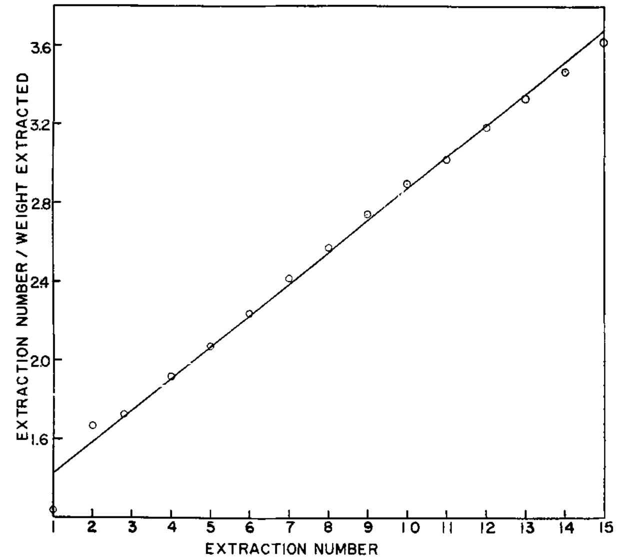

FIG. 3. Linear graph for determining the y-asymptote of curve in Figure 2.

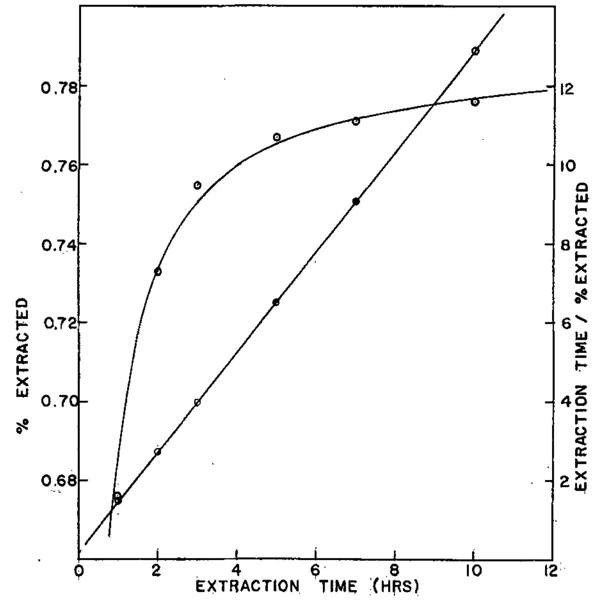

FIG. 4. Extraction curve and corresponding linear graph for extraction of Amerian cotton with hot chloroform.

Clifford *et al.* for the determination of fat, wax, and resin in cotton (4). After testing a variety of solvents, these workers correctly concluded that, although hot chloroform was best, no complete separation was possible. The question of how much soluble material remained unextracted naturally arises. Clifford's data include a tabulation of the percentage of sample extracted at various time-intervals. The data for the extraction of American cotton with hot chloroform are studied here. The percentage extracted is plotted against the extraction time in Figure 4. The experimental points are seen to lie very close to the best hyperbola which can be drawn through them. This hyperbola follows the equation, $\% = t/(1.269\ t + 0.1883)$. The straight-line function has been plotted in Figure 4 also. From this the total soluble material is found to amount to 0.788%. The longest extraction time reported in this series of extractions was 10 hrs., and in this time 0.776% of the sample had been extracted. The 10-hr. extraction thus removed 98.5% of the soluble material present in the cotton.

Summary

Successive extractions of mixtures are used to determine the percentage of the more soluble components present. A plot of the amount extracted *vs.* the extraction number results in a section of a hyperbola, which is then extrapolated to the limiting value. The solubility thus obtained is independent of arbitrary ratios of weights of solute to solvent. The method is applied to the determination of the alcohol-soluble fraction of sugar cane wax, and a laboratory extractor operating at constant temperature is described. Also the method may be used to analyze other extraction data, *e.g.*, extraction with the Soxhlet extractor, to determine the amount of soluble material left unextracted after a given time.

Acknowledgment

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ABSTRACTS . . . . R. A. REINERS, Editor

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• Fats and Oils

ISOÖLEIC ACIDS. VI. ISOÖLEIC ACIDS OF BEEF LIVER AND GOAT MILK FATS. I. S. Shenolikar and M. R. Subbaram (Indian Council Med. Research, Coonoor). *J. Sci. Ind. Research* (India) **17C**, 207–8 (1958). The presence of Δ^8- through Δ^{13}-octadecenoic acids in the isoöleic acid from beef liver and goat milk fats is proved. (*C. A.* **53**, 11696)

DETECTION AND MEASUREMENT OF CIS UNSATURATION IN FATTY ACIDS. R. T. Holman, Siret Ener, and P. R. Edmundson (Univ. of Minnesota, Austin). *Arch. Biochem. Biophys.* **80**, 72–9 (1959). The absorbance of fatty acids at 2.15 μ is related to the unsaturation of the samples and found to be a measure of *cis* unsaturation. Moles *cis* acid/kg. $= 0.76\ (k \times 10^4) - 0.96$. The determination of *cis* unsaturation by its absorption at 2.15 μ has the advantage of speed and determines directly and specifically a property of *cis* unsaturation. (*C. A.* **53**, 11697)

VARIATIONS IN THE COMPOSITION AND CHARACTERISTIC NUMBERS OF SUNFLOWER OIL IN DEPENDENCE OF CLIMATIC CONDITIONS. G. Rankov and As. Popov. *Bulgar. Akad. Nauk., Izvest. Khim. Inst.* **5**, 203–8 (1957) (Russian and German summaries). The oils received from different localities varied in iodine number and chemical composition. Those from Southern Bulgaria had lower iodine values than those from farther north. The amount of linoleic acid varied between 50.8 and 56.7% and that of oleic acid from 33.4 to 38.5%. No linolenic acid was found. These are typical semidrying oils, soluble in ether. (*C. A.* **53**, 10806)

REFINING OF OLIVE OILS CONTAINING DIAZINON RESIDUES. Maria E. Alessandrini, Mirella Doretti, and A. Sampaolo. *Rend. ist. super. sanità* **21**, 1116–25 (1958). Diazinon [*O*-(2-isopropyl-4-methyl-6-pyrimidyl)-*O,O*-diethyl thiophosphate] is not decomposed by alkali refining, but as much as 200 parts per million of it is destroyed by decolorizing with a mixture of 3% "Rumsil" activated clay with 0.3% activated carbon at 95–105° for 0.5 hour. About 90% of diazinon was recoverable from the clay. No breakdown product (PO_3^{+++}) and no cholinesterase inhibitors were identifiable in the refined oil. Deodorization by heating the oil to 200° at 1 mm. mercury for three hours leaves sulfur derivatives. (*C. A.* **53**, 10808)

SEEDS AND OIL OF SOME SORTS OF THE XANTHIUM SPECIES. As. Popov and St. Ivanov. *Bulgar. Akad. Nauk., Izvest. Khim. Inst.* **5**, 377–87 (1957). Data from the literature are given on several species of *Xanthium*. The oil of *Xanthium strumarium, Xanthium spinosum* and *Xanthium italicum* gave: $n^{25/D}$ 1.4740, 1.4745, 1.4747; acid number 1.1, 1.5, 2.3; saponification number 192.0, 194.7, 190.6; hexabromide number all zero; iodine number (Kaufman) 138.9, 140,0, 140.6. The composition of the oils included linoleic acid 63.3, 64.6, 65.5%; oleic acid 28.0, 26.5, 24.5%; unsaponifiable matter 0.4, 0.9, 0.9; glycol residues all 4.5. They belong to the group of semidrying oils and can be used as such. The oils of *Xanthium strumarium* and *Xanthium spinosum* are safe for food purposes; the oil of *Xanthium italicum* has not been proven to be physiologically safe. The pulp which remained after extraction of the oil is known to contain poisonous substances and cannot be used as a feed. (*C. A.* **53**, 10807)

OIL OF WALNUT (JUGLANS REGIA). R. S. Aĭzenberg. *Trudy Kishinev. Sel'skokhoz. Inst.* **11**, 63–98 (1956); *Referat. Zhur., Khim.* **1958**, Abstr. No. 2690. Oil from nuts of standard grade, from the State Fruit Nursery of Moldavian S.S.R. stored for six months at 18–20°, has the following constants: $n^{19/D}$ 1.4774, $n^{19/C}$ 1.474, $n^{19/E}$ 1.484, temperature index of refraction 0.00046, d^{20} 0.9172, flash point 327°. Turbidity begins to develop at −26°. Acid value of the oil 0.65, saponification value 193.1, ester value 192.45, glycerol content 10.55%, unsaponifiables 0.68%, Hehner value 95.1, neutralization value of fatty acids 203.3 with unsaponifiables, 204.7 without, average molecular weight of fatty acids 275.3, value of water-soluble volatile acids 1.52, insolubles 0.2, iodine value (according to Margoshes) 142.1, thiocyanogen value 87.33. The oil contains approximately 28% oleic acid, 55% linoleic acid, and 8.5% linolenic acid and is a typical drying oil. On studying the processes of refining and oxypolymerization of the oil, it was found that optimal conditions for manufacture of an immersion oil are refining with a mixture of animal charcoal (2%) and waste aluminum sulfate (6%) and blowing with air at 130-mm. residual pressure for 35 hours. In order to raise the refractive index, α-bromonaphthalene is added to the oil thus treated. (*C. A.* **53**, 10806)

MOLECULAR DISTILLATION OF SOME PHILIPPINE VEGETABLE OILS. A. O. Cruz, A. P. Labog, and L. U. Casile (Inst. Sci. and Technol., Manila). *Philippine J. Sci.* **86**, 241–5 (1957). Coconut *(Cocos nucifera), Aleurites moluccana,* rubber seed *(Hevea brasiliensis),* and rice *(Oryza sativa)* oils were molecularly distilled. Some separations of the triglycerides of the coconut and rice oils were achieved but little or no separation in the other two. The drying properties of *Aleurites moluccana* and rubber-seed oils were not improved by molecular distillation. (*C. A.* **53**, 10806)

