ABSTRACTS . . . . Don Whyte, Editor

• Oils and Fats

R. A. Reiners, Abstractor

English plant separating olein from stearine by crystallization from methanol. Anon. *Chem. Proc.* **14**(12), 40(1951). A plant with a throughput of 2500 lbs. per hr. is described. A 25-30% solution of distilled fatty acids in 90% methanol is chilled to 10°F. to affect the separation.

X-ray diffraction study of several branched-chain fatty acids. G. L. Clark and Chia-Chen Chu (Univ. of Illinois, Urbana). *Acta Cryst.* **4**, 470-1(1951). The crystal structure of 14-ethylhexadecanoic acid, 16-methyloctadecanoic acid and 17-methyloctadecanoic acid is described. (*Chem. Abs.* **45**, 9980)

The occurrence in butterfat of a C_{18} methyl branched-chain saturated fatty acid. R. P. Hansen, F. B. Shorland and N. J. Cooke (Dept. Sci. Ind. Res., Wellington, New Zealand). *Chem. Ind.* **1951**, 839. A methyl-substituted saturated fatty acid of the formula $C_{18}H_{36}O$ has been isolated from the hydrogenated acetone-soluble extract of butterfat. The methyl group is probably near the middle of the chain.

The fire hazards of oils in the woolen industry. F. E. T. Kingman and E. H. Coleman. *J. Tex. Inst.* **42**, T402(1951). Neutral vegetable oils when dispersed on wool are a lesser fire hazard than oleines, mineral oils or blends of vegetable oils and mineral oils similarly dispersed.

Water-insoluble fatty acids and butyric acid in butter manufactured by the "continuous" process. F. Hillig and S. W. Ahlmann (Food and Drug Admin., Washington, D. C.). *J. Assoc. Official Agr. Chem.* **34**, 777(1951). There is little difference in the quantity of water-insoluble acids found in butter prepared by the "continuous" process and that churned in a barrel-type churn. The butyric acid content of "continuous" process butter is higher than that of barrel-type churn butter.

Effect of excess alkali in the determination of water-insoluble acids in butter. F. Hillig (Food and Drug Admin., Washington, D. C.). *J. Assoc. Official Agr. Chem.* **34**, 782(1951). In the determination of water-insoluble fatty acids in butters, the addition of 0.5 ml. of *N* NaOH in excess to that required to neutralize the sample to a decided pink color of phenolphthalein (the conditions specified in the method) does not cause any significant increase in water-insoluble fatty acids. It has been shown that some excess alkali is necessary to assure complete extraction of the fatty acids.

Studies on linseed oil. I. The unsaturated fatty acids of some New Zealand linseed oils. W. G. H. Edwards and A. J. D. Robb (Univ. Otago, Dunedin, New Zealand). *J. Sci. Food Agr.* **2**, 429(1951). New Zealand grown linseed was found to contain oil of considerably higher iodine value (195-203) than average. Determination of the fatty acid composition revealed that two of the New Zealand oils contained more linoleic acid and correspondingly less saturated acids than average. The third oil was found to contain more linolenic acid.

II. Partial separation of the unsaturated acids of linseed oil by countercurrent distribution between pairs of immiscible solvents. L. S. Davies and W. G. H. Edwards. *Ibid.* 431. Linseed oil fatty acids (iodine no. 240) were distributed between light petroleum (55-61°C.) and 95% methanol using the Craig apparatus. Results indicate that repeated partition will be necessary to obtain pure linolenic acid.

The influence of environment upon the composition of sunflower seed oils. III. Oils from sunflower seeds grown in different regions of Australia. R. E. Bridge, A. Crossley and T. P. Hilditch (Univ. Liverpool). *J. Sci. Food Agr.* **2**, 472 (1951). Data confirm previous results in that there was a great variation in the proportions of linoleic and oleic acids in the oils from seeds grown in different localities. Seeds grown in the Northern Territory gave oil of quite low linoleic content (31-36%), those from the most southerly latitudes contained 65% or more linoleic acid.

Oil and protein content of sunflower seed. C. O. Clagett, G. W. Hoffman and I. Sollin. *North Dakota Agr. Expt. Sta. Bio-monthly Bull.* **13**, 173-7(1951). After 3-years' exposure to laboratory temperatures there was no development of rancidity, chemical changes, or off-flavor in sunflower-seed oil. The oil when stored under refrigeration showed no precipitation or separation. Sunflower-seed meal contained 52.5% protein. When completely dehulled, it was low in crude fiber and rich in Ca and P. It was an excellent source of thiamine, niacin, and riboflavin. There were some indications that the riboflavin is not all available for growth of animals. The biological value of the protein in the defatted meal was 64.5%. The protein when used in baked products produced a gray color; this was due to the oxidation of chlorogenic acid in the kernel. (*Chem. Abs.* **45**, 10424)

Chemistry of the lipids. K. F. Mattil (Swift & Co., Chicago). *Ann. Rev. Biochem.* **20**, 87-102(1951). A report of a year's progress on physical and chemical properties of lipids; analytical techniques and results; oxidation; and isolation, synthesis, and reactions of fatty acids and related compounds. (*Chem. Abs.* **45**, 10615)

Semimicrochemical determination of glycerol according to the dichromate procedure. E. Tschirch. *Seifen-Ole-Fette-Wachse* **77**, 333-4(1951). The procedure of Steinfels is employed, with 0.002 g. glycerol (a 1/100 aliquot of 2 g. in 200 ml. water for the oxidation and 1/10 aliquot of this for iodometric titration of excess CrO_3), to effect economies of chemicals. (*Chem. Abs.* **45**, 10616)

Determination of the melting point of hydrogenated fats. Z. Blaszkowska. *Przemyst Chem.* **6**(29), 43-4(1950). A quick method for checking the progress of the hydrogenation of fats by determining the m.p. under defined physicochemical conditions is described and some examples of its application are presented. A diagram illustrating the correlation between the m.p. and the iodine no. is also given. (*Chem. Abs.* **45**, 10616)

A rapid method for determining the iodine index. A. S. Neto (Inst. pesquisas technol., Sao Paulo, Brazil). *Anais assoc. quim. Brasil* **9**, 92-4(1950). A modification of the Wijs method for determining the iodine no. is suggested which reduces the time required from 60 to approximately 10 minutes: Immediately after adding the reagent, add 10 ml. 25% mercuric acetate solution in glacial acetic acid. Shake in a bottle 5 minutes in diffuse natural light; proceed with titration in the usual manner. Comparison of results obtained by both methods with 12 samples of linseed, cottonseed, and castor oil shows that the modified method can be used without loss of sensitivity in iodine no. determinations of vegetable oils without conjugate double bonds, except in the case of castor oil, probably owing to the hydroxy group in ricinoleic acid. (*Chem. Abs.* **45**, 10617)

