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

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## • Oils and Fats

**Oxidation of fats in emulsions. I. Determination of peroxide values in emulsions.** P. Finholt and G. Hopp(Univ. Oslo, Norway). *Medd. Norsk Faum. Selskap* 19, 163–73(1957). Factors which influence the peroxide determination according to Wheeler were studied, and modifications were proposed. When an emulsion is analyzed, the blank must contain an amount of water equivalent to the water in the sample. (*C. A.* 52, 6815)

**Notes on the iodine number of cacao fat.** W. Spoon(Koninkl. Inst. Tropen, Amsterdam). *Cacao, Chocolade en Suikerwerken (Bussum, Neth.)* 25, 225(1957). Wijs iodine number determinations show a tendency to be high on Brazilian and French Cameroon cocoa fat, while cocoa fat of Surinam, Dutch New Guinea, Java, and Indonesia have normal iodine number (37–8). Since high iodine number means low melting point and slow solidifying, the Wijs iodine number determination is now included in routine analysis. (*C. A.* 52, 6815)

**Characteristics of the nation's olive-oil production. Data from the Andalusian provinces. Variation of properties during the 1954–55, 1955–56, 1956–57 programs.** J. Gracián Tous, G. Arévalo, J. Martel, Fca. Albi, and A. Plasencia(Inst. Grasa y sus Derivados, Seville). *Grasas y aceites* 8, 212–21(1958). Variations in average weight of fruit and oil content and the index of refraction, acid number, saponification number, percentage of oleic acid, and density of oils over several years are reviewed. (*C. A.* 52, 6817)

**Fatty acids from Araliaceae. III. Fatty acids from the seed of Aralia elata var. canescens.** G. Kurono, T. Sakai, K. Tochiori, and K. Fukuda(Kanazawa Univ.). *Kanazawa Daigaku Yakugakubu Kenkyu Nempo* 7, 1–5(1957). Petroselinic acid, palmitic acid, linoleic acid, and a small amount of petroselinelaidic acid occur among the fatty acids. Oleic acid was not identified. The seed contains 5% fatty acids. (*C. A.* 52, 4213)

**Improved method for direct estimation of free tocopherol in small quantities of oilseed.** A. S. Sethi and A. R. S. Kartha (Indian Agr. Research Inst., New Delhi). *Indian J. Agr. Sci.* 27, 49–72(1957). The nature and mechanism of inhibition in the direct estimation of tocopherol in oils and fats by the Emmerie and Engel method was studied. The amount of inhibition varies with the peroxide content. Saturated and unsaturated free fatty acids produce a certain amount of color with the Emmerie and Engel reagent. A simple method for the detection of inhibition was developed. The free tocopherol content of twenty common Indian oils is given. (*C. A.* 52, 6817)

**Spectrophotometric study of olive oils.** F. Minutilli. *Rass. chim. per chim. e ind.* 11(5), 14–16(1957). Fatty acids and unsaponifiable matter of refined (earth-bleached) olive oils show characteristic absorption maximum at 260 and 280 millimicrons which are absent in the natural olive oils. (*C. A.* 52, 6817)

**The effects of some fatty additives on the gluten and the baking quality of wheat flour.** A. Schulerud(Statens Teknol. Inst., Oslo, Norway). *Brot u. Gebäck* 11, 240–3(1957). The uptake of chemically defined synthetic fatty acid esters by the gluten increases with ascending iodine values of the esters. There is no uptake of saturated fatty acid esters by the gluten. The action of oleic acid, which tends to make the gluten short and incohesive, is due to the free carboxyl group and disappears when the oleate esters are added instead of the free acid. Addition of saturated fatty acid esters produces volume increases in baked goods, while the unsaturated esters adversely affect baking volume. An inverse relation exists between the iodine values of cod-liver oil, hydrogenated whale oil, and butterfat and their ability to increase baking volume. (*C. A.* 52, 6655)

**Detection of refined lard and refined white grease.** J. Wurziger. *Fette, Seifen, Anstrichmittel* 59, 90–3(1957). Investigation of various lard mixtures indicates that the following methods can be used as indicative of refining: neutral red fluorescence, aniline point, iodine value, and cholesterol content. (*C. A.* 52, 6661)

**Oxidation of unsaturated fatty acids. I. Reaction of methyl oleate with selenium dioxide.** Y. Watanabe, Y. Ito, and T. Matsuura. *J. Sci. Hiroshima Univ., Ser. A.*, 20, 203–8(1957). Methyl oleate was oxidized by selenium dioxide. The yield of methyl stearate was 15%. A mixture of the methyl ester of *trans*-2-octadecenoic acid and of 8-oxoöleic acid was obtained in 22% yield.

**II. Reaction of ethyl undecylenate with tert-butyl chromate.** Y. Watanabe and Tamon Matsuura. *Ibid.* 209–12. Ethyl undecylenate was oxidized by tert-butyl chromate to yield sebacic acid, unsaturated keto acid, and probably oxoundecanoic acid, and undecanoic acid. (*C. A.* 52, 6816)

**Studies on refining of olive oil. I. Neutralization.** N. Nosti Vega and J. M. R. de la Borbolla y Alcala(Inst. Fats and Derivs., Seville). *Grasas y aceites*(Seville, Spain) 8, 101–6 (1957). Conditions for obtaining neutralization loss factor (loss per unit of free fatty acid) were studied for olive oils differing in quality and acidity. The loss factor varied from 1.6 to 1.8. However, the free fatty acid content decreased in the oil extracted from olives which had been stored under adverse conditions, e.g. in the tops of piles. (*C. A.* 52, 1652)

**Physical-chemical studies of ground olive pastes. IV. The oil globules.** J. M. Martinez Moreno, C. Gomez Herrera and C. Janer del Valle(Inst. Fats and Derivs., Seville). *Grasas y aceites* (Seville, Spain) 8, 112–20(1957). Olive oil emulsified into the aqueous pressing extract can be recovered by dilution with water, dehydration by addition of salt, heating or by treating with anionic detergents. (*C. A.* 52, 1653)

