility of any fat, liquid at ordinary temperature, which has been investigated on rats. Crude rape-seed oil was digested to the extent of only 77% while the refined oil gave an average value of 82%. This apparently cannot be traced to a failure of lipolysis but is believed to be related to the poor absorbability of the erucic acid fraction.

THE INFLUENCE OF THYROID ACTIVITY ON THE LIVER AND PLASMA LIPIDS OF CHOLINE- AND CYSTINE-DEFICIENT RATS. P. Handler (Duke University School of Medicine, Durham, North Carolina). *J. Biol. Chem. 173,* 295-303 (1948). Hypothyroidism, produced both by thyroidectomy and by thiouracil feeding, resulted in a marked increase in the cholesterol concentration and a relatively small increase in the neutral fat content of the livers of both control and choline-deficient rats. Thyroid feeding resulted in a pronounced decrease in the cholesterol concentration and a slight decrease in the neutral fat concentration of the livers of both control and choline-deficient rats. Cystine deficiency partially prevented the accumulation of neutral fat and cholesterol in the livers of normal and choline-deficient rats. The plasma lipid concentrations of choline-deficient rats were somewhat reduced below those of normal rats. Thyroid feeding slightly diminished plasma lipids of both series, while in hypothyroidism the plasma lipid concentrations of both series were greatly increased

CONTENT OF FATTY ACIDS, TOTAL CHOLESTEROL, AND IODINE VALUE OF THE FATTY ACIDS IN THE SERUM OF DIABETIC PATIENTS. L. Travia, M. Cordone, and F. Di Raimondo (Univ. Roma). *Arch sci. med. 84,* 289-97 (1947). The values obtained from 13 diabetic patients were compared with those of 6 normal persons. While there was no difference in the total fatty acid or cholesterol contents, the average content of unsatd. acids was higher in the diabetic patients. (*Chem. Abs. 42,* 1348.)

HUMAN BONE MARROW AND DEPOT FAT. Karl Bernhard and Harry Korrodi (Univ., Zurich, Switz.). *Helv. Chim. Acta 30,* 1786-97 (1947). The fat of the bone marrow of 31 corpses was assayed according to the usual methods and the fatty acids were fractionated. No significant differences were found in the fat compn. of the bone marrow from healthy and diseased persons or from persons in a good or deficient state of nutrition. (*Chem. Abs. 42,* 1345.)

THE FORMATION OF FATTY ACIDS IN THE INTESTINAL TRACT. Karl Bernhard and Francois Bullet (Univ. Zurich, Switz.). *Helv. Chim. Acta 30,* 1784-6 (1947). Male white rats whose body water was labeled with deuterium (I) received extd. bread as a sole source of food. After 3 to 21 days, the animals were killed, the intestinal tract and liver isolated and the I contents of their fatty acids detd. The values of both fatty acid mixts. had nearly the same I content. The result shows that an intensive synthesis of fatty acids occurs in the intestinal tract of rats fed a carbohydrate-rich diet. This agrees with results obtained with a protein-rich diet. (*Chem. Abs. 42,* 1339.)

ON THE INTERACTION OF AVIDIN AND OLEIC ACID. H. P. Broquist and E. E. Snell (College of Agr., Univ. Wis., Madison). *J. Biol. Chem. 173,* 435-6 (1948). Under appropriate conditions, oleic acid replaces biotin for several lactic acid bacteria. This growth-promoting action of oleic acid is not nullified by excess avidin for *Streptococcus faecalis R*[2] or for several other organisms. Egg white did, however, block utilization of oleic acid by *Lactobacillus arabinosus.* This result is obtained whether oleic acid is added alone, as Tween 80, or as the free acid with Tween 40. Purified samples of ovalbumin, conalbumin, and lysozyme were ineffective in preventing utilization of oleic acid.

PATENTS

RUST INHIBITOR FOR MINERAL OIL. G. H. S. Snyder, R. V. White, J. H. Bishop, and J. F. Socolofsky (Socony-Vacuum Oil Company, Inc.). *U. S. 2,436,272.* Reaction products of malic acid and fatty alcohols is used as a rust inhibiting ingredient for lubricant oils.

GREASE COMPOSITIONS. J. C. Zimmer and A. J. Morway (Standard Oil Development Co.). *U. S. 2,436,347.* The grease composition comprises at least 65% of the ester isobutyl, 2-ethylhexyl sebacate; 6-30% of a soap of a metal selected from the group consisting of alkali and alkaline earth metal and 0.5 to 5% of an amphoteric metal soap as a stabilizer.