Mechanism of autoxidation of fats. IV. Constitution of hydroperoxide of methyl oleate. S. Mukherjee (Univ. Coll. Sci. Technol., Calcutta). *Indian Soap J.* **16**, 183-6(1951). The hydroperoxide of methyl oleate was found to contain the double bond in its original 9,10 position, and no shifting of the bonds can be obtained as evidenced from the oxidative fission of the hydroperoxide by lead acetate. The latter reaction led to the isolation of 9-C fragments like α-nonenaldehyde and azelaic acid. The actual C atom involved in hydroperoxidation was proved by the attachment of the —OOH group at C-8. Had this group been attached at the C_{11} position, dibasic sebacic acid instead of azelaic acid would have resuled. (*Chem. Abs.* **45**, 10617)

Fatty acid composition of the oil of Elaeis melanococca (oil palm). O. Roels and L. Thuriaux (Univ. Libre, Brussels). *Bull. inst. roy. colonial belge Bull.* **21**, 730-7(1950). The fruit of *E. melanococca* was heated to destroy the enzymes and the oil was extracted from the fleshy portion by solvent. The oil had the following constants: d^{40} 0.8978, n^{45} 1.4583, saponification equivalent 287, iodine no. 65, free acids as palmitic, 1.2%, unsaponifiable 1.0, setting point of fatty acids, 41.0°. The fatty acids (g. % of total acids) were: myristic 1.0, palmitic 32.6, stearic 4.7, arachidic 0.5, palmitoleic 0.9, oleic 47.5, linoleic 12.0, and linolenic 0.8. The oil is similar to the oil of *E. guineensis* in composition. (*Chem. Abs.* **45**, 10618)

Mechanism of fish-oil extraction by means of the ultrashort waves. M. Yamada and M. Ishida (Hokkaido Univ.). *Science* (Japan) **21**, 467-8(1951). The effect of ultrashort waves on fish muscle tissue was examined. When a tissue model composed of protein and oil was put in the field of ultrashort waves of wave length 10 m., the temperature rise of the protein portion always preceded that of the oil layer by about 10°, showing that the selective absorption of energy occurred more markedly by the protein. For the oil extraction from fish body by ultrashort waves, the following order was suggested: The heat-coagulation of protein took place at the outset, releasing water from the muscle. The lipids of the connective tissue within the muscle was emulsified with released water and flowed out. (*Chem. Abs.* **45**, 10619)

Preparation of a relatively antioxidant-free vegetable oil. G. S. Fisher and W. G. Bickford (Southern Regional Research Lab., New Orleans, La.). *Am. J. Pharm.* 123, 233-6(1951). The method comprises solution of an oil, preferably peanut oil, in pentane and passing it through a specially prepared adsorption column containing layers of activated C and filter aid, activated Al_2O_3, and anhydrous Na_2SO_4. Peanut oil treated by this method yields a product having a keeping time of about 2 hrs. by the active O method at 97.7°. (*Chem. Abs.* **45**, 10619)

Bleaching of vegetable oils by clays. S. Mukherjee and J. C. Roy (Calcutta Univ., India). *Indian Soap J.* **16**, 281-7(1951). Four clays were investigated: Gangetic silt, kaolin, Bihar bentonite, and Kashmir bentonite. HCl and H_2SO_4 were used as activating agents. Higher temperature of drying, following acid treatment, and baking at high temperature prior to acid treatment lowered the bleaching power. H_2SO_4 was as good and in some cases even better, than HCl for activation. The effect of residual acidity of the activated clays on their bleaching power was found to be very remarkable; even small changes in acidity gave wide variations in activity. The temperature of the oil and the speed of agitation both affected bleaching efficiency. Since activation and bleaching methods are so sensitive to changes in operating conditions, the authors recommend a semi-works investigation before going into large-scale bleaching with any of these clays. (*Chem. Abs.* **45**, 10619)

The solubility of vegetable oils in furfuryl alcohol. The critical solution temperatures of a few oil-furfuryl systems. E. Angelescu and F. Esanu (Univ. Bucharest, Romania). *Acad. Rep. Populare Romane, Bul. Stiint., Ser. Mat., Fiz., Chim.* **2**, 387-97(1950). A few reciprocal solubility curves of furfuryl alcohol and vegetable oils were studied by determining their critical solution temperatures. Solubility tables for the following oils are given: colza (rape), cucurbit, sunflower, tobacco, soybean, poppy, walnut, hempseed, linseed, and olive. (*Chem. Abs.* **45**, 10620)

Evaluation (estimation) of castor oil in oil mixtures. K. T. Achaya and S. A. Saletore (Sci. Ind. Research Lab., Hyderabad). *J. Sci. Ind. Research* (India) **10B**, 118-19(1951). Acetylation of castor oil lowered its index of refraction by 0.0094 units at 25°. The content of castor oil in mixtures with groundnut oil can be determined by measuring the index of refraction of the mixture before and after acetylating. The procedure is more rapid than determination of acetyl no. Rancidity has little or no effect on the determination. (*Chem. Abs.* **45**, 10620)

The oil of citrus fruit seeds, with special reference to the sweet orange of eastern Spain. J. M. V. Lobo, P. P. Marin and J. R. Iranzo (Facultad de cienc., Valladolid, Spain). *Ion* **10**, 651-4 (1950). Seeds from sweet oranges grown near Valencia were pressed at 240-50 kg. per sq. cm. to obtain 23.8% of a clear, yellow oil with an agreeable nutty odor and bitter taste. The oil extracted with petroleum ether (34.5%) was bitter and water white, with ethyl ether (35.1%) yellow, and with CS_2 (35.4%) somewhat darker. The oil had the following physical-chemical constants: d^{20} 0.9196; n^{25} 1.4683; viscosity 66.0 at 20°, 16.5 at 60°; saponification no. 192; iodine no. (Wijs) 99; hydroxyl no. (pyridine) 11; hydroxyl no. (Andre) 11; Reichert-Meissl no. 0.39; Polenske no. 1.155; unsaponifiable 0.88. These values are of about the same order of magnitude as for the seed oil from other citrus fruits. (*Chem. Abs.* **45**, 10620)

The Paraguay palm, Acrocomia totai. W. Landmann (Asuncion, Paraguay). *Seifen-Ole-Fette-Wachse* **77**, 403-4(1951). *Acrocomia totai* and its fruit are described. The pulp of the fruit contains 10-11% oil and the seed 5-7% oil (both values calculated on the weight of the whole fruit). The pulp oil has d^{30} 0.9240, n^{40} 1.4595, f.p. 11°, titer test 28.5°, free fatty acid (as palmitic) 1.0%, saponification no. 200-209, iodine no. (Hanus) 54-66, Hehner no. 93-94, Reichert-Meissl no. 2.64, Polenske no. 3.00, unsaponifiable 0.27-0.55%. The seed oil has d^{30} 0.9175, n^{40} 1.4524, f.p. 13.2°, m.p. 22°, titer test 20.5°, free fatty acid (as lauric acid) 0.2%, saponification no. 243, iodine no. (Hanus) 29, Hehner no. 88, Reichert-Meissl no. 6.2-7.6, Polenske no. 10-14, and unsaponifiable 0.25-0.40%. The pulp oil is orange-yellow to deep reddish brown, owing to fermentation processes its content of free fatty acids increases considerably (usually it is 35-60% for commercial oil). The seed oil is slightly yellow; on cooling, it solidifies to a white, creamy mass. Production statistics are given. (*Chem. Abs.* **45**, 10621)

Paying crop for peace or war—castor beans. I. M. Colbeth (Baker Castor Oil Co.). *Chemurgic Digest* **10**(12), 4(1951). The uses of castor oil are briefly described. New varieties have been developed which may eventually reduce the United States dependence on imports.