ETHYL OLEATE USED AS AN EXCIPIENT. A. del Pozo and P. Alemany (Dept. Farm. C.S.I.C., Barcelona, Spain). *Galenica acta* **11**(4), 7–18 (1958). Ethyl oleate containing nordihydroguaiaretic acid, butyl hydroxyanisole, lauryl gallate, propyl gallate, or ethyl gallate, each 0.01%, and each with citric acid 0.005%, or Tenox II 0.04%, all exerted protective effects, causing delay in rancidification at 87° up to two months. (*C. A.* **53**, 10805)

ISOMERIZATION OF FAT HYDROPEROXIDES TO CYCLIC PEROXIDES. A. R. S. Kartha (Maharaja's Coll., Ernakulam). *J. Sci. Ind. Research* (India) **17B**, 284–5 (1958). When fat peroxides are kept in methanol-carbon tetrachloride solution at 30–50°, an appreciable decrease in peroxide number is observed within one hour whereas there is no decrease observed in the absence of methanol. The change in peroxide number on contact with methanol is due to isomerization. Hydroperoxides are converted to cyclic peroxides in the presence of alcoholic OH. Acetic acid also has the same type of isomerizing action as methanol. The present studies demonstrate the possible existence of cyclic peroxides of the nonconjugated unsaturated fatty acid derivatives. Further, cyclic peroxides appear to be readily converted back to hydroperoxides. This makes the interrelationship between the two types of peroxides look like tautomerism. (*C. A.* **53**, 11215)

ANIMAL FATS IN PLANT OILS. G. Bigoni (Soc. Gaslini, Genua, Italy). *Olii minerali, grassi e saponi, colori e vernici* **36**, 1–4 (1959). Animal fats contain tetradecenoic and hexadecenoic acid in greater amounts than does olive oil; the ox, sheep, and pig fat contain 0.6–4.8% tetradecenoic acid and 0.1–6.7% of hexadecenoic acid, while olive oil contains less than 1% of tetradecenoic acid and no hexadecenoic acid. Detection is made as follows: separate the solid fatty acids from total freed fatty acids with the lead salt method, methylate liquid fatty acids, and distill a first fraction (15%) of the methyl esters. The average molecular weight of the distilled fraction from pure olive oil has saponification number less than 191; when more than 10% animal fats is present, the saponification number is 194–212. (*C. A.* **53**, 11862)

DEODORIZATION OF LIQUID WHALE OIL IN HYDROGEN ATMOSPHERE. T. A. Khorin (Fat Combine, Troĭtsk). *Masloboĭno-Zhirovaya Prom.* **25**(3), 34–5 (1959). Deodorization of whale oil in hydrogen atmosphere at 275° for three hours, or at 300° for forty-five minutes, and the withdrawal of at least 2% of distillate inhibits development of fishy flavors during storage. (*C. A.* **53**, 11862)

TRANSESTERIFICATION OF COTTONSEED OIL. P. A. Artamonov, E. A. Glokova, and L. N. Goryaeva. *Masloboĭno-Zhirovaya Prom.* **25**(3), 22–5 (1959). Preparation of sodium methoxide as a catalyst for the transesterification of cottonseed oil, as well as the apparatus used in the process, are described in some detail. (*C. A.* **53**, 11861)

MANUFACTURE OF FATTY ACIDS BY THE SODA SAPONIFICATION PROCESS. A. Vickery. *Mfg. Chemist* **30**(3), 107–8(1958). A description is given of the technique and soda saponification plant used by Price's (Bromborough) Ltd. for preparation of ricinoleic and 12-hydroxystearic acids concentrates from natural oils. (*C. A.* **53**, 11861)

SELECTION AND ACTIVATION OF CATALYSTS DURING FAT HYDROLYSIS. D. A. Rozhdestvenskiĭ. *Masloboĭno-Zhirovaya Prom.* **25**(3), 31–4(1959). The acid (up to 5%) hydrolysis of hydrogenated fat is accelerated by the presence of surface-active anionic and nonionic emulsifying agents (which form heat-stable emulsions in the acid medium) and cationic adsorbers. (*C. A.* **53**, 11861)

FATTY ACID COMPOSITION OF NORTHERN ELEPHANT SEAL OIL. Hideo Tsuyuki (Univ. Nihon). *Sci. Repts. Whales Research Inst.* (Tokyo) **13**, 323–32 (1958) (in English). The fatty-acid composition of a northern elephant seal oil was saturated acids: myristic 3.52, palmitic 12.82, stearic 3.61, arachidic 0.41, and behenic acid 0.01%, and unsaturated acids: C_{14} 0.96 (−2.0 H), C_{16} 10.02 (−2.5 H), C_{18} 33.22 (−3.0 H), C_{20} 24.57 (−4.4 H), C_{22} 10.27 (−7.1 H) and C_{24} acid 0.59% (−6.6 H). (C. A. **53**, 14548)

WHALE OIL. XIII. THE COMPOSITION OF FATTY ALCOHOLS IN BERARDIUS BAIRDII BLUBBER OIL. Masamichi Saiki, Shin-Chen Fang, and Takajiro Mori (Univ. Tokyo). *Bull. Japan Soc. Sci. Fisheries* **24**, 578–80 (1958–59). The blubber oil of *Berardius bairdii* showed specific gravity $d^{30/4}$ 0.8748, $n^{40/D}$ 1.4560, acid number 0.3, saponification number 123.2, iodine number 87.4, and unsaponifiable matter 40.05%. The unsaponifiable matter had iodine number 64.41, hydrocarbon 0.05%, and sterol 0.3%. The composition of fatty alcohols in the unsaponifiable matter was C_{16} saturated 9, C_{18} saturated 27, C_{20} saturated 2, C_{16} unsaturated 7, C_{18} unsaturated 53, and C_{20} unsaturated 2%. Urea adduct-methanol method for separation of higher alcohols was very useful for concentrating octadecenol. (*C. A.* **53**, 14548)

A NOTE ON A METHOD FOR THE EXTRACTION OF FREE FATTY ACIDS FROM LIPID MATERIAL. L. R. Mattick and F. A. Lee (New York State Agr. Exptl. Sta., Cornell Univ., Geneva, N. Y.). *Food Res.* **24**, 451–2 (1959). A method is presented for the extraction of free fatty acids from lipid material. This method eliminates the troublesome emulsions formed during the extraction of soap solutions with ether.

Effect of Cooking Upon Edible Fat and Oil. IV. Quality of Fat and Oil Used in Sautéing Vegetables and in Roux. T. Hashimoto, T. Sakamaki, and H. Matsumauro. *Ann. Rep. Natl. Inst. Nutrition* (Tokyo) **1958**, 86–8. Raw soybean oil was compared with that used in sautéing or in roux preparation of vegetables. No difference in utilization of the fats used in these ways was evident. (*C. A.* **53**, 12514)

Partial Esters (Mono- and Diglycerides) of Fatty Acids and Polyhydroxy Alcohols as Emulsifying Agents. B. Ya. Golant and N. A. Petrov. *Masloboino-Zhirovaya Prom.* **25**(2), 16–19 (1959). A review with 23 references.

Incomplete Esters of Fatty Acids and Polyhydroxy Alcohols as Emulsifiers. B. Ya. Golant and N. A. Petrov. *Ibid.* **25**(3), 15–18. Review of literature with 8 references. (*C. A.* **53**, 12710)

Quantitative Methods for Determination of Rancidity in Vegetable Oils. B. A. J. Sedláček. *Nahrung* **2**, 655–9 (1958). The 2-thiobarbituric acid method, with measurement of color through extinction at 530 mμ, is applied to lard and walnut kernels. Organoleptic properties decrease with increase in extinction and peroxide number. Particularly, beginning rancidity is accompanied by a rapid rise of the extinction, which allows use of the method to distinguish between freshly refined and stored oils. Extinction values and peroxide numbers for fresh, stored, and rancid oils are suggested. (*C. A.* **53**, 12710)

Preparation of Activated Clays and Carbons from Indigenous Raw Materials for Bleaching Cottonseed Oil. K. Krishna Murthy and M. Narayana Rao (Central Food Technol. Research Inst., Mysore). *J. Proc. Oil Technologists' Assoc., India, Kanpur* **10**, 121–6 (1954) (Pub. 1955). The preparation of activated clays from four samples of kaolinitic clays and of activated carbons from vegetable raw materials including sawdust, peanut hulls, cottonseed hulls, and rice hulls, was studied. Rice hulls carbon, and acid-activated Bagheshapura clay gave the best results. These compared favorably with other (foreign) sources of carbon and earth for the bleaching of cottonseed oil. (*C. A.* **53**, 12710)

Hydrogenation of Nageswar Oil (Mesua Ferrea). Sri Couri Kanta Mukerjee (Radhanagar, West Bengal). *J. Proc. Oil Technologists' Assoc., India, Kanpur* **10**, 117–20 (1954) (Pub. 1955). The oil, obtained in yields of 30.0–49.8%, had a saponification number 209.5, iodine number 87.92, and n^{40} 1.468. (*C. A.* **53**, 12711)

Refining of Vegetable Oils for Human Consumption and for Motor Lubrication. M. Bourjol and M. Ortigues. *Chim. & Ind.* (Paris) **80**, 712–15 (1958). (*C. A.* **53**, 12711)

Processing, Storage, and Nutritive Value of Cottonseed Oil. V. Subrahamanayan, M. Narayana Rao, K. Krishnamurthy, S. Kuppuswamy, M. Swaminathan, and D. S. Bhatia (Central Food Technol. Research Inst., Mysore). *J. Proc. Oil Technologists' Assoc., India, Kanpur* **10**, 64–9 (1954) (Pub. 1955). The cottonseed oil from nine Indian varieties was compared with American varieties. (*C. A.* **53**, 12711)

Elaidination of Peanut Oil. Om Prakash, Atma Ram, and S. C. Pandey (Technol. Inst., Kanpur). *J. Proc. Oil Technologists' Assoc., India, Kanpur* **10**, 89–96 (1954) (Pub. 1955). Attempts were made to elaidinize peanut oil to produce a product similar to butterfat or hydrogenated oil in appearance. Selenium in granulated form was used as catalyst. Maximum conversion was attained when the product had a melting point of about 26–7°. Optimum conditions involved the use of 1% catalyst at 215° for six hours. (*C. A.* **53**, 12711)

