ABSTRACTS . . . . R. A. Reiners, Editor

• Oils and Fats

S. S. Chang, Abstractor
Sini'tiro Kawamura, Abstractor
Dorothy M. Rathmann, Abstractor

A method for the estimation of fatty acid esters. M. H. Hack (Dept. of Medicine, Tulane Univ., New Orleans, La.). *Arch. Biochem. Biophys.* **58**, 19–23(1955). This colorimetric method is an adaptation of the Feigl spot test for esters of carboxylic acids using the reagents developed by Bauer and Hirsch, so that 0.2–3 micromoles of ester can be accurately estimated in a few minutes.

Solubility of some normal saturated fatty acids in aqueous sodium glycocholate solution. P. E. Verkade and W. Meerburg (Tech. Univ., Delft, Neth.). *Rec. trav. Chim.* **74**, 263–70(1955). The solubilities in g. of acid per 100 g. of 2.32% aqueous sodium glycocholate solution of the following normal saturated fatty acids at 25° and 37°, respectively are: heptanoic, 1.44 and 2.03; octanoic, 1.23 and 1.44; nonanoic, 1.04 and 1.16; decanoic, 0.66 and 1.04; undecanoic, 0.83 and 0.98; dodecanoic, 0.20 and 0.53; tridecanoic, 0.19 and 0.59; tetradecanoic, 0.08 and 0.17; pentadecanoic, 0.07 and 0.17. The data are discussed with reference to the alternation phenomena in a homologous series and to the mobility of fatty acids through the intestinal wall. (*C. A.* **49**, 10707)

The fat and glycogen contents of the liver after application of extracts of anterior of the hypophysis and biocatalysts of adrenal cortex. L. Benda, A. Behringer, E. Rissel and E. Scholda. *Verhandl. deut. Ges. inn. Med.* **59**, 218–21(1953). Application of adrenocorticotropic hormone to rabbits raises the fat content of the liver 9 times, that of glycogen 3 times, as compared to normal individuals. For the application of cortisone the values are 3 and 15 times respectively. Desoxycorticosterone and substance S(Reichstein) are without effect; application of interior parts of the hypophysis without corticotropic activity only causes a great increase in fat. (*C. A.* **49**, 11825)

Review of the oils and fats situation of 1954 and estimation of supplies and requirements for 1955. J. C. A. Faure. *Oils and Oilseed J.(India)* **8**(2), 5–17(1955). The total world production of oils and fats in 1954 is estimated at 25.6 million tons which is sufficient to supply 22.4 lbs. of fat per head of population. The U.S.A. is the largest producer with 5.8 million tons, followed by China with 2.9 million tons. The total world exports in 1954 is 6.3 million tons. The world production of oils and fats for 1955 is estimated at 26 million tons and the world exports at 6.4 million tons. The years 1954 and 1955 have shown that world consumption is increasing rapidly but that world production is keeping pace with the greater needs. The freer movement of oils and fats through the world should act as a stabilizing factor on price levels.

Shortening, recent developments of interest to bakers. C. E. Morris and M. J. Harder (Armour and Co., Chicago). *Baker's Digest* **29**(5), 53–5, 112(1955). During the last few years, there has been a remarkable tendency in the shortening industry toward the production of specialty products for specific uses. Among the new processes used for shortening manufactures are: the addition of monoglycerides, rearrangement of the fatty acid chains within the lard molecule, addition of fully hydrogenated lard flakes to lard, and partial hydrogenation of beef fats.

A modified fat test employing a quaternary ammonium compound. N. F. Lee(Dairy Farmers' Coop. Milk Co., Sydney). *Australian J. Dairy Technol.* **9**, 151–2(1954). The Babcock test requires modification when applied to flavored homogenized milk containing sugar. The procedure is to add 0.5 ml. of a 10% solution of alkyldimethylbenzylammonium chloride, e.g. Zephiran, to 18 g. of sample in standard 10% Babcock test bottle, and proceed with standard method. Glymol is added to the fat column to flatten the meniscus. Results are lower by an average of 0.07% by using the quaternary and by another 0.07% by using Glymol. The method is applicable to ice cream and evaporated milk. (*C. A.* **49**, 11909)

Industrial utilization of rice by-products. XII. A process for removing acid from germ oil with anion exchange resins. J. L. G. Fabra, J. C. Pizá, B. L. Ferriols and E. P. Yúfera(Univ. Valencia, Spain). *Anales real soc. españ. fís. y quím.* **51B**, 291–300(1955). An emulsion of rice-germ oil and ethyl alcohol (1:2) is passed through a series of resin beds supported on perforated porcelain plates. These are spaced to allow swelling of the resin particles, coincident with absorption of the fatty acid, to take place without packing and impeding the flow. Oil acidity(oleic) is reduced from 10.05 to 0.2%. (*C. A.* **49**, 11907)

Investigation of sophisticants in olive oil by means of chromatographic analysis. Clara Petronici(Univ. Palermo, Sicily). *Chimica e industria(Milan)* **37**, 273–5(1955). Chloroform solutions of olive oil and of various other vegetable oils are chromatographed on aluminum oxide columns. Upon development with xylene, rings and bands, observable under ultraviolet light, are formed which are characteristic for the respective oils with respect to color of fluorescence and position. These can be used to detect sophisticants of olive oil. Detection of as low as 5–10% adulteration is possible. (*C. A.* **49**, 12018)

Analysis of the oil of Pinoncillo (Garcia nutans), originating from Huasteca Potosina (Mexico). M. Madrazo G. and E. Sánchez Sierra(Univ. nacl. autónoma, México, D. F.). *Ciencia (Mex.)* **14**, 208–9(1954). The complete seed contains 41.3% fatty oil, the physical chemical properties of which are given. Composition of the free fatty acids was eleostearic 85, oleic 10, linolenic 0.8, saturated fatty acids 2 and nonsaponifiable matter 0.8%. Exposure to light causes transposition of α-9,11,13-octadecatrienoic acid to the β-form, which is precipitated. (*C. A.* **49**, 12019)

Colorimetric method for determination of nickel in hydrogenated fats. N. V. Vengerova. *Masloboino-Zhirovaya Prom.* **20** (3), 25–6(1955). A colorimetric method for determination of nickel in hydrogenated fat using a series of standards containing 3–15 γ of nickel is given in detail. (*C. A.* **49**, 12017)

The stability of different kinds of butter. A. I. Titov. *Trudy Vsesoynz. Nauch.-Issledovatel. Inst. Molchnoi Prom.* **1953**(13), 39–59. Fresh butter, put to storage just after its preparation, preserves its original qualities for a long period of time when stored at temperatures not higher than 1°. Melted butter is best stored at temperatures approximately —5°; at lower temperatures, the undesirable pistachio-green color can be developed, at high temperatures, the liquid phase can be separated. Milk fat and refined butter have to be stored at temperatures not lower than —5°, and not higher than 6°; under these conditions the storage can be as long as two years. Dry butter stored in hermetically sealed containers preserves its natural freshness for 12 months even when kept at 18–20°. When butter contains yeasts it can be stored without any significant changes for two years. (*C. A.* **49**, 12743)

Hygroscopic properties of the oil cake. A. V. Dumanskii, P. A. Demchenko and L. G. Demchenko. *Masloboino-Zhirovaya Prom.* **20**(3), 6–8(1955). The moisture content of ground, sifted (0.25 mm.), and vacuum dried (105° for 16 hrs.) samples of sunflower-seed cake was found to vary directly with the humidity of air. The maximum gain in weight occurred during the first 25–50 hours of storage. (*C. A.* **49**, 12019)

Perfection of the manufacturing of melted butter. A. I. Zheltakov and E. V. Baulina. *Trudy Vsesoyuz. Nauch. Issledovatel. Inst. Molchnoi Prom.* **1953**(13), 75–81. It has been shown that the compounds responsible for the specific flavor of melted butter are water soluble and that they are formed from the plasma constituents. In order to get the specific flavor of the product a time interval is required for the reaction of the butter fat with the plasma constituents at elevated temperature. Keeping the butter fat with the plasma increases the stability of the fat against oxidation. It has been found that in the presence of 3% plasma the temperature of 85–90° can be used; below this plasma amount the temperature has to be lower. (*C. A.* **49**, 12743)

Adulteration of dairy products. S. Z. Karim. *Intern. Dairy Congr. Proc. 13th Congr. Hague* **4**, 648–55(1953). Ten common animal and vegetable fats were homogenized with milk so that the resulting milk contained 0, 10, 15 and 20% vegetable oil, 0, 10 and 20% animal fat, 0, 10, 15, 20 and 25% Crisco, and similar amounts of oleomargarine. Reichert Meissl, Polenské, iodine value, refractive index, and melting point are determined on each of the butters. No one constant is sufficient to determine adulteration, but the proper selection of two or more with organoleptic tests should help in detecting adulteration of smaller degree. (*C. A.* **49**, 12741)

Comparison of Hanus refractometric and chemical method of determining the iodine value for vegetable oils. K. Blaim and Z. Kaszlej. *Roczniki Nauk Rolniczych*, Ser. **A68**, 678–80(1954).

The oils of flax, hemp, rapeseed, poppyseed, sunflower seed, pumpkin seed, medicinal thistle, perilla, and niger seed were studied. The iodine numbers obtained by the refractometric method were somewhat lower than those obtained by the chemical method. Refractometric data is influenced by the sensitivity of the refractometer and by the temperature. Reading for the determination of iodine numbers should be made at 25°, or corrected to that temperature. (*C. A.* **49**, 12858)

Rice-bran oil. VII. The "fines" fraction of rice bran. N. J. Morris, C. E. Swift and F. G. Dollear. *Rice J.* **53**(9), 6–7, 10 (1950). The fines produced during extraction of rice bran in a pilot plant consisted of 67.5% of material which would pass a 400-mesh sieve. The tendency of fines to become suspended in the miscella depended appreciably on the moisture content of the bran; fewer fines passed into the miscella when bran containing 15.6% moisture was extracted with commercial hexane. Increasing the moisture content to about 16% had no adverse effect on the yield of oil recovered by solvent extraction. (*C. A.* **49**, 12858)

Bellier or Adler index of peanut oil. L. Leclercq and J. Fagard. *J. Pharm. Belg.* **9**, 325–30(1954). The Bellier or Adler value for peanut oil should be within 39–41°; such an oil with an Adler value lower than 39° should be considered adulterated. Results with oils from different sources are tabulated. (*C. A.* **49**, 12857)

Rapid quantitative method for the determination of nickel in hydrogenated fat. A. A. Lesyuis and V. E. Ovcharenko. Mas. *loboino-Zhirovaya Prom.* **20**(3), 26–7(1955). The gravimetric dimethylglyoxime method for determination of nickel in hydrogenated fat is compared with a colorimetric one similar to that of Kul'berg, *et al.* (*C. A.* **49**, 12857)

Effect of antioxidants on the stability of certain fats and fat-containing food products during storage. G. S. Korobkina (Nutrition Inst., Acad. Med. Sci. U.S.S.R., Moscow). *Voprosy Pitaniya* **13**(5), 33–8(1954). Data are presented on the antioxidative properties of β-naphthol (comparative substance), white streptozide, vitamin E, carotene, *o*-aminobenzoic acid, mixtures of tyrosine and sodium sulfite, carotene and sodium thiosulfate, carotene and vitamin D, carotene and vitamin E, carotene, vitamins E and D, and the whole meals of germinated summer wheat, barley, oats and soybeans, respectively. It was found that the most effective antioxidants are germinated oats and barley; that the next most effective antioxidants are (in the order of decreased effect) the meal of the germinated soybeans, carotene and sodium thiosulfate, and *o*-aminobenzoic acid; that a similar effect is obtained when the antioxidants are added to the fat containing foods; that the meals of the germinated seeds of barley, oats and soybeans when added to fats and fat containing foods in the amounts of 1.4–1.8% and 3% increase the storage stability of the fats and foods 1.5–2 and 2–3 times over the control. (*C. A.* **49**, 12737)

A new inexpensive method for the estimation of tocopherols. A. R. S. Kartha, A. S. Aethi and K. C. Gulati (Indian Agr. Research Inst., New Delhi). *J. Sci. Ind. Research (India)* **14B**, 107–10(1955). $K_3Fe(CN)_6$ can be used to substitute for 2,2'-bipyridine in the Emmerie and Engel method for the estimation of tocopherols if a solution of $Fe_2(SO_4)_3$ containing H_2SO_4 is substituted for the $FeCl_3$. The modified method is more sensitive and can only be used for quantities less than 100 p.p.m. tocopherols. (*C. A.* **49**, 11505)

The influence of fatty acids on the polarization curves of iron in ammonium nitrate. M. Simaowski and T. Ostrowska. *Bull. Acad. polon. sci. Classe III*, **3**, 29–31(1955). Addition of normal fatty acids, ranging from C_4 to C_9, to a 5 *N* solution of ammonium nitrate influence the polarization curves of iron in the solution both of the anode and of the cathode, although to a lesser degree in the case of the latter. The extent of this influence depends on the number of carbon atoms in a molecule of fatty acid. The presence of fatty acids facilitates the passivation of iron anodes in an ammonium nitrate solution. (*C. A.* **49**, 11470)

Working out the fat prescription for the manufacturing of margarine. O. K. Palladina and A. G. Styazhkina (All-Union Sci. Res. Inst. Fats and Fat Combine, Leningrad). *Masloboino-Zhirovaya Prom.* **20**(3), 9–13(1955). To produce margarine with butterlike physical qualities the following properties of milk fat, coconut oil, beef tallow, oleo, hydrogenated sunflower and cottonseed oils, and whale fat were reinvestigated: m.p., temperature and clarification, hardness number, ration of solid/liquid fractions, and melting point of high and low-melting solid fractions. To manufacture margarine with butterlike physical qualities, it is necessary to prepare the fat base containing less than 18% high-melting solid fractions, m.p. 28–32°, and the clarification temperature should not be higher than 35°. (*C. A.* **49**, 11911)

Infrared studies on the isomers of kamlolenic acid. Sharda Dasgupta and J. S. Aggarwal (Natl. Chem. Lab. India, Poona). *J. Sci. Ind. Research (India)* **13B**, 449(1954). The α- and β-isomers of kamlolenic acid (ω-hydroxy-9,11,13-octatrienoic acid) and their derivatives have been studied with infrared absorption spectra for the purpose of establishing the *cis-trans* configurations of the double bonds. Results indicated that the third double bond in the 9-position had a *cis* configuration in the α-acid and *trans* in the β-acid. Both acids gave strong indications of *trans-trans* conjugated double bond systems. (*C. A.* **49**, 11549)

Constitution of kamlolenic acid by ozonization. S. C. Gupta and J. S. Aggarwal (Natl. Chem. Lab. India, Poona). *J. Sci. Ind. Research (India)* **13B**, 889(1954). The structure of kamlolenic acid was confirmed as ω-hydroxy-9,11,13-octadecatrienoic acid by ozonolysis of the acid in chloroform solution with a mixture of oxygen and ozone. After removal of chloroform and treatment with moist ether, addition of a 10% aqueous solution of potassium bicarbonate to the residue gave $OHC(CH_2)_7CO_2H$ and δ-hydroxyvaleraldehyde, proving that a double bond in kamlolenic acid was situated between C-13 and C-14. (*C. A.* **49**, 12290)

Oxidation of esters of 9,10-octadecenoic acids. N. P. Bulatskii (State Univ., Odessa). *Zhur. Obshchei Khim.* **24**, 1835–7(1954). Oxidation of esters of oleic and elaidic acids using potassium permanganate in acetone was followed. The results indicate that methyl, ethyl, propyl, and butyl oleates are oxidized at a greater rate than are the corresponding esters of elaidic acid. Increase of the alkyl group reduces the rate of oxidation. (*C. A.* **49**, 12284)

Higher fatty acids. II. By-product oil from the alkali fusion of castor oil. M. Kobayashi (Osaka City Ind. Research Inst.). *Science and Ind. (Japan)* **27**, 104–6 (1953). The residual oil after removing as much as possible sebacic acid, 2-octanol, and methyl hexyl ketone produced by the alkali fusion of castor oil was fractionated under 3–4 mm. Hg. to heptoic, undecylic, oleic, and C_8–C_{18} saturated and unsaturated fatty acids and their polymers. (*C. A.* **49**, 12017)

Production of higher fatty acids by oxidation of liquid paraffin. V. K. Tsyskovskii, Ts. N. Shcheglova, S. G. Soltan and B. G. Freiden. *Masloboino-Zhirovaya Prom.* **20**(3), 17–20 (1955). The yield of desirable synthetic fatty acids obtained by the oxidation of liquid paraffins at 125° with Mn naphthenate as a catalyst is materially increased by the use of a continuous process instead of the batch method. Undesirable hydroxy acids are destroyed during the subsequent heating at 320° in the fractionation process. (*C. A.* **49**, 12017)

Production of synthetic fatty acids through oxidation of paraffinic hydrocarbons with molecular oxygen. G. Wietzel. *Chem. Eng. Sci.* **3**, Spec. Suppl., 17–30(1954). A brief summary is given of the development of the process for oxidizing liquid paraffin with potassium permanganate for the synthesis of fatty acids. (*C. A.* **49**, 12857)

Preparation of 17-octadecenoic acid. S. C. Gupta (Natl. Chem. Lab. India, Poona). *J. Sci. Ind. Research (India)* **13B**, 885 (1954). ω-Hydroxystearic acid abtained from kamala seed oil is treated with thionyl chloride to form ω-chloroöctadecanoic acid. The latter is treated with alcoholic potash solution and then acidified to yield 17-octadecenoic acid, m.p. 55–5.5°. Oxidation of this acid with potassium permanganate in acetone gives 1,15-pentadecanedicarboxylic acid, 117–17.5°. (*C. A.* **49**, 12290)

Preparation of synthetic fatty acids from paraffins and their utilization. P. Gross. *Rev. Chim. (Bucharest)* **5**, 96–100(1954). In the catalytic air oxidation of paraffins containing 18–35 C it was advantageous with respect to yield and reaction time to add twice its amount of the nonoxidized fraction from a previous run. After 20–24 hours at 101–5°, conversion to saponifiable material was 33%, half of which was C_{10}–C_{20}. The industrial utilization of the fatty acids and by-products is discussed. (*C. A.* **49**, 12283)

A new synthesis of phloinic acid. W. J. Gensler, H. N. Schlein (Dept. of Chem., Boston Univ., Mass.). *J. Am. Chem. Soc.* **77**, 4846–4849(1955). A synthesis of 9,10-dihydroxyoctadecanedioic acid (phloionic acid) is reported. The sodium derivative of 8-chloro-1-octyne coupled with 6-iodo-1-chlorohexane gave 1,14-dichloro-7-tetradecyne. Application of the malonic ester synthesis to the corresponding 1,14-diiodo compound furnished 9-octadecynedioic acid, which on semi-hydrogenation gave cis-9-octadecenedioic acid. Hydroxylation with performic acid forms phloinic acid; hydroxylation with permanganate forms the stereoisomer. The over-all yield of phloionic acid from 8-chloro-1-octyne was 25–29%.

α-Hydroxy acids and estolides and their derivatives. O. L. Polly and O. D. Cunningham (Union Oil Co. of Ca.). *U. S. 2,721,188.* A mixture of 0.5–2 moles of a water insoluble C_{8-30} straight chain α-hydroxy acid and 1 mole of an unsubstituted aliphatic alcohol is heated in the presence of 0.05–20 moles of an acidic nongelation agent (a conjugated dienoid acid) at 100–200° until the desired degree of esterification and dehydroxylation has been achieved.

Production and separation of polycarboxylic acids. R. A. Hanson and O. L. Polly (Union Oil Co. of Cal.). *U. S. 2,721,190.* Mono- and dicarboxylic C_{8-30} acids obtained from air oxidation of refined paraffin wax are esterified with monohydric aliphatic alcohol. The esters are separated by the formation of urea adducts.

Unsaturated ω-(2-furyl) substituted fatty acids. O. Moldenhauer, A. Brandl and H. Behnke (Phrix-Werke A.-G.). *Ger. 825,272.* The known process of preparing unsaturated ω-(2-furyl) substituted fatty acids by oxidation of corresponding unsaturated ketones by means of hypochlorite solution is improved by introducing the ketone and the hypochlorite solution simultaneously into an alkali medium heated at reaction temperature and containing an emulsifying agent. (*C. A.* 49, 12542)

Cyanovaleric acid ester. F. Nagasawa (Mitsubishi Chem. Ind. Co.). *Japan 1276 and 1277 ('54).* Syntheses for cyano-ethylvalerate from $NC(CH_2)_4CN$ are described. (*C. A.* 49, 11694)

• Biology and Nutrition

F. A. Kummerow, Abstractor
Joseph McLaughlin, Jr., Abstractor

Reciprocal replacement of oleic acid and carbon dioxide in the nutrition of the "minute" Streptococci and Lactobacillus leichmannii. R. H. Deibel and C. F. Niven. Jr. (Div. Bacteriology, Amer. Meat Inst. Found., Chicago, Ill.). *J. Bacteriology* 70, 134–40 (1955). Cultures were grown on a casein hydrolyzate medium under CO_2. Tween 80 or oleic acid could replace CO_2 in the nutrition of the minute *streptococci* and 2 strains of *Lactobacillus leichmannii.* The reciprocal replacement of CO_2 and oleic acid could not be demonstrated among other bacteria known to require one of these substrates. The relationship of this finding to biotin metabolism is discussed. High concentrations of pyruvate in the medium partially eliminated the need for either CO_2 or oleic acid. Yeast extract contains an unidentified, nonlipoidal, dialyzable substance which can replace CO_2 and oleic acid in the nutrition of the test microorganisms and which was not found in other common, commercial medium constituents.

Partition chromatography of vitamin A alcohol and its application to the nonsaponifiable matter from cod liver oil. G. G. Dunckley and Yvonne J. Macfarlane (Nutrition Res. Dept., Med. School, Dunedin, New Zealand). *J. Sci. Food Agr.* 6, 559–64 (1955). Partition chromatography of nonsaponifiables from cod liver oil was achieved using paraffin oil on dichloromethylsilane-treated kieselguhr as the stationary phase and aqueous methyl, ethyl or isopropyl alcohol as the mobile phase. A column prepared from 6 g. of treated kieselguhr was suitable for the chromatography of the nonsaponifiables from 1–5 g. of cod liver oil and could be reused repeatedly. Vitamin A was the first band eluted by 70% aqueous methanol and was thus separated from some of the substances which interfere with its spectrophotometric assay. Analyses are shown for fresh cod liver oil and one which had been stored at room temperature for 8 years.

Some effects of oxygen on the mixing of bread dough. J. Hawthorn and J. P. Todd (Food Sci. Section, Royal Tech. College, Glasgow). *J. Sci. Food Agr.* 6, 501–11 (1955). When part of the flour is mixed to a batter in a high speed mixer prior to making into bread dough, the resultant bread has a greater volume and lighter color than does bread prepared in the usual manner. Experiments show that the bleaching results from oxidation of the carotenoids by the action of unsaturated fat oxidases. Flours vary greatly in the degree of bleaching under these conditions. By comparisons of bread volumes obtained after mixing doughs in oxygen, air or nitrogen, the improvement in bread was found to result from an uptake of oxygen by the flour protein and to be independent of lipoxidase action. A process for making bread from unbleached, untreated flour by mixing in an oxygen-enriched atmosphere is described.

Interaction of serum albumin with built-up monomolecular layers of fatty acids. I. H. Sher and H. Sobotka (Dept. Chem., Mt. Sinai Hospital, New York). *J. Colloid Sci.* 10, 125–38 (1955). A multi-layer lipide film was built-up by repeatedly dipping a chromium coated glass microscope slide into a barium acetate-phosphate buffer on which was spread a monolayer of cholesterol or one of the following acids: palmitic, stearic, arachidic, behenic, lignoceric, elaidic, brassidic, or isoarachidic. A system is described for determining the removal of the films by dilute serum albumin solutions. The effects of temperature, pH, albumin concentration and buffers on this reaction are reported. Only palmitic and stearic acids were removed by albumin under the experimental conditions. The possibility is discussed that albumin selectively removes stearic acid from the build-up film, leaving behind a skeletonized film of barium stearate.

A new spectrophotometric method for the determination of cholesterol in blood. J. A. A. Swinnen (Milit. Hospital, Antwerp). *Pharm. Tijdschr. Belg.* 32, 25–33 (1955). A modification of the Zlatkis method. The proteins are precipitated with an alcohol-acetone mixture. The results obtained with the Zlatkis method are too high, because the proteins give a brown color with the sulfuric acid of the reagent. (*C. A.* 49, 12579)

Effect of cholesterol feeding on the distensibility of the isolated thoracic aorta of the rabbit. J. T. Nichol (Univ. Ontario, London). *Can. J. Biochem. and Physiol.* 33, 507–15 (1955). The descending thoracic aortas of control and cholesterol-fed rabbits were used to prepare tension-length diagrams. Cholesterol feeding increases the distensibility at pressure up to 70 mm. Hg., but at pressures above this value no significant change is produced. Cholesterol feeding increases the resistance of the aorta to collapse, i.e. the longer the cholesterol feeding is continued the greater the magnitude of the negative pressure required to make the vessel segment collapse. (*C. A.* 49, 11839)

Symposium on lipides in nutrition (San Francisco, 1955). **Fat as a required nutrient of the diet.** H. J. Deuel, Jr. (Univ. of S. California, Los Angeles). *Federation Proc.* 14, 639–49 (1955). Discussion; 63 references. **Evaluation of fat soluble vitamins.** H. J. Almquist (Grange Co., Modesto, Calif.). *Ibid.* 650–4. Brief discussion. **Effects of various types of lipides in experimental hypolipotropic diets.** W. S. Hartroft (Washington Univ., St. Louis, Mo.). *Ibid.* 655–60. Review and discussion; 38 references. **Hormonal-nutritional lipide relationships.** L. W. Kinsell and G. D. Michaels (Highland Alameda County Hosp., Oakland, Calif.). *Ibid.* 661–6. Review with 28 references. (*C. A.* 49, 12630)

Variations in the absorption of different fats and fatty acids in rats. P. Favarger (Univ. Geneva, Switz.) *Congr. intern. biochim., Résumés communs., 2ᵉ Congr., Paris* 1952, 154. Rats were fed on diets containing deuteriopalmitic, deuteriostearic and elaidic acids or deuteriopalmitin, deuteriostearin, deuterioolein, and elaidin. During digestion (2 hours after feeding) the animals were sacrificed and the intestines cut into 3 sections of equal lengths. Unsaturated fatty acids disappeared before reaching the lower third. Deuteriopalmitin was absorbed in the first third and deuteriostearin in the second third. Both the esters were absorbed farther along the intestines than the corresponding fatty acids. With all fatty acids, only moderate absorption occurred in the last third of the gut. (*C. A.* 49, 12638)

Fat metabolism in relation to human arterial disease. M. Plotz (State Univ. of New York, New York, N. Y.). *Congr. intern. biochim., Résumés Communs., 2ᵉ Congr., Paris* 1952, 167. High fat diets do not seem harmful to persons with normal coronary vessels, but apparently accelerate the course of coronary atheroma in persons who already have significant clinical disease. (*C. A.* 49, 12639)

Effect of essential unsaturated fatty acids and methionine on hypercholesteremia. S. L. Shapiro and L. Freedman (U. S. Vitamin Corp., Yonkers, N. Y.). *Am. J. Physiol.* 181, 441–5 (1955). The hypercholesteremic response to cholesterol feeding in rats on a S-deficient protein diet was largely prevented by dietary fat (safflower oil) containing high levels of essential unsaturated fatty acids and supplementation with methionine. Substitution of a hydrogenated fat under the same experimental conditions did not effectively prevent hypercholesteremia. (*C. A.* 49, 12639).

Absorption of lipides during protein starvation. G. Peretti and G. Liguori (Univ. Cagliari, Sardinia). *Arch. Sci. biol. (Italy)* 38, 481–92 (1954). Rats kept on a low protein diet until they lose 20% of their weight still absorb lipides at a fairly good rate, but always less than on normal diets. There is no difference whether the lipides are fed separately or added to the food. If the diet is changed to a normal protein content, the lipid absorption gradually improves. (*C. A.* **49**, 11797)

Effect of the relative amounts of proteins, fats, and carbohydrates present in food on the development of thiamine avitaminosis. S. G. Aptekar(Inst. Nutrition, Acad. Med. Sci. U. S. S. R., Moscow). *Voprosy Pitaniya* 13(2), 25–30(1954). Guinea pigs were fed synthetic diets of the same caloric value but differing in their compositions with respect to proteins, fats and carbohydrates; all vitamins were provided except thiamin. Increasing the amount of proteins at the expense of carbohydrates at constant fats content did not prevent the development of B_1-avitaminosis. Increasing the dietary proteins at the expense of fats accelerates the process. Increasing the amount of fats in the diet either at the expense of proteins or carbohydrates inhibits the development of the avitaminosis. (*C. A.* **49**, 11799)

The separation of sphingosine and related compounds by reversed phase partition chromatography. J. A. Wittenberg (Western Reserve Univ., Cleveland, Ohio). *J. Biol. Chem.* **216**, 379–390(1955). Sphingosine and related compounds have been separated by reversed phase partition chromatography on siliconized diatomaceous earth. Prior to chromatography these compounds are converted to their *N*-succinyl derivatives by reaction with succinic anhydride. Compounds differing in the number of their hydroxyl groups, in methylation of one hydroxyl group, and in degree of unsaturation have been separated. A new assay for sphingosine is proposed. Sphingosine and related compounds are converted to the *N*-succinyl derivative, and the carboxylic acid group thus introduced is titrated with alkali. Quantities of from 3 to 100 μ moles are determined with an accuracy of 5 per cent.

The influence of dietary fat on thiamine loss from the body. L. E. Holt, Jr., Selma Snyderman(N. Y. Univ. College of Medicine, N. Y.). *J. Nutrition* **56**, 495–500(1955). Studies carried out in human infants revealed that the substitution of carbohydrate for fat in the diet resulted in a diminished output of thiamine in the urine. This is interpreted as indicating an increased demand for thiamine in metabolic reactions. The increased thiamine intake required by such a dietary shift has been measured.

The enhancement of the toxicity of sodium fluoride in the rat by high dietary fat. R. F. Miller, P. H. Phillips(Dept. of Biochem., College of Ag., Univ. Wis., Madison). *J. Nutrition* **56**, 447–454(1955). Increasing the dietary fat from 5 to 15%, in a purified ration increased the growth-retarding effect of a diet which contained 0.1% of sodium fluoride. It was established further that the protein-energy relationship was not responsible for the retardation effect of high fat on rats fed sodium fluoride.

The biological value of oils and fats. H. J. Thomasson(Unilever Research Lab., Zwijndrecht, The Netherlands). *J. Nutrition* **56**, 455–468(1955). In 6-week feeding experiments with rats the behavior of 20 oils and fats has been investigated, each of them being administered in 7 different dosages from 10 to a maximum of 73 cal. %. The various oils and fats showed differences in growth-promoting effect. Nevertheless, the food-efficiency seemed to have a constant value and to be independent of the type of fat used. Only shea butter and palm oil were exceptions to this rule.

The biolgical value of oils and fats. II. The growth-retarding substance in rapeseed oil. (Unilever Research Lab., Zwijndrecht, The Netherlands.) *J. Nutrition* **56**, 469–475(1955). Comparison of the growth-promoting effect of nasturtium seed oil, containing 86% of erucic acid, with that of rapeseed oil (about 50% erucic acid), as well as determination of the effect of erucic acid on growth, or of fat mixtures containing tri-erucin, has shown that the unfavorable growth obtained with rapeseed oil must be ascribed to the erucic-acid content of this oil.

Tocopherol content of the fat of dairy products as an index of adulteration. J. H. Mahon, Constance Anglin, R. A. Chapman (Dept. of National Health and Welfare, Ottawa, Canada). *J. Dairy Science* **38**, 1089–1095(1955). The tocopherol procedure, originally developed to detect the adulteration of the fat of butter, has been extended to the analysis of the fat of evaporated milk, condensed milk, whole milk powder, ice cream, and cheese. This procedure will not detect lard, tallow, or coconut oil.

On the origin of the methyl groups of phospholipid choline in the rat. J. A. Stekol, S. Weiss, Ethel Anderson(Ins. for Cancer Research, Phila. 11, Pa.). *J. Amer. Chem. Soc.* **77**, 5192–5193 (1955). These data strongly suggest that choline is synthesized in the rat not by transfer of three methyl groups of methionine to aminoethanol, but by transfer of one methyl group of methionine to dimethylaminoethanol as the direct acceptor.

Nitrogen utilization during caloric restriction. Doris Calloway and H. Spector(Quartermaster Food and Container Inst. for the Armed Forces, Chicago, Ill.). *J. Nutrition* **56**, 533–544 (1955). Well-nourished mature rats were fed for 4 days diets composed of egg albumin or milk proteins containing either 30 or 5% of fat at three levels of caloric intake: 100, 50 or 25% of the determined requirement. Fasted and normal composition controls were employed. All calorie-restricted groups were in negative nitrogen balance, the degree of negativity being directly related to the caloric intake. No superiority of level of fat or of type of protein was evident.

Nitrogen metabolism and fat absorption in malnutrition and in kwashiorkor. K. Holemans and A. Lambrechts(Univ. Liege, Belgium). *J. Nutrition* **56**, 477–494(1955). The nitrogen retention was as good for vegetable proteins as for animal proteins. The fat absorption (80%) is lower than that in normal children (95%).

• Drying Oils and Paints

Raymond Paschke, Abstractor

Thermal polymerization of methyl eleostearate. C. Boelhouwer, J. J. T. M. Geerards and H. I. Waterman(Dept. Chem. Engr., Tech. Univ., Delft). *Research Correspondence* **8**, 546–7(1955). Comparative polymerization experiments on methyl eleostearate were conducted at 230, 260 and 290°. The degree of cyclization in the polymer increased with increasing polymerization temperatures: the products formed at 260° were chiefly dimers containing about one ring per molecule; at 290° polymers containing about two rings per molecule were formed.

The properties and applications of epoxide resin esters. Part I. R. N. Wheeler(Shell Chemicals Ltd.). *Paint Technol.* **19**, 159 (1955).

Part II. *Ibid.* **19**, 260(1955). A review. 14 references.

Thickening of linseed oil by blowing air and heat. M. Taniewski. *Przemyst Chem.* **9**, 461–3(1953) (English summary). The oils thickened by air blowing have low acid number, dry much faster, and adhered to the base much better than oils thickened without access to air. (*C. A.* **49**, 12018)

Determination of mixed phthalic acid isomers in alkyd resins. M. H. Swann, M. L. Adams, and D. J. Weil(Aberdeen Proving Ground, Md.). *Anal. Chem.* **27**, 1604(1955). The *meta* and *para* isomers of phthalic acid have recently attained commercial significance in alkyd resin manufacture. An analytical method for measuring each of the three phthalic acid isomers in mixture consists of a special saponification technique to recover the acids from resin solution, followed by hydrolysis in methanol solution and measurement of the absorptivity at three ultraviolet wave lengths. Analytical control can be exercised on the new compositions.

Recent developments in surface coating. K. K. Sarin(Nat. Res. Rev. Corp. India). *Paintindia* **5**(5), 37(1955). A review.

Statistical evaluation of odor levels in flat wall paints. J. W. Prane(Nat. Lead Co., Philadelphia). *Paint Ind. Mag.* **70**(9), 22(1955).

Dehydrochlorination of chlorinated fatty acids. M. Naudet and P. Desnuelle(Fac. sci., Marseille). *Bull. Soc. chim. France* **1955**, 563–7. Metal salts, particularly those of Co, catalyze the dehydrochlorination of chlorinated fatty acids and fatty acid esters on heating briefly to a high temperature. The technique was explored with various halogenated stearic and oleic acids. Saturated fatty chains can be converted into unsaturated ones or existing unsaturation can be augmented. (*C. A.* **49**, 12857)

Use and application of isocyanates in the lacquer and paint industry. E. J. Mouton. *Plastica* **8**, 232–5(1955). Polyurethan paints and lacquers find increasing application in Western Europe, in view of their hard, elastic films which are completely resistant to water up to 70° and to heat up to 200°. The resistance is excellent to most solvents and to dilute strong acids and alkalies as well as to concentrated weaker acids and alkalies. The weathering characteristics, adhesion, and electric properties are excellent. The high toxicity requires stringent safety measures. (*C. A.* **49**, 11294)

Higher fatty alcohols. VIII. Utilization of unsaturated higher fatty alcohols. 1. Preparation of some drying esters with unsaturated fatty acids. S. Masuyama(Osaka City Ind. Res.

Inst.). *Science & Ind.(Japan)* 27, 106–10(1953). Higher fatty alcohols reduced under normal pressure with metallic Na and Cellosolve from castor (normal and isomerized), cottonseed, poppyseed, sardine, and squid visceral oils were esterified with unsaturated fatty acids (from soybean, normal and isomerized castor oils, and tricarballylic and sorbic acids) and KOH catalyst at 165–205°/7–15 mm. for 3–7 hours. These esters are all fast drying. (*C. A.* **49**, 12015)

Uniformity in the formation of latex paints. M. Kronstein, R. W. Muschett, Jr., E. J. Dypa, and A. H. Staheli(N. Y. Univ., New York 53, N. Y.). *Ind. Eng. Chem.* **47**, 2181(1955).

Basic concepts in latex paint formulation. Part IV. P. Heiberger(National Lead Co., Philadelphia). *Am. Paint J.* **39** (51), 63–75(1955). This last part of the review discusses stability, compatibility and additives.

New developments in silicone resins for protective coatings. R. C. Hedlund(Dow Corning Corp., Midland, Mich.). *Paint Ind. Mag.* **70**(9), 17(1955). A discussion of recent advances in this rapidly developing field is given.

Preliminary evaluation of protective coatings systems. R. W. Flournoy(Corn Products Refining Co., Argo, Illinois). *Corrosion* **11**, 289t(1955). Laboratory tests are used for selection of coatings to be further tested under plant conditions. (*C. A.* **49**, 12016)

A simplified method for the analysis of alkyd resins. A. Davidsohn(Haifa, Israel). *Paint Technol.* **19**, 301(1955). Analysis of alkyd resins is rather complicated and time-consuming. In particular, the usual method for the determination of phthalic anhydride is difficult and requires considerable skill. The method described eliminates most of the time-consuming gravimetric work and is especially suitable for routine analysis.

A.S.T.M., Committee D-1—and Navy paints. W. W. Cranmer (Industrial Test Lab., Philadelphia). *Am. Paint J.* **39**(52), 94–113(1955). A survey of the present and future status of U. S. Navy paints, and of the work of the committee.

New epoxide resins by reaction of epichlorohydrin with sulfonamides. M. Cohen(Gen. Elect. Co., West Lynn 3, Mass.). *Ind. Eng. Chem.* **47**, 2095(1955). The reaction of epichlorohydrin with various sulfonamides was studied in order to prepare new types of epoxide resins based on sulfonamides instead of bisphenols.

Fundamental investigation of paint. N. A. Brunt. *Verfkroniek* **28**, 59–65(1955). An accurate measurement of the mechanical properties of a paint film enables one to evaluate its resistance to cracking and loss of gloss, and permits a better insight into the effect of resins and other paint components. The molecular-kinetic significance of the phenomena of the elasticity at slight deformation is explained theoretically and investigated experimentally on one linseed-oil standoil and rosin varnish. The differences in durability agree completely with the results of the measurements. The unfavorable action of the rosin is the effect of the increased sensitivity to water. An experimental investigation of 4 paints showed likewise that measurements make it possible to evaluate the behavior of the materials under various conditions. They comprise: elastic properties of the paint film as a function of temperature and time, molecular- kinetic interpretation and experimental determination of the mechanical spectrum, and changes of the latter due to radiation and moisture. (*C. A.* **49**, 12013)

Recent developments in antifouling paints. A. L. Alexander (Naval Res. Lab., Washington, D.C.). *Org. Finishing* **16**(9), 5(1955). Newer vinyl systems are now coming into full use as protective antifouling and anticorrosive paint systems for ships' hulls. A much better appreciation of the effects of surface preparation has been obtained resulting in longer life from previously established paints. The use of adaptable coatings with cathodic protection to combat hull corrosion as well as fouling has been established on a compatible basis.

New synthetic resins and derivatives. Anon. *Paint Technol.* **19**, 283(1955). Esterification of decarboxylated cashew nutshell liquid with unsaturated fatty acids yields coating materials said to have good electrical properties. Pale air-drying copolymers are produced by reacting together cyclopentadiene, drying oils, and certain ethylenic compounds. Styrene, maleic anhydride, and certain crosslinking agents form heteropolymers having interesting viscosity characteristics. New silicoalkyd resins are recommended for coating furnaces, stoves, and other surfaces that operate at very high temperatures. New polymerization processes are also described.

The chemistry of plastics. Part I: Cellulose plastics: phenolic plastics. Anon. *Paint Oil Chem. Rev.* **118**(19), 12(1955). A review.

Tall oil comes of age—a staff report. Part II. Tall oil refining. Anon. *Paint Oil Chem. Rev.* **118**(16), 20(1955). This part discusses tall oil recovery, acid refining, whole and fractional distillation and miscellaneous methods of refining. **The tall oil revolution—its meaning to the protective coating industry.** *Ibid.* **118**(18), 10(1955). A brief survey of the present economic situation showing the improved quality, uniformity, availability and price are the factors making tall oil a strong competitor in the drying oil field.

Titanium organics show promise. Anon. *Chem. Eng. News* **33**, 4226(1955). The tetra alkyl titanates hydrolyze rapidly when exposed to water or moist air; the hydrolysis product is a continuous, clear, adherent film of TiO_2. Paint, plastics and rubber exhibit greatly improved adhesion to metals precoated with the film. These esters also react very rapidly with polyhydroxy compounds to form cross-linked polymers.

The adhesion of paint films. Anon. *Paint Manuf.* **25**, 345 (1955). A summary of several papers given at a Conference of the Oil and Colour Chemists' Association, in which the influence of the coating, the surface coated, and external conditions on the adhesion of paint films was discussed.

Aluminum pigmented vinyl paint rated best in six-year test. Anon. *Paint Oil and Chem. Rev.* **118**(20), 9(1955). A coating system designated as an "aluminum pigmented vinyl paint system" has recently been judged best of 25 systems, consisting of eight vinyl systems, fourteen phenolic varnish-pigmented paints and three rubber base and coal tar coatings. The ratings were established from the standpoint of corrosion-resistance in a continuing test conducted by the Corps of Engineers, U. S. Army.

The chemistry of plastics. Part 2. Urea and malamine, vinyl plastics. Anon. *Paint Oil and Chem. Rev.* **118**(20), 12(1955). A review.

Polymerizable coating composition. R. W. LaBerge(E. I. du Pont Co.). *U. S. 2,705,702.* A liquid coating compound applicable at high solids is prepared from (1) a diester of methacrylic acid and a glycol, (2) a coconut oil-modified methacrylated alkyd resin, (3) a nondrying oil-modified mixed polyester of an olefinically unsaturated α,β-dicarboxylic acid, (4) a hydrocarbon solvent, and (5) Co drier and peroxide curing agents. (*C. A.* **49**, 9940)

Compositions having air-drying properties. R. W. Martin(Gen. Electric Co.). *U. S. 2,707,715.* This patent covers compounds free from hydrolyzable ester groups and having air-drying properties which have the general formula $C_6H_3(OR)(R')(CH_2OH)_n$, where R is a member selected from class consisting of alkyl and hydroxy alkyl groups, R′ is an unsaturated aliphatic group, and n is an integer from 1 to 3, inclusive, the benzene ring being free of hydroxymethyl substitution in the *meta* positions. (*C. A.* **49**, 11298)

◆

• Detergents

Lenore Petschaft Africk, Abstractor

Some aspects of the keeping qualities of perfumed soaps. J. Sfiras(Establissements Roure Bertrad Fils and Justin Dupont., Argenteuil). *Rev. franc. corps gras* **2**, 406–9(1955). The characteristic odor of perfume compositions incorporated into soaps is altered by not yet explained adsorption phenomena, by partial evaporation of the components, and by the saponifying action of hydrolytically split alkali on esters (I). Hydrolysis of I was investigated by titrating the fatty acid liberated after heating 20 g. of soap containing 2% of I for 3 hrs. on a water bath. The rates of saponification of benzyl, phenylethyl, styryl, linalyl, terpenyl, and guaiol acetate were resp., 41.1, 23, 19, 14, 2.5 and 1.6%; and for amyl salicylate 21.5%. Causes of autoxidation and the principal compounds susceptible are discussed. (*C. A.* **49**, 12021)

Detergents from sugar. Anon. *Chem. Week* **77**(15), 90–2(1955). A new detergent prepared from sugar is now a commercial possibility. It is a non-ionic detergent that is nontoxic, odorless and tasteless. It gives low to moderate foam depending on the builders used and the fatty acid ester that is reacted with the sucrose. Though most nonionics are liquids, the sugar-based ester is produced as a free-flowing powder and therefore seems well suited for use as a heavy-duty detergent. The detergent is made by reacting sucrose with the fatty acid ester of a volatile alcohol in a solvent. An excess of the sucrose produces the monoester, desired for detergent uses. An excess of the nonsugar ester produces the diester, which may be used as a food emulsifier.

Surface-active substances. A. Bauerschmitt and R. Bene. *Bull. assoc. diplomes microbiol. fa. pharm. Nancy* **54**, 13–37(1954). The chemical, physical and biological properties, uses and toxicity of American and European anionic and cationic surface-tension depressants are described and discussed. (*C. A.* **49**, 12859)

Synthetic wetting agents and detergents—their characteristics and effect on sewage purification. B. Dieterich. *Gas-u. Wasserfach* **96**, 391–4(1955). A review is given of the effect of synthetic detergents on sewage purification by both mechanical filters and biological purification. The effect is largely physical and can be reduced by increasing the solids content, spraying the foam, and simultaneously increasing the air input. 16 references. (*C. A.* **49**, 11923)

Bleaching grained soaps. E. A. Kolty. *Am. Perfumer Essent. Oil Rev.* **66**, 64, 66(1955). Problems involved in producing light colored soaps are discussed. When using dark raw materials, it is well to bleach before saponification. The use of oxidizing or reducing agents as bleaches for the soap itself depends upon the type of soap. Oxidizing agents are used on most soaps but rosin-containing grained soap should be bleached with reducing agents.

Effect of micellar size on physico-chemical properties of surfactants. A. M. Mankowich(Aberdeen Proving Ground, Md.). *Ind. Eng. Chem.* **47**, 2175–81(1955). The physicochemical properties of micellar solubilization, suspendibility, spreading coefficient, and boundary tensions of 1% solutions of alkyl aryl sulfonate and alkyl aryl polyethylene glycol ether surfactant were compared at varying micellar sizes, the variations being accomplished by additions of different builders. Data indicate that each of these properties is a function of micellar size. A more fundamental unit of solubilization, molecules of dyestuff solubilized per micelle, was developed. The mathematical estimation of the values of physicochemical properties of surfactants is suggested. A modified treatment of the Hc/T data for built surfactants in the concentrations investigated permitted more rapid estimation of micellar molecular weights.

Synthetic detergents and emulsifiers—up to date. J. W. McCutcheon. *Soap Chem. Specialties* **31**(7) 50–61, (8) 48–61, (9) 52–67, (10) 48–67(1955). The present economic and production picture in the field of detergents and emulsifiers is reviewed. An extensive alphabetical list of commercial surface active agents is included.

Synthetic detergents: the boom won't wash out. D. Price (New York). *Chem. Week* **77**(17), 40–82(1955). The synthetic detergents picture is reviewed from the point of view of type, applications, sales and production. A list of products is included, arranged alphabetically by manufacturer and including trade name, chemical name, concentration, and form classification as to type, price and principal uses.

The activity of carboxymethylcellulose during the washing process. H. Stupel. *Melliand Textilber.* **36**, 355(1955). In principle, there are two mechanisms to which prevention of dirt redeposition during washing can be attributed: (a) the carboxymethylcellulose (CMC) envelops the dirt particles, and (b) the fiber adsorbs the CMC particles. In order to prove the fiber-CMC adsorption theory, an attempt was made to render visible the adsorbed CMC by means of Acridine Orange, which stains the CMC so that it shows a red color in the ultraviolet light of the fluorescence microscope. Dilute solutions, such as those present in the wash-liquor, give no color effect. In the experiments with ramie, purified cotton wool, cotton, rayon, etc., no CMC was detected on the fibers, but added, or accidentally present, soil particles (soot, natural organic soils, fats, fatty acids, mineral oil, etc.) became rapidly and thickly coated with the CMC in the solution. The experiments are being continued.

Improving soap flakes. K. L. Weber. *Seifen-Oele-Fette-Wachse.* **81**, 345–7(1955). The use of additives, supplemented by emulsifier and dispersant, aids saponification, improves transparency, increases detergency, foaming power, plasticity and resistance to breakage, thus producing an improved soap flake product.

Floating soaps. F. V. Wells(London, Engl.). *Soap Chem. Specialties* **31** (9) 41–4, 130, (10) 45–8, 79(1955). Development of floating soaps is reviewed. They have the following advantages: they float on the surface of the water and can be easily located; they are made from high-grade raw materials, they have a pleasantly characteristic texture, handle well and look attractive. Their disadvantages include: they are more than normally prone to rancidification due to occlusion of air; for the same reason they tend to exhibit reduced lathering properties; their homogeneity and ratio of volume to weight have to be carefully controlled to produce uniform cakes, they are more expensive to produce, and they dissolve at a faster rate than ordinary soaps. Various methods of producing these floating soaps are described with references to the patent literature. Aeration methods are most successful. Various types of additives which may be used are also discussed. 15 references.

Critical micelle concentration of sodium lauryl sulfonate. R. J. Williams, J. N. Phillips, and K. J. Mysels. *Trans. Faraday Soc.* **51**, 728–37(1955). The critical micelle concentration of sodium lauryl sulfate in water and in sodium chloride solutions has been determined by conductivity, dye solubility, and light-scattering studies. Results obtained by these methods are in agreement. The critical micelle concentration is found to vary with a power of the concentration of the counter-ions.

Spray process soap and synthetic detergents. G. J. Stockmann (Wurster & Sanger International, Inc., Chicago). *Oil and Oilseeds J.* **7**, 8–12(1955). The processes for manufacture of spray dried washing powder, of spray dried soap, and of spray dried detergents are discussed.

Micelle formation of nonionic surfactants. I. Properties of aqueous solutions of polyoxyethylene glycol alkyl ether. Rempei Goto, Takeo Sugano, and Naokazu Koisumi(Kyoto Univ.). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 73–6(1954). Abrupt changes were observed in the density, viscosity, and solubilization of coloring substances at about 10^{-4} mole/l. in this nonionic surface-active agent. The mechanism of micelle formation was discussed not from electrolyte nature (as in ionic detergents) but from the polar-nonpolar structure of active molecules.

Sulfonate detergent blend. F. N. Baumgartner(Esso Research & Eng. Co.). *U. S. 2,712,530.* A detergent having good detersive properties at low concentrations is prepared by blending a branched-chain alkyl aryl sulfonate with a straight-chain secondary alkyl aryl sulfonate.

Method for the production of a granulated soap product. F. G. Packard(Lever Brothers Co.). *U. S. 2,715,110.* A granular soap product rapidly dispersible in water and substantially free from gel forming and agglomerating characteristics is made by preparing an alkali metal silicate-containing soap and treating soap material when in granular form with carbon dioxide in a concentration and for a time sufficient to form silica on the surfaces of the granulated soap particles but insufficient to make the particles substantially water-insoluble.

Non-caking alkyl aryl sulfonate detergent compositions. H. S. Bloch and G. L. Hervert(Universal Oil Products Co.). *U. S. 2,717,243.* A comminuted, non-agglomerating detergent consists of a free-flowing, water-soluble mixture of finely divided solid particles of (1) an anionic detergent selected from the group consisting of the alkali metal, ammonium, alkyl ammonium and hydroxy-alkyl ammonium salts of an alkyl aromatic sulfonic acid containing an alkyl group of from about 9 to 18 carbon atoms, (2) an alkyl benzene sulfonate salt of a metal selected from the group consisting of magnesium, calcium, strontium, barium, aluminum and zinc, the last-mentioned salt having an alkyl group of from 1 to about 18 carbon atoms, and being in sufficient amount to prevent caking of the detergent and (3) a sufficient amount of sequestering agent to enhance the solubility of the last-mentioned sulfonate salt.

Disinfecting and cleansing solution for the human skin. A. Schmitz. *U. S. 2,717,830.* A certain class of amphoteric surface-active agents was found to possess not only good body cleansing but also good disinfecting properties when employed in the form of aqueous solutions of their salts with organic or inorganic acids. These amphoteric surface active agents are the water soluble acid salts of a high molecular amino acid having the formula: $C_{12}H_{25}\cdot NH\cdot CH_2CH_2NH\cdot CH_2CH_2NH\cdot CH_2\text{-}COOH$, and have a pH corresponding substantially to that of the skin.

High molecular weight polymer detergent compounds and method of making the same. Wyandotte Chemicals Corp. *Brit. 731,603.* Hard, solid form non-ionic detergents have outstanding detergent and surface active properties and contain a hydrophobic portion which is a polyoxypropylene polymer of at least 900 molecular weight. These polyoxyalkylene compounds are prepared by first condensing propylene oxide with an organic compound containing a plurality of reaction hydrogen atoms to prepare a polyoxypropylene polymer of at least 900 molecular weight and then condensing with ethylene oxide.

Improvements in detergent compositions. Unilever Ltd. *Brit. 733,075.* Lathering properties of many organic ionic soapless detergents are improved by the addition of acid amides of alkoxy- or alkylphenoxy-alkane carboxylic acids.