**The peroxide test in the static and dynamic analysis of fats.** K. Täufel(Humboldt Univ., Berlin). *Fette, Seifen, Anstrichmittel* 59, 87–90(1957). The role of the peroxides in the autoxidation of fats is reviewed. A quick color comparison test for the determination of the peroxide number (ml. of 0.002*N* sodium thiosulfate per gram of fat) is run. Either 1 or 2 drops of the fat is dissolved in 10 ml. distilled acetone. In 50 ml. of 10% aqueous ammonium thiocyanate, containing 0.5 ml. concentrated sulfuric acid, is dissolved 5 g. of ferrous sulfate and then 0.7 g. iron powder is added. To 2.5 ml. of this solution is added 12.5 freshly distilled water and 12.5 ml. of acetone. Reference color standards are made by diluting aliquots of a 30% solution of cobaltous nitrate to 50 ml. with a 5:1 methyl-alcohol:water mixture which contains 10 ml. per 100 ml. of concentrated hydrochloric acid. Aliquots of 1, 4, 10, and 20 ml. correspond to 1, 2, 3, and 4 or 5.0, 6.0, 7.5, and 10.0 peroxide numbers by using 2 and 1 drops of fat per 10 ml., respectively. (*C. A.* 52, 6815)

**Structure of sterculic acid.** D. G. Brooke and J. C. Smith (Oxford Univ., Eng.). *Chem. & Ind. (London)* 1957, 1508–9. It is concluded that sterculic acid is ω-(2-n-octylcycloprop-1-enyl) octanoic acid. (*C. A.* 52, 6205)

**Structure of sterculic acid.** D. G. Brooke and J. C. Smith (Univ. Oxford, Engl.). *Chem. & Ind. (London)* 1958, 103. A sample of synthetic DL-cis-ω-(2-n-octylcyclopropyl)octanoic acid(dihydrosterculic acid) was found to be identical with a sample of DL-cis-ω-(2-n-octylcyclopropyl)octanoic acid(dihydrosterculic acid) prepared by reduction of freshly prepared sterculic acid. This, together with earlier results eliminates the structure for sterculic acid proposed by Verma, Nath, and Aggarwal, which would give ω-(2-n-hexylcyclopropyl)decanoic acid on reduction. (*C. A.* 52, 6205)

**Branched chain fatty acids. I. Synthesis of some branched chain fatty acids.** D. Lukeš and J. Hofman(Czech. Acad. Sci., Prague). *Chem. listy* 51, 2309–18(1957). Detailed procedures for the preparation of a number of branched chain fatty acids are given. (*C. A.* 52, 6172)

**Refractivity in fats and fatty compounds.** E. V. A. Chari, D. Sivaramiah, H. Nazimuddin and B. S. Kulkarni(Osmania Univ., Hyderabad). *Paintindia* 7(1), 75–80(1957). Review of useful applications of index of refraction determination in respect to oils, varnishes, and pigments. (*C. A.* 52, 7733)

**Modification of kamala-seed oil.** V. N. Ojha, P. G. Sharma, and J. S. Aggarwal(Natl. Chem. Lab., Poona). *Paintindia* **7**(1), 61–2(1957). Alcoholysis of kamala-seed oil with butyl alcohol or amyl alcohol and hydrochloric acid catalyst gave a product similar to tung oil in gel time and acceptable for varnish-making. (*C. A.* **52**, 7734)

**Acetone in olive-oil industry.** B. Foresti(Univ. Catania, Sicily) and A. Giuffrida. *Boll. inform. ind. olearia e saponiera* **3**, 105–9 (1957). The use of acetone for extracting free acids from oils, pigments, and other impurities from olive husks, parathion from parathion-containing olive oil, and of gossypol from cotton oil or seed, is discussed. (*C. A.* **52**, 7739)

**The seed-fat composition of desert plants. I. The component fatty acids of Gynandropsis pentaphylla seed fat.** N. O. Cappridacea, A. Sen Gupta and M. M. Chakrabarty(Birla Coll., Pilani, India). *Sci. and Culture (Calcutta)* **23**, 306–7(1957). Seeds of this plant yielded about 17.6% of a dark-colored oil that had a typical odor. After three months of storage the oil had a high acid value indicating the presence of strong lipolytic factors. Some characteristics of the oil are: $n_D^{40}$ 1.4617, acid value 131.1, iodine number 114.5, unsaponifiable matter 3.5%. Analysis of the oil for fatty acids showed the presence of myristic 0.31, palmitic 18.41, stearic 8.07, arachidic 1.96, oleic 15.39, linoleic 53.82, and linolenic 2.04%. (*C. A.* **52**, 7739)

**Manometric method for determination of fat in seeds, oil cakes, and other material.** V. P. Rzhekhin and N. I. Pogonkina. *Masloboĭno-Zhirovaya Prom.* **23**(12), 15–17(1957). A method is described for manometric determination of fat in seeds, cakes, and other materials. It is computed from the difference between the heights of columns of pure and oil-containing solvents (acetylene tetrabromide) in capillary tubes under reduced pressure. The method was successfully applied to the approximation of oil in sunflower seed, cottonseed, and cake. (*C. A.* **52**, 7739)

**Spectrophotometric detection of fish oils.** G. D'Arrigo(Univ. Catania, Sicily). *Boll. inform. ind. olearia e saponiera* **3**, 51-4 (1957). Fish oils, after isomerization, give characteristic absorption spectra in the ultraviolet field, with absorption bands between 235 and 350 millimicrons. In linseed oil containing 10% whale oil, such bands were visible. (*C. A.* **52**, 7739)