Palm Oil in Hot-Dip Tinning. J. Jorand. *Oléagineux* **14**(2), 73–81 (1959). An analysis is presented of the changes in palm oil during continuous use up to four weeks. (*C. A.* **53**, 12712)

Determination of Rancidity of Linseed Oil by Spectrophotometric Method. P. Machulis. *Uchenye Zapiski Vil'nyus. Univ., Ser. Mat., Fiz. i Khim. Nauk* **1956**, No. 6, 83–91; *Referar. Zhur., Khim.* **1958**, Abstr. No. 2715. Rancidity of linseed oil is determined by measuring a decrease in transmittancy at 280 mμ of a steam distillate of the oil. (*C. A.* **53**, 13627)

Ultraviolet Absorption Spectra of Natural Vegetable Fats. Cl. Franzke. *Nahrung* **2**, 639–54 (1958). A review. (*C. A.* **53**, 13627)

The Minor Fatty Acid Constituents of Butterfat. F. B. Shorland and R. P. Hansen (Dept. Sci. and Ind. Research, Wellington, N. Z.). *Dairy Sci. Abstr.* **19**, 168–89 (1957). A review with 147 references. (*C. A.* **53**, 13438)

The Reaction of Oleic Acid with Chlorine. V. E. Veijola (Inst. Technol., Helsinki). *Suomen Kemistilehti* **31B**, 307–8 (1958) (in English). The rate of addition and substitution in carbon tetrachloride were followed by noting the amounts of hydrochloric acid and chlorine evolved. The addition reaction is rapid and takes precedence. Substitution takes place at a steady rate during the addition reaction period but falls rapidly when the latter is completed. The ratio of substitution to addition increases with increase of temperature but decreases with decreased oleic acid or chlorine concentration to a level of about 25% of the total reaction. The ratio decreased when ferric chloride, iron powder, iodine, aluminum, or antimony pentachloride were added or when oxygen or air were used as the diluent gas. (*C. A.* **53**, 13050)

Baking Strength and Unsaturation in Wheat Oil. H. V. Hart and J. B. Hutchinson (Research Assoc. of British Flour-Millers, Cereals Research Sta., Old London Rd., St. Albans). *Chem. and Ind.* **90**, 3–4 (1959). The iodine value of wheat oil is only slightly affected by differences in climate, variety, place of growth, or season and shows no significant association with the baking quality of the protein. However, it is possible that the amounts of particularly unsaturated components of flour oil fluctuate with variety and environment more than the overall degree of unsaturation would suggest. If this be the case, such variations might play a role in the differential responses of baking flours to the removal or addition of lipids.

Stability for Oxidation of Unsaturated Fatty Acids in Their Urea Adduct Crystals. Tadashi Makita (Univ. Kyoto). *Rev. Phys. Chem. Japan* **28**, 31–5 (1958) (in English). The oxidation of unsaturated fatty acids and their urea adducts was studied. With oxidation in air the crystal lattice of urea adduct became quite unstable at 80°. At high pressures the urea lattice stabilized and protected against oxidation by air. The hollow channel structure of urea completely protected the double bonds against the addition of ozone. In oxidation of urea adducts milled with sodium chloride, part of the crystal lattice was probably broken up by the milling. (*C. A.* **53**, 14546)

By-Products of Cottonseed Crushing Industry—A Review. Om Prakash, Atma Ram, and S. C. Pandey (Harcourt Butler Technol. Inst., Kanpur). *Papers Symposium Cottonseed and By-Products, Hyderabad, India,* **1958**, Sect. VI, 8–19. 34 references. (*C. A.* **53**, 14547)

Chemical Physiology and Analysis of Polymerized Fats. K. Täufel, Cl. Franzke, and H. Hoppe (Humboldt-Univ., Berlin). *Deut. Lebensm.-Rundschau* **54**, 235–52 (1958). A review with 24 references. (*C. A.* **53**, 8663)

Absorption of Gases by Whale Oils. II. Absorption of Nitrogen by Whale Oils. Yasutaro Ishikawa (Univ. Hiroshima, Fukuyama). *Sci. Repts. Whales Research Inst.* (Tokyo) **13**, 309–21 (1958) (in English). The solubility of nitrogen in whale oils is about 0.1 of that of carbon dioxide and it is proportional to the pressure. (*C. A.* **53**, 14548)

Steam Expenditures and Ways of Increasing the Heat-Utilization Coefficient in Oil-Extracting Plants. G. E. Zarnitskiĭ, V. M. Kopeĭkovskiĭ, N. L. Troyanova, and V. G. Shcherbakov. *Trudy Krasnodar. Inst. Pishchevoĭ Prom.* **1956**, No. 14, 75–80; *Referat. Zhur., Khim.* **1958**. Abstr. No. 2687. Different operating conditions of distillation columns for oil-extracting plants were studied. When the rate of feed is increased up to 8.7–9.3 cu. m./hour, steam consumption is reduced by 8%. For a plant processing 400 tons of sunflower seed per day this permits a saving of 718 tons of nominal fuel on the yearly basis. (*C. A.* **53**, 14548)

Influence of Temperature Treatment and Season on the Dilatometric Behavior of Butterfat. J. M. De Man and F. W. Wood (Univ. Alberta, Edmonton, Can.). *J. Dairy Research* **26**, 17–23 (1959). At higher rates of cooling there was an increase in the solid fat content, which is in accordance with the theory of mixed crystal formation. A cooling rate existed beyond which no further increase in solid fat content took place, since butterfat cooled by immersion in a 5° water bath had practically the same solids content as it had when cooled at 0°. Differences in cooling rate changed the solid fat content mainly in the region of lower-melting point glycerides. Seasonal variations in solid fat content indicated relatively large differences in the content of higher melting glycerides. There was an indication that not only the quantity of solid fat but also the composition of the crystals was important as a factor influencing the hardness of butter. It was possible to recrystallize mixed crystals in butterfat at 22.5° and thereby lower the solid-fat content of the butterfat. (*C. A.* **53**, 12510)

The Unsaturated-Fatty-Acid Content of Milk Fat in Manitoba. A. Reinart and J. M. Nesbitt. *Proc. Intern. Dairy Congr., 14th, Rome 1956*, **1**, 911–24; *Dairy Sci. Abstr.* **19**, 55 (1957). There was considerable seasonal variation in both the monoethenoid and polyethenoid fatty acid content. Small amounts of conjugated dienoic and trienoic acids were also found in some samples. (*C. A.* **53**, 14367)

Intensity of Butterfat Synthesis and Butterfat-Globule Size. I. S. Bruslav, I. P. Bel'skaya, G. N. Pavlov, and Z. V. Sosnovskaya. *Doklady Vsesoyuz. Konf. po Moloch. Delu* **1958**, 61–5; *Dairy Sci. Abstr.* **20**, Abstr. No. 2180. The average diameter of fat globules in individual goat-milk samples was 1.8–3.9 μ and in individual cow-milk samples 2.1–4.6 with maximum of 15 and 72, respectively. (*C. A.* **53**, 14370)

Analytical and Keeping Quality Study on Salted Creamery Butter. B. J. Ommodt and T. I. Hendrick. *Proc. Intern. Dairy Congr., 14th, Rome,* **1956**, **2**, 142–56; *Dairy Sci. Abstr.* **19**, 587 (1957). A survey was made in August-December, 1955, of 133 samples of 3 grades of butter on the U.S.A. market to determine keeping quality. No correlation was found between keeping quality and any single test. (*C. A.* **53**, 14370)

Vitamin A and Carotene Content of Butter. Yu. A. Khotsko. *Doklady Vsesoyuz. Konf. po Moloch. Delu* **1958**, 296–300; *Dairy Sci. Abstr.* **20**, Abstr. No. 2942. The vitamin A content of fresh butter produced under normal manufacturing conditions during 1954 was found to be dependent on the type of feeding. The average vitamin A and carotene contents of fresh sweet- and ripened-cream butter (salted or unsalted) was about 7.8 and 4.2, respectively, during the summer and 1.6 and 1 mg./kg., respectively, during the winter. On storage −5° and −12° for 12 months, the ripened-cream salted butter lost about 31% of vitamin A and 37% carotene, whereas the unsalted sweet-cream butter lost only 11 and 14%, respectively. The incidence of tallowy, oily, fishy, and rancid flavors was accompanied by losses of vitamin A and carotene. (*C. A.* **53**, 14370)

Approximate Formula for the Determination of the Maximum Attainable Completeness of Fat Hydrolysis. I. V. Molchanov. *Trudy Krasnodarsk. Inst. Pishchevoĭ Prom.* **1955**, No. 12, 101–7; *Referat Zhur., Khim.* **1957**, Abstr. No. 2772. The expression derived for the degree of hydrolysis is $1 - 0.587x - 2.242x^2 - 0.171x^3$, in which x is the ratio of glycerol to solvent in the glycerol water. In a multistage hydrolysis, the average equilibrium concentration of glycerol decreases with the increase of the number of stages, and, consequently, the completeness of hydrolysis can be significantly increased. (*C. A.* **53**, 12709)

Stability of Tocopherol in Fats During Storage and Heating. R. A. Ramanujan and C. P. Anantakrishnan (Natl. Dairy Research Inst., Karnal). *Indian J. Dairy Sci.* **11**, 179–84 (1958). Propyl gallate or butylated hydroxyl anisole did not significantly prevent the loss of tocopherol during storage at 37°. However, it retarded an increase in the peroxide value. (*C. A.* **53**, 14374)