FAT HYDROLYSIS. M. H. Ittner (Colgate-Palmolive-Peet Co.). *U. S. 2,435,745.* This invention relates to the hydrolysis of fats with liquid water in autoclaves with the aid of elevated temperatures and pressures and to apparatus suitable therefore.

WINTERIZING OILS. C. M. Gooding and J. R. Rich (The Best Foods, Inc.). *U. S. 2,435,626.* A method for improving the resistance of a winterized vegetable oil to freezing comprises adding a crystallization modifying agent comprising lecithin to it, chilling the oil fraction to separate further crystals and separating liquid oil therefrom.

Soap and Perfume

Edited by LENORE PETCHAFT

THE SHARPLES CONTINUOUS SOAP PROCESS. Anon. *Soap, Perfumery, & Cosmetics 21,* 154-6, 174 (1948). Article outlining the essentials of the Sharples centrifugal process. This process consists of four stages: preliminary saponification, complete saponification, washing of glycerin from the soap, and the "fitting" stage. A flow sheet and detailed description of the process is included. Advantages of system are present in the saving of steam, saving of amount of saponifying reagent, decrease in amount of impurities introduced in the system and high recovery of saleable glycerin.

SADDLE AND LEATHER SOAPS. M. A. Lesser. *Soap Sanit. Chemicals 24,* No. 3, 43-5, 91, 93 (1948). Review article including types of soaps and formulations. 20 references.

GUANIDINE SOAP—PROPERTIES AS DETERGENTS. M. Z. Poliakoff and Gilbert B. L. Smith (Polytechnic Institute of Brooklyn, Brooklyn, N. Y.). *Ind. Eng. Chem. 40,* 335-7 (1948). Synthesis and properties of guanidine salts of fatty acids are described. They are produced by reaction of fatty acids with guanidine carbonate. These compounds demonstrate similarity to the usual alkali metal soaps. Detergent ability of the guanidine soaps is compared with the corresponding sodium and potassium compounds on such points as surface tension, emulsifying power, deflocculating power and laundering. They were found to compare favorably. Possible uses may be in wax dispersion, drug and cosmetic preparations, food emulsions, and cutting oils.

SODIUM CMC IN SYNTHETIC DETERGENTS. T. H. Vaughn and H. Earl Tremain (Wyandotte Chemicals Corp., Wyandotte, Mich.). *Soap Sanit. Chemicals 24,* No. 3, 37-9, 98 (1948). Detergent mixtures formulated from "Carbose" (technical grade of sodium carboxymethyl cellulose), "Kreelon 4D" (a flaked product containing approximately 40% active Na alkylaryl sulfonate), and silicated soda ash builder were found to yield better carbon soil removal results than either synthetic detergents or soaps will alone. The most successful formulation consisted of 20% "Carbose," 60% "Kreelon 4D" and 20% silicated soda ash builder. Whiteness retention tests yielded similar results. A possible explanation of this power of Na CMC may be the fact that it increases the colloidal and micelle forming characteristics of the synthetic detergent, a property present in solutions of fatty acid soaps and not usually present in most synthetic detergents.

END-USE TESTING OF SCRUB SOAPS. Adrien DuBois (Fuld Brothers, Inc., Baltimore, Md.). *Soap Sanit. Chemicals 24,* No. 3, 134-6 (1948). Four types of scrub soaps (neutral, alkali-absorbing; neutral; slightly alkaline; and decidedly alkaline) were evaluated on the basis of their efficiency in actual sanitary maintenance work. The tests conducted were on detergency, foaming, "Spendability"—measure of lasting power of cleanser in actual use, and wetting. The preparation of a standard soil which is applied to ordinary microscopic slides and washed in a specially designed machine is described.