**Effect of fatty acids on solubilization of alcohols in aqueous solutions of soaps. II.** A. N. Bose and K. N. Mehrota (Lucknow Univ.). *Z. physik. Chem.* (Leipzig) **207**, 355–9(1957). The effect of caprylic, capric, and lauric acids on the solubilization of butyl alcohol, isoamyl alcohol, and 1-hexanol in aqueous solution of sodium caprylate, caprate, and laurate has been studied. The viscosity of the solubilized solutions has been measured to determine the nature of the micelles formed. The results are given in tabular summaries. (*C. A.* **52**, 7740)

**New method of extracting fat from bones in an autoclave.** V. Gorbatov, S. Liberman, and V. Petrovskiĭ(All-Union Sci. Research Inst. Meat Ind., Moscow). *Myasnaya Ind. S.S.S.R.* **28**(6), 15–17(1957). An industrial installation is described for extracting fat from bones, consisting of an autoclave and a fat separator (centrifuge) of 2.5- and 0.43-cm. capacity, respectively. The fat extraction is with steam at 4 atmospheres, followed by separation of extracted fat from the bone broth by centrifuge. The capacity is 1100–1600 kg. bones per 4 hours per man, yield 88–224 kg. edible fat. The power expenditure per ton bones is 210 kg. steam and 0.1–0.2 kw. hour electricity. Extraction is 54–80% complete. Yield of fat is 7.5–14.5% of the bone weight. The beef and pork fats have, respectively, acid number 1.4–1.8 and 0.6–1.2, and peroxide number 0.01–0.02 and 0.006–0.007. The stick water is 31–5% of the bone weight containing 16–17% of the dry substance, and 1.1–2% ash. The stick water is separated into three fractions, the first fraction containing 10–20% well-emulsified fat. The second and third fractions contain 1.2–4% fat and large amounts of protein material. This stick water is useful as protein supplement in animal feeds. (*C. A.* **52**, 7739)

**Determination of saturated acids by direct acetic acid-acetone-permanganate oxidation of mixed fatty acids.** A. R. S. Kartha and R. Narayanan(Indian Agr. Research Inst., New Delhi). *Indian J. Agr. Sci.* **27**, 73–7(1957). A procedure to determine the saturated acid content of mixed fatty acids by acetic acid-acetone-permanganate oxidation and Bertram separation of the oxidation products is described. The method can be used to determine the linoleic acid content in mixed fatty acids. The saturated acids, iodine value, oleic acid, and linoleic acid contents of 13 natural fats are given (*C. A.* **52**, 6816)

**The separation and identification of saturated and unsaturated fatty acids from formic acid to dodecanoic acid by gas-liquid chromatography.** A. T. James(Natl. Inst. Med. Research, London). *Fette, Seifen, Anstrichmittel* **59**, 73–7(1957). Separation of fatty acids by gas chromatography is reviewed. For carbon chains of 1–6, the stationary phase was 10% stearic acid in Silicon oil MS 550 at a temperature of 100°. The methyl esters of the acids, both saturated and unsaturated, can be separated cleanly at 197° by using either Apiezon M vacuum grease or a high-boiling lubricating-oil fraction as the supporting medium. (*C. A.* **52**, 6816)

**Antioxidative capacities of seeds of some native and introduced plants.** J. Janicki, A. Rutkowske, J. Furyk, T. Kulik, and W. Olszewski. *Roczniki Technol. i Chem. Zywnosci* **1**, 85–97(1957). A number of antioxidant substances are present in the fat-soluble substances from seeds. The antioxidant activity was not related to the fat content of the seed. It was, however, related to the botanical classification. The strongest antioxidant activity was found in the seeds of *Raphanus sativus, Brassica napus oleifera, B. napus* var. *napobrassica, Solanum lycopersicum* and *Caragana arborescens.* (*C. A.* **52**, 7739)

**Characteristics of crude montan wax and their application for the assessment of quality. I. Determination of characteristics.** W. Schaack and D. Födisch(VEB Braunkohlenwerk "Gustav Sobottka," Röblingen am See, Neth.). *Fette, Seifen, Anstrichmittel* **59**, 30–5(1957). Methods for the evaluation of the quality of crude montan wax are discussed. Instructions are given for determination of acid, saponification, and ester numbers; melting point and freezing point; residue on ignition; benzene, acetone, and paraffin solubilities; and viscosity. Other possible properties for use are briefly reviewed. (*C. A.* **52**, 6818)

**The structure of wax-solvent systems.** W. Presting, K. Steinbach, and H. Beeckmann(Inst. Org.-Chem. Ind., Leipzig Abt., Halle-S., Ger.). *Fette, Seifen, Anstrichmittel* **59**, 17–27(1957). The solubility isotherms, the solubility as a function of the amount of solute used, of various waxes was determined for a series of solvents. Soft and hard waxes can be evaluated by the measurement of the "cold benzene solubility" at various solute concentrations. An apparatus has been constructed which is suitable for this determination and is recommended for purposes of conventional testing. (*C. A.* **52**, 6818)

**The rancidity of olive oil. VII. Taffel and Revis test.** R. Gutiérrez González-Quijano, R. Vásquez Ladrón, and J. M. Rodríguez de la Borbolla y Alcala(Inst. Grasa y sus Derivados, Seville). *Grasas y aceites* **8**, 207–11(1957). The Täffel and Revis test for rancidity on several olive-oil samples was compared with peroxide values. Good reproducibility was achieved with minor variations in the procedure. The concentration and purity of hydrochloric acid were critical. A reasonable excess of phluoroglucinol is required. At low peroxide values (0–20) results of the two tests are parallel. Results from accelerated rancidity tests using the Täffel and Revis test also paralleled results with peroxide values. However, the Täffel and Revis test did not predict the stability of olive oils. (*C. A.* **52**, 6817)

**Storability of margarine.** H. Schmidt(Bundesforsch. Lebensmittelfrischhaltung, Karlsruhe, Ger.). *Fette, Seifen, Anstrichmittel* **58**, 821–6(1956). The storage behavior of two margarine types in several different types of wrappings were studied at −25, −5, 5, 15, and 20° as a function of time. The products were followed for water loss, acid number, and peroxide content. It is concluded that margarine can be stored at 20° for 5–6 weeks. (*C.A.* **52**, 4880)

**The surface layers of milk-fat globules. I.** H. Mulder(Agr. Univ., Wagengeningen). *Neth. Milk Dairy J.* **11**, 197–212 (1957). A method for studying the membranes of fat globules, based on van Dam and Sirks' method is discussed. In this method the quantity of a substance in the membrane is calculated from the amounts in milk, cream, and skim milk, in combination with the fat contents. The milk fractions are obtained by gravity creaming to protect the membranes.