The Effect of Chlorinating and Oxidizing Agents on Derivatives of Oleic Acid. B. Leopold and D. B. Mutton (Ind. Cellulose, Research, Ltd., Hawkesbury, Can.). *Tappi* **42**, 218–25 (1959). With aqueous chlorine, almost complete saturation of triolein occurs, the main reactions being the addition of chlorine and HOCl to the double bond. With ClO_2, 25–50% of the double bonds in triolein were modified at room temperature. The reaction is accelerated by light and is probably free radical in nature. The most likely reaction path appears to be an oxidative cleavage at the double bond with the formation of aldehyde groups. This is accompanied by the formation of an equivalent amount of chlorine, which then adds to another double bond. Treatment with dilute NaOCl at 65° affected about 25% of the double bonds in triolein. The reaction is rather complicated and involves the introduction of CO, COOH, epoxide, and OH groups, as well as some chlorination. The least chemical change was brought about by alkaline peroxide at 65°, the main reactions being the introduction of epoxide and OH groups. The chlorination of oleic acid and methyl oleate in organic solvents is complicated by a number of side reactions such as polymerization and addition of oleate ions and solvent anions to the double bonds. (*C. A.* **53**, 14546)

The Trans Olefin Content of Various Naturally Occurring Fats and Its Alteration Through Ultraviolet Irradiation. H. Kühn and H. Lück (Deut. Forschungsanst. Lebensmittelchem., Munich, Ger.). *Z. Lebensm.-Untersuch. u. -Forsch.* **109**, 306–15 (1959). *Trans* fatty acids in animal and vegetable fats are detected and determined by infrared spectroscopic techniques. The hypothesis that only ruminant animal depot fat contains *trans* fatty acid is questioned, for 3.5% was found in human fat and 4.0–6.3% was found in the fat of the domestic cat. Irradiation of lard and olive oil with ultraviolet light in air increases the intensity of the infrared *trans* band; this increase, at the beginning, is proportional to the irradiation energy, and, like the peroxide content, arrives at a limiting value. This limiting value depends slightly on the total olefin content, and amounts to a *trans* isomerization of 6–8%. A slight (from 5–8%) increase of *trans* fatty acids occurs in beef fat on ultraviolet irradiation. During irradiation of a hydrogenated peanut oil containing about 30% *trans* olefins, there was a slow decrease of *trans* fatty acids. (*C. A.* **53**, 12708)

Determination of the Softening Point of Butterfat. B. D. Dixon (School Dairy Technol., Werribee). *Australian J. Dairy Technol.* **14**, 22–4 (1959). A simplified method is described. (*C. A.* **53**, 12510)

Analysis of Lard. The Fatty-Acid and Glyceride Composition of Hungarian Lard. I. Szerédy and J. Perédi. *Élelmezési Ipar* **10**, 253–8 (1956); *Food Sci. Abstr.* **29**, Abstr. No. 2307 (1957). The Hungarian lards contained the following types of glycerides: fully unsaturated, fully saturated, disaturated-monounsaturated, and monosaturated-diunsaturated. (*C. A.* **53**, 13440)

Fatty Acids Today and Tomorrow. E. S. Pattison (Fatty Acid Producers' Council, New York, N. Y.). *Industrial Fatty Acids and Their Applications* (E. Scott Pattison, editor, Reinhold Pub. Corp.) **1959**, 1–10.

Production of Fatty Acids—Raw Materials. R. H. Potts (Armour & Co., Chicago). *Ibid.* 11–28.

Production of Fatty Acids—Separation Processes. V. J. Muckerheide. *Ibid.* 29–33.

Fatty Acids from Tall Oil. R. Herrlinger. *Ibid.* 34–40.

Ozone and Other Cleavage Processes. R. L. Logan and Allison Maggiolo. *Ibid.* 41–50.

General Chemical Reactions of Fatty Acids. M. W. Formo. *Ibid.* 51–86.

Handling Industrial Fatty Acids. J. L. Trauth. *Ibid.* 197–208.

Tests and Testing Methods. J. L. Trauth. *Ibid.* 209–25. Review with references. (*C. A.* **53**, 12709)

The Determination of Foreign Fats in Cacao Butter. IX. A. Purr. *Fette Seifen, Anstrichmittel* **61**, 119–26 (1959). The determination is based on estimation of nonhydrogenated fatty acids which are obtained on low-temperature crystallization, separation of fatty acid from glycerides, saponification of the glycerides, and comparison of chromatographs made from the samples and from unadulterated cacao butter. (*C. A.* **53**, 14547)

Campeche Wax. J. Giral and J. Barrera (Univ. of Mexico, Mexico DF). *Ciencia* (Mex.) **18**, 129–30 (1958); cf. F. Giral and Rojahn. *Productos químicos y farmaceuticos*, **1**, 2226 (1946). Campeche wax which is produced by melipona bees, was found to contain hydrocarbons, free myristic alcohol, free palmitic acid, and myricyl palmitate. The wax is similar to China wax, which is produced by a very different species of insect. (*C. A.* **53**, 12712)

Flash-Point Irregularities in the Analysis of Carnauba Waxes. M. Silva, Maria da Conceiçaõ, and P. B. Cavalcanti. *Rev. quím. ind.* (Rio de Janeiro) **27** (319), 20–2, 25 (1958). In the analysis of carnauba waxes with the method of the Am. Wax Importers and Refiners Assoc., certain lots showed 2 flash points, one below and one at or above the specified range (229–310°), even though these waxes were unadulterated. The "false flash points" were caused by residues (<1%) of hydrocarbon solvent which were used for the extraction of the wax. Adulteration with 2.5, 5, 10, or 20% paraffin wax (flash point 215°) lowered the flash point of carnauba wax from 305.9° to 267–95°, 245–80°, 240–60°, and 238–57°, respectively. Pure carnauba adulterated with 0, 5, 10, 20, 40, and 50% paraffin wax, and the pure paraffin wax alone, had $n^{90/D}$: 1.4513–1.4551, 1.4472–1.4493, 1.4468, 1.4448, 1.4404, 1.4407, and 1.4248, respectively. A $n^{90/D}$ of 1.4500 minimum is recommended for unadulterated carnauba wax. Licuri wax also flashed at 298–305°. (*C. A.* 53, 13628)

Influence of Various Catalysts on Interesterification of Unsaturated Fatty Acid Esters. H. P. Kaufmann and B. Grothues [German Inst. of Fat Research, Münster (Westf.)]. *Fette Seifen Anstrichmittel* 61, 425–429 (1959). Methyl oleate, triolein and soybean oil have been interesterified under various experimental conditions. No *cis-trans* isomerization has been detected within the limiting range of sensitivity of the testing method employed. Practically no conjugation occurs. Polymerization begins only at higher temperatures (above 150°C.). Mono- and diglycerides however arise in small quantities. Emphasis is laid on the careful analytical testing of the interesterified fats.

The Thiobarbituric Acid Number—A Measure of the Stage of Oxidation in Edible Oils. H. Schmidt (Inst. for Food Preservation, Karlsruhe). *Fette Seifen Anstrichmittel* 61, 127–133 (1959). A simple spectrophotometric method for the determination of thiobarbituric acid number is described. Malonic dialdehyde or its tautomers hydroxyacrolein or epihydrinaldehyde, which are formed as a result of the oil oxidation, are identified by using thiobarbituric acid and the results compared with those obtained by the phloroglucinol method. The author suggests the use of thiobarbituric acid tests for the qualitative identification of the polyunsaturated acids in fats and oils. The failure of the analogous reaction in the case of certain pyrimidine derivatives is attributed to the formation of the above mentioned tautomeric aldehyde through acid hydrolysis.

Occurrence of Linoleic and Linolenic Acids in the Sardine and Mackerel Oils. Y. Toyama, T. Shimooka, Y. Iwata, and K. Fujimura (Nagoya Univ., Nagoya, Japan). *Fette Seifen Anstrichmittel* 61, 461–464 (1959). Exhaustive experiments have been carried out to investigate whether linoleic and linolenic acids found in some fresh water fish oils, also occur in the oil of salt water fish. The oils examined are sardine and saury oils. The fractionation of fatty acids has been carried out through the formation of urea inclusion compounds, subsequent fractional distillation of the methyl ester and repeated separation through adsorption chromatography with silica gel in the adsorption column. The hydrogenation, bromination, and ozonolysis of the respective fractions furnish the proof for the presence of linoleic and linolenic acids in sardine and saury oils.

Classification and Standardization of Waxes. H. Lux (Heilbronn). *Fette Seifen Anstrichmittel* 61, 435–439 (1959). The author comments upon the publication, ''Classification of Waxes,'' by F. Gieser. The suggestions are illustrated with the help of examples and diagrams.

Estimation of the Monoglyceride Content of Milk. R. G. Jensen and M. E. Morgan (Dept. of Animal Industries, Storrs Agr. Exper. Station, Storrs, Conn.). *J. Dairy Sci.* 42, 232–39 (1959). Butterfat from both normal and rancid milk was analyzed for total monoglycerides. Normal milk contained from none to a trace when 10-ml. aliquots were analyzed. Acid degree increases ranging from 8.55 to 12.95 were accompanied but not paralleled by increases in 1-monoglyceride content ranging from 0.36 to 0.86 mM per 100 g. fat, and a 2-monoglyceride content ranging from 0.56 to 0.99 mM per 100 g. fat The presence of diglycerides in rancid milk is indirectly indicated.

An Unequivocal Synthesis of Dihydrosterculic Acid. K. Hofmann and C. W. Yoho (Biochem. Dept., Univ. of Pittsburgh School of Med.). *J. Am. Chem. Soc.* 81, 3356–58 (1959). A synthesis of DL-*cis*-9,10-methyleneoctadecanoic acid is described, and the synthetic acid was found to be identical with dihydrosterculic acid.

Studies in Organic Peroxides. XXIII. The Use of Paper Chromatography for the Detection and Separation of Organic Peroxides. N. A. Milas and I. Belic (Dept. of Chem., Mass. Institute of Techn.). *J. Am. Chem. Soc.* 81, 3358–61 (1959). The present investigation was undertaken to develop a simple and rapid method for the detection and separation of organic peroxides in very small quantities. A paper chromatographic method was developed which permits the detection and separation of certain organic peroxides in quantities as low as 0.2–0.5 γ. This method has already proved of considerable value in the separation and identification of new organic peroxides.

