Initial concentrations of 0.02, 0.1, and 0.5% were used.

The results indicate that, in general, the deterioration of phenolic antioxidants in oxidizing fats does not occur as a single low order reaction but is complicated by products formed in the oxidation of the fat and possibly also of the antioxidant.

The deterioration curves for gallic acid are quite different from those of the other three antioxidants. This is tentatively explained on the basis of the synergistic action of gallic acid upon itself.

There is an increasing catalytic effect with increasing initial concentrations of all of these antioxidants on the formation of peroxides during the early stages of the autoxidation of lard.

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Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

THE COMPONENT FATTY ACIDS OF BUFFALO COLOSTRUM FAT. C. P. Anantakrishnan, V. R. B. Rao, T. M. Paul, and M. C. Rangaswamy (Imperial Dairy Research Inst., Bangalore, India). *J. Biol. Chem. 166,* 31-3 (1946). The colostrum fat is found to differ in chemical composition from that of the normal butter fat of the buffalo. The chief changes to be found were the gradual increase in the amount of butyric, myristic, and palmitic acids and a decrease in the amount of stearic and oleic acids, the decrease in the latter being more pronounced.

A STUDY OF METHODS FOR ASSESSING RANCIDITY IN LARD. G. A. Grant (National Research Labs., Ottawa) and H. J. Lips. *Can. J. Research 24F,* 450-60 (1946). Lard from 26 sources was stored in glass jars at 26.7° until definitely rancid. Spoilage was evaluated at 2-week intervals by chemical tests and odor ratings. Correlation coefficients between odor scores and the logarithms of chemical test values were: iodometric peroxide—.90; α-dicarbonyl test—.85; Stamm test—.82; Kreis test—.81; ferrometric peroxide—.80; fluorescence—.79; free fatty acids—.10. Association between chemical measurements was greatest between α-dicarbonyl and iodometric peroxide values ($r = .97$). As peroxides are not thermostable, the measurement of the stable α-dicarbonyl compounds, although less precise, is considered the best available chemical method for assessing rancidity.

SUSCEPTIBILITY TO OXIDATION OF THE FAT OF THE BACON PIG. W. Tuck, P. B. D. De la Mare, F. B. Shorland, and R. N. Seelye (N. Z. Dept. Agr., Wellington). *New Zealand J. Sci. Tech. 27A,* 212-20 (1945). Lea's peroxide-value method was used to determine the changes in stored inner-back fat, outer-back fat, and flare fat of pigs fed solely on buttermilk during the fattening period. The results were variable and not in agreement with previous findings of Lea or Johns. Sampling errors and the effects of bacterial and metallic contaminations are suspected as causes of the discrepancy. (*Chem. Abs. 40,* 7435.)

THE DETERMINATION OF THE PEROXIDE VALUES OF EDIBLE FATS AND OILS. THE IODIMETRIC METHOD. C. H. Lea (Univ. Cambridge). *J. Soc. Chem. Ind. 65,* 286-90 (1946). The increase in peroxide value observed in earlier iodimetric procedures when the quantity of fat taken for determination was reduced has been shown to be due to an increasing error resulting from further oxidation of the fat by dissolved O_2 during the determination rather than to loss of I by reabsorption. The effect of other factors, such as moisture in the reagent and time and temperature of reaction, were measured. The data were the bases for development of 2 procedures in which O_2 exclusion was adequate.

X-RAY INVESTIGATION OF GLYCERIDES. V. DIFFRACTION ANALYSES OF SYNTHETIC DIACID DIGLYCERIDES. S. S. Sidhu and B. F. Daubert (Univ. Pittsburgh). *J. Am. Chem. Soc. 68,* 2603-5 (1946). X-ray diffraction and thermal data are reported for a series of 3 symmetrical diacid diglycerides, 2 of which, namely, 1-palmityl-3-laurin and 1-myristyl-3-caprin, are new compounds. The side-spacing diffraction data for 1-myristyl-3-caprin and 1-palmityl-3-laurin correspond to Malkin's type α pattern for the β form of monoacid diglycerides, while the data for 1-stearyl-3-myristin seemed to correspond more nearly to Malkin's type β pattern.

