TABLE IV

Effect of Total Solids in Slip on Wax Pick

Formula	Protein-Pigment, g./100 g.	Pigment	Dispersing Agent	pH Color	pH Slip	Per Cent Total Solids	Wax Pick
			Protein Curd (Dried, Unwashed)				
55	40	TiO_2-BaO	NaOH	11.4	11.1	45	7
56	40	TiO_2-BaO	NaOH	11.4	11.1	40	6
57	40	TiO_2-BaO	NaOH	11.6	11.2	34	9
58	40	TiO_2-BaO	NaOH	11.8	11.7	19	13
59	40	MgO-SiO_2	NaOH	10.6	10.6	45	6
60	40	MgO-SiO_2	NaOH	9.6	9.8	40	5
61	40	MgO-SiO_2	NaOH	10.0	10.0	34	6
62	40	MgO-SiO_2	NaOH	9.2	9.6	19	6
63	40	MgO-SiO_2	NaOH	8.7	9.1	15	4
64	40	MgO-SiO_2	Na_2CO_3	7.8	8.4	40	6
65	40	MgO-SiO_2	Na_2CO_3	8.1	8.3	34	6
66	40	MgO-SiO_2	Na_2CO_3	8.3	8.3	19	6
67	40	MgO-SiO_2	Na_2CO_3	8.1	8.1	15	9
68	40	Clay	NaOH	11.6	10.7	40	10
69	40	Clay	CaO	12.0	11.9	24	9
70	40	Clay	CaO	12.1	12.1	19	7
71	40	Clay	CaO	12.2	12.3	15	7
72	40	Clay	CaO	12.0	11.5	19	8
73	40	Clay	CaO	12.0	11.6	15	7
74	30	Clay	NaOH	11.3	10.1	38	10
75	30	Clay	CaO	12.2	12.3	24	7
76	30	Clay	CaO	12.2	12.5	14	4
77	30	MgO-SiO_2	NH_4OH	9.1	9.2	44	7
78	30	MgO-SiO_2	NH_4OH	9.5	9.6	38	6
79	30	MgO-SiO_2	NH_4OH	9.5	9.5	32	6
80	30	MgO-SiO_2	NH_4OH	9.4	9.3	24	7
81	30	MgO-SiO_2	NH_4OH	9.4	9.7	14	4

tions. Over a pH range of 8 to 12, coatings prepared from unwashed protein give high wax pick values, whereas those prepared with water-washed protein give slightly lower values.

TABLE 5

Comparison of Peanut Protein Paper Coatings With Other Protein Coatings

Protein	Protein-Pigment, g./100 g.	Pigment	Dispersing Agent	pH Slip	Wax Pick	Reflectance*	
						Whiteness	Yellowness
Peanut (unwashed)	15	Clay	Na_2CO_3	9.1	5	0.66	0.11
Soybean (alpha)	15	Clay	Na_2CO_3	8.7	4	0.69	0.10
Casein (H_2SO_4)	15	Clay	Na_2CO_3	8.8	7	0.69	0.11

* Using MgO Standard and Hunter Multipurpose Reflectometer.

Acknowledgment

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☆ ☆ ☆ ABSTRACTS ☆ ☆ ☆

Oils and Fats

Edited by
M. M. PISKUR and MARIANNE KEATING

THE COMPONENT ACIDS AND GLYCERIDES OF NEAT'S FOOT OIL. T. P. Hilditch and R. K. Shrivastava. *J. Soc. Chem. Ind. 67,* 139(1948). The component acids of a specimen of neat's foot oil consisted of myristic 0.7, palmitic 16.9, stearic 2.7, arachidic 0.1, tetradecenoic 1.2, hexadecenoic 9.4, oleic 64.4, ocadecadienoic 2.3, octadecatrienoic 0.7, and unsaturated C_{20-22} acids 1.6% (wt.). Component glycerides, studied after partial separation by low-temperature crystallization from acetone, were found to include, *inter alia,* about 35% palmitodiolein, 23% of hexadecenodiolein, 8% of polyethenoid-diolein, 7% of oleopalmitostearin, and probably not much more than 10% of triolein, with minor amounts of other mixed glycerides. The presence of fairly substantial proportions of hexadecenoic acid in neat's foot oil had not been previously noted. The specific utility of the oil as a lubricant cannot, as at one time supposed, be connected with a high content of triolein.