The Active 12-Methyloctadecanoic Acids. F. S. Prout, D. E. Dickson, and R. J. Klimkowski (Dept. of Chem., De Paul Univ.). *J. Org. Chem.* 24, 826–29 (1959). The (+) and (−)-12-methyloctadecanoic acids have been prepared from (+)- and (−)-2-octanols by the procedure pioneered by Prout, Cason, and Ingersoll. The active acids have higher melting points than the DL-acid.

Gas Chromatography. Effect of Sample Size on Height of Equivalent Plate and Retention Volume. R. M. Bethea and M. Smutz (Iowa State Coll., Ames, Iowa). *Anal. Chem.* 31, 1211–14 (1959). Sample size is important in the performance of gas chromatography columns at low flow rates. Certain alcohol and ester samples are tested in dibutyl phthalate and dibutyl sebacate columns. Minimum values of HETP are recorded in each case.

Determination of Alpha,Beta-Unsaturated Acids and Esters by Bromination. F. E. Critchfield (Union Carbide Chem. Co., South Charleston, W. Va.). *Anal. Chem.* 31, 1406–08 (1959). Alpha,beta-unsaturated acids and esters are determined by a simple, rapid bromination procedure. The acids are converted to sodium salts and the esters to potassium salts. In this form bromination, using a bromine-bromide solution, proceeds smoothly. Large quantities of alcohols interfere.

Gas and Liquid Elution Chromatography. Quantitative Detector Evaluation. H. W. Johnson, Jr., and F. H. Stross (Shell Dev. Co., Emeryville, Calif.). *Anal. Chem.* 31, 1206–11 (1959). A specific procedure is outlined for the evaluation of detectors used in gas and liquid chromatography. The main interest deals with the smallest amount of sample that can be determined reliably by a detector. Noise is measured at various frequencies and treated statistically as a definition of detector limitations.

Glass Paper Chromatography of the Long-Chain Fatty Acids, Brominated Derivatives, and Methyl Esters. R. L. Ory, W. G. Bickford, and J. W. Dieckert (Southern Regional Res. Lab., U. S. Dept. of Agr., New Orleans, La.). *Anal. Chem.* 31, 1447–48 (1959). The methyl polybromostearates corresponding to oleic, linoleic, and linolenic acids can be separated from each other and from methyl palmitate by using pure iso-octane as the developing solvent.

Peroxides. VIII. X-Ray Diffraction and Polarographic Study of t-Butyl Peresters and Diacyl Peroxides of Aliphatic Monobasic Acids. L. S. Silbert, L. P. Witnauer, D. Swern, and C. Ricciuti (Eastern Regional Res. Lab., Eastern Utilization Res. and Dev. Div., Agr. Res. Service, U. S. Dept. of Agr.). *J. Am. Chem. Soc.* 81, 3244–50 (1959). Alternating series are obtained from long spacing and melting point data for the even and odd acyl chain members of diacyl peroxides and *t*-butyl peresters. The even membered diacyl peroxides have lower spacing and higher melting point curves than the odd members. Long spacings have been redetermined for several acid anhydrides and reported for the first time for several *t*-butyl esters. Peroxide bond skew is revealed as a foreshortening of chain length.

Determination of Vitamin D in Multivitamin Mixtures After Separation by Partition Chromatography. J. G. Theivagt and D. J. Campbell (Abbott Labs., North Chicago, Ill.). *Anal. Chem.* 31, 1375–77 (1959). Partition chromatography offers a rapid, reproducible method for the separation of vitamin D in multivitamin mixtures. The procedure employs a polyethylene glycol iso-octane column and can separate vitamin D from vitamin A at an A/D ratio of 50 to 1.

Studies on Phospholipids. 1. Separation of Dinitrophenylated and Methylated Phospholipids by Countercurrent Distribution. F. D. Collins (Australian Natl. Univ., Canberra, A.C.T.). *Biochem. J.* 72, 281–7 (1959). Lipids from rat liver and sheep brain were dinitrophenylated and methylated, and fractionated by countercurrent distribution. In addition to derivatives of phosphatidyl-ethanolamine and -serine, several minor constituents were isolated. These included inositol-containing lipids, three unknown amino-phospholipids, and two resembling phosphatidic acids.

Synthetic Butterfat. D. Nelson (Swift & Co.). *U. S. 2,892,721.* A substitute butterfat is prepared by the interesterification of lard and coconut oil.

Changes in the Lipids of Cod During Storage in Ice. J. A. Lovern, June Olley and Helen A. Watson (Torry Research Station, Aberdeen). *J. Sci. Food Agr.* 10, 327–37 (1959). Changes in lipids of cod stored in crushed ice were determined over a total period of 8 weeks. Changes occurred slowly during the first two weeks. After about 5 weeks, about 70% of the phospholipids had been hydrolyzed. Esterification of free sterols was about 85% complete within 6 weeks. In one test, there was definite destruction of free fatty acids after about 5 weeks. Possible contributions of nonenzymatic, autolytic and bacterial processes to the over-all effects are discussed briefly.

Apparatus for Continuous Hardening of Vegetable or Animal Oils or Hydrogenation of Other Unsaturated Compounds. Pintsch-Bamag Akt.-Ges. *Brit. 804,604.* Previous continuous methods do not homogeneously harden. The Bolton-Lush method, e.g., produces a fat with a melting point of 58° and a solidification point of 30°, while the maximum difference of the two points in the margarine industry is 7°. A new apparatus mitigates previous disadvantages. It has a plurality of individual chambers superimposed one upon the other, each one comprising an individual heating and cooling device, an inlet and an outlet for the oil or the compound, an inlet and an outlet for hydrogen, and a mixing device for the incoming oil and hydrogen. (*C. A.* **53**, 10810)

Stabilization of Edible Oils. G. C. Hampson and I. P. Freeman (Unilever Ltd.). *Brit. 807,226.* The tendency of edible oils to develop an objectionable taste on exposure to light is prevented or decreased by incorporation in the oil of a small amount of an amine of the formula RNH_2, in which R is an acyclic hydrocarbon radical containing 12–18 carbon atoms. (*C. A.* **53**, 11711)

Carotenoid-Containing Oils. M. J. Brinckman, Sr., M. J. Brinckman, Jr., K. V. von Sydow, and Carmen Mergell (trading as Harburger-Oelwerke Brinckman & Mergell). *Brit. 804,685.* Carotenoid-containing extracts of palm oil are prepared by mixing various antioxidant-containing natural oils with crude or deacidified oil during separation of solid fats. Thus, 100 parts crude palm oil was mixed with 10 parts by weight deacidified and bleached cottonseed oil. The solid components are separated by fractional crystallization. The liquid fraction is deacidified, dried, and deodorized in vacuum. A deep red oil, liquid at room temperature and deep red in color containing 80% of the palm oil carotenoids, is obtained. (*C. A.* **53**, 14551)

9,11-Octadecadienoic Acid. Pintsch-Bamag Akt.-Ges. *Brit. 805,918.* Castor oil is dehydroxylated by heating with 150% by weight water at 10–60 atmospheres pressure for about 9 hours. (*C. A.* **53**, 14551)

Bleaching of Palm Oil. M. J. Brinckman, Sr., M. J. Brinckman, Jr., K. von Sydow, and Carmen Mergell (trading as Harburger-Oelwerke Brinckman & Mergell). *Brit. 807,600.* Palm oil is treated *in vacuo* with 0.1–0.5% fuller's earth at 175° or higher, preferably approximately 180°. (*C. A.* **53**, 12714)

Fatty Materials in the Form of Discrete Solid Particles. C. B. Cox (Unilever Ltd.). *Brit. 810,006.* Commercial 16-carbon saturated fatty alcohols, setting point 45–52°, are made into discrete particles about 2 mm. in diameter, a form particularly suitable for spreading on static water in hot climates to provide a layer which decreases loss of water by evaporation. Molten fatty alcohol forced through nozzles as a jet with exposure to vibration was caused to separate into particles, cooled by falling down a 45-foot tower through which a flow of cool air was maintained. (*C. A.* **53**, 12713)

Apparatus for Purification of Oils or Fats Obtained from Seeds or Nuts. T. Andrews (Rose, Downs & Thompson Ltd.). *Ger. 950,150.* Cleaning of oils or fats from seeds or nuts containing small solids and (or) colloids by using coagulants is described. The apparatus consists of several consecutive settling chambers. (*C. A.* **53**, 12714)

Easily Emulsifiable or Colloidally Soluble Wax Products. G. Schöller (Badische Anilin- & Soda-Fabrik Akt.-Ges.). *Ger. 967,238.* As agents for waxing of furniture, floors, and leather, products are prepared by treatment of synthetic paraffins (boils at greater than 400°) with sulfur dioxide and oxygen under the influence of light up to an acid number of 50–200. If necessary, basic substances, soft paraffins, hard paraffins, or carboxylic acids of high molecular weight are added. (*C. A.* **53**, 12715)

Heat-Stable Waxes for Paste Waxes. H. Kolling and F. Rappen (Ruhrchemie Akt.-Ges.). *Ger. 1,005,504.* See *U. S. 2,821,484.* (*C. A.* **53**, 14552)

Mixed Diglycerides. N. D. Embree and G. Y. Brokaw (Eastman Kodak Co.). *Ger. 1,008,099.* See *U. S. 2,764,605.* (*C. A.* **53**, 14550)

Fractionation of Fatty Acids into Solid and Liquid Portions. G. B. Martinenghi and M. Viarengo. *Ital. 582,596.* A method of separating the solid from liquid portions of crude solid fatty acids by hexane dissolution and precipitation is claimed. Its advantages, especially with reference to the methanol method, are pointed out. (*C. A.* **53**, 14551)

Fractionating Fatty Acids According to Degree of Saturation. O. Notevarp, A. Roald, and P. Sletnes. *Norway 91,409.* Mixtures of very unsaturated polyacids and less unsaturated monoacids and saturated acids are saponified with sodium hydroxide containing $\leqq 40\%$ water. The saponified polyacids are then extracted with methanol or ethanol. (*C. A.* **53**, 14550)

Dry Salts of Unsaturated Acids. E. V. Kuznetsov and L. Kh. Muzeeva. *U.S.S.R. 114,712.* Dry acetates of sodium, copper, or cobalt are treated with an ether solution of the unsaturated acids. The precipitated salt is filtered off and washed free of acetic acid with ether. (*C. A.* **53**, 14005)

Arrangement for Continuous Hydrogenation of Fats. I. I. Okrugov and S. D. Kopylenko. *U.S.S.R. 115,640.* Addition to *U.S.S.R. 103,217.* The arrangement of a panel is described for remote control of the process described in the main patent. (*C. A.* **53**, 12713)

• Fatty Acid Derivatives

Hydroboration of Fats. I. Positional Isomerism in the Methyl Oleate Hydroboration Reaction. Sara P. Fore and W. G. Bickford (Southern Reg. Research Lab., New Orleans, La.). *J. Org. Chem.* **24**, 920–2 (1959). It has been found that addition of diborane to the ethylenic bond of methyl oleate proceeds smoothly without significant reduction of the carbomethoxy group. Alkaline hydrogen peroxide oxidation of the tris (carbomethoxyalkyl) borane resulted in the formation of an equimolar mixture of 9- and 10-hydroxyoctadecanoic acids, establishing that the hydroboration reaction proceeded nonselectively. Little or no isomerization occurred on heat treatment of these substituted trialkyl boranes.