AMINOSTEROIDS. I. α- AND β-FORMS OF 7-AMINOCHOLESTEROL. J. Barnett, B. E. Ryman, and F. Smith (Univ. Edgbaston, Birmingham). *J. Chem. Soc. 1946,* 524-6. The α- and β-isomers of 7-aminocholesterol have been isolated by fractional crystallization of the mixture obtained by reduction of the oxime of 7-ketocholesteryl acetate. The isomeric acetyl derivatives have also been separated, but all attempts to hydrolyze them to the free bases have failed. α-7-Aminocholestanol has been obtained by catalytic reduction of α-7-aminocholesterol. Both the α- and β-7-aminocholesterol isomers show high anti-bacterial activity *in vitro* against Gram-positive organisms, but no appreciable difference has been observed between the activities of the 2 spatial isomers. II. PREPARATION OF 3:7-DIKETOCHOLESTENE. *Ibid.* 526-8. 3:7-Diketocholestene has been prepared from 7-ketocholesterol. An improved method for the preparation of the latter is also described. The diketone appears to exist only in the enolic form. III. SOME MONO- AND DI-AMINOSTEROIDS. *Ibid.* 528-30. Various mono- and di-aminosteroids have been prepared by reduction of the oximes of the corresponding mono- and di-ketosteroids. Examination of their properties as antibacterial agents *in vitro* against Gram positive organisms showed a marked and similar activity in all compounds studied. Only the diaminosteroids had any appreciable bacteriostatic activity against Gram-negative organisms.

Stereochemical configuration and provitamin A activity. V. Neocryptoxanthin A. H. J. Deuel (Univ. South. California School Med., Los Angeles). E. R. Meserve, A. Sandoval, and L. Zechmeister. *Arch. Biochem. 10,* 491-6 (1946). The provitamin A activity in rats of neocryptoxanthin A was found to amount to 71% of that of all-*trans*-cryptoxanthin or 42% of that of all-*trans*-*β*-carotene.

Effect of bulk, casein, and fat in the ration on the utilization of carotenes by white rats. G. S. Fraps (A. & M. Coll., College Station, Tex.). *Arch. Biochem. 10,* 485-9 (1946). Carotene dissolved in oil fed with a bulky ration due to cottonseed hulls had a lower apparent digestibility than when fed with a similar ration containing corn meal or starch, but the storage of vitamin A in the livers was but little affected. The apparent digestibility of the carotene was erratic with linseed oil, cottonseed oil, and lard containing tocopherol.

Anomalies of intestinal absorption of fat. I. The determination and significance of fecal fat. W. T. Cooke, J. J. Elkes, A. C. Frazer, J. Parkes, A. L. Peeney, H. G. Sammons, and G. Thomas. *Quart. J. Med. 15,* 141-55 (1946). Fat balance tests using a 50-g. fat intake per day were carried out on 120 subjects with intestinal disturbances. In 41 controls, 95% of the fat was usually absorbed, with variations between 91 and 99%. In 29 cases of idiopathic steatorrhea the average absorption range was 9-31%. Microscopic examination of feces, although frequently revealing excess of fat acid crystals, was not a certain method of detecting abnormal fat absorption. While feces containing abnormal amounts of fat are often pale and more bulky than usual, they may be perfectly normal in color and consistency. The percentage of fat in dried feces was not found to be a reliable criterion, and the percentage of hydrolysis of fecal fat was of little value in the diagnosis of pancreatic disease. Lack of fat absorption could not be attributed to small-intestinal hurry. It is suggested that the correlation of dietary and fecal fat as fat acid is sufficient for the detection of fat-absorption defect. There seems to be little advantage at present for further differentiation of fecal fat. (*Chem. Abs. 40,* 5133.)

Bile acids and fat resorption in invertebrates. H. J. Vonk (Lab. Comparative Physiol., Utrecht). *Rec. trav. chim. 64,* 320 (1945). Gastric juice of the crayfish, after having been freed of protein by alcohol and then freed of fat and further purified, showed faint color reactions for bile acids. The findings support the hypothesis that bile acids are responsible for the ability of surface active substances in the gastric juice of Crustacea to dissolve small amounts of oleic acid and milk fat, as previously observed by Vonk. Until now, it was believed that the occurrence of bile acids was limited to vertebrates. (*Chem. Abs. 40,* 5157.)