**II. The phospholipide content of the surface layers.** H. Mulder, J. W. Menger, and J. Koops(Agr. Univ., Wageningen). *Ibid.* 263–9. With the above method, phospholipides were determined by extraction, destruction of organic matter, and colorimetric estimation of $PO_4^{---}$ according to Scheel. Phospholipide per one hundred grams of fat varied from 449 to 811 milligrams, average 600 milligrams; per 100 grams of milk serum it varied from 12 to 22 milligrams, average 16 milligrams. In fresh raw milk about 60% of the total phospholipide was found in the membranes. These contained about 30% phospholipide. (*C. A.* **52**, 4877)

**Infrared spectroscopy of serum lipides.** N. K. Freeman(Univ. of California, Berkeley). *Ann. N. Y. Acad. Sci.* **69**, 131–44 (1957). Serum lipides were separated by chromatography on an activated silicic acid-celite column. The eluates were evaporated and the residues dissolved in carbon disulfide. The absorbancies were measured at specific band peaks character-

istic of the lipide components. The use of infrared analysis was illustrated with the attempt being made to develop a chromatographic separation of various cholesteryl esters. Further chromatography of the phosphatide fraction was done. Lecithin and sphingomyelin were not completely separated from each other. It was found that the 3040 $cm^{-1}$ band intensity varied directly with the iodine number of olive, cottonseed, corn, and linseed oils. It was suggested that the number of *cis* double bands might be calculated for fatty acids by determining the intensity of the 14 micron bands. (*C. A.* **52**, 4780)

**The effect of blanching on the carbonyl content of the crude lipid during the storage of frozen peas.** F. A. Lee (New York State Agricultural Expt. Station, Cornell Univ., Geneva, N. Y.). *Food Research* **23**, 85–6(1958). Crude lipids, prepared from frozen peas stored for five and one-half years, both raw and blanched, and from fresh peas, both raw and blanched, were chemically examined for saturated and unsaturated carbonyl compounds. Peas held in storage unblanched yielded crude lipids which contained appreciable amounts of unsaturated carbonyl compounds. Unsaturated carbonyl compounds were not found in the crude lipids extracted from material blanched previous to storage. Crude lipids extracted from fresh market peas, raw or blanched, contained no unsaturated carbonyl compounds.

**Catalytic action of cation exchange resin and sulfonic acid having lipophilic group on the hydrolysis of fat.** K. Fukuzumi and Y. Koyama (Nagoya Univ.). *Kôgyô Kagaku Zasshi* **59** 612–14(1956). Coconut and soybean oils were hydrolyzed at 100° with cation-exchange resin (Dowex-50) and sodium dibutylnaphthalene sulfonate or dibutylnaphthalene sulfonic acid with or without sulfuric acid as catalyst. The cation exchanger is effective for promoting the hydrolysis, and also to minimize coloring of the resultant hydrolyzed oils. (*C. A.* **52**, 5855)

**Selection of a process for continuous rectification of synthetic fatty acids.** A. I. Levin. *Khim. i Tekhnol. Topliva i Masel* **1957**, No. 8, 27–30. A scheme for continuous separation of synthetic fatty acids by a 4-stage distillation is designed. In the first stage acids above $C_{21}$ remain as residue, acids from $C_5$ to $C_{21}$ are transferred to the second stage. The second stage separates $C_5$ to $C_9$ from $C_{10}$ to $C_{21}$. The last two fractions can be separated further in stages four and five. Stage one can be replaced by a film evaporator if necessary. (*C. A.* **52**, 5856)

**Lower esters of gallic acid, antioxidants for vegetable oils.** Gr. Bălănescu, Ov. Popescu, and C. Stănculescu. *Lucrările inst. cerecetări alimen.* **1**, 97–124(1957). The antioxidant action of methyl, ethyl, propyl, and iso-butyl esters of gallic acid is investigated on sunflower oil. The oil is stored in open glass and closed metallic vessels, and the peroxide number is followed. Best results are at 0.15% concentration. The addition of citric acid does not change the results. (*C. A.* **52**, 5857)

**Rapid testing of oilseed for oil quantity and iodine number of oil.** M. H. Neustadt. *U. S. Dept. Agr. Tech. Bull. No.* **1171**, 26 (1957). An apparatus is described for the dielectrometric determination of the oil content of flaxseed, soybean, sunflower, and safflower seed. Conversion tables relating meter reading to oil content are given. A simple refractometer is described which is calibrated to read directly the iodine number of flaxseed and soybean oils. (*C. A.* **52**, 5857)

**Fatty acid composition of Argentine peanut oils.** P. Cattaneo. *Contribs. Cient., Univ. Buenos Aires, Fac. ciencias exactas y nat., Ser. C. Quim.* **1**(1), 28(1956). The composition of the fatty acids in peanut oils from different geographical areas is studied. The range values are: myristic 0.1–1.4, palmitic 8.2–12.9, stearic 1.6–3.8, arachidic 0.9–2.0, behenic 1.2–5.0, lignoceric 1.3–2.5, palmitoleic 0.2–1.0, oleic 36.9–54.0, and linoleic acid 25.7–40.5%. The turbidity temperature is influenced most by total concentration in saturated acids, the composition of the saturated acids, and the oil iodine value. (*C. A.* **52**, 5857)