SOUTH AFRICAN FISH PRODUCTS. PART XXVIII. THE COMPOSITION OF THE LIVER OIL OF THE SEVEN-GILLED SHARK, *Heptranchias pectorosus,* (Garman). M. L. Karnovsky, W. S. Rapson, and (Miss) H. M. Schwartz. *J. Soc. Chem. Ind. 67,* 144(1948). The composition of the unsaponifiable fraction, and of the fatty acid fraction of the liver oil of *Heptranchias pectorosus* has been determined. Since α-glyceryl ethers of the unsaponifiable fraction have been quantitatively determined and their relationship to the fatty acids discussed.

REPORT ON PROGRESS IN FATS AND OILS FIELD. G. W. McBride (Editorial Consultant, Washington, D. C.). *Food Industries 20,* 1015-1018(1948). Report of recent technological progress in processing fats and oils.

CHOLESTEROL NOW MADE FROM WOOL GREASE. H. C. E. Johnson (Chemical Industries). *Chem. Inds. 62,* 922-3 (1948).

A STAFF-INDUSTRY COLLABORATIVE REPORT. R. L. Kenyon, S. W. Gloyer, and C. C. Georgian (Pittsburgh Plate Glass Co., Milwaukee, Wis.). *Ind. Eng. Chem. 40,* 1162-70(1948). A review of soybean oil industry. 52 references.

THE PROPERTIES OF NEW ZEALAND BUTTERS AND BUTTERFATS. I. IODINE, REICHERT AND SAPONIFICATION VALUES AND SOFTENING POINTS OF MONTHLY SAMPLES OF BUTTERFATS FROM NINE COMMERCIAL FACTORIES OVER FOUR YEARS. G. A. Cox and F. H. McDowall [Dairy Research Institute (N. Z.), Palmerston North, New Zealand]. *J. Dairy Res. 15,* 377-86(1948). Iodine values, Reichert values, saponification values, and softening points of butterfats from butters collected at monthly intervals over a period of 4 years from 9 factories representative of the main butter-producing districts in New Zealand were determined. The trend of variation of any one property throughout the season was remarkably uniform, both for different factories in the one season, and for any one property in the four seasons.

CHROMATOGRAPHIC SEPARATION OF STEARIC ACID AND OLEIC ACID. Bhupendra Krishna Mazumdar and M. N. Goswami (Calcutta Univ.). *Indian Soap J. 12,* 227-33(1947). The history, theory, and methods of chromatographic separation of fatty acids in general are reviewed. The purpose of the investigation was to develop a method for separating stearic acid(I) from oleic acid(II) which is invariably an impurity in commercial I. The preparation of Al_2O_3, MgO, Si gel, and activated C adsorbents and their use as column materials are described in detail. The Al_2O_3 and MgO columns gave the best results, with C the third choice. Results with Si gel were disappointing. Positive separation of I and II was obtained in the laboratory but much work remains to be done before the methods can be applied economically on a commercial scale. (*Chem. Abs. 42,* 3973-4).

THE ESTIMATION OF FATTY ACIDS OF INTERMEDIATE CHAIN LENGTH BY PARTITION CHROMATOGRAPHY. M. H. Peterson and M. J. Johnson (College of Agri., Univ. of Wisconsin). *J. Biol. Chem. 174,* 775-89(1948). Sulfuric acid (27 to 35N) is a better solvent for fatty acids of intermediate chain length than water, and hence may be used as the non-mobile phase in partition chromatograms for the analysis of fatty acid mixtures. By the use of both water and sulfuric acid partition chromatograms, quantitative separation of formic, acetic, propionic, *n*-butyric, caproic, caprylic, and capric acids is possible. Higher fatty acids do not interfere. Detailed procedure is given for the quantitative analysis of fatty acids in biological materials. For accurate analysis of any one fatty acid, more than 10 microequivalents of that acid must be present on the column. Fatty acids in known mixtures, or fatty acids added to butter fat samples, were recovered with a maximum error of 8%.