The comparative effect of the fatty acids of butterfat and corn oil on the growth and metabolism of microorganisms. H. Spector (Univ. Illinois, Urbana). *Arch. Biochem. 11,* 167-77 (1946). The effect of the fatty acids of butterfat and corn oil on the growth or metabolism of 7 different microorganisms was compared, at the levels of 10, 50, 100, and 1000γ, with different vitamins and amino acids as the factors limiting growth as well as with a complete medium. The effect produced by the fatty acids is dependent not only upon the test microorganism but also upon the level of the vitamin or amino acid limiting growth as well as the level of the fatty acids themselves. In the tests described there was no consistent distinction between the fatty acids of butterfat and of corn oil in their effects upon bacterial growth, and presumably upon bacterial synthesis of vitamins.

Comparative digestibilities of plastic shortenings made from lard and from hydrogenated vegetable oils. K. F. Mattil, J. W. Higgins, and H. E. Robinson (Research Labs., Swift & Co., Chicago, Ill.). *Science 104,* 255-6 (1946). The new plastic all-lard shortening and the well-known, all-hydrogenated vegetable shortening are equally digestible when fed to white rats. Therefore, they should be equally digestible in humans. The lard shortening has the added advantage, that, due to the fact that the major portion is not hydrogenated, there has been no appreciable destruction of the naturally occurring, essential, unsaturated fatty acids.

PATENTS

Mineral oil defoamer. H. G. Smith and T. L. Cantrell (Gulf Oil Corp.). *U. S. 2,397,377-81.* Dimethylaniline, quinoline, pyridine, and nicotine compounds of isoamyl octyl phosphate are used as defoamers for mineral lubricant oils.

Lubricating oil. G. H. Denison and P. C. Condit (California Res. Corp.). *U. S. 2,400,106.* The product comprises a major proportion of an oil of lubricating viscosity and a small amount each, not less than 0.1% by weight based on the oil, of a salt of a thiocarbamic acid and a fat acid selenide.

Lubricant antioxidant. R. L. May (Sinclair Refining Co.). *U. S. 2,392,253.* The reaction product of ZnO and the reaction product of lauryl alcohol with a condensation product of turpentine and P_2S_5 is an effective antioxidant for lubricating oil.

Stabilized lubricant oil. G. H. Denison and P. C. Condit (California Res. Corp.). *U. S. 2,398,416.* A compounded motor oil comprises a major proportion of petroleum lubricating oil and about 0.1-2% by weight each of dilauryl monoselenide, an oil-soluble polyvalent metal salt of an alkylated phenol, and an oil-soluble polyvalent metal salt of an ester of a thiophosphoric acid.

Lubricant. T. E. Sharp (Standard Oil Co.). *U. S. 2,398,193.* The composition comprises a minor corrosion inhibiting proportion of an ester of an anhydroalkitol and a fatty acid, a soap of a preferentially oil-soluble petroleum sulfonic acid, and a lubricating oil.

Lubricating composition. M. R. Fenske and G. H. Cummings (Rohm & Haas Co.). *U. S. 2,407,954.* A lubricant comprises a lubricating oil having dissolved therein polymerized cetyl α-methacrylate in an amount sufficient to improve the lubricating properties of the oil and glyceryl monoricinoleate in an amount sufficient to reduce the emulsifying tendency of oil containing the polymerized ester alone.

Grease manufacture. L. C. Brunstrum and H. J. Liehe (Standard Oil Co.). *U. S. 2,398,075.* In the manufacture of a lime grease, the improvement comprises hydrating a lime soap in the presence of a preferentially water-soluble fatty alcohol sulfate.