Unsaturated Higher Molecular Weight Alcohols. W. Rittmeister (DEHYDAG Deutsche Hydrierwerke G.m.b.H.). *Ger. 965,236.* Sperm oil fatty acids (iodine number 67, acid number 211, saponification number 213) were dissolved in methanol (1.4 l. acid per 2.8 l. methanol) and 50 cubic meters hydrogen per hour and this solution passed over 14 liters zinc-barium-chromium catalyst at 285° and 250 atmospheres. The hydrogen flow rate was 50 m^3/hr. The methanol removed to give a product with the following properties: acid number, 0; saponification number, 0.7; iodine number, 68.2; hydroxyl number, 222. Similarly, oleic acid, tallow acid, or sperm oil acid methyl ester can be hydrogenated. (*C. A.* **53**, 13053)

Organomercury Carboxylates of Higher Fatty Acids. W. Kaufmann (Chemische Fabrik Düren G.m.b.H.). *Ger. 960,280.* Aromatic hydrocarbons, aromatic carboxylic acids, their alkyl or aryl derivatives, and heterocyclic compounds which may contain hydroxy, halo, nitro, or amino groups react at temperatures between 70 and 140° with mercury salts of higher fatty acids. The organic starting materials used are heated to temperatures above the melting points or they are dissolved or suspended in such solvents, which do not react with the mercury salts. (*C. A.* **53**, 14004)

• Biology and Nutrition

Further Observations on Lipid Stimulation of Bacterial Growth. K. Hofmann, W. M. O'Leary, C. W. Yoho, T. Y. Lui. (Biochem. Dept., Univ. of Pittsburgh, School of Med., Pittsburgh, Pa.). *J. Biol. Chem.* **234**, 1672–7 (1959). It was concluded that (a) saturated fatty acid dehydrogenation is not a likely route to *cis*-vaccenic acid in *Lactobacillus Arabinosus* and *Lactobacillus Casei,* (b) that lactobacillic acid is capable of substituting metabolically for *cis*-vaccenic acid, (c) that a chain length of 12 carbon atoms is required to endow a fatty acid possessing structure with biotin-sparing activity, and (d) that the short chain fatty acids exert their biotin-sparing effects either by serving as *cis*-vaccenic acid precursors or by possessing the ability to substitute metabolically for this compound.

Linoleic Acid and Cholesterol Metabolism in the Rat. I. Effect of Dietary Fat and Linoleic Acid Levels on the Content and Composition of Cholesterol Esters in Liver and Plasma. P. D. Klein (Argonne Natl. Lab., Lemont, Ill.). *Arch. Biochem. Biophys.* **76**, 56–64 (1958). Rats show an increase in plasma cholesterol as the linoleic acid content of the diet is increased. The liver cholesterol esters are increased in fat deficiency, low in the normal ranges of dietary fat, and increased again at high levels of linoleic acid. The second increase is specifically related to the polyunsaturated fatty acid content, not fat level. The polyunsaturated acid content of liver cholesterol esters bears a simple relation to the dietary polyunsaturated fatty acids; the level of ester found in the liver is not related to the content of polyunsaturated fatty acid in the ester. Plasma cholesterol esters differ markedly in composition from liver esters and do not follow the same relation to the dietary fat as do the latter. Possibilities for the derivation of plasma cholesterol esters from liver cholesterol are discussed. (*C. A.* **53**, 12430)

Comparative Effects of Dietary Fatty Acids and Triglycerides on Lymph Lipides in the Rat. V. Vahouny and C. R. Treadwell (George Washington Univ., Washington, D. C.). *Am. J. Physiol.* **196**, 881–3 (1959). Butyric and lauric acids, given with bile salt and cholesterol as the free acids or the triglycerides, had little effect on total lymph lipides or on absorption of exogenous cholesterol. Palmitic acid gave a marked increase in lymph lipides which was due entirely to a rise in neutral fat, and a simultaneous depression of cholesterol absorption. The administration of stearic, oleic, or linoleic acids produced large increases in the lymph levels of neutral fat and phospholipides. Oleic acid was most efficient, with linoleic and stearic acids somewhat less effective, in promoting cholesterol absorption. The increases in total lymph lipides after tristearin or triolein were less marked than with the free fatty acids, while with trilinolein, total lipides, neutral fat, and phospholipide levels were comparable to the levels after linoleic acid. Of the triglycerides studied, only trilinolein caused a significant elevation of total lymph cholesterol. (*C. A.* **53**, 14258)

Fat Metabolism in Experimental Obesities. IX. Lipogenesis and Cholesterogenesis in Yellow Obese Mice. Claire Zomzely and Jean Mayer (Harvard School of Public Health, Boston, Mass.). *Am. J. Physiol.* **196**, 611–13 (1959). Yellow mice fed *ad libitum* exhibit a greater rate of lipogenesis and cholesterogenesis than their controls. Females show fatty acid content in the liver and in extrahepatic tissues which is twice as high as the males. Unlike the males, they are hypercholesterolemic and also show an elevated rate of lipogenesis after an 18-hour fast. (*C.A.* **53**, 14278)

The Absorption of Fatty Acids by the Isolated Intestine. J. M. Johnston (Dept. of Biochem., Univ. of Texas Southwestern Med. School, Dallas, Texas). *J. Biol. Chem.* **234**, 1065–7 (1959). With the use of a preparation *in vitro*, labeled fatty acids are continuously absorbed from the mucosal solution and transported to the serosal compartment over a 2-hour period. The activity in the serosal solution is found predominantly as triglyceride with small amounts of diglyceride and free fatty acids. The distribution of glyceride activity in the intestinal wall is similar to that in the serosal solution. The relationship of the reported findings to the mechanism of fatty acid absorption is discussed.

Nutritive Value of Highly Unsaturated Fatty Acids and the Origin of Toxicity of Fish Oils. Takashi Kaneda, Hisae Sakai, and Seinosuke Ishii (Tôkai Regional Fisheries Lab., Tokyo). *Eiyô to Shokuryô* **7**, 188–97 (1954–55). Ethyl esters of purified, highly unsaturated fatty acids from sardine oil had no toxic effect on albino rats. The above esters after autoöxidation were very toxic to rats. Not only fish oil but also linseed oil gave toxic autoöxidized unsaturated acids. The urea adduct method showed that the toxic compounds were concentrated in the part which did not form urea adduct. The peroxides of autoöxidized fatty acids were found in livers and muscles of rats. (*C. A.* **53**, 8333)

Blood Lipides in Young and Old Individuals. P. G. Ackermann, G. Toro, J. Toro, T. Kheim, and W. B. Kountz (Washington Univ., St. Louis, Mo.). *Clin. Chem.* **5**, 100–5 (1959). There is an increase in serum cholesterol levels with age to about age 50 in males and 60 in females, and a decrease thereafter to values close to those of young individuals. Cholesterol:fatty acid ratios appear to be more dependent on absolute lipide values than on age. (*C. A.* **53**, 13347)

Effects of Trielaidin and Mixed Glycerides of Elaidic Acid on the Growth of C3H Mice. N. A. Khan (Univ. of Minnesota, Minneapolis). *Pakistan J. Biol. Agr. Sci.* **1**, 28–32 (1957). Weanling male C3H mice had added to their diet either fat with 10% *trans* glycerides, Crisco, monoethenoic fraction of Crisco, olive oil, or absorbent-treated olive oil. Growth studies showed that the diets containing *trans* isomer gave better health and longevity to the mice. However, 90% of the mice fed *trans* isomer developed liver tumors, whereas those fed olive oil had only 30% tumor incidence. The general health of the mice in the latter case was not good. The livers with tumors had more *trans* isomer than the tumor-free livers. The *cis* fat did not give rise to *trans* isomer in mice tissue. (*C. A.* **53**, 12429)

Initiation Processes in Autoxidation of Methyl Oleate and in Cardiovascular Degeneration of C3H Mouse by Methyl Oleate Hydroperoxide. N. A. Khan (East Regional Lab., Tejgaon, Dacca). *Pakistan J. Biol. Agr. Sci.* **1**, 119–23 (1958). Methyl oleate hydroperoxide was found to be the sole product formed at the initial stage of autoxidation of methyl oleate. This result is based on autoxidation of pure methyl oleate as a 30% solution in purified heptane under mild conditions. The electronic states of the oxygen molecules have been invoked to establish its characteristic affinity during initial interactions with the unsaturated methyl oleate to form methyl oleate hydroperoxide only. When this compound was fed to mice as 1.5% of the diet for over a month, all the mice died within 8 months. In contrast, 74% of the control mice (fed 1.5% methyl oleate) survived. Autopsies showed that the dead mice invariably had enlarged hearts with fatty infiltration. (*C. A.* **53**, 12429)