CHOICE OF HARDENED OILS AND THEIR ACTION ON CONSISTENCY. Mykola Zajcev (Ukrain, tech-wirtschaftl. Inst. Regensburg). *Seifen, Ole, Fette Wachse Schrift, 1948,* No. 1 and 2. Melting points, solidification points, difference between these, dilation point, chewability, and consistency is reported on 30 samples of oil. An oil that is selectively hardened has a melting interval of 3.25 when the melting point is 32-34° and 2.34 at melting point 40-42°, dilation of, resp., 950 and 1150 and difference between melting point and solidification of, resp., 7.1 and 8.7. The oils hardened with poor selectivity had dilation 290-460 and difference between melting point and solidification point of 9.9-16.8. Poor selectivity in hydrogenation was evident with oils of high Lea values. Winter and summer margarines, of good consistencies have the following characteristics, resp., melting interval 4.6, 4.3; difference between melting and solidification points 7.9, 9.2 and dilation 745, 915.

RANCIDITY IN VEGETABLE OILS. I. THE OIL OF COCONUT. Tuhin Kumar Roy, S. Mukherjee, and M. Goswami (Univ. Coll. Sci. Calcutta). *J. Indian Chem. Soc., Ind. & News Ed. 9,* 129-34(1946). The reducing sugars and albumin in coconut are suggested as acting as antioxidants for coconut oil in the kernel. Light, moisture, and heat cause the oil to hydrolyze and become rancid. The blowing of H_2 through the oil at low temperatures inhibits the hydrolysis of the oil, but doesn't prevent deterioration altogether. (*Chem. Abs. 42,* 3974-5).

ALUMINUM SOAPS AS HIGH POLYMERS. II. Sheffer (Defence Res. Chem. Lab., Ottawa, Canada). *Can. J. Res. 26B,* 481-98(1948). Viscosity and osmotic pressure measurements were carried out on dilute benzene solutions of aluminum dicaprylate, dilaurate, dimyristate, dipalmitate, distearate, and monostearate. From the results it is concluded that these soaps are polymers of high molecular weight formed by weak intermolecular links which are assumed to be hydrogen bonds. Lowering of the molecular weight by dissociation of these bonds is responsible for decreases in solution viscosities. Variations of the molecular weights obtained (60,000 to 900,000) are due, in the main, to the effect of concentration and aging on the extent of this dissociation.

THE UTILIZATION OF VITAMIN A IN VARIOUS CARRIERS. G. R. Halpern and J. Biely (Vancouver, Canada). *J. Biol. Chem. 174,* 817-26(1948). Hydroperoxides up to a peroxide value of 45.0 did not inhibit the action of vitamin A in chicks. Apparently other compounds than peroxides present in oxidized oils decreased the biological action of vitamin A. Furthermore, there was no cumulative inhibiting effect when an oxidized grayfish liver oil was fed in conjunction with an oxidized vegetable oil. When fed orally, by pipette, vitamin A oils, whether fresh or oxidized, had a greater biological value in water emulsion than in vegetable oil solution.

INFLUENCE OF THE FAT CONTENT OF THE DIET ON THE PRODUCTION OF FAT BY LACTATING COWS. Andre M. Leroy and Jeanne Bonnet (Lab. Zootech, I.N.A., Paris). *Ann. agron. 17,* 455-76(1947). Increasing the digestible fat content of the diet of cows from 400 g./day to 600 g./day caused no increase in the total fat production or the butter content of the milk. Diets adequate in energy and nitrogenous material but containing less than 300 g./day of digestible fat caused a reduction in the amount of fat produced and in the butter content of the milk. (*Chem. Abs. 42,* 2651.)

Influence of high doses of lecithin on basal metabolism and lipide metabolism. V. Capraro and M. Pasargiklian (Univ. Milano, Italy). *Arch. fisiol. 46,* 140-6(1947). Large doses, up to 1 g./kg., of lecithin, given intravenously to anesthetized dogs, resulted in a slight lowering of the basal metabolism and an increase in lipide consumption. Lecithin did not have a specific dynamic action. (*Chem. Abs. 42,* 2667.)

