into the last ext. stage from which refined oil is recovered an addl. amt. of ammonia between about 10% and 40% of the amt. added in the first stage.

PROCESS FOR PREPARATION OF VITAMIN E CONCENTRATE AND ANTIOXIDANT. John S. Andrews (General Mills, Inc.). *U. S. 2,263,550.*

PREPARATION OF OILS CONTAINING ANTIOXIDANTS. James G. Baxter and Jakob L. Jakobsen (Distillation Products, Inc.). *U. S. 2,269,243.* The process of refining an animal or vegetable oil which contains a natural antioxidant comprises treating the oil with an organic dibasic acid whereby the impurities are coagulated, separating the oil from these impurities, subjecting the oil to high vacuum unobstructed path distillation and separating a fraction of the oil which contains at least a part of the necessary antioxidant. Examples of suitable org. acids are oxalic, tartaric, citric and maleic.

PHOSPHATIDE PRODUCT, AND PROCESS OF OBTAINING IT. Norman F. Kruse (Central Soya Co., Inc.). *U. S. 2,269,772.* A crude phosphatide fraction is sepd. directly as a waxy material from vacuum-stripped solvent-extracted vegetable oils contg. it by addg. to such a vegetable oil both a small amt. of moisture and a crude oil which is high in phosphatide content, which fraction is substantially free from volatile materials that cause disagreeable odors and taste, and has a high content of acetone-insoluble material, a low oil content, and a moisture content of between 3% and 10%.

LUBRICATING COMPOSITION. Bert H. Lincoln and Gordon D. Byrkit (Lubri-Zol Development Corp.). *U. S. 2,264,319.* A lubricating compn. comprises a major propn. of oil of lubricating viscosity and a minor propn. of halogenated foots oil.

LUBRICANT. Eugene Lieber (Standard Oil Development Co.). *U. S. 2,262,809.* An improved lubricant comprises a waxy lubricating oil and a condensation product of halogenated "tall oil" and a cyclic compd.

Abstracts

Soaps

Edited by
M. L. SHEELY

INDUSTRIAL RESEARCH IN THE UNITED STATES DURING 1941. William Hamor. *News Ed. A.C.S. 20,* 1 (1942). Cottonseed oil industrial soap is getting trial in place of olive oil base products. From the investigation of the sapon. of fats at high temperatures in the presence of kerosene several operating difficulties in the process have been overcome. As little as 3 to 5% bentonite improves the properties of soap, but this quantity does not effect much of a saving in fat-acid content. Soaps from pyroabietic acid are more germicidal than soaps made from gum rosins, as are also soaps of tetrahydro-dihydro-, and freshly prepared abietic acids.

SYNTHETIC GLYCERINE—Dichloro-tert-butyl alcohol, the principal product from the chlorohydrination of methallyl chloride, has been employed for the synthesis of β-methylepichlororohydrin, β-methylglycerol monochlorhydrin, β-methylglycidol, and β-methylglycerol. A similar but more complex series of compounds has been prepared from trichloro-tert-butyl alcohol. Synthetic glycerol, produced by hydrogenolytic processes, is impure and the isolation of C. P. grade has proved difficult. A new approach to the problem—namely crystallization in the presence of suitable solvents—yields glycerol of purity. It is now possible by treatment with hydrogen to produce glycerol from such abundant carbohydrate materials as starch and dextrose. Shell's synthetic glycerol process has brought a number of intermediates and derivatives formerly obtainable in quantity only from glycerol itself. In the catalytic process of Battelle Memorial Institute glycerol is produced from petroleum refinery gases without high-temperature chlorination. Glycerol formal is being used as a solvent for zein as well as cellulose esters.

THE ETHANOLAMINES. Chester B. Kremer. *J. Chem. Ed. 19,* 80-1 (1942).

INFLUENCE OF SOAPS ON BACTERIAL TOXINS AS ELICITED BY SHWARTZMAN RESPONSE. Herman C. Mason. *J. Bact. 43, Proc. 43,* 54 (1942).