**Effect of drying of rice bran on oil extraction by ethyl alcohol.** R. G. Krishnamurthy and Y. K. Raghanata Rao. *Food Sci. (Mysore)* **6**(3), 47–9(1957). Practical data are recorded on the behavior of ethyl alcohol extractions of rice bran as affected by moisture in the bran, repeated extraction, etc. (*C. A.* **52**, 5857)

**Thermal properties of soybean oil meal.** J. O. Hougen (Rensselaer Polytech. Inst., Troy, N. Y.). *Chem. & Eng. Data Ser.* **2**(1), 51–4(1957). The thermal properties of soybean oil meal have been determined with the following results: thermal diffusivity = 0.0048 per square foot per hour, thermal conductivity = 0.040 B.t.u. per hour per square foot (°F. per foot), and heat capacity = 0.215 B.t.u. per pound per °F. The data are assumed independent of temperature in the range from approximate 45° to 100°. (*C. A.* **52**, 5857)

**Fixed oil from seed of Xanthium strumarium.** P. P. Bhargava, S. S. Deshapahde, and C. N. Haksar (Jiwaji Ind. Research Lab., Gwalior). *J. Sci. Ind. Research (India)* **16B**, 427–8(1957). The seed of *Xanthium strumarium* yielded 30% oil. The oil contains no nitrogen or sulfur and burns with a semisooty flame. Fatty acids present are palmitic, oleic, stearic, and linoleic. Unsaturated fatty acids represent 90.8% of the total acid content. Specific gravity at 20°, index of refraction at 40°, acid value, saponification values, % unsaponifiable, iodine value, Hehner value, Reichert-Meissl value, and Polenske value were 0.9252, 1.4696, 0.9500, 196, 1.2, 142, 89.8, 0.3, and 0.2, respectively. (*C. A.* **52**, 5858)

**Effect of x-ray irradiation on the physicochemical and organoleptic properties of sunflower oil.** K. I. Zhuravlev. *Voprosy Pitaniya* **16**(4), 60–4(1957). The effect of the x-ray sterilizing dose of $10^6$r. on the oxidation of sunflower oil was investigated. Irradiation intensified the natural autoxidation of the oil, accelerated its organoleptic deterioration, but did not affect its hemolytic activity. Peroxide number was greatly increased in the irradiated oil samples, particularly those stored at 18°. Iodine number and acid number remained nearly unchanged by the irradiation. A slight polymerization of both samples occurred on prolonged storage at 18°, as shown by increased viscosity and index of refraction. Addition of 0.1% ascorbic or citric acid prevented entirely the off-flavor formation due to irradiation for as long as 240 days at 3°. Addition of 0.1% sucrose showed an adverse effect. (*C. A.* **52**, 5858)

**The protection of marine products from their deterioration due to the oxidation of oil. V. Application of butylated hydroxyanisole (BHA) to salting of salmon.** K. Toyama, T. Tochi and K. Saruya (Tokyo Suisan Daigaku). *Nippon Suisangaku Kaishi* **22**, 198–201(1956–57). The salmon treated with less than 0.01% BHA showed no significant rancidity on organoleptic examination after preservation for 60 days, while the usual salted samples started to show deterioration after 17 days. When 0.04% or more of BHA was employed, a faintly yellow color appeared at the abdominal part of the treated salmon, the discoloration apparently being different from that due to rancidity. The oil extracted from the usual salted salmon showed marked peroxide content after preservation for 28 days, while the oil from the BHA-treated salmon showed much smaller peroxide values.

**VI. Application of butylated hydroxyanisole (BHA) dry-salting of salmon.** K. Ando and Kuman Saruya. *Ibid.* 202–5. Admixture of 0.01–0.02% BHA with common salt in the dry-salting of salmon prevented the occurrence of rancidity during 75 days of preservation. (*C. A.* **52**, 5692)

**Influence of ascorbyl palmitate on the autoxidation of lipides.** A. Hérisset and C. Gautier (Ecole méd., Angers, France). *Ann. pharm franç.* **15**, 394–402(1957). Ascorbyl palmitate, melting point 116–17°, $[\alpha]^{20/D}$ −21 to −24°, saponification number 385, iodine number 61.2, is decomposed by prolonged heating at 60°. The solubility in oils varies between 0.03 and 0.12%. Fats containing the palmitate were exposed to air and intensive light and tested for rancidity. Olive and arachis oils and butter were effectively protected against autoxidation and rancidity. (*C. A.* **52**, 5506)

**A comparative study of various solvents for the extraction of rapeseed and linseed oils.** M. Loury and H. Feng. *Rev. franc. corps gras* **5**, 83–90(1958). The authors discuss the various solvents used to extract rapeseed and linseed oils. The solvents used are hexane, cyclohexane, acetone, trichloroethylene, dichloroethylene, absolute ethanol, 95% ethanol, absolute isopropanol, and 87% isopropanol. Also included is a comparison of peanut oil extraction in cyclohexane and Essence B (industrial solvent composed of the major paraffin hydrocarbons and cycloparaffins of boiling point range 60–75°). Ten tables sum up the results obtained.

**Constants of the total fatty acids of animal and vegetable origin. Their utilization for recognizing esterified oils.** L. Matarese. *Olii Minerali—Grassi E Saponi—Colori E Vernici* **35**, 39–46(1958). The esterification process, especially as regards raw materials, is examined. In Italy more and more fatty acids are in use, with much of the supply from abroad. Thus, more exact chemical methods are required. The present study is the determination of constants for total fatty acids derived from the chief edible oils. Fourteen of the most important fats and oils are given with the percentages of saturated and unsaturated acids. The author discusses the various combinations of the fats which will give a mixture of the type and amounts of the fatty acids needed.