MANUFACTURING LITHIUM BASE GREASES. A. R. Bax, H. F. Kielhorn, and W. E. Forney (Cities Service Oil Co.). *U. S. 2,406,655.* The method of manufacturing a Li base grease comprises forming a slurry of an Al soap and lubricating oil at a temperature of 250-300° F., separately forming a slurry of a Li soap and lubricating oil at 150-200° F., mixing the Al soap slurry and the Li soap slurry, heating the mixture to 400-450° F. while simultaneously working it and then quickly chilling the grease mixture to 100° F. or less.

LITHIUM SOAP GREASES. L. C. Brumstrum and H. J. Liehe (Standard Oil Co.). *U. S. 2,398,173.* The Li soap grease comprises at least 5% of Li soap of mixtures of saturated fatty acids, a major proportion of a hydrocarbon oil, and 0.2-2% of an unsulfurized ester of a polyhydric alcohol and an acid.

HYDROXYACETYLATED DRASTICALLY-OXIDIZED RICINOLEIC ACID COMPOUNDS. M. DeGroote, B. Keiser, and A. F. Wirtel (Petrolite Corp.). *U. S. 2,406,206.* A new demulsifier consists of a hydroxyacetylated drastically-oxidized castor oil, the ratio of monomeric hydroxyacetic acid radicals to ricinoleic acid radicals present prior to drastic oxidation being 2:1.

PETROLEUM DEMULSIFIER. L. T. Monson, W. W. Anderson, and F. W. Jenkins (Petrolite Corp.). *U. S. 2,407,895.* The reagents employed as the demulsifier consist of surface-active heat-polymerized amino-alcohols which in monomeric form are secondary, or tertiary amines containing at least 2 alkanol or hydroxyalkyl radicals.

POLISHING WAX COMPOSITIONS. D. Aelony (Monsanto Chemical Co.). *U. S. 2,404,896.* A paste-type polishing composition free from cellulose derivatives comprises stearamidobiphenyl, a wax, and mineral spirits.

PROCESS FOR OBTAINING PROVITAMIN D. W. S. Calcott, G. E. Holbrook, and S. G. Turnbull, Jr. (E. I. du Pont de Nemours & Co.). *U. S. 2,406,133.* A process for obtaining provitamin D from mussels comprises treating cracked mussels with a saponifying solution of aqueous NaOH to remove material containing provitamin D, and separating the shells from the saponifying liquor.

AMINO ISOBUTYRIC ACID ESTERS OF FATTY ACID MONOGLYCERIDES. B. R. Harris. *U. S. 2,406,329.* The compounds are especially useful for antiseptic, medicinal, preservative, bactericidal, bacteriostatic, germicidal, and fungicidal purposes.

CUTTING OIL. H. Diamond (Shell Development Co.). *U. S. 2,406,671.* A method for minimizing the occurrence of foam which occurs in treatment of oil and water mixtures in which oleaginous material is in the form of an oil-in-water emulsion during only part of the treating process comprises having present a foam-reducing amount of a mixture of a saturated dialkyl silicone in which the 2 alkyl radicals are fatty acids.

CUTTING OIL BASE. L. D. Myers and V. J. Muckerheide (Emery Industries, Inc.). *U. S. 2,393,927.* A cutting oil base consists of equal parts of an alkali metal rosin soap and a monoglyceride ester of a fatty acid.

TEXTILE OIL. G. W. Seymour and W. Brooks (Celanese Corp. Am.). *U. S. 2,385,423.* The product comprises a paraffin base white mineral oil having a viscosity of about 50 seconds Saybolt Universal at 100° F., an oxidized peanut oil, diamyl phenol, Bu acetyl ricinoleate, oleic acid and triethanolamine.

RUST PREVENTIVE COMPOSITION. P. M. Ruedrich (Tide Water Associated Oil Co.). *U. S. 2,392,102.* A rust preventive comprises a mixture of partially saponified wool fat, wax, lubricating oil, and a homogenizer (emulsifier).

CASTOR OIL FOR LUBRICATION PURPOSES. A. J. Paluszek. *U. S. 2,401,369.* In the treatment of castor oil are the steps of distilling castor oil in the presence of a lesser amount of clay, diatomaceous earth, Al hydrate, anhydrous silica, or silica gel, until all of the oil has undergone distillation but without solidification of the distilland, and condensing the distilled vapors.