Effect of curative oil on body fats of rats raised on a high saturated fat diet. Harold G. Loeb. *Permanente Foundation (Oakland, Calif.) Med. Bull. 5,* 136-41(1947). Rats were placed on a low-fat diet for 4 weeks after weaning and then given a diet high in saturated fat (71% hydrogenated coconut oil) but deficient in essential fatty acids for a period of 8 weeks. During this period 2 of the animals received 3 drops daily of the curative corn oil, while the others developed the typical Burr and Burr syndrome. The treated animals store more fat than those on the deficient diet. The total lipide of the normal animals yielded a lower I number than the deficient animals, and this was shown to be due to the higher percentage of saturated fatty acids in the acetone-soluble fat fraction of the normal animals. In the latter, both the acetone-insoluble fraction and the total unsaturated fatty acids of the acetone-soluble fraction showed a higher degree of unsaturation. This indicated that linoleic acid, in some way, promotes the formation of relatively more of the saturated fatty acid than the unsaturated, and tends to increase the degree of unsaturation of the latter. It was suggested that this may reflect a preferential utilization of unsaturated fatty acids of lower iodine number in the normal animals. The increased linoleic acid observed in the non-deficient rats was attributed to the administered corn oil, and the apparent increase in arachidonic acid was ascribed to more effective retention and conservation of this highly unsaturated fatty acid. (*Chem. Abs. 42,* 2653.)

The effects of corn oil and olive oil on the blood sugar and rectal temperature of rabbits. E. F. Stohlman (Natl. Institute of Health, Bethesda, Md.). *J. Pharm. & Exp. Therap. 93,* 346-50(1948). Administration of either corn oil or olive oil produced in rabbits hyperglycemia and hypothermia. The elevations in blood sugar and drop in rectal temperature with relatively large doses of corn oil occurred earlier than with equivalent doses of olive oil. Both corn oil and olive oil when administered in relatively large doses appear to be toxic.

On the conversion of palmitic acid labeled with radioactive carbon to glucose by the alloxan-diabetic rat. I. L. Chaikoff, S. R. Lerner, C. Entenman, and W. G. Dauben (Div. of Physiology, Univ. of Calif. and Dept. of Chemistry, Univ. of Calif., Berkeley). *J. Biol. Chem. 174,* 1045-6(1948). The ratio for the CO_2 fixation experiment was 6.0. This indicates that 1 of every 6 atoms, or about 16% of the glucose carbon excreted by the alloxan-diabetic rat, was derived from bicarbonate carbon. This value is in good agreement with those reported by Solomon *et al.* for the fixation of carbon dioxide in glycogen by the normal rat. The fact that the values for this ratio in the palmitic acid experiment were much lower than 6 is of particular significance. This suggests that a process other than carbon dioxide fixation is involved in the incorporation of the 6th carbon of palmitic acid in glucose.

Self selection of diet. VIII. Appetite for fats. E. M. Scott and E. L. Verney (Dept. of Chemistry, Univ. of Pittsburgh, Pittsburgh, Pa.). *J. Nutrition 36,* 91-8(1948). Hydrogenated vegetable oil was more generally liked by young rats than butterfat or corn or cottonseed oils. When an unpopular fat was given as a choice, the rats selected much more casein and sucrose than when the choice was hydrogenated fat. It was concluded that choice of foods when components of a diet were offered was not related to the nutritional nature of the choices (i.e., whether a given choice was fat, carbohydrate, or protein), but was more probably dependent on the animals' subjective response to each particular choice.

Cortical lipides of the normal and denervated suprarenal gland under conditions of stress. M. Vogt (Univ., London). *J. Physiol.* (London) *106,* 394-404(1947). Repeated injections of adrenaline (I) given to rats or cats over a period of 8 hrs. caused a conspicuous loss of sudanophilic material in the adrenal cortex. Denervation did not prevent the depletion of lipides in the adrenals of rats under stress such as exposure to low or high temperatures or to hemorrhage. In rats lipide depletion was observed after injection of 0.12 I. U. insulin/100 g. or more. I loss was observed after double that dose and clinical signs after 5 times the dose. It is concluded that in the cat the release of I was not sufficient to cause a conspicuous change in the very large lipide stores of the adrenal cortex. (*Chem. Abs. 42,* 2669.)

Fat and nitrogen absorption after folic acid administration in dogs deprived of external pancreatic secretion. G. F. Douglas and T. D. Pratt (Tufts Med. School). *Proc. Soc. Exp. Biol. Med. 68,* 171-4(1948). Data on the absorption of fat and nitrogen following folic acid therapy in dogs deprived of external pancreatic secretion have been presented. Folic acid was shown to be of no value as far as absorption of the substances was concerned. The importance of employing a standard diet of known composition and of determining the amount of fat lost in the stools and not relying on the percentage of fat present in the dried stool is emphasized.