**Some tests of neutralization of fats in solvents.** M. Naudet, M. Arlaud and S. Bonjour. *Rev. franc. corps gras* **5**, 74–83(1958). Some tests of the amount and type of neutralization of fats in various solvents indicate that the advantages may outweigh the disadvantages. The author discusses the procedure used, effect of concentration, influence of water used for dilution and washing, alkali used, preliminary removal of mucilaginous substances, treatment of the soap phase, and tentative establishment of a balance sheet. Six tables and one figure give the results obtained.

**Brief considerations about the Canneri-Marconi reaction.** G. Petruccioli(Istituto sperimentale per l'Olivicoltura e l'Oleificio, Spoleto, Italy). *Olii Minerali—Grassi E Saponi—Colori E Vernici* **35**, 47–8(1958). The author reports on a preservation test of oil (pure pressed olive oil) kept in sheet zinc containers, for 26 months. His conclusions are that prolonged contact of oil with zinc by itself gives no positive reaction with dithizone (Canneri-Marconi).

**Seasonal changes in the fatty acid composition of ewe-milk fat.** T. Gerson, F. B. Shorland and C. R. Barnicoat(Fats Res. Lab., Dept. Scientific & Industrial Res., Wellington, New Zealand). *Biochem. J.* **68**, 644–646(1958). The fatty acid composition of Romney ewes-milk fat taken at the peak, decline and end of lactation has been determined. It is shown that the reduction in the content of $C_{18}$ unsaturated acids at the end of November (late spring) is similar to that of cow-milk fats. This period represents the end of lactation for the early-lambing ewe, but only the middle of lactation for the cow. It is suggested that the change in fatty acid composition is associated with the increased food intake in November, and is not greatly influenced by the stage of lactation.

**South African pilchard oil. 7. The isolation and structure of an octadecatetraenoic acid from South African pilchard oil.** M. Matic(National Chemical Res. Lab., South African Council for Scientific and Ind. Res., Pretoria, South Africa). *Biochem. J.* **68**, 692–5(1958). The *cis-n*-octadeca-6:9:12:15-tetraenoic acid has been isolated from South African pilchard oil, and some of its properties have been determined.

**Recent studies of auto-oxidation of oils in general.** P. de Radzitzky. *Belgische Chemische Industrie* **23**, 233–250 (1958). The object of this article is to give an idea of the basic phenomena ruling the auto-oxidation of oils. The author first gives a brief historical account of the auto-oxidation theory applied to the hydrocarbons. In order to be able to compare the results obtained by different authors, a survey of the principal experimental methods for studying oxidation is given with their advantages and disadvantages. The author dwells particularly on the critical examination of some recent works in which the oxidizability of the oils is studied in terms of their structure. The oxidation of synthetic oils is discussed.

**Spectrophotometric research of sea fish oils.** G. D'Arrigo. *Olii Minerali–Grassi E Saponi–Colori E Vernici* **35**, 111–113 (1958). A method is described for the study of sea fish oils based on the ultraviolet absorption shown by such fatty acids after alkali isomerization.

**Castor oil cracking, its main by-products and possible utilizations.** G. Dupont. *Olearia* **12**, 53–6(1958). The author describes the composition of the main by-products of the methyl ricinoleate cracking, now employed for Rilsan's manufacture. The two main by-products are "S. oils" and the "aldehyde over-head oils." The S. oils consist of undecenoic, rininoleic, linoleic, and palmitic-free or esterified acids. They may be used for varnishes and related products. The aldehyde overhead oils consist of more than 50% of mono-unsaturated hydrocarbons and of low molecular weight fatty acids. They may be employed as gum solvents, plastic substances, etc. if deodorized.

**Studies on the rancidity of lard. III. A comparison among several tests for the detection of rancidity.** A. Vargas Romero and R. Gutierrez Gonzales-Quijano. *Grasas y Aceites* **9**, 10–13 (1958). Rancidity is developed in lard by heating it in the oven (Schaal), by the Swift technique(A.O.M.) and by natural storage under light and in the darkness. The increase in oxidation was followed by the peroxide number and the Kreis test, and the thiobarbituric acid test. Good correlation was obtained between the results of these tests. Results agreed with the organoleptic characteristics.

**Halogenation and de-halogenation of cottonseed oil.** A Vazquez and J. Huesa. *Grasas y Aceites* **9**, 3–9(1958). Chlorination of cottonseed oil, followed by elimination of halogen or hydrochloric acid was used as a means to improve the drying properties of the oil, through higher total unsaturation and greater percentage of conjugation. Tertiary butyl hypochlorite, gaseous chlorine and both simultaneously were used as agents for chlorination with the best results obtained with the two together. Elimination of chlorine was carried out by heating under a vacuum and also by the action of metallic catalyzers using dioxane as a solvent.

**Trace elements in edible fats. VI. Stabilizing olive oil by "de-metallization" with ion exchange resins.** A. Vioque, Mª del Pilar Villagran and R. Gutierrez Gonzalez-Quijano. *Grasas y Aceites* **9**, 10–13(1958). Virgin olive oils, dissolved in acetone are eluted through a column of cation exchange resins. After elimination of the solvent, no metallic traces remain in the oil. These "de-metallized" oils show an increased stability as compared to the original oils. It is shown that traces of metals greatly reduce the stability of oils. In the case of iron, a relation is shown to exist between its concentration and the stability of the oil.

**Changes in the sesamol, sesamolin, and sesamin contents of sesame oil in the course of extraction and refining processes.** Kei Fujimura and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **7**, 31–3(1958). Sesamol, sesamolin, and sesamin were determined in the crude sesame oil, variously purified oils, and oils extracted from expeller cake, hexane extraction residue, oil foots, gums, soap stock, and spent adsorbent (mixture of acid-treated clay and activated carbon). The sesamolin and sesamin in the oil decreased during the purification processes, i.e. degumming, alkali refining (deacidification), bleaching, and deodorization. The deodorized oil contained less than 0.002% sesamol and sesamolin and 0.270% sesamin. Sesamin was rather strongly adsorbed on the adsorbent used for bleaching, and the spent adsorbent might be advantageously utilized for the recovery of an oil fraction rich in sesamin by fractional extraction. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 373–8(1957) (in English).