Fatty substance from adipose tissues, ovaries, and testes of Bufo melanostictus. T. Tsukamoto and T. Ohtaki (Univ. Taipei, Formosa). *J. Pharm. Soc. Japan* **71**, 741-2(1951). The oil obtained from adipose tissues, testes, and ovaries in the order named showed the following constants (March-May): d^{15} 0.9214, —, 0.9620; $n^{30.5}$ 1.4660, 1.4789, 1.4815; m. 2.5-13°, —, 3-14°; acid no. 2.5, 88, 17.2; saponification no. 197, 205, 189; iodine no. 77, 51, 90; unsaponifiable substance 0.47, 20,0, 7.1%.

Fatty substance from testes of Bufo melanostictus. T. Ohtaki. *Ibid.* 742-3. The oil contained (March-May and June-Aug.) 20-13% unsaponifiable substance and free fat acids (7-25% ether-insoluble and 13-25% ether soluble portion). The unsaponifiable matter consisted chiefly of cholesterol.

Fatty substance from ovaries of Bufo melanostictus. I. T. Tsukamoto and T. Ohtaki. *Ibid.* 743-4. Extraction of the ovaries with CCl_4 gave 10% fatty oil, d^{15} 0.9670, n^{27} 1.4850, acid no. 24, saponification no. 193, iodine no. 85, unsaponifiable substance 2.95%, hexabromide value 3.98.

II. T. Ohtaki. *Ibid.* 744-6. The fat acids of the oil consisted of palmitic, stearic, and oleic acids with a small amount of highly unsaturated acid. Unsaponifiable substance yielded a large amount of cholesterol and a small amount of steroid, whose acetate was m. 129-9.5°. The presence of carotenoid was confirmed by the color test with $SbCl_3$.

III. *Ibid.* 747-51. Fractionation of fatty acids gave palmitic, stearic, and unsaturated C_{16}- and C_{18}- acids. Bromination of a neutral fatty oil and separation into various fractions by use of various solvents showed the presence of linoleodilinolein bromide, palmitodiolein bromide, and triolein bromide.

IV. *Ibid.* 751-3. Unsaponifiable substance contained cholesterol and γ-sitosterol; the amount of γ-sitosterol was larger in the spring (spawning period) while cholesterol was larger in summer. (*Chem. Abs.* **45**, 10406)

Extraction of oil by solvents at elevated temperatures. I. A. G. Antonioli and R. Turriziani. *Ann. chim.* (Rome) **41**, 255-63 (1951). The distribution coefficients of oil from finely ground seeds have been determined for two benzines (boiling ranges 80-120° and 120-150°) at 25°, 50°, and 75°. The energies of activation were calculated by applying Eyring's absolute reaction velocity theory to diffusion phenomena. These values do not agree with the values calculated by measuring the viscosities of these same systems. (*Chem. Abs.* **45**, 10618)

Unsaponifiable lipids from Vernix caseosa. (Preliminary report.) S. Cmelik, N. Petrak-Longhino and F. Mihelic (Inst. Food Research Clin. Chem., Zagreb). *Arhiv Kem.* **22**, 236-7 (1950). The lipoid from *Vernix caseosa* contains about 30% of unsaponifiable lipids which so far had not been identified. Three constituents were isolated chromatographically: (1) squalene, which until now had not been shown to be a normal metabolite in humans, although it was found as a pathological constituent of ovarian cysts (dermoids). (2) A compound of steroid nature, not yet further investigated. In pure form it is a crystal solid, m. 135-7°. (3) A solid of as yet unknown composition and constitution, strongly fluorescent in ethanol solution when in pure form and after irradiation with ultraviolet light. The intensity index of this fluorescence is 0.8 when compared with that of quinine sulfate as a standard. Its crystals form ethanol m. at 85°. (*Chem. Abs.* **45**, 10352)

Supply of fats in France in 1950. A. Ferrara. *Olearia* **5**, 293-298(1951). The national production including imports and exports of fats in France in 1950 are outlined.

The principles of molecular attenuated static distillation. G. Dini. *Olearia* 5, 285-288(1951). The distillation of vegetable oils is reviewed under three headings: the distillation of acid fats; the distillation for refining oils; the distillation by cracking.

Experiments on the new method of processing olives. G. Loew. *Olearia* 5, 277-284(1951). Olives were dehydrated by artificial heat in order to preserve them for a period of time. They were subsequently regenerated by immersion in water or a solution of sodium chloride so as to allow the olives to be pressed in the usual way in order to recover the oil.

Oligoelements in the palm tree fertilizers in Moyen Congo. M. Ferrand, A. Backy and M. Ollagmer. *Oleagineux* 6, 629-636 (1951). The removal of deficiencies in the Moyen Congo soil of the elements, zinc, copper, manganese, magnesium and boron has permitted a strong N-P-K fertilizer to improve both the yield and the sanitary condition of the palm tree plantations.

Jute seeds. Corchorus olitorius. The composition of Oil Olitorius. Part I. J. K. Chakravaric and N. K. Sen. *Jour. Indian Chem. Soc.* 28, 390-394(1951). The composition of fatty acids from the oil of *Corchorus olitorius* has been determined by fractionation of their methyl esters: palmitic acid, 15.65%; stearic acid, 4%; behenic acid, 1.66%; lignoceric acid, 1.12%; oleic acid, 12.43%; linoleic acid, 59.67%; C_{20} (monoethenoid) acid, 2.42%; and non-saponifiables, 3.05%.

Studies on lipase from oil seeds. Part XII. Effect of hydrogen ion concentration and the nature of the buffer on the hydrolysis of amyl butyrate by Ricinus Lipase from castor seed. C. V. Ramakrishnan and G. V. Neogi. *Jour. Indian Chem. Soc.* 28, 333-334(1951). Hydrolysis of amyl butyrate by *Ricinus lipase* was carried out using different buffer solutions of varying pH in order to study the effect of hydrogen-ion concentration and the nature of the buffer on the enzymic hydrolysis of esters. The optimum pH is in the range of 4.8 to 4.9.

Part XIII. Hydrolysis of some esters by Ricinus lipase from castor seed. *Ibid.* 335-336. Hydrolysis of some aliphatic esters by *Ricinus lipase* from castor seed has shown that the percentage hydrolysis decreases in the order: normal, secondary, and tertiary esters.

Studies of lipase from oil seeds. Part X. Synthesis of some esters by Ricinus lipase from castor seed. C. V. Romakrishnan and G. V. Nevgi. *Jour. Indian Chem. Soc.* 28, 271(1951). The synthesis of some aliphatic esters by *Ricinus lipase* from castor seed was shown to increase in percent in the order: normal, secondary and tertiary alcoholic esters.