Drying Oils

Edited by ROBERT E. BEAL

The determination of acid and saponification values of stand oils. H. A. Hampton. *J. Oil & Colour Chemists' Assoc. 31,* 219-28(1948). The oil is dissolved in 25 cc. of warm benzene, 50 cc. of neutral alcohol is added with vigorous agitation, and the solution is titrated with N/10 aqueous NaOH to a pink phenolphthalein endpoint which is stable for two minutes. The standard deviation for an 8.88 acid value stand oil was 0.297 for 15 determinations made at 12 different laboratories. The saponification value determination is made in an alkali-resistant-glass flask with a 4.5-5.5 g. sample by adding 50 cc. of N/2 alcoholic KOH and heating at reflux with frequent swirling until a homogeneous solution is obtained. Refluxing is continued for one hour with frequent agitation and the hot solution is titrated with N/2 HCl to a pink phenolphthalein endpoint. The standard deviation for a 190.8 saponification value stand oil was 1.086 for 14 determinations.

STYRENATED OILS. N. R. Peterson (Dow Chemical Co.). *Am. Paint J. 40,* 32-40(1948). Styrene, methylstyrene, a drying oil, and peroxide catalysts are reacted in mass to obtain clear coating vehicles which are light colored, fast drying, and durable but are inclined to be thermoplastic and to lack gasoline resistance. When blown drying oils are used more cross-linking is introduced into the product with improvement in gasoline resistance and with less thermoplasticity. The peroxide groups of the blown oil catalyze the reaction and additional catalysts are unnecessary. The product is heat, color, and package stable.

THE USES OF SOYBEAN OIL IN THE PAINT INDUSTRY. I. PRESENT KNOWLEDGE CONCERNING THE USE OF SOYBEAN OIL IN HOUSE PAINT. F. Scofield. *Official Digest Federation Paint & Varnish Production Clubs 281,* 438-41(1948). The substitution of soybean oil for linseed oil in house paint does not affect durability but increases dirt collection seriously and probably increases mildew susceptibility. Bodied soybean oil is a more satisfactory vehicle. Various methods of treating the oil to increase its drying speed should improve its properties with respect to paints but such paints have not yet been adequately tested and final conclusions cannot be drawn.

SPECIAL ASPECTS OF DRIERS AND DRYING. F. S. Greenawald (Nuodex Products Co., Inc.). *Official Digest Federation Paint & Varnish Production Clubs 281,* 467-73(1948). Metallic driers are believed to act as "oxygen carriers" in promoting the drying of oil films since valence changes, demonstrated by color changes, are characteristic of good driers. Film formation with driers present is marked by a shortened induction period, an increased rate of oxidation, film formation at a lower oxygen content than in the absence of driers, and a lower total oxygen content during aging. Since there is less total oxygen in the film at all stages of drying it is believed that driers do not promote film disintegration.

DRYING EFFECT OF SICCATIVES. F. Wilborn. *Paint, Varnish Production Mgr. 28,* 195-200(1948). Most investigations which have been carried out using linseed oil with Co, Mn, and Pb driers either alone or in various combinations demonstrate that the reaction is complex and as yet little understood. Only the hypothesis for classifying siccatives into groups appears to be supported. The action of driers in catalyzing film formation is affected by the type and condition of the drying oil, the metal or metal combination used, the drier concentration, and the temperature, light intensity, and humidity at which film formation takes place. 26 references.

DRYING OILS, DRIERS, AND VARNISHES. J. H. Greaves. *Paint, Varnish Production Mgr. 28,* 200-205(1948). A review with 51 references.