**The oil extracted from half-dried sauries (Cololabis saira).** Tsutomu Shimooka and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **7**, 28–30(1958). Oils extracted from half-dried sauries (moisture about 60%, a favorite Japanese food) showed some variance in their properties according to the method of extraction. Especially, peroxide no. varied from 10.9 to 62.4 mg.-equiv./kg. This was caused by the unstability of the peroxides which tended to decompose not only at an elevated temperature but also at the room temperature. It was presumed that some components of the highly unsaturated acids of sauries were highly reactive with peroxides and acted as the acceptors for the active oxygen in peroxides. Examination of the oils extracted from the samples prepared by further sun-drying of the half-dried sauries showed that the oil contained in sauries underwent autoxidation to a larger extent when the period of sun-drying was longer. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 360–5 (1957) (in English).

**Autoxidized saury oil and its highly unsaturated acid fraction.** Tsutomu Shimooka, Masako Murase, Takeshi Nagakami, and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **6**, 321–4(1957). The saury *(Cololabis saira) oil* autoxidized to different degrees by exposing to the sun or by air blowing at 50° was analyzed for the physical and chemical characteristics including hydroxyl no. and conjugated diene content. When the autoxidized samples with similar iodine no. were compared, the samples obtained by exposing to the sun had smaller peroxide no. than those obtained by air blowing. A highly unsaturated acid fraction separated from saury oil was autoxidized with oxygen at 15–18°. The autoxidized fatty acids were heated at 90° to decompose the peroxides. The autoxidized acids (after heating and removal from volatile components) showed increase in density, refractive index, saponification no., and molecular weight and decrease in neutralization no. The volatile components consisted of acids and carbonyl compounds. The former (volatile acids) consisted of saturated monobasic acids of $C_1$–$C_6$, as revealed by paper chromatography of hydroxamic acids. The latter (volatile carbonyl compounds) consisted of propionaldehyde, butyraldehyde, *n*-pentanal, *n*-hexanal (or methylbutylketone), crotonaldehyde, and pentenal by fractionating 2,4-dinitrophenylhydrazones. A dialdehyde was also present. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 366–72(1957) (in English).

**Stability of hydrogenated saury (Cololabis saira) and whale oils determined by the rate of increase of their peroxide value.** Maromi Takeda and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **6**, 152–6(1957). Several samples prepared by hydrogenating saury and whale oils to different degrees were kept at 50° and were analyzed for peroxide value and fatty acid composition periodically. The stability of saury oil was lowered at an early stage of hydro-

genation until it reaches a minimum, and then it increased with further hydrogenation. A similar tendency was also observed in the course of hydrogenation of whale oil. The change of stability was discussed in connection with fatty acid composition, but it was presumed to be affected more profoundly by pro-oxidants such as Cu, Fe, and Ni and natural antioxidants. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 132–9 (1957) (in English).

**The highly unsaturated acids in sardine oil. XXI. Ultraviolet absorption spectra for alkali-isomerized polyethenoid acid components of sardine oil.** Tsutomu Shimooka and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **6**, 314–21(1957). $C_{22}$-hexaenoic, $C_{22}$-pentaenoic, $C_{20}$-pentaenoic, $C_{20}$-tetraenoic, $C_{18}$-tetraenoic, $C_{18}$-trienoic, and $C_{16}$-trienoic acids were separated as their methyl esters by fractional distillation and silica gel chromatography. They were isomerized with 21% KOH-ethyleneglycol at 180° for 15 min. Each fraction was examined by chromatography, distillation, fractional precipitation, saponification no., iodine no., and fractionation with urea. From extinction coefficients at various wave lengths the component of highly unsaturated acids of sardine oil was calculated. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 335–46(1957) (in English).

**XXII. Examination for the occurrence of $C_{16}$–$C_{22}$ dienoic and $C_{20}$-trienoic acids in sardine oils.** *Ibid.* **7**, 13–16(1958). A fatty acid fraction (neutralization no. 200 and iodine no. 176) separated from sardine oil fatty acids by urea fractionation was subjected to fractional precipitation to examine for the occurrence of acids of the sub-title. Among them an octadecadienoic acid was separated, but no other ones could be separated. Also in *Mem. Fac. Eng. Nagoya Univ.* **9**, 347–52 (1957) (in English).

**Naturally occurring sterols.** Taro Matsumoto(Nihon Univ., Tokyo). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **7**, 61–9 (1958). A review is given of the structure, properties, classification, and especially on the occurrence of sterols and trimethylsteroid alcohols.

**The oil industry of Brazil.** Yoshihiro Shigeno(Osaka Univ.). *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **6**, 341–7(1957); **7**, 34–41(1958). A report of a tour. Description is made of the fat resources, fatty oil industries, and oil processing with 32 references.

**Countercurrent distribution of sorghum lipides in leaf and stem extract.** M. C. Burnett, R. L. Lohmar, and H. J. Dutton(Northern Regional Research Lab., U.S.D.A., Peoria, Ill.). *J. Agr. Food Chem.* **6**, 374–377(1958). Fractionation of the lipides of sorghum leaf and stem by countercurrent distribution yielded five distinct nonpigment components. Pigments in seven fractions accounted for 9% of total lipides. Phosphorus and nitrogen were found throughout the distribution. The range of phosphorus in various fractions was 0.04 to 1.2%; of nitrogen, 0.08 to 1.23%. The findings illustrate the complexity of the lipide extract and will serve as guides for further isolation of selected fractions for detailed study.