FATTY AND FAT-FREE WASHING AND CLEANING MATERIAL IN VIEW OF THE ORDER OF JAN. 27, 1940. Kurt Lindner. *Seifensieder-Ztg. 67,* 171-2 (1940). Substitutions are discussed. *(Chem. Abs.)*

SIMPLIFICATIONS IN THE DETERMINATION OF FAT ACIDS IN COMMERCIAL SOAPS. J. Grossfeld. *Chem.-Ztg. 65,* 153-4 (1941). G. found that the loss of fat acids from butterfat and coconut fat during analysis is not caused by the volatility of the acids but by their soly. in water, especially in the presence of alc. The following method avoids this loss. Add 5 cc. of HCl (25%) to 5 g. of soap, keep at 100°, until the fat acids have sepd. out., add 50 cc. of naphtha (b. 60-70°), dissolve the acids by shaking, let stand until the soln. is clear, pipet out 25 cc. of soln., evap. the solvent and dry. Soaps filled with clay are extd. for 3 hrs. with 96% alc. and the residue after evapn. of the alc. is treated as before. A fast, less accurate method is given: ext. 2 g. of soap with 20 cc. of 96% alc. for 10 min., add 50 cc. of naphtha, 10 cc. of HCl (25%) and 30 cc. of H_2O, mix and evap. 25 cc. of the clear soln. *(Chem. Abs.)*

DEEP-DRAWING LUBRICANTS. E. E. Halls. *Automobile Engr. 31,* 192-4 (1941). Various compns. that may be used as lubricants for deep-drawing operations are described, and their relative merits discussed. The presence of fixed fatty oils is required because of their unrivaled properties of wetting, adhesion and film strength. Mineral-filled soap-base compds. are recommended. *(Chem. Abs.)*

AN IMPROVED MOISTURE DETERMINATION APPARATUS. John J. Young. *Soap 18,* No. 1, 59 (1942). The standard distillation method for determination of moisture calls for refluxing at least two hours. Thus

in the control of moisture, in the "boiling down" method of soap manufacture, it means that considerable time is lost, as the boiling down must be stopped to await the result of the determination. Working with the apparatus illustrated, it was found possible to obtain final and accurate results in about twenty minutes.

In operation enough of the unknown to contain 2-3 cc. of water is weighed into an erlenmeyer flask and about 100 cc. of xylol (previously water saturated and distilled) is added. Distillation is carried on until no more water collects in the burette. By merely drawing the burette down to zero and substituting a clean flask the apparatus is ready for a second determination.

Before using the apparatus for determination it is necessary to run a blank consisting of approximately 2 cc. of water and 100 cc. of xylol. This is to provide for water hold-up in the apparatus and zeroing of the burette.

Inherent errors in use of the new apparatus are small. There is no water hold-up above or in the condenser due to the flushing action of the xylol. Due to the design of the connections between the condenser and the burette, the water tends to form in small droplets which shower down through the xylol in the burette to form a definite layer. Hold-up on the sides of the burette is practically nil. There is some hold-up in the return tube trap which can be minimized by using small diameter tube for the return. However, any water held in the apparatus remains practically constant from run to run and therefore may be disregarded.

The speed of the apparatus is due to the efficient sepn. of the drops of water and xylol in the top of the burette and the partial fractionation taking place in the riser tube. This will be aided if the riser tube is asbestos covered.

GLYCERINE. III. J. W. McCutcheon. *Soap 18,* No. 1, 27 (1942). The production of refined glycerine is discussed; the operation of a still built on the van Ruymbeke principle is described in detail. A charge of 10,000-20,000 lbs. is run into the feed tank and is made alkaline to prevent distn. of the lower fatty acids. Too high an alkalinity slows down the rate of distn. and may cause low yields due to the formation of polyglycerols; it is usually held from 0.2-0.4%, calculated as Na_2O. The crude is heated in the feed tank and is then run into the still pot where live steam superheated to 200-220° C. is injected, the flow being so regulated that ⅓ lb. steam is given for every lb. of glycerine distilled. Towards the end of the run the steam flow is increased about 30% to obtain reasonably dry foots. The distillate passes over at about 290° F. with high vacuum, or 325° F. under a pump vacuum of about 28".