THE APPLICATION OF THE STATISTICAL THEORY OF CROSS-LINKING AND GELATION TO THE REACTION BETWEEN PHENOL ALCOHOLS AND CERTAIN POLYMERIZED DRYING OILS, AND RELATED MATTERS. H. S. Lilley and D. W. J. Osmond. *Paint Technol. 13,* 217-24(1948). Gelation time studies with mixtures of a heat polymerized linseed oil and a phenol dialcohol show good agreement with the theory of cross-linking and gelation of Flory and Stockmeyer. For gelation to occur the oil must contain a suitable number and distribution of diene systems and the ortho methylol grouping of the dialcohol is critical, evidence supporting the familiar reaction involving a chromane ring formation through a dehydrated intermediate whose formation is the rate-determining stage of the reaction. The critical concentation of alcohol for gelation depends upon the diene value and average molecular weight of the oil. Thus, for heat bodied linseed oil of 30,000 molecular weight, calculated from the functionality of the original and bodied oils, and a diene value of 3, gelation can be achieved with a minimum of 0.4 gms. of cross-linking agent per 100 gms. of oil while tung oil with a molecular weight of 1,000 and a diene value of 70, requires 60 gms. per 100 gms. of oil. A study of the formation of dibenzyl ether linkages in phenolic resin chemistry by statistical and spectroscopic examination indicates both ionic and hydrogen bonding mechanisms, however, the importance of such side reactions is minimized if the heating cycle is short.

PATENTS

WRINKLE FINISH. W. A. Waldie (New Wrinkle, Inc.). *U. S. 2,443,284.* A non-conjugated double bonded oil and a glycol are heated at 350-360°F. until a homogeneous mixture has been obtained and the product is reacted with a polycarboxylic acid at 490-530°F. until a wrinkling oil composition is obtained.

WRINKLE FINISH. W. A. Waldie (New Wrinkle, Inc.). *U. S. 2,443,212.* Gilsonite or candle pitch is heated to 550-650°F. with a drying oil and the mixture is cooled to 500°F. and additional drying oil added so that the total weight of drying oil is about equal to or greater than the amount of hydrocarbon material. The mixture is cooled to 400°F. and part of the thinner added then to 300°F. where the remainder of the thinner and the drier are added.

Soap

Edited by
LENORE PETCHAFT

BACTERICIDA PHENOLIC INVERT SOAPS. Joseph B. Niederl, George M. Sieger, Jr., and Frank E. Stirs (Lederle Laboratories). *J. Org. Chem. 13,* 584-91 (1948). New phenolic compounds derived from 4-($\alpha,\alpha,\gamma,\gamma$-tetramethyl) butyl-1,3-dihydroxybenzene, or 4-tt-octylresorcinol have been synthesized and characterized; these include 6-chloro-, 6-bromo-, 6-nitro, 2,6-dinitro, mono-, and di-benzoyl-4-tt-octylresorcinols. One of the most outstanding of these compounds is the highly bactericidal and relatively non-toxic 6-chloro-4-tt-octylresorcinol, which was characterized with monobenzoyl and methylene-bis derivatives. A very significant fact was the discovery that the highly desirable antibacterial properties of the halogenated alkylresorcinol were found to be carried over into a new series of ring-halogenated, phenolic, cationoidic, capillary-active and bactericidal quaternary ammonium salts derivatives. Bacteriological tests have shown these compounds to possess high phenol coefficient (100 to 200) against both gram-positive and gram-negative organisms.

PRACTICAL ASPECTS OF WETTING AND DETERGENCY. E. S. Paice. *Ind. Chemist 24,* No. 282, 456-60 (1948). The industrial significance of surface active agents based on their power to modify surface relationships is reviewed. Synthetics, particularly secondary alkyl sulphates and nonionics are used in wool scouring, in kier-boiling of cottons, and in silk de-gumming. In leather manufacture, wetting agents are used to reduce the time of swelling of the hide prior to tanning, while synthetics have been unusually effective in the low temperature treatment of woolens and silks. In metal-processing, secondary alkyl sulphates or the alkyl-aryl sulphonates are used for aqueous degreasing, in electroplating to improve contact between solutions and metal, and to remove scale and rust in a cid pickling. Shampoos and cosmetics have been an important outlet for both primary and secondary alkyl sulphates and the ethylene oxide condensation products. The dairy and food industries utilize wetting agents in removing milkstone, cleaning equipment without resulting corrosion and foaming, and to improve wetting to increase the efficiency of insecticides. Miscellaneous uses include coating photographic film base and to improve wetting of developer solutions, in the stripping of rubber articles from molds, to reduce the amount of water needed in mixing cement, and in the boiling of raw materials for paper manufacture.