METHOD OF ANALYSIS FOR CERTAIN SURFACE-ACTIVE AGENTS. S. R. Epton (Thornton Research Center, Chester, Eng.). *Nature 160,* 795-6 (1947). An improved titrimetric method of analysis for anionic surface-active agents, such as alkyl sulfates and sulfonates, is described. The equivalent point is observed from the change of intensity of methylene blue in a chloroform layer, as related to the addition of the titrating agent, hexadecylpyridinium bromide. Pipet off 10 ml. of an alkyl sulfate (approximately 0.004 M) into a 250-ml. stoppered bottle. Add 25 ml. of indicator solution (0.003% methylene blue, 1.2% H_2SO_4, and 5% Na_2SO_4 in aqueous solution) and 15 ml. $CHCl_3$. Then add a solution of hexadecylpyridinium bromide (approximately 0.004 M) from a buret. Shake the mixture after each addition and note the color of the 2 layers. At first the blue is concentrated in the $CHCl_3$ layer but is slowly transferred to the H_2O. When the two layers have the same color, the equivalent point has been reached. The end point can be reproduced to 0.1 ml. and is not affected by excess inorganic salt, acids, moderate quantities of organic solvents, or temperature variations. Substances having more than one ionizable group cannot be analyzed by this method. (*Chem. Abs. 42,* 1528.)

A QUANTITATIVE TEST METHOD FOR EVALUATING WOOL SCOURING DETERGENT SYSTEMS. E. A. Leonard and A. R. Winch (Alexander Smith & Sons Carpet Co., Yonkers, N. Y.). *Am. Dyestuff Reptr. 37,* 202-8 (1948). A quantitative method of evaluating detergents to determine the relative cost per pound of material cleaned has been devised. A small laboratory scouring train is used under controlled conditions to scour uniform skeins of wool uniformly soiled. Factors controlled include detergent used and its concentration, temperature of scouring liquors, time of the test, circulation of scouring liquors, wringer pressure, concentration of supporting electrolytes, specific ions, etc., pH and ratios of soiled material to scouring liquor. Tables showing cumulative weight of detergent used in the controlled scouring process and residual grease content for each weight, determined by use of a "Greaseometer" were compiled. Curves drawn from these data, "Scouring curves," provide a method of comparing various detergents and their economic efficiencies.

DETECTION AND DETERMINATION OF TYLOSE IN SOAP AND DETERGENTS. Miroslav Liby. *Chem. Obzor 22,* 213-15 (1947). The detection of tylose is carried out microscopically by means of a dye preparation. In the determination, tylose is hydrolyzed by boiling HCl and the dextrose determined with Fehling solution. (*Chem. Abs. 42,* 1750).

REACTION OF SODIUM CARBONATE ON CALCIUM SOAPS DURING THE WASHING PROCESS. P. Anglaret (Lab. Chevreul, Paris). *Bull. mens. ITERG (Inst. tech.*

etudes et recherches corps gras) 1947, No. 11, 31. The lather produced in exhausted laundry waters on boiling with Na_2CO_3 can be attributed to the formation of Na soaps from the suspended Ca soaps. Samples of 2 g. of Ca oleate were boiled for 4 hours with varying quantities of water and Na_2CO_3; after filtration, the amount of $CaCO_3$ was determined (volumetric method of Lunge-Rithener). The quantities of Na_2CO_3 required to transform half of the Ca oleate employed into Na soap were 210, 66, and 9 times the theory if, respectively, 1000, 200, and 33 ml. of water were employed. (*Chem. Abs. 42,* 2120.)

THE FUNDAMENTAL CONCEPTS CONCERNING SURFACE TENSION AND CAPILLARITY. R. C. Brown (Univ. Coll., London). *Proc. Phys. Soc. (London) 59,* 429-48 (1947). On the basis of the usual idea of cohesion between molecules it can be shown that it is not necessary to deny the reality of surface tension during the course of an explanation of the common phenomena that were, at one time, regarded as providing evidence of its existence. It is possible, also, to gain a less abstract conception of the distinction between free and total surface energy than that provided by a purely thermodynamic discussion. The customary assumption that in a system containing a solid-to-liquid interface the surface energy of the solid plays a role identical with that of the liquid is criticized, and the conception of surface energy as the work done during the rupture of a column of material is examined. Capillary elevation is regarded as a consequence of negative surface tension in the liquid at the solid to liquid interface, and the usual expression for the capillary rise is derived from this idea. Surface energy of solids and the equilibrium between solid and liquid surfaces are discussed. Angles of contact are also discussed. (*Chem. Abs. 42,* 1469.)

PATENTS

IMPROVED PROCESS FOR THE PREPARATION OF WETTING, EMULSIFYING, DETERGENT, AND FOAMING PRODUCTS. Societe d'Innovations Chimiques. *Brit. 595,735.* Wetting, emulsifying, detergent, and foaming products, useful in textile operations, are prepared by sulphonation of diaryl thioethers in the presence of alcohols.