Abstracts

Drying Oils

Edited by
HOWARD M. TEETER

THERMAL POLYMERIZATION OF DRYING OILS. STUDY OF THE PRODUCTS OF SAPONIFICATION AND ETHANOLYSIS OF LINSEED STAND OILS. G. Champetier and J. Petit (Inst. Chimie, 11 rue Pierre Curie, Paris). *Bull. soc. chim. 12,* 680-8 (1945). Evidence is offered to support the theory that the polymerization of a drying oil results from a Diels-Alder reaction following an isomerization of the double bonds to conjugated positions. Distillation of the free acids from saponified linseed stand oil yields unreacted monomeric acids plus a residue of the simple and mixed dimers of linoleic and linolenic acids. Oxidation of the di-acids with alkaline permanganate gives azelaic acid. Reoxidation of the residue from this treatment gives acids which can be converted to diazonium salts and coupled with β-naphthol. This indicates the presence of aromatic nuclei. The acids are also shown to contain an aromatic acid, probably phthalic (fluorescein test). 27 references. (*Chem. Abs. 41,* 296-7.)

THERMAL POLYMERIZATION OF ETHYL ESTERS OF LINSEED-OIL ACIDS. G. Champetier and J. Petit (Inst. Chimie, 11 rue Pierre Curie, Paris). *Bull. soc. chim. 12,* 689-91 (1945). See preceding abstract. Thermal polymerization of the Et esters of linseed-oil acids gives the same products as the ethanolysis of linseed stand oils. (*Chem. Abs. 41,* 297-8.)

PREPARATION OF LINOLEIC AND LINOLENIC ACID ESTERS OF SEVERAL POLYHYDROXY ALCOHOLS. C. C. Elmer and R. T. Holman (Univ. Minnesota). *Official Digest, Fed. Paint Varnish Prod. Clubs 263,* 711-6 (1946). A modification of the procedure of Wheeler, *et al.* [*J. Biol. Chem. 132,* 687 (1940)] was employed. It was not found necessary to use mechanical stirring or to provide a double CO_2 intake. Excellent results were obtained with this method in the direct esterification of glycerol and pentaerythritol with linoleic and linolenic acids using *p*-toluenesulfonic acid as catalyst. Similar experiments with dipentaerythritol and inositol gave poor results. The esterification of pentaerythritol with linoleyl chloride (prepared by the oxalyl chloride method) gave a product having a higher I value than that from the direct esterification described. This result is traced to the presence of conjugated trienes in the former product.

The sulfurization of unsaturated compounds. H. E. Westlake, Jr. (Mellon Institute). *Chem. Revs. 39,* 219-39 (1946). A review of the sulfurization of simple olefinic hydrocarbons, terpenes, drying oils, rubber, asphalts, and pitches, together with a discussion of the mechanism of such reactions. 94 references. (*Chem. Abs. 41,* 88.)

Tall oil in printing inks. C. J. Vander Valk and H. Burrell (Heyden Chemical Corp., Garfield, N. Y.). *Paper Trade J., 123,* No. 20, 53-6 (1946). Printing inks are formulated with the reaction product of undistilled tall oil, maleic anhydride, and "polypentek" (a commercial mixture of approximately equal parts of di- and tripentaerythritol). The inks are stable, non-skinning, and dry well. Tests for hardness and abrasion indicate that films containing the tall oil product are equal to films containing the higher-priced alkyd resins conventionally used. (*Chem. Abs. 41,* 603.)

Vegetable oils as fuels for diesel engines—castor oil. Martinot-Lagarde. *J. soc. ing. automobile 14,* 237-46 (1941). Castor oil from the first pressing stage and peanut oil proved to be excellent substitutes for Diesel oil. (*Chem. Abs. 41,* 586.)

PATENTS

Separation of the components of a mixture of fatty acids and rosin acids. J. J. Lovas and J. F. Laughlin. *U. S. 2,412,818.* Mixed fatty and rosin acids derived from kraft pulp mill soap are treated with ethylene diamine to form a fatty acid amide. The resulting mixture of rosin acid and fatty acid amide is dissolved in a heated solvent selected from the group consisting of methanol, carbon tetrachloride, and hexane, and the solution cooled to precipitate the amide.