Effect of Soybean Oil on Cholesterolemia. R. Wolff, R. Herbeuval, G. Cuny, J. J. Brignon, J. Gilgenkrantz, and P. Ulrich (Fac. méd., Nancy, France). *Presse méd.* **66**, 1706–8 (1958). In rabbits orally administered 3 ml. oil/kg. body weight for eight days, plasma cholesterol levels had fallen 27% by the end of this period. Short- and long-term studies were conducted on fifteen atherosclerotic, hypercholesterolemic patients aged 50–70 years who ingested 1.5 ml. oil before each principal meal. After 6–11 days mean total plasma cholesterol had fallen 16%, esterified plasma cholesterol had fallen 18%, and free plasma cholesterol had risen 15%. After 24–164 days results were more variable; although total plasma cholesterol levels had diminished in most cases, they had risen in several above control levels. (*C. A.* **53**, 12421)

Experimental Study of Atherosclerosis. Role of Hypercholesterolemia in the Production and Development of Atherosclerosis. Reizo Koide (Univ. Osaka). *Med. J. Osaka Univ.* **9**, 573–96 (1958). The relation of lipide changes in plasma, aorta, and liver to production and development of aortic atherosclerosis in rabbits fed lanolin was studied. It is concluded that the deposition of blood cholesterol into the aortic wall is an important factor in the development of lesions in aortic atherosclerosis. (*C. A.* **53**, 12458)

Interconversions of Polyunsaturated Fatty Acids by the Laying Hen. R. B. R. Choudhury and R. Reiser (Dept. of Biochem. and Nutr., Texas Agr. Exp. Station, College Station, Texas). *J. Nutrition* **68**, 457–64 (1959). The dienoic acid level of egg yolk triglycerides and phospholipides approaches an upper limit of 30% by the inclusion of not over 7.5% of linoleic acid in the diet. The trienoic acid level of phospholipides increases from a basal value of 1.0% toward a maximum of 4% on a dietary level of 7.5% linoleic acid, but does not maintain the increase even at the 15% level in the diet.

Studies on the Experimental Production and Prevention of Bloat in Cattle. III. The Effect of Vegetable Oil and Animal Fat on Acute Legume Bloat. H. W. Colvin, Jr., J. M. Boda, and Thomas Wegner (Dept. of Animal Husbandry, Univ. of Calif., Davis). *J. Dairy Sci.* **42**, 333–45 (1959). The influence of animal and vegetable fats on ruminal motility, eructation, and bloat has been investigated in dairy cattle receiving freshly harvested alfalfa tops under laboratory and feed-lot conditions. It is concluded that foaming of the rumen ingesta is an important factor in the etiology of acute legume bloat. Rumen motility studies indicate that there is a sufficient number of secondary (eructation) contractions occurring during the development of bloat to relieve the pressure, if the cardia can be cleared of foam. Animal and vegetable fats prevent acute legume bloat by exerting such an effect.

Ultracentrifugal Method for the Determination of Serum Lipoproteins. L. Del Gatto, F. T. Lindgren, and A. V. Nichols (Univ. of Calif., Berkeley, Calif.). *Anal. Chem.* **31**, 1397–99

(1959). An ultracentrifugal method provides a means for determining all major classes of lipoproteins in serum. The serum is added to a solution of sodium bromide and centrifuged at 40,000 r.p.m. for 24 hours at 18° to 20°. The procedure is rapid and inexpensive and requires only 2 milliliters of serum.

Thyroid Function in the Young Pig and Its Relationship with Vitamin A. D. L. Frape, V. C. Speer, V. W. Hays, and D. V. Catron (Dept. Animal Husbandry, Iowa Agr. and Home Econ. Exper. Station, Ames, Iowa). *J. Nutrition* **68**, 333–41 (1959). Thyroid function has been investigated in the young pig. It has been shown that dietary vitamin A within the range tested has considerable influence upon the rate of thyroxine secretion. Insufficient and excessive intakes of vitamin A lowered the rate of secretion. It was shown later that the relationship between this secretion rate and growth rate in the pig is rather small so that a more direct effect of vitamin A upon thyroid function is postulated. When thiouracil was used, the rate of thyroxine secretion was shown to increase with time. An appropriate equation derived for this was: $\hat{Y} = 4.040 + 0.0194X - 0.0334X^2$ (X = time after injection in days, $\hat{Y}$ = expected thyroid activity).

Degradation of S_f20-400 and High Density Lipoproteins of Human Sera by Ethyl Ether. S. Hayashi, F. Lindgren, and A. Nichols (Div. of Med. Physics, Univ. of Calif.). *J. Am. Chem. Soc.* **81**, 3793–98 (1959). The S_f20-400 and the high density lipoproteins of human sera have been degraded by partially extracting their lipid content with ethyl ether. The resultant degradation products have been analyzed both chemically and ultracentrifugally. In the case of the S_f20-400 class lipoproteins, the ether extracted more than 60 percent of the total lipids. The composition of the extracted lipids (mostly glycerides) was approximately constant for each of four successive extractions. On the other hand, the main lipid constituent of the lipoprotein fragments was phospholipid. In the case of the high density lipoproteins, the ether extracted only a very small amount of lipids. In spite of this resistance to ether degradation an essentially lipid-free protein fragment was produced, the molecular weight of which was calculated to approximately 40,000.

The Gastrointestinal Digestion of Fat in Dogs Fed Triglycerides, Partial Glycerides, and Free Fatty Acids. L. K. Knoebel (Dept. of Physiol., Indiana Univ. School of Med., Indianapolis). *J. Nutrition* **68**, 393–403 (1959). Dogs were fed cottonseed oil triglycerides and 4 lipid mixtures, the composition of which represented various stages in the hydrolysis of triolein *in vitro*. The composition of lipid recovered from the various parts of the small intestine of dogs fed these test meals closely resembled that obtained during the hydrolysis of triolein *in vitro*. Triglycerides may be hydrolyzed, therefore, in much the same manner *in vivo* as *in vitro*.

Effect of Dietary Fat on Vitamin B_{12}-Methionine Interrelationships. M. R. Spivey Fox, L. O. Ortiz, and G. M. Briggs (Lab. of Nutrition and Endocrinology, Nat. Institute of Arthritis and Metabolic Diseases, Public Health Service, U. S. Dept. of Health, Educ., and Welfare, Bethesda, Md.). *J. Nutrition* **68**, 371–81 (1959). A purified diet containing isolated soybean protein was developed for the study of vitamin B_{12} in the non-depleted chick. The vitamin B_{12}-sparing effect of methionine in day-old New Hampshire chicks receiving 0, 4, and 24% fat in the diet was determined with the new diet. In confirmation of earlier studies with a crude corn-soybean meal diet, increasing the fat content of the diet increased the severity of the vitamin B_{12} deficiency that was obtained during 4-week experimental periods. This effect of high dietary fat was lost in the presence of supplemental methionine; however, both vitamin B_{12} and methionine were necessary for maximum growth.

Nutrition Studies in the Cold. III. Effects of Cold Environment on "Cholesterol" Fatty Livers. G. V. Vahouny, D. F. Flick, H. M. Gregorian, and C. R. Treadwell (Dept. of Biochem., Med. School, George Washington Univ., Washington, D. C.). *J. Nutrition* **68**, 495–506 (1959). Young male rats received hypolipotropic diets containing 20% protein and 20% fat, with and without 1% cholesterol. Comparable groups were maintained at 25° and 1°. Rats on the low-cholesterol diet at 25° had a marked accumulation of hepatic triglycerides during the initial 21-day period, while at 1°, triglyceride increase was not observed. Thus, cold exhibited a preventive lipotropic effect on "fat" fatty livers. Cholesterol-fed rats at 25° developed yellow fatty livers characterized by a high level of esterified cholesterol. Similar animals at 1° had even greater increases in liver lipides due to a further elevation of the esterified cholesterol level, while the triglyceride fraction was reduced by cold.

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• Paints and Drying Oils

Determination of p-Tert-Butylbenzoic Acid in Coconut Oil-Type Modified Alkyds. P. J. Secrest and B. Kosciesza (Sherwin-Williams Co., Chicago 28, Ill.). *Anal. Chem.* **31**, 1402-04 (1959). The *p-tert*-butylbenzoic acid content of alkyd resins is determined by a spectrometric procedure based on the difference in absorbance at 282.5 and 300 mμ. Accuracy of the method varies with the degree of unsaturation and oxidation of the separated fatty acids.

Coating Compositions from Modified Kamala Seed Oil. M. C. Menon, P. G. Sharma, and J. S. Aggarwal (Natl. Chem. Lab., Poona). *J. Sci. Ind. Research* (India) **17A**, 279–81 (1958). The suitability of Kamala seed oil, modified by alcoholysis with monohydric alcohols, for the preparation of coating compositions is described. (*C. A.* **53**, 14538)

The β-hydroxyl of Glycerol. M. R. Mills. *Paint Technology* **23**, 129–34 (1959). The nature, proportion, and distribution of the acids between the glyceride molecules are believed to account for the remarkable uniformity of physical properties of any given type or of natural fat. Another important factor may be the presence of isomeric forms of the glycerides. While structural modifications of alkyds and polyesters through the β-hydroxyl of glycerols have been studied, present manufacturing methods are probably not conducive to such variations. (*C. A.* **53**, 14550)

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• Detergents

Tall Oil in Synthetic Detergents. Anon. *Tappi* **42**(6), 60A, 62A, 64A, 66A (1959). The use of tall oil in various types of synthetic detergents including the polyoxyethylenes, esters, alcohols, sulfates, and sulfonates, and amines is reviewed. 67 references.

Use of Polyvinylpyrrolidone in Specialties. J. L. Azorlosa (General Aniline & Film Corp.). *Soap Chem. Specialties* **35**(8), 51–4, 173 (1959). The commercial utility of PVP is inherent in several outstanding properties such as wide solubility and compatibility range, complexing and detoxifying ability, physiological acceptability, protective colloid action, film forming ability and adhesive qualities. In soaps and detergents PVP is useful as an anti-redeposition agent in alkylaryl sulfonates, bonding agent for synthetic detergent bars; it reduces the skin irritation and sensitizing effect of the chlorinated phenols in germicidal soaps, and its film forming properties may be utilized in the water-soluble package field.