LIQUID SOAPS AND LIQUID SHAMPOOS. I. C. V. Cardew. *Soap, Perfumery & Cosmetics 21,* 574-6, 604 (1948). Liquid products may be utilized as toilet soaps, laundry or household soaps, shaving soaps, shampoos, floor-scrub soaps, and disinfectant soaps. The raw materials consist of caustic potash and vegetable oils with the addition of small amounts of soda and animal fats to give body to the lather and to increase viscosity. However, care must be taken that these additives do not lessen solubility nor transparency. Castor oil is often added to improve rinsability, lessen skin irritation, and produce a near neutral soap. Alcohols, sugar, glycerin, and sodium hexametaphosphate are added to improve transparency as are the newer sequestering agents. Manufacturing procedures with emphasis on prevention of turbidity and sedimentation are reviewed. Formulations are given.

BACTERICIDAL ACTIVITY OF PHENOLS IN AQUEOUS SOLUTIONS OF SOAP. H. Berry and H. S. Bean (Univ., London). *Nature 161,* 396-7(1948). Results of the examination of the bactericidal activity of a water-soluble phenol (5-chloro-2-hydroxydiphenylmethane) using K laurate as the soaps have shown that solubilization of the phenol commences at the critical concentration for initial formation of the micelles, and that the bactericidal activity of the solution is a function of the concentration of the phenol in the micelle. Maximum bactericidal activity, as measured by the death time of *B. coli* is attained when the micelles are fully saturated with the phenol. (*Chem. Abs. 42,* 4307.)

THE COMPOSITION OF ALUMINUM STEARATE. Wilfred Gallay and Ira E. Puddington (National Research Labs., Ottawa, Can.). *Can. J. Research 26B,* 155-60 (1948). The composition of a number of Al stearates, prepared in various ways, was investigated. The composition approximates that of the distearate. Extraction over extended periods, with EtOH, Me_2CO, and MeEtCO as extractants, reduced the proportion of stearic acid to that of a monobasic soap. The excess of stearic acid normally found is adsorbed and can be removed by solvent extraction. The extractions have to be made in absence of any moisture as this causes extensive hydrolysis and leads to a large excess of Al. Titrations with indicator and electrometric titration proved the assumption that Al stearate is only monobasic and that neither the distearate nor the tristearate exists. (*Chem. Abs. 42,* 5243.)

PATENTS

HOMOGENEOUS POTASSIUM SOAPS. M. J. H. E. Hustinx. *Dutch 61,132.* K Soap, free of alkali hydroxides and carbonates stays homogeneous, even at fluctuations from +40° to —20°, but gets a softer consistency by the presence of glycerol or polyglycerol aliphatic esters, having one or more nonesterified hydroxy groups. These may be added or formed in the soap by heating for several hours, just under the b.p. with less than the equivalent quantity of KOH. For example, soybean-oil acid 5, palm-oil acids 10, and coconut oil 23 kg. are saponified by 17½ kg. KOH at 50° Bé., after addition of Na_2SO_4 1, NaCl 1, H_2O 37, and Na sulfonate 2½ kg. After saponification about 3 kg. partial fatty glycerol ester is added. (*Chem. Abs. 42,* 4773.)

SURFACE-ACTIVE NITROSATION-SULFITATION PRODUCTS. Leland James Beckham and William Alfred Fessler (Allied Chemical & Dye Corp.). *U. S. 2,443,716.* A surface-active composition containing organic nitrogen base salts of a mixture of open-chain sulfonic acids reacted with a water-soluble sulfite of a water-soluble organic nitrogen base.

DETERGENT BRIQUETTE. James Douglas MacMahon (Mathieson Chemical Corp.). *U. S. 2,444,836-837.* A detergent briquette readily soluble for use in mechanical washing operations is prepared from a mixture of sodium carbonate and trisodium phosphate, sodium borate, a polyphosphate such as sodium tetraphosphate, and 0.25-5% of an alkali-soluble anionic, cationic or non-ionic synthetic detergent such as sodium lauryl sulfate, lauryl dimethyl benzyl ammonium chloride or hydroxy ethyl lauramide.

MANUFACTURE OF SOAP TABLETS HAVING INTERLOCKED PORTIONS OF DIFFERENT TYPES OF SOAP. Arthur William Evans (Cussons Sons & Company). *Brit. 600,175.* A soap tablet containing portions differing in color, perfumes, and/or texture is prepared by extrusion and is capable of being fitted together by a tongue-and-groove joint so as not to become separated during use and wear.