**A rapid method for determining the fat emulsion stability of homogenized fluid milk products.** D. L. Gibson and E. O. Herreid(Dept. of Food Tech., Univ. of Ill., Urbana, Ill.). *J. Dairy Sci.* **41**, 509–513(1958). The Babcock centrifuge and fat testing apparatus were used. The method follows: Add 1 ml. of Sudan III to a milk test bottle, then add 17.5 ml. of milk at 110°F. and shake for 15 sec. Add two 10-ml. portions of distilled water at 110°F., shaking for 30 sec. after each addition. Then fill the bottle to between the 7 and 8% marks with distilled water at 110°F., being careful not to shake. Balance bottle in a centrifuge heated to 110°F., using the outside trunnion cups, and spin for 10 min. Read directly from the centrifuge, the cream volume to the nearest 0.1%. Each 0.1% cream volume is about equal to 1.0% difference in the USPHS Index. Sudan III made the cream volume more distinct. Ethyl alcohol carried the dye. With this method small differences can be detected in fat emulsion stability as affected by some processing procedures.

**Effect of phospholipids and unsaponifiable matter on oxidative stability of milk fat.** L. M. Smith, E. N. Frankel, W. Haab, and E. L. Jack(Dept. of Dairy Ind., Univ. of Calif., Davis, Calif.). *J. Dairy Sci.* **41**, 472–482(1958). Stability of milk fat samples prepared by different methods was measured by determining the length of the induction period at 80 ± 0.5°. Fat extracted from cream or buttermilk with a 2:3 ether-pentane mixture had greater stability than churned fat. This was attributed to synergism between phospholipids and other antioxidants or synergists extracted from membrane material and plasma, and was confirmed by the stabilizing effects of adding to churned fat different levels of phospholipids and/or unsaponifiable matter. Churned fat contained no phospholipids. Unsaponifiable matter alone, added to churned and extracted fats, increased fat stability. Among the known constituents of the unsaponifiable matter, beta-carotene acts as a prooxidant, and cholesterol had no significant effect. Alpha-tocopherol was the only unsaponifiable constituent tested that acted synergistically with phospholipids in stabilizing churned fat.

**Chromatographic separation of some milk lipids.** E. N. Frankel, L. M. Smith and E. L. Jack(Dept. of Dairy Ind., Univ. of Calif., Davis, Calif.). *J. Dairy Sci.* **41**, 483–491(1958). Fats extracted from milk and from dried buttermilk by mixtures of ethyl ether and pentane were chromatographed on silicic acid columns. Butanol was used to split the lipoprotein complexes in the buttermilk. Each fat in pentane was applied to the column and eluted with successive portions of 1, 10, 25, and 50% ethyl ether in pentane, with methanol, with acetone, and with water. Cholesterol and phospholipids were separated, but most of the tocopherols and carotenoids remained with the triglycerides. Unsaponifiable matter prepared from churned fat was applied in hexane to alumina and celite and to magnesia and celite columns. The material on the alumina-celite column was eluted successively with hexane, benzene, ethyl ether, and methanol. A fraction characterized as 70% cholesterol by chemical analysis and infrared spectrophotometry was recovered from the benzene eluate. The magnesia-celite column yielded 95% cholesterol in the benzene eluate. Carotenoids were separated by developing the column with hexane to obtain five clearly defined zones. These were rechromatographed to obtain hemogeneity. Beta-carotene, neo-beta-carotene, lutein, and zeaxanthin were found to be present in the eluted fractions.

**Sulfur compounds as antioxidants.** R. B. Thompson, J. A. Chenicek, and T. Symon(Universal Oil Products Co., 30 Algonquin Rd., Des Plaines, Ill.). *Ind. Eng. Chem.* **50**, 797–798 (1958). Antioxidant effectiveness of sulfur compounds having an activating group beta to the sulfur atom has been investigated. Alkylmercapto amides, sulfoxides, sulfones, and 1,2-bis-alkylsulfinylethane were found to be antioxidants. Some additional variations of the molecule were studied with respect to their effect on potency. A variety of groups which, in the beta position to the alkylmercapto group, will afford antioxidants have been investigated. A possible mechanism is suggested to explain their effectiveness.

**Trends in (soybean oil) processing and marketing.** C. B. Gilliland(Agr. Marketing Service). *Soybean Digest* **18**(7), 6–7 (1958). Statistics are summarized for the production of soybean and cottonseed oils by solvent extraction and hydraulic and screw-press methods. Data on the use of soybean oil in the production of margarine and shortenings are summarized.

**End paper containing lanolin and polyoxyethylene sorbitol lanolin derivative.** D. H. Powers(Richard Hudnut). *U. S. 2,832,357.* End paper for the permanent waving of human hair is impregnated with about 0.5 to 5% by wt. of a composition containing 5 parts by wt. of lanolin and 3 parts by wt. of a condensation product of lanolin, ethylene oxide and sorbitol.

**Process of applying lanolin finish to nylon hosiery.** W. F. Doyle and D. L. Copenhaver. *U. S. 2,832,518.* Nylon hosiery fiber is given a permanent finish consisting essentially of lanolin which imparts a characteristic smooth, soft and flexible hand which persists through repeated launderings in mild soap and water at lukewarm temperatures.

**Separation of oil and foodstuffs from herrings.** S. Sirnes. *U. S. 2,832,684.* Herring and other fat fishes are heated, pressed to express liquid, and dried. The liquid is partially concentrated, and oil is removed by centrifugation.

**Pastry cooking machine.** A. Kipnis. *U. S. 2,833,204.* A machine for cooking pastry in hot fat is described.

**Non-blocking coated sheet material.** M. C. Funk and J. F. Helms(American Can Co.). *U. S. 2,833,671.* A flexible wax-coated packaging material is coated with a non-blocking composition containing a solid binding agent (ethyl cellulose, polyamides or polyvinyl acetate) and a non-blocking agent such as solid straight chain saturated fatty acids, solid hydrogenated castor oil, and solid polyethylene glycols.

**Method of degreasing wool and recovery of wool grease.** D. P. Norman(Pacific Mills). *