Part XI. Effect of H-ion concentration and the nature of the buffer on the synthesis of amyl butyrate by Ricinus lipase from castor seed. *Ibid.* 272-274. The optimum pH for enzymic synthesis of amyl butyrate is 5.2 for the disodium phosphate-citric acid and the sodium acetate-hydrochloric acid buffers and 5.5 for the sodium acetate-acetic acid buffer. The maximum percentage synthesis is reached on the fifth day.

PATENTS

Refining of animal and vegetable oils. M. Mattikow. *U. S. 2,576,957.* An aqueous refining agent is mixed with a crude glyceride oil which contains 5-25% of a volatile organic solvent, the precipitated impurities are centrifuged off and the solvent vaporized from the oil.

Ibid. U. S. 2,576,958. The same process carried out at a temperature between 30 and 60°F.

Cooker. A. W. French (French Oil Machinery Co.). *U. S. 2,577,010.* A conventional cottonseed cooker is modified by adding a plurality of horizontally arranged baffle plates rigidly suspended from the ceiling of each chamber.

Separation of fatty oils from solid bleaching agents. W. P. Gee (Texaco Dev. Corp.). *U. S. 2,577,079.* The used bleaching earth-fatty material is slurried with a solvent and mixed with water. The resultant slurry is introduced into a vertical treating zone kept under sufficient pressure to maintain liquid phase conditions into which steam is introduced at a temperature of 200-210°F. The fatty material separates from the solid particles, rises upwardly and is withdrawn.

Extraction apparatus. C. J. Mueller. *U. S. 2,577,429.* A countercurrent total immersion-type extractor is described.

Sulfurization of lard oils. E. H. Sperry (Sun Oil Co.). *U. S. 2,577,636.* A process is disclosed for sulfurizing lard oil which comprises contacting H_2S and SO_2 in the presence of lard oil at 50-100°F.

Glyceride oil compositions and method of producing same. H. W. Vahlteich, C. M. Gooding and R. H. Neal (The Best Foods, Inc.). *U. S. 2,578,649.* A food composition is disclosed which comprises a significant amount of a glyceride oil having incorporated therein 0.002 to 0.1% by weight on oil of a mono-alkyl ester of an unsymmetrical hydroxy aliphatic polycarboxylic acid containing at least 3 carboxyl groups and which contains no functional groups other than hydroxyl and carboxyl, the primary ionization constant of the acid being from 1.0×10^{-2} to 1.0×10^{-4} at 25°.

Method of deodorizing and stabilizing soybean oil. R. A. Carleton. *U. S. 2,578,670.* The method is disclosed of continuously deodorizing and stabilizing soya bean oil having an objectionable taste and odor, and an iodine value of 120-140, which comprises passing a continuously flowing stream of the oil intimately mixed with about 10% to 40% by weight of water and in the presence of a hydroxylating catalyst, at a determinate selective hydroxylating reaction temperature within the range of about 100°F. to 225°F. against a countercurrent stream of air to reduce said iodine value by hydroxylation to about 100-120 and to effect substantial elimination of said objectionable taste and odor from the oil, deaerting and drying said oil by heating quickly at a reduced pressure and in the presence of water vapor to a temperature between about 250°F. to 400°F., then quickly cooling said oil. The oil is characterized by the substantial absence of peroxide and carbonyl groups and a relatively high resistance to development of oxidative rancidity.

Glycerin refining. L. J. Lofdahl and J. K. Gunther (Swift & Company). *U. S. 2,578,816.* A method is disclosed for removing odor-forming constituents from substantially pure distilled glycerol derived from saponification processes and containing non-volatile odor-forming constituents which comprises adding a small amount of a volatile acid to the said distilled glycerol and steam deodorizing under subatmospheric pressures, the mixture so formed to volatilize and remove said odor-forming constituents.

Process for the fractionation of cottonseed. H. L. E. Vix, J. J. Spadaro, E. F. Pollard, E. A. Gastrock, R. M. Persell and C. H. Murphey, Jr. (U.S.D.A.). *U. S. 2,579,526.* A process is disclosed comprising disintegrating cottonseed in an organic liquid that does not rupture the pigment glands to reduce at least 70% of the meal tissue to a size of about 2 to 40 microns, the meal tissue particles have a relatively large surface area, the whole pigment glands having a lower specific gravity than the fine meal particles; and mixing the disintegrated cotton seed with an inert hydrocarbon liquid having a specific gravity below 1.25 and settling the whole glands and hulls, the fine particles of meal tissue, substantially free of pigment glands, remaining suspended in the liquid, and isolating this meal tissue as solids suspended in the liquid.

Process for filtering glyceride oils. H. K. McClain (Procter & Gamble Co.). *U. S. 2,579,946.* In the process of filtering a glyceride oil with the assistance of a filter-aid and of recovering retained oil from the spent filter-aid, the steps are claimed comprising depositing on a filtering medium a coating of a filter-aid consisting of a finely divided water-soluble, oil-insoluble, solid inorganic salt which is chemically inert to said oil and which is in particle size from about 150-mesh to about 300-mesh, passing said oil through said coating and said filtering medium thereby removing filterable impurities from the oil, treating the filter cake of inorganic salt, impurities, and retained oil with water and dissolving the water-soluble salt and thereby liberating retained oil and separating liberated oil from the salt solution and impurities.

Lanolin alcohols from wool grease. P. Vaterrodt and R. E. Choyce (Botany Mills, Inc.). *U. S. 2,579,986.* A process is claimed for recovering lanolin alcohols from wool grease which consists in saponifying the wool grease by a 75 to 85% caustic alkali solution at pressure not substantially exceeding one atmosphere, converting the product to calcium soaps carrying said alcohols, and neutralizing the soaps, then drying the neutralized calcium soaps, extracting the lanolin alcohols from the neutralized calcium soaps by solvent action and precipitation of the calcium soaps in light flocculent form from a solution of the lanolin alcohols, thence removing solvent from the alcohols.

Margarine. Van den Bergh's en Jurgens' Fabrieken N. V. *Dutch 67,620.* The margarine emulsion, after cooling upon a drum and after ripening, is kneaded continuously in a multiplex rolling machine and mixed in a machine provided with perforated stationary plates, alternating with rotating knives, which press the mass through the perforations; the mass is then fed with a screw conveyor to the mixing machine. By combining the rolling machine and the mixing machine, a much smaller mixing machine can be used. (*Chem. Abs.* **45**, 10434)

Treating oil seeds. O. Neiss. *German 803,609.* The known process of preparing oil or albuminous substances from oil seeds by pressing and (or) extracting is improved by subjecting the oil seeds to the heating effect of electric short waves in vacuo before the pressing or extracting operation. (*Chem. Abs.* **45**, 10625)

• Waxes

E. H. McMullen, Abstractor

Mineral oil as a wool lubricant; emulsification of blends of mineral oil and wool-wax alcohols. E. V. Truter (Univ. Leeds, Engl.) *J. Applied Chem.* (London) 1, 254-7(1951). Wool wax contains alcohols which, when mixed with mineral oil give blends that are stable at 0° and are easily removable from wool. The isolation of these alcohols from several sources is described and performance data is given. (*Chem. Abs.* **45**, 9843)

Recovery of lanolin and its applications; working up laundering and textile-mill wastes. Georg Gernert. *Seifen-Ole-Fette-Wachse* 77, 388-92(1951). A review on the recovery, refining, and applications of lanolin. 71 references. (*Chem. Abs.* **45**, 10615)

Washability of waxed floors. R. B. Trusler. *Soap and Sanit. Chemicals* 27, No. 9, 49, 51, 53(1951). This is a preliminary report of committee work on determining the conditions under which waxed surfaces can be cleaned without removing the wax and also under what conditions the wax can be removed without damaging the asphalt tile floor surface. Asphalt tile was unsuitable test material because such washed surfaces had a gloss that could not be distinguished from wax gloss by a reflectometer. From linoleum surfaces some commercial cleansers removed commercial waxes. The dual presence of pine oil and alkaline salts removed wax most energetically. Some detergents do not harm good wax. The limitation and unsolved problems of the test are discussed. (*Chem. Abs.* **45**, 9898)

Allergenic constituents of lanolin. M. B. Sulzberger, M. P. Lazar and D. Furman. *Am. Perfumer Essent. Oil. Rev.* **57**, 273-5(1951). (*Chem. Abs.* **45**, 10513)

A new method for raw-wool scouring and grease recovery. W. Fong, A. S. Yeiser, and H. P. Lundgren. *Textile Research J.* **21**, 540-55(1951). The primary objective of this investigation of the raw-wool scouring process was to evaluate some of the physicochemical principles involved as the basis for possible improvement in technical practice. A continuous alcohol-suint scouring process, under neutral conditions, along with the recovery of wool wax, has been demonstrated in the laboratory. A 3% solution of n-butyl alcohol in water is satisfactory. After cleaning, the water is saturated with n-butanol (about 7%) to separate the dirt and wax. The solution is then distilled to adjust the alcohol concentration and it can then be used again for scouring.

Some normal alcohols occurring in wool wax. J. Tiedt and E. V. Truter (Textile Chemistry Laboratory, University of Leeds). *Chem. and Ind.* **1951**, 911-12. The normal alcohols occurring in wool wax were separated by formation of an addition complex with urea. Fractional crystallization of the complex from constant boiling benzene/ethanol gave the six *n*-alcohols with even-numbered carbon chains from 16 to 26. Hexadecanol is the only *n*-alcohol previously isolated from wool wax and satisfactorily identified.

PATENTS

Method for wax-coating beans and carrots. K. H. Recker, Winter Haven, Fla. *U. S. 2,560,820.* A method and apparatus for wax-coating beans and carrots are described.

Fabric-treating composition. J. R. Hill (S. C. Johnson & Son, Inc.). *U. S. 2,565,686.* Fabrics can be treated with a composition which imparts a protective, stain-resistant, water-repellent, and starch finish and which consists of a wax, water-soluble multivalent metal salt, a protective colloid, raw starch, and water. (*Chem. Abs.* **45**, 9886)

• Biology and Nutrition

R. A. Reiners, Abstractor

Producing fat with a newly isolated mold of the Fusarium group. T. V. Aristovskaya, E. V. Litvinova and P. Staszko. *Przemyst Chem.* 5(28), 552-7(1949). A new fat-producing mold of the *Fusarium* group isolated from birch sap converts sugar and dextrin to a palatable orange-colored oil. Surface culture gave 52% fat (dry basis), while submerged fermentation gave 38% fat (dry basis). The oil has iodine no. 85, saponification no. 185, and acid no. 10. (*Chem. Abs.* **45**, 10615)

Effect of glycerol-monostearate on fat absorption, growth and health of calves. J. S. Huff, R. K. Waugh and G. H. Wise (N. Carolina Agr. Exp. Station, Raleigh). *J. Dairy Sci.* **34**, 1056 (1951). Although glycerol monostearate was shown to aid in the absorption of fats, the growth of calves fed a diet in which glycerol monostearate was absent was as good as that of calves fed the monostearate containing diet.

The utilization of dietary calcium by growing albino rats fed diets containing lard or cocoa butter. Jessie R. Beadles, H. H. Mitchell, and T. S. Hamilton (Univ. Illinois, Urbana). *J. Nutrition* **45**, 399(1951). The comparative effect on calcium utilization of lard and of cocoa butter administered at a 20% dietary level, and of these diets as compared with a low fat diet, was studied using 12 trios of young albino rats in a 42-day feeding period. The average calcium utilization was 73.9 for the low-fat diet, 72.1 for the lard diet and 57.6 for the cocoa butter diet. Data from feces analyses indicate that the inhibiting effect of cocoa butter on calcium utilization is largely accounted for by the greater formation of insoluble calcium soaps.

Photoelectric determination of fat in milk. N. Brio and I. Vlodavets. *Molochnaya Prom.* **12**, No. 7, 29-31(1951). Fat is determined in milk by photoelectric determination of light transmission; the principle depends on turbidity caused by fat-droplet dispersion. A red color filter is desirable. An overall accuracy of 0.1-0.2% is obtained with the use of a prepared calibration scale. (*Chem. Abs.* **45**, 10417)

The formation of milk fat. K. Taufel (Inst. Ernahrungs-Forsch., Potsdam-Rehbrucke, Ger.). *Z. Lebensm.-Untersuch. u.-Forsch.* **93**, 140-5(1951). A review, from which it is concluded that formation of milk fat is not restricted to a single mechanism. It is formed from both food fat and body fat under significant chemical changes, in which β-degradation may be important. The process may also include synthesis from lower-molecular weight compounds originating in intermediate metabolism or in foods. (*Chem. Abs.* **45**, 10349)

Inhibition of Streptococcus lactis in milk by fatty acids. R. N. Costilow and M. L. Speck (N. Carolina State College, Raleigh). *J. Dairy Sci.* **34**, 1104(1951). All the fatty acids common to milk fat were tested for their effect on the growth of *S. lactis.* Caprylic, capric and lauric acids inhibited growth and the degree of inhibition increased as the concentration of acid increased. The effect of myristic acid was doubtful, and none of the other acids tested was found to inhibit the growth of this organism.

Fat content of dairy rations. C. F. Monroe (Ohio Agr. Exp. tion, Columbus). *Soybean Digest* **12**(1), 18(1951). A review in which it is emphasized that efficient milk production can be obtained on low-fat (2.5%) mixtures.

Fluorometric determination of vitamin A. M. Aoyama (Inst. Kitasato). *Vitamins* (Japan) **4**, 15-17(1951). The greenish yellow fluorescence of vitamin A is used for its determination. After the saponification of the sample oils, the unsaponifiable matter is extracted with C_6H_6, and the fluorescence of this C_6H_6 solution is determined against vitamin A standards. The fluorescence brightness is quite proportional to the vitamin A concentration and scarcely affected by the existence of carotene, cryptoxanthin, and vitamin D_3 in this extract. (*Chem. Abs.* **45**, 10283)

Colorimetric determination of vitamin A with glycerol dichlorohydrin. A. Fujita and M. Aoyama (Inst. Kitasato). *Vitamins* (Japan) **4**, 127-8(1951). By addition of $SbCl_3$ and HCl, to glycerol dichlorohydrin, the sensitivity of the Sobel method for determination of vitamin A is much increased. (*Chem. Abs.* **45**, 10283)

Direct determination of genuine vitamin A. A. Fujita and M. Aoyama (Inst. Kitasato). *Vitamins* (Japan) **4**, 174-7(1951).

When free vitamin A obtained by the saponification of liver oils was chromatographed with weakly activated alumina, free vitamin A was more securely absorbed on alumina than the non-vitamin A fractions, and after this adsorption, the latter could be eluted by naptha and then the free vitamin A fraction by C_6H_6. When the non-treated liver oils were chromatographed, free vitamin A could be eluted by C_6H_6 or by a mixture of acetone (20%) and naptha (80%), and the esterified vitamin A could be eluted by naptha, and by this method these two fractions could be separated. (*Chem. Abs.* 45, 10283)

Nutritive value of blended vanaspati (shortening). I. Digestibility of fats. M. R. Sahasrabudhe and V. Subrahmanyan (Central Food Technol. Research Inst., Mysore). *J. Sci. Ind. Research* (India) 10B, 119-20(1951). Blended fats were made by mixing hydrogenated groundnut oil (m.p. 60°) with refined groundnut oil so that the mixtures melted at 38°, 45°, 51°, respectively. They were fed to rats in conjunction with a standard diet. Parallel feeding experiments were conducted with straight hydrogenated groundnut oils, m. 38°, 45°, and 51°. The coefficients of digestibility were as follows (m., blended fat, straight hydrogenated oil): 38° 96.5, 96.2; 45°, 90.2, 92.3; 51°, 66.3, 60.5. In control experiments the coefficient of digestibility of ghee was 96.2, coconut oil 95.3, refined groundnut oil 95.7. The unsaturated acids of the groundnut oils were assimilated to a greater extent than the saturated acids. (*Chem. Abs.* 45, 10328)

Fat-soluble vitamins. H. Dam (Danmarks Tek. Hojskole, Copenhagen). *Ann. Rev. Biochem.* 20, 265-304(1951). A review of a year's work on standardization, synthesis, derivatives, reaction, deficiency symptoms, and metabolic effects of vitamins A, D, E, and K, anti-gizzard ulcer factor, essential fatty acids, and antistiffness factor. 287 references. (*Chem. Abs.* 45, 10331)

Lipid metabolism. S. Gurin and D. I. Crandall (Univ. of Pennsylvania, Philadelphia). *Ann. Rev. Biochem.* 20, 179-208(1951). A review of work published in 1950 on oxidation, biosynthesis, significance of blood lipids and cholesterol, acetylation, microbiological oxidation and synthesis, intestinal absorption and transport, lipotropic factors, and lipases and esterases. (*Chem. Abs.* 45, 10345)

Cholesterol determination in skin fat. H. Lincke and K. Klaui (Univ. Zurich, Switz.). *Arch. Dermatol. u. Syphilis* 192, 402-22(1951). A spectrophotometric method based on the Liebermann-Burchard reaction is described for the determination of cholesterol in fat of the skin surface. Substances difficult to remove may produce an error of 10 to 20%. In pooled skin surface fat, total cholesterol was 2.0, cholesterol esters 1.4, and free cholesterol 0.6%. By nephelometric technique, total cholesterol was 1.9, cholesterol esters 1.1, and free cholesterol 0.8%. (*Chem. Abs.* 45, 10335)

Studies of the acute and chronic toxicity of undecylenic acid. G. W. Newell, A. K. Petretti and L. Reiner (Wallace & Tiernan Products, Belleville, N. J.). *J. Invest. Dermatol.* 13, 145-9 (1949). The oral mean lethal dose for mice of ω-undecylenic acid is found to be 8.15 ± 1.7 g./kg.; if given intraperitoneally, 0.960 ± 0.007 g./kg.. A ration containing 2.5% undecylenic acid inhibits markedly the growth of rats; the retardation is less marked but still present if the amount in the diet is reduced to 1% or 0.5%. (*Chem. Abs.* 45, 10388)

Studies on vitamin A in solution. Part IV. Estimation of antioxidants. S. Bhattacharya and U. P. Basu. *Jour. Indian Chem. Soc.*, 28, 371-376(1951). A modification of the Emmeric and Engel method for the determination of tocopherols is described for the assay of phenolic antioxidants like propyl gallate, ethyl gallate and monomethyl ether of hydroquinone when present in arachis oil or ethyl oleate. A correction is needed for the interference of color formation due to the substrates.

• Drying Oils

Stuart A. Harrison, Abstractor

Oxidation of unsaturated fatty acid esters of polyhydric alcohol. J. R. Chipault, E. C. Nickell and W. O. Lundberg. *Official Digest Federation Paint & Varnish Production Clubs.* No. 322, 740(1951). Thin films of glycerol, pentaerythritol, and dipentaerythritol esters of oleic, linoleic, linolenic and eleostearic acids containing drier (cobalt-lead) were oxidized in air at 25° to high levels of oxygen absorption. The rate of oxygen uptake of the unconjugated esters increases with degree of unsaturation and is independent of the alcohol part of the ester.. Oxidation of the esters of linoleic and linolenic acids results in the development of diene and triene conjugation. The films of these esters do not appear "hard" until considerable amounts of peroxides have been accumulated. The amount of conjugation increases until about one mole of oxygen per mole of fatty acid is absorbed then decreases. The decrease in conjugation is attributed to polymerization of the esters. In the case of the esters of eleostearic acid and dehydrated castor acids the films dry rapidly to the hard stage at low peroxide levels. There is a constant decrease in conjugated unsaturation. For all the compounds studied fractions of the oxygen absorbed ranging from .28 to .71 appear as peroxides.

Hardness, abrasion resistance, and accelerated weathering tests on pure pigmented and unpigmented paint vehicles. E. B. Kaiser and J. H. Coulliette. *Official Digest Federation Paint & Varnish Production Clubs.* No. 322, 724(1951). Twenty-three vehicles were examined in the clear and pigmented state. The following tests were made: film thickness, drying rate, gloss retention, chalking on aging in weatherometer, hardness and abrasion resistance. The results of the tests are tabulated. No general conclusions are given. .

Shrinkage of some organic film forming materials during aging. L. L. Carrick and A. J. Permoda. *Official Digest Federation Paint & Varnish Production Clubs.* No. 322, 692(1951). The shrinkage characteristics of the following seven vehicles containing cobalt-lead driers were studied: varnish, linseed oil, dehydrated castor oil, trilinolein, trilinolenin, trieleostearin, dipentaerythritol linolenate and pentaerythritol linolenate. The films were dried at 77°F., in an atmosphere of 50% humidity and 25 foot candles illumination. The volumes were determined by water displacement after 1, 2, 5, . . . to 160 days of aging. In general there is a rapid shrinkage during the first five days followed by a slower gradually decreasing shrinkage up to 160 days. The glycerin oils show a shrinkage of 15 to 17% after 160 days while the mono- and dipentaerythritol oils show a smaller shrinkage of 10-13%.

Depth to which oxygen penetrates drying oil films. L. L. Carrick and W. J. Snoddon. *Official Digest Federation Paint & Varnish Production Clubs.* No. 322, 682(1951). The oxygen content of oil films of various thicknesses was determined at definite intervals of time. The following vehicles which contained a cobalt-lead drier were investigated: varnish oil, trilinolein, trilinolenin, pentaerythritol linoleate, dipentaerythritol linoleate and trieleostearin. The film thicknesses used were in the order: 1-1.5 mils, 3-4 mils, 10 mils and 25 mils. The films were allowed to oxidize at 77°F. in an atmosphere of 50% relative humidity under an illumination of 25 foot candles from a 40-watt daylight fluorescent unit. The oxygen was determined by difference from carbon-hydrogen analysis on samples cut from films after 1, 2, 7 and 30 days. On the 1-1.5-mil. films a maximum was reached after one day in the percent of oxygen followed by a slight drop then a nearly constant value throughout the remaining 27 days. The trieleostearin, however, showed a steady increase after a slight drop after one day. The thicker films in general continued to increase up to 30 days though the greatest increase was during the first day. The maximum percent oxygen, including that present in ester, in the films was about 30 for trilinolein and other linoleate esters, 33 for trilinolenin and 35 for trieleostearin.

Influence of chemical constitution on the adsorption of dyestuffs by the insoluble part of the heat-dehydrated gum arabic. J. S. Behrana and C. S. Narioani. *Jour. Indian Chem. Soc.* 28, No. 5, 252-256(1951). Gum arabic becomes partly insoluble in water when heated to 165-170° and the insoluble part absorbs basic dyes irreversibly, exchanging calcium ion for basic dye ions. Acid dyes are not adsorbed at all and in the presence of sodium chloride the basic dyes are not adsorbed at all.

Dipole moments of anacardic acid and cardol. S. Krishnamurthy. *Jour. Indian Chem. Soc.* 28, No. 4, 193-197(1951). The dielectric constants of raw cashew shell liquid, anacardic acid and cardol have been determined as well as the dipole moments of anacardic acid and cardol. The molecular structures of anacardic acid and cardol have been corroborated by the measurement of their physical properties.

The stress-strain properties of clear and pigmented films of pure drying oil compounds. A. C. Elm. *Official Digest Federation Paint & Varnish Production Clubs.* No. 322, 701(1951). The stress-strain relationships of clear and pigmented films of long and short oil alkyds, the eleostearic, linolenic and linoleic esters of pentaerythritol and glycerol as well as a commercial alkyd were studied. The films were 1.25 mils thick cast on amalgamated silver surface and stripped after drying for one week. Detailed description of preparation and testing of samples are given. The rate of change of degree of extensibility with age rather than the absolute values are considered most significant. All results must be considered strictly in the relative sense and cannot be interpreted broadly in terms of film performance. Results indicate that long and short oil alkyds age at about the same rate. Pigmentation apparently does not have a pronounced effect on the rate of aging. Pigmented eleostearic esters age more slowly than the corresponding linolenic esters.

PATENTS

Alkyd resins. H. Wittcoff and J. R. Roach. *U. S. 2,572,085.* New polymeric polyhydric alcohols are made by reacting a polyhydric alcohol such as glycerol or pentaerythritol with glycerol dichlorohydrin in the presence of aqueous sodium hydroxide. The new polyhydric alcohols can be used to make oil modified alkyds which have superior properties.

Process for the improvement of vegetable drying and semidrying oils. S. B. Radlove. *U. S. 2,575,529.* The drying rate of oils is improved by heating them with small amounts of certain quinones, e.g. alkali refined soybean oil (100 pts.) is mixed with anthraquinone (3 pts.) and heated to 385° for one and one-half hours in a sealed tube. The mixture is cooled to 20° and filtered to separate the catalyst. With a lead-cobalt drier films of oil set to touch in 4 hours as compared to 7.5 hours for the untreated oil. Other quinones such as dihydroxy anthraquinone and 1,2-naphthoquinone can also be used.

• Detergents

Lenore Petchaft, Abstractor

Potash liquid soap solutions. N. V. Feldpush and L. L. Sutker (Wilson Martin Division of Wilson & Co., Inc., Philadelphia, Penn.). *Soap Sanit. Chemicals* 27, No. 12, 48-9, 51, 53 (1951). A review of some variables of mixed fatty acids which affect clarity and viscosity of potash liquid soap solutions. It was observed that the addition of 5% saturated acids reduces the temperature of the clarity point and decreases viscosity. Addition of over 10% saturated acids raises the clarity point and increases viscosity. However, addition of 10% unsaturated acids definitely lowers the clarity, but the addition of 20% unsaturated acids does not lower the clarity point but produces a crystallized solid material, whereas the other clarity points were all in a liquid state. Also with the addition of 20% of unsaturated acids the viscosity shows a marked increase. It was also found that addition of 4% unsaponifiable lowers the temperature of the clarity point and increases the viscosity, producing a commercially acceptable product. Whereas the addition of over 5% unsaponifiable also lowers the clarity point but produces a cloudy product with decreased viscosity and one not acceptable to the trade.

Cocoanut oil liquid soap. P. I. Smith. *Am. Perfumer Essent. Oil Rev.* **58**, 457(1951). Improvements in the manufacture of cocoanut oil liquid soaps can be achieved by choosing oil of high quality and selected for the specific end use, by saponifying so that no free alkali is present in the soap, by taking precautions to insure clarity and by using as few chemical additives as possible.

Factors which affect the gelling characteristics of aluminum soaps. G. A. Parry, J. E. Roberts, and A. J. Taylor. *Proc. Roy. Soc.* (London) **A200**, 148-54(1950). Three methods for making Al soaps are described, and one, the metathetic reaction between a Na soap and an Al salt solution is discussed in detail. The effect of variations in manufacturing technique upon the gelling characteristics of the product is considered. Recent work on the structure of Al soaps is reviewed, particularly in relation to the effect of structure and peptizers upon the gelling property in hydrocarbon solvents. Mention is made of the more important methods of moisture determination, and results obtained by the use of the Karl Fischer reagent are quoted. The soaps gel more readily the shorter is the C chain in the series butyric, caproic, hexoic, caprylic, capric, and lauric acids. (*Chem. Abs.* **45**, 10622)

Cleaners and dermatitis. L. Schwartz. *Soap Sanit. Chemicals* **27**, No. 12, 43-4, 73(1951). Review of the structure of skin and the effect that various types of cleaners may have on the skin. The action of soap on the skin has been studied in detail but the effect of the newer anionics, nonionics and cationics needs more study. So far the nonionics appear to be less irritant and allergenic than the anionics. Care should be taken formulating new products and should take into account the relative skin irritant properties of the various components of the product as well as the degree and length of skin contact.

Observations on the influence of detergents containing mersolate in various fields of application. K. Bergwein. *Seifen-Ole-Fette-Wachse.* **77**, 352-4(1951).Influence of mersolate in shampoos, toilet soaps, dentifrices, shaving creams, in laundering, and as textile assistants was studied. Mersolate should be used with care in cosmetic preparations, as some skins are sensitive to it. (*Chem. Abs.* **45**, 10499)

The removal of fatty acids and soaps from soap-manufacturing waste waters. F. S. Gibbs (F. S. Gibbs, Inc., Boston, Mass.). *Proc. 5th Ind. Waste Conf., Purdue Univ. Eng. Bull., Extension Ser.* **No. 72**, 400-6(1950). The passage of waste H_2O from soap manufacturing with pH control into a chamber where large volumes of air bubbles of small size were produced provided flotation of fatty acids and suspended solids, which were collected and returned to the soap process. (*Chem. Abs.* **45**, 10622)

The use of butyrometers (Babcock fat bottles) in the determination of the fatty acids of soaps. J. Aguarod (Lab. quim. inst. hyg. Zaragosa). *Anales bromatol.* (Madrid) 3, 39-42(1951). Dissolve a weighed sample of soap in water, transfer to a 100-ml. volumetric flask, dilute to the mark, mix, and transfer 10 ml. to a Babcock bottle. Add a few drops of HCl and enough water to bring the separated fattty acids into the column, centrifuge, and measure. One marked division of the butyrometer represents between 0.0125 and 0.0145 g. of fatty acids. (*Chem. Abs.* **45**, 10623)

Liquid soap: consumer view. H. G. Harding (National Dairy Research Laboratories, Oakdale, Long Island, N. Y.). *Soap, Sanit. Chemicals* **27**, No. 11, 49, 143(1951). Liquid soaps in dairy plants are used primarily for washrooms to remove dirt and bacteria quickly from the skin without irritation The ideal liquid soap should effectively remove soil from the skin, reduce bacterial population of the skin, be harmless to the user, harmless to dispensers and fixtures, pleasing in appearance and odor, and economical to use.

Finishing of toilet soap. Anon. *Soap Sanit. Chemicals* **27**, No. 11, 79, 81(1951). Review of soap finishing operations needed to produce a toilet soap. The manufacturing phases completing the cake soap from the liquid soap are: cooling and drying, mixing the soap chips with additives and milling, plodding, and then pressing.

Electrophoretic mobilities of carbon in dilute soap solutions. L. N. Ray, Jr., and A. Witt Hutchison (Pennsylvania State College, State College, Penna.). *J. Phys. Colloid Chem.* **55**, 1334-9 (1951). This study has shown the applicability of the vertical microelectrophoresis cell for measuring the mobility of carbon particles in suspensions. Values were obtained for the electrophoretic mobility of carbon in dilute soap solutions. The ability of these same solutions to suspend carbon was studied, and the results were correlated with the mobility measurements. It was concluded that the zeta potential is a primary factor in producing stable suspensions of carbon in soap solutions.

Classification of surface active compounds. Ernst Gotte. *Das Leder* 2, 102(1951). The following classification of the surface active agents important for the tanning industry is proposed: Two main types are ion forming compounds and nonionic compounds. Ion forming are divided into anion active, cation active and ampholytic compounds. Anion type consists of soaps, alkyl sulfates and alkyl sulfonates, while cationic consists of amino salts and quaternary salts. The nonionic group is divided into ethylene oxide condensates and albumin condensates.

Flow birefringence in solutions of N-hexadecyltrimethylammonium bromide. H. J. Scherage and J. K. Backus (Cornell University, Ithaca, New York). *J. Am. Chem. Soc.* **73**, 5108-12 (1951). The question of the existence of large asymmetrical particles in detergent-salt solutions and their size and shape has been investigated by the method of flow birefringence. The flow birefringence data, interpreted on the basis of a rigid prolate ellipsoidal model, indicate the existence of elongated micelles whose length increases with increasing salt concentration. The solutions are considerably polydisperse in the range of salt and detergent concentrations studied. Presumably, in high salt concentrations the hydrocarbon tails of the detergent extend radially from the major axis of the ellipsoid ending in the charged heads which make up the surface of the ellipsoid in contact with the water.

Surfactant performance. H. L. Sanders (Ninol Laboratories, Chicago, Ill.). *Soap, Sanit. Chemicals* **27**, No. 12, 39-42, 55, 57(1951). A number of tables have been prepared from laboratory and literature data to list the relative performance ratings of some representative surfactants with respect to cotton detergency of built and unbuilt products, foaming power, wetting speeds, surface activities, lime soap dispersing power, viscosities, corrosiveness towards steel and acute oral toxicity. Tabulations of the above type can be of help in selecting a surfactant for a given application, however, caution must be used when applying this information to actual operating systems.

Long-chain sodium oxyethylamide sulfates (sulfonated fatty amides). C. Paquot. *J. recherches centre natl. recherche sci., Labs. Bellevue* (Paris) **1950**, 169-75. Several pure Na salts of sulfonated fatty acids (I) were prepared by heating a pure fatty acid with $HOC_2H_4NH_2$ to form the hydroxyethyl fatty acid amide, which was sulfonated with $ClSO_3H$ in $CHCl_3$ and then neutralized with 30% NaOH at 0.5° to give I, which was crystallized out. Fatty acids were capric, lauric (II), myristic, palmitic, stearic, and oleic. The I prepared from II showed the best foaming and wetting properties. A product neutralized with 10% NaOH was superior to that neutralized with stronger NaOH, $NaHCO_3$, or Na_2CO_3. A study of temperature effects on the stability of the various I's prepared is included. (*Chem. Abs.* **45**, 10617)

The mechanism of the wetting of textiles. K. J. Gruntfest (Rohm & Haas Co., Philadelphia, Penn.). *Textile Research J.* **21**, 861-6(1951). Because of the complex nature of the wetting process as applied to textiles, it has been difficult to establish any close correlation between the physico-chemical properties of wetting agents and their performance in wetting tests. Recent work indicates that the wetting process can be resolved into two independent elements which are often in competition with one another. One, the escape of occluded gases, is essentially mechanical, the other, the rate of advance of the liquid phase into the mass may be determined by film-balance experiments. Some studies of the time dependence of the surface tension of solutions of surface-active agents are also described and discussed. It appears that the rates of surface-tension lowering correlate quite well with wetting-agent performance.

PATENTS

Detergent composition. W. Baird, E. G. Parry and T. E. Thompson (Imperial Chemical Industries, Itd.). *U. S. 2,576,913.* Improving detergency properties of phenol-ethylene oxide condensation products especially in the presence of alkali by incorporating up to 400% (based on weight of the detergent) of a β-monohydroxyethylamide of a fatty acid of from 9 to 19 carbon atoms. *U. S. 2,577,503.* Improving detergency properties of ethylene oxide condensation products of a fatty alcohol or acid by incorporating at least 10% (based on the weight of the condensation product) of a β-monohydroxyethylamide of a fatty acid of from 8 to 20 carbon atoms.

Germicidal detergents. Lever Brothers & Unilever Ltd. *British 654,139.* A detergent with effective germicidal properties may be obtained by incorporating up to 6% (based on weight of the detergent) of 2,2-dihydroxy halogenated diphenyl ethers. The phenyl ethers may be used either in soap or detergents intended for domestic washing purposes.