ALPHA-HYDROXY-ETHER OF FATTY ACID SOAP. Herbert H. Guest (The J. B. Williams Co.). *U. S. 2,435,829.* New type soaps having such desirable properties as solubility in hard water, high lathering ability and mildness to skin are prepared by reacting α-halo higher fatty acids such as α-bromo-stearic or palmitic acid with the alkali metal derivative of a polyhydric alcohol such as glycerol or propylene glycol and recovering the salt formed.

MILLED SOAPS CONTAINING AN AROMATIC SULFONATE. Lester F. Hoyt (Allied Chemical & Dye Corporation). *U. S. 2,438,169.* Preparation of a soap product containing fatty acid soap and a higher petrol aromatic sulfonate which is made suitable for milling by the addition of starch to overcome stickiness and toughness.

PHOSPHATE-DETERGENT COMBINATION. Lloyd Henderson and Bernard Maxwell (Lever Brothers Co.). *U. S. 2,437,253.* Phosphates, such as sodium hexametaphosphate, trisodium phosphate, etc. with a high negative valence are added to soaps and synthetic detergents to prevent redeposition of emulsified soil particles by providing them with a high negative potential which keeps the particles suspended.

Drying Oils

Edited by ROBERT E. BEAL

SAFFLOWER: A POTENTIAL OILSEED CROP IN THE WESTERN STATES. C. E. Claassen (Univ. of Nebraska). *Chemurgic Digest 7,* No. 3, 11-16 (1948). A recently developed variety of safflower with a 34% semi-drying oil content will be an economic crop for western dry lands.

LIQUID ROSIN-TALL OIL. R. L. Annand. *Oil Colour Trades J. 112,* 1319- 20, 1322 (1947). The characteristics of tall oil from U. S. and Scandinavian sources and its uses in the paint and varnish industry are described. (*Chem. Abs. 42,* 1746.)

TWENTY-ONE YEARS OF GAS COAGULATION THEORY. L. Auer. *Paint Manuf. 18,* 41-4 (1948). Film formation of raw, refined or bodied drying or semi-drying oils occurs at 1 to 10 mm. air pressure, under CO_2 at atmospheric pressure or under oxygen-free nitrogen at proper pressure. The oils may be pigmented and contain driers. At 10^{-6} mm. oil films show no change in viscosity. Chemical oxidation is concluded to be unnecessary for film formation. Oxidation which occurs under normal atmospheric conditions leads to the formation of peroxides, aldehydes or hydroxyl compounds and such reactions are not necessarily connected with film formation. Films are believed to consist of a dispersed phase held in a gel skeleton. Bodied oils do not show the same molecular weight in different solvents or at different concentrations in the same solvent and they should be regarded as colloidal aggregates rather than true polymers. Differences in the behavior of film forming oils may be explained from a colloidal viewpoint in which the theory of polyfunctionality is unnecessary.

PATENTS

CATALYTIC ISOMERIZATION OF UNSATURATED GLYCERIDE OILS. C. J. Plank (Socony-Vacuum Oil Company). *U. S. 2,435,695.* A drying or semi-drying oil is treated at 450-600°F. with a boron trifluoride-bodied Chinawood oil gel to isomerize the double bonds of the drying oil.

LUBRICANT COMPOSITIONS. D. W. Young and W. J. Sparks (Standard Oil Development Company). *U. S. 2,435,619.* A polyester, such as may be derived from polymerized drying oil fatty acids or esters thereof and a glycol, is dissolved in a mineral lubricating oil in an amount sufficient to improve the viscosity index of the lubricating oil.

PREPARATION OF AN ALKYD TYPE RESIN. H. L. Gerhart and L. M. Adams (Pittsburgh Plate Glass Company, Pittsburgh, Pa.). *U. S. 2,436,641.* Dicylopentadiene and maleic anhydride are converted to cis-3,6-endomethylene, delta 4 tetrahydrophthalic anhydride at 180 to 200° in a closed system in the presence of drying oil fatty acids and glycerol, or derivatives thereof. The temperature is subsequently raised to 210° until an alkyd resin is formed.

REFINING MATERIALS FOR USE IN PAINTS AND IMPREGNATING COMPOSITIONS. K. H. Magnusson and H. Sander (Svenska Oljeslageriaktiebolaget). *Sweden 118,873.* Drying or semi-drying oils are refined with 35 to 80% sulfuric acid. The product may be blown with air or oxygen-containing gas at a temperature not above 150° and treated with a dibasic acid. (*Chem. Abs. 42,* 1748.)