The majority of the glycerine at a concentration of about 98% is dropped in the first condenser. The second and third condensers are so regulated as to receive 85% and 70% glycerine resp. Introduction of a fourth and fifth condenser gives a very versatile operation. Glycerine distillation in the Garrigue still is also described in detail. There is usually an overall loss of 1½% in foots, 5% loss in the first distillation and 1½% on the second. Steam ejectors are gradually replacing pumps for production of vacuum because of the greater vacuum obtainable. Although steam consumption for operating the vacuum is higher, the improved distillation rate through lowering the temperature, actually cuts overall steam usage in half. Bleaching and specifications are also discussed.

PATENTS

WASHING AND CLEANING AGENTS. Otto Lind to Henkel and Cie G.m.b.H. *German 703,604.* A soln. of: (1) an O-yielding salt such as per salt, (2) a water-sol. compd. with an alk. reaction, e.g., water glass borax, Na_2CO_3, soap, phosphates, etc., (3) a phosphate with less water than orthophosphate, e.g., pyrophosphate or metaphosphate, and (4) 0.1-1.5% Mg silicate as stabilizer. The mixt. is used as a washing and detergent agent (CA 36:199).

REFINING VEGETABLE OR ANIMAL OIL. William Clayton, Lamar Fleming, Jr., Harmon Whittington, John Fuesler, Dudley Cannafax, DeFord Sumners, Samuel McAshan, Jr., Sydnov Oden and William Anderson (trading as Anderson, Clayton and Co.). *Brit. 531,749.* The alk. soln. is sprayed in the form of a mist into a spray in the form of a mist of the oil being refined or into a thin film of the oil. Greater concns. of the alk. agent can be used than in kettle processes or the known continuous processes. The sapon. loss is less. Salt soln. is used in breaking the emulsion.

SOAP. Hermann Pardun to Noblee and Thorl G.m.b.H. *German 703,634.* A continuous process is described for the removal of unsaponified residues from saponification products. These residues are removed by steam distn. under pressure. To the steam is added an auxiliary liquid which is sol. in both water and the unsaponified residues, e.g., alcs. or ketones. The water and the auxiliary liquid are sepd. from the condensate and reused.

WETTING, PENETRATING, FOAMING, AND DISPERSING AGENT. *Heinrich Bertsch* (American Hyalsol Corp.). *U. S. 2,256,877.* Fiber treatment liquids contg. in aq. soln. a salt of a sulfated higher mol. alc. having at least 8 carbon atoms in the mol. and having a primary alc. hydroxy group with a tertiary aliphatic amine.

DETERGENT AND METHOD FOR PRODUCING THE SAME. Ernst Alfred Mauersberger (Alframine Corp.). *U. S. 2,264,766.* As a new product, a sulfonated mixt. consists of amides, imides, monoglycerides and diglycerides of higher molecular fatty acids and being free from ester amides, said mixt. being obtained by the reaction of from ½ mol. to 1½ mol. of monoalkylolamine with 1 mol. of natural triglyceride of the fatty acids at temps. between about 200° C. and about 235° C.

WASHING AND CLEANING COMPOSITION. Winfrid Henrich and Eberhard Elbel (Proctor and Gamble Co.). *U. S. 2,263,729.* A washing and cleaning compn. comprises a water sol. sodium soap of a hard fatty compd., which soap is poorly sol. in warm and cold water, in admixt. with a water sol. salt of a compd. composed of alkylphenoxy-acetic acid, said alkyl radical being a secondary alkyl radical of 6 to 12 carbon atoms.