Oil-modified resin compositions. A. P. Mazzucchelli (Bakelite Corp.). *U. S. 2,413,412.* An oil-modified resinous composition is prepared by reacting an oil-insoluble, dehydrated Novolac phenol-aldehyde resin with raw fatty oils, oxidized fatty oils, heat-polymerized fatty oils, dehydrated fatty oils, hydrogenated fatty oils, or fat acids at 115-215°, and in presence of hydrates of P_2O_5, dialkyl sulfates, SO_3, and other compounds.

Esters of hydroxydihydronorpolycyclopentadienes and unsaturated fatty acids. H. A. Bruson (Resinous Products & Chemical Company). *U. S. 2,414,089.* An ester of hydroxydihydronorpolycyclopentadiene and an unsaturated monobasic carboxylic acid selected from aliphatic, cyclo-aliphatic, and arylaliphatic acids is claimed.

Abstracts

Soaps

Edited by
LENORE PETCHAFT

Some observations on fatty acid treatment. John Seaman. *Soap, Perfumery, Cosmetics 19,* 1023-5 (1946). The continuous processes of fat splitting and saponification are reviewed. These include the Clayton process in which fat is saponified with caustic soda, the Mill's process of fat splitting with water, and the DuPont process of hydrolyzing Me esters.

Industrial soaps. John W. McCutcheon. *Soap 23,* No. 1, 40-2 (1947). A general review article. Modifications of properties of soaps may be accomplished by lengthening or shortening the hydrocarbon tail, introducing solubilizing groups on it, changing cations. The relationship between solubility and temperature in respect to detergency has been pointed out.

"Floating" soaps. A. G. Arend. *Perfumery Essent. Oil Record 37,* 363-5 (1946). Perfumes, coloring materials, formulations, emulsifications and plants and equipment used in manufacturing floating toilet soaps are described.

The determination of tergin in soaps filled with hydrated aluminum silicates. Francesco Di Stefano and Alice Davidova (Ist. superiore sanita, Rome, Italy). *Am. chim. applicata 35,* 94-6 (1945). Tergin is ordinarily determined from the SiO_2 content of the soap, but this determination is impossible when the soaps contain kaolin, talc, bentonite, etc. It is proposed to dissolve the cellulose contained in Tergin in Schweitzer solution, from which it can be precipitated as hydrocellulose by an acid. (*Chem. Abs. 40,* 7666.)

The phase nature of beta sodium palmitate. R. H. Ferguson, F. B. Rosevear, and H. Nordsieck (Proctor and Gamble Co.). *J. Am. Chem. Soc. 69,* 141-6 (1947). On the basis of X-ray, vapor pressure and microscopic evidence, certain minor variations previously encountered among X-ray patterns of beta Na palmitate are accounted for by the existence of a beta solid solution phase extending at room temperature from about 0.2-2.5% water. This beta structure is shown to embrace previous beta palmitates and stearates as well as the zeta, and possibly the epsilon phase. Beta and zeta are, therefore, not hydrates of fixed composition. Some justification is offered for keeping the number of distinct crystalline soap structures as few as consistent with available evidence.

Dyes for soap—a classification. K. E. Marsden. *Perfumery Essent. Oil Record 37,* 366, 369 (1946). Soap dyes are classified as follows: oil and spirit soluble dyes; water soluble synthetic dyes; inorganic and organic pigments; and natural dyes. Tests are described for identifying the chemical grouping to which any specific dye belongs. Dyes which are heat proof can be mixed with the liquid soap when it comes from the boiler, but when delicate tints are required, it is better to mix in the dye in the crushing mill after the soap shavings have been dried. Coal tar or aniline dyes may be added by dissolving in either the melted fat used in soap production, alcohol or water. In the last two methods, the solution is filtered, poured into the melted soap and stirred thoroughly. Examples of the four types of dyes suitable for use in soap are listed.

SULFONATED FATTY AMIDES. J. J. VOSGANIANTZ. *Ind. corps gras 2,* 249-55 (1946). These commercial products are manufactured by condensation of fat acids with monoethanolamine (I), sulfonation, and neutralization, and are used as detergents. V. investigated the cause of irregularities occurring during the condensation using the glycerides and free acids of cabbage palm and palm oils, and oleic and stearic acids. At 180° I yielded the pure amide. With commercial ethanolamine (70 tri-, 15 di-, and 15% monoethanolamine) the amides with ester of the triethanolamine were formed. At 150° condensation with I gave a mixture of amide and ester in various proportions. Fat acids of high molecular weight condensed with I more quickly than the acids of low molecular weight (cabbage palm-oil fat acids).

pH EFFECTS BACTERICIDAL ACTION OF DETERGENT. Lawrence H. Flett, Robert C. Haring (Allied Chemical & Dye Corp.), Albert F. Guiteras and Rebecca L. Shapiro (Foster D. Snell). *Am. Perfumer 48,* No. 12, 63-4, 69 (1946). A study has been made of the changes in bactericidal action of one of the stable anionic detergents at hydrogen ion concentrations ranging from pH 2 to pH 12. Results showed that Nacconol NR in a concentration of 1:500 is bactericidal in the range from pH 2.0 to pH 11.9 when tested against Staphylococcus aureus at 37°. It kills 99% or more of the organisms within 5 minutes and kills 100% of the organisms within 48 hours or less.

OILS, FATS, AND WAXES. Russell Gill. *Cotton (Atlanta) 110,* No. 11, 43-6, 55 (1946). Sulfonation of fats and oils with H_2SO_4 or chlorosulfonic acid, saponification with concentrated alkali, and hydrogenation of oils are discussed, along with the newer surface-active agents which owe their value to their ability to modify the surface behavior of liquids in which they are dissolved. (*Chem. Abs. 41,* 609.)

PATENTS

SOAP-LIKE PREPARATIONS. Albert L. Rawlins (Parke, Davis & Co.). *U. S. 2,406,902.* Salts of hexadecyl amine and octadecyl amine, when used with a germicidal water-soluble high molecular quaternary ammonium compound, give soap-like preparations with excellent lathering and germicidal properties.

SYNTHETIC ORGANIC NONSOAP DETERGENT IN BAR FORM AND PROCESS OF MAKING SAME. John W. Bodman (Lever Brothers Co.). *U. S. 2,407,647.* Nonsoap detergents in bar form are prepared from Gardinols, Emco products or Igepon A products with or without addition of inactive diluents and aerated if desired.

PREPARATION OF METAL SOAPS. C. H. Hamblet (DuPont). *U. S. 2,409,678.* Metallic soaps are prepared in presence of oxygen with amino or hydroxy antioxidants to prevent degradation of organic portion of salt.

HAND CLEANER. W. E. Kleinicke (The Johnson-March Corp.). *U. S. 2,410,168.* Hand cleaning composition to be used without wash water comprises an emulsion of white mineral oil and stearic acid in an aqueous solution containing diethylene glycol stearate, laurate and glycol.

WATER SOLUBLE CHEMICAL COMPOUNDS. B. R. Harris. *U. S. 2,409,275.* The new detergent preparation is prepared by condensing partial amides of fat acids and polyamines with anhydrides of any carboxylic acid ester of a hydroxy polycarboxylic acid.

HARD WATER DETERGENT. Frederick C. Bersworth. *U. S. 2,412,943-944.* The detergent consists of an equilibrium mixture of ethylene diamine tetracarboxylic acid and fatty acids (stearic acid) in aqueous solution with pH range of about 8 which is especially useful in hard water.

HARD WATER DETERGENT. Frederick C. Bersworth. *U. S. 2,412,945.* The detergent is formed by the reaction of a polyalcohol and an alkali metal salt of an amino polyacetic acid. The product can also be reacted with alkali metal fatty acid soap compounds.

PRODUCTION OF DESIGNS IN MILLED TOILET SOAP. Arthur, Horace, and James Garvey. *U. S. 2,412,979.* Soap cakes with a continuous design are made by inserting preformed soluble soap rods having the cross-sectional shape of the required design into the soap cake.