Effect of Micellar Behavior on Adsorption Characteristics of Two Surfactants. W. E. Bell (Union Oil Co. of California, Brea). *J. Phys. Chem.* **63**, 299–300 (1959). Pluronics L-44 (a condensate of ethylene oxide with propylene glycol and propylene oxide) exhibited increasing adsorption on 45–60-mesh sand with an increase in concentration, but Igepal CA-630 (an alkylaryl polyether alcohol) adsorption reached a maximum at a concentration of about 300 p.p.m. and remained constant as the concentration was increased. The surface-tension depressions of aqueous solutions by these 2 surfactants exhibited similar behaviors. The results were explained in terms of the equilibrium, micelles in solution $\leftrightarrows$ single molecules in solution $\rightleftarrows$ molecules adsorbed at surface. In the case of Pluronics there is little micelle formation to compete with the adsorption process and, therefore, the degree of adsorption continues to increase with concentration. (*C. A.* **53**, 12712)

Conductivity of the Systems: Water–0.2N Sodium Salt of Fatty Acid and Butanol in Presence of Free Acids and Alkali. III. A. N. Bose and K. N. Mehrota (Univ. Lucknow, India). *Kolloid Z.* **163**, 15–17 (1959). For the above system the specific conductivity increases with increase in NaOH concentration for all the soaps. In the plots specific conductivity vs. NaOH concentration, the curvature is more marked for 5% BuOH solutions than for 10%. For lower soaps the curvature is more marked than for higher soaps. The specific conductivity of the solution decreases with increase in BuOH concentration for all the soaps. (*C. A.* 53, 12792)

Perfuming Detergents. V. G. Fourman (Syntomatic Corp., New York). *Soap Chem. Specialties* 35(8), 43–5, 102–3 (1959). The problems involved in perfuming detergent products are reviewed. These include interaction of perfume ingredients with detergent ingredients, overcoming odors inherent in various detergent raw materials, formulating appropriate fragrances for end use of product, stability of the perfume oil, cost and packaging effects.

Solubility in Soap Solutions. A. S. C. Lawrence (Univ. Sheffield, Engl.). *Discussions Faraday Soc.* 25, 51–8 (1958). Fatty acids and *n*-alkanol crystals heated with solutions of various soaps exhibit a transition to a liquid crystal at a sharply defined temperature T_P that depends on the nature of the soap but is insensitive to its concentration. Soap diffuses much faster than water across the liquid crystal membrane that forms around a crystal of decanol placed in contact with a soap solution. Characteristic phase diagrams, showing the stability range of liquid crystals, are given for systems of soap solutions with amphiphiles melting above or below the Krafft point. A solid solution of dodecyl sulfate + water + decanol forms large crystals never seen in pure soaps. (*C. A.* 53, 11946)

New Low-Cost Sequestrants. C. L. Mehltretter and P. R. Watson (Northern Regional Research Laboratory, Peoria, Ill.). *Soap Chem. Specialties* 35(8), 49–50, 106 (1959). Mixtures of organic acids produced by oxidizing dextrose hydrate and corn starch with nitric acid are rich in gluconic and saccharic acids and possibly contain other chelating substances. Good sequestration of calcium has been obtained with these compounds.

In Vitro and Use Tests for the Evaluation of ''Degerming'' Agents. H. L. Rubenkoenig and P. A. Majors (Hill Top Research Institute, Inc., Miamiville, Ohio). *Am. Perfumer Essent. Oil Rev.* 74(1), 34–6 (1959). Degerming agents are added to products to cause a persisting reduction in the number of bacteria on the skin when the product is used regularly. High antibacterial activity *in vitro* is not always an index of residual activity on skin after use. Screening test procedures on rabbit skin are suggested as an inexpensive aid to evaluating such products. A procedure employing bacteria counts on the cheeks is described. This is especially suited to the study of facial cosmetics and cleansers, but may also be of interest for supplementing or replacing hand-washing procedures.

The Analysis of Synthetic Detergents. A Review. W. B. Smith (Marchon Products Ltd., Whitehaven, Cumberland, Engl.). *Analyst* 84, 77–89 (1959). A critical review of various methods of analyzing synthetic detegents is presented. The detergents are classified according to groups present, e.g., hydrophobic, hydrophilic, and linking groups. Tests described in detail include qualitative tests, extraction methods, colorimetric determination of surfactants, anionic-cationic titration, and specific tests for anionics, cationics, non-ionics and inorganic constituents. 80 references.

Radioactive Tracers in Detergency Research. R. E. Wagg and C. J. Britt (British Launderers' Research Assoc.). *Perfumery Essent. Oil Record* 50, 609–10 (1959). The various applications of radioactive tracers in detergency applications are outlined. These include determining relative efficiencies of detergents in removing soil from various textiles, investigating metal cleaning problems, removal of bacteria in laundering, and investigation of adsorption of surface active compounds at interfaces.

The Objective Determination of Colour. D. Jacqmain (C.E.R.I.A., Dept. of Food Ind.), *Ind. chim. belge* 24, 605–18 (1959). The basis of the I.C.I. system is reviewed and colour differences in N.B.S. units noted. A critical study was made of measuring apparatus (spectrophotometer and photoelectric, tri-stimulus colorimeter) listing the advantages, drawbacks, errors, limits of utilization. A colour measure of detergent powders is given as well as a practical example of the action of some detergents on the whiteness of linen.

Detergent Composition Containing Phosphated Alkyl Glyceryl Ether Corrosion and Tarnish Remover. H. W. McCune (Procter & Gamble Co.). *U. S. 2,892,796.* A detergent composition contains a corrosive calcium sequestrant such as the water-soluble salts of tripolyphosphoric acid or ethylene diamine tetraacetic acid, a non-soap anionic organic synthetic detergent, and phosphated alkyl glyceryl ethers having alkyl groups from 14 to 18 carbon atoms which act to protect the heavily built detergent from corrosive attack on metals.

Process for Producing Sugar Esters. H. B. Hass, F. D. Snell, and L. I. Osipow (Sugar Research Foundation, Inc.). *U. S. 2,893,990.* Sugar esters useful as surface active agents are prepared by treating a saccharide of the group consisting of sucrose and raffinose with an ester of a saturated or unsaturated fatty acid containing between about 6 and 30 carbon atoms and a non-saccharide alcohol, in the presence of an alkaline catalyst, at a temperature from about 20° to 180° in the presence of a solvent.

Isethionate Detergent Bar. R. C. Geitz (Lever Brothers Co.). *U. S. 2,894,912.* A synthetic detergent bar with desirable toilet bar characteristics is prepared consisting essentially of from 30 to 70% of water-soluble alkali metal detergent salts of esters of isethionic acid with mixed aliphatic fatty acids having from 6 to 18 carbon atoms, from 2 to 10% of a water-soluble suds-boosting detergent salt such as an alkyl aryl sulfonate, a small amount of a water-soluble higher fatty acid soap and from about 10 to 40% of at least one higher fatty acid having from 12 to 25 carbon atoms as a binder and plasticizer, the final bar having a pH of from 6 to 8.

Method for Preparing Detergent Compositions. J. A. Milenkevich and J. E. Henjum (Procter & Gamble Co.). *U. S. 2,895,916.* A detergent composition useful in dishwashing machines which does not cake or form a gel in use is prepared by adding water and a water-soluble alkali-metal silicate to a condensed anhydrous water soluble alkali metal phosphate whereby substantial hydration of the phosphate is obtained before any chlorinated trisodium phosphate is introduced into the mixture.

Process for Preparing a Detergent Composition Containing Anhydrous Form II Tripolyphosphate. J. P. McNaught and J. R. Bryant (Lever Brothers Co.). *U. S. 2,897,155.* A free flowing heat dried detergent composition containing primarily anhydrous Form II sodium tripolyphosphate and a minimum of decomposition products thereof is prepared by adding any anhydrous Form II sodium tripolyphosphate to an aqueous slurry containing at least one organic detergent and inorganic salt builders to form a slurry having only sufficient moisture to maintain a pumpable and sprayable slurry, the slurry having a temperature in the range of 160 to 200°F., agitating the slurry within this temperature range, and heat drying the slurry.

Manufacture of Alkyl Benzene Sulfonate Detergents. A. H. Lewis (California Research Corp.). *U. S. 2,897,156.* Alkyl benzene sulfonate detergents with a high ratio of sulfonate to sulfate is obtained by adding water to the sulfonation mixture, and accelerating the separation of the sulfuric and sulfonic acid phases by the addition of either benzene sulfonic acid or toluene sulfonic acid.

Detergent Compositions. G. K. Ashforth and R. Coskie (Thomas Hedley & Co.). *Brit. 810,688.* The lathering and/or detergent properties of organic anionic non-soap detergents including an alkyl sulfuric acid ester salt containing from 10 to 20 carbon atoms in the alkyd residue, are improved by the inclusion of a small amount of an alkyl ester of para-hydroxybenzoic acid of which the alkyl group contains from 10 to 16 carbon atoms.

Improvements in the Manufacture of Soap Powders. Unilever Ltd., *Brit. 810,755.* The lumping of spray dried soap powders in hot water can be prevented by adding a small amount of an alkali metal xylene sulfonate and either an alkali metal silicate or an alkali metal carbonate to a coconut oil-tallow soap slurry before the slurry is spray dried.

Coloured Detergents or Washing Adjuvants. Henkel & Cie G.m.b.H. *Brit. 811,028.* Colored detergents which leave no color effect on textiles can be prepared by adding to the detergent an oxygen-yielding substance such as perborates and percarbonates, and a dyestuff which is decolorized by oxidation during normal use of the detergent.

Improvements in Detergent Compositions. Thomas Hedley & Co., Ltd., *Brit. 812,249.* A high density spray dried detergent can be produced by the addition of certain non-ionic polyoxyalkylene ether compounds to slurries containing sulfate and sulfonate anionic synthetic organic detergents, sodium sulfate and water-soluble alkali metal silicates to effect a rapid reduction in the amount of entrained air in slurry. When the slurry is agitated, these chemically deaerated detergent slurries can then be spray dried by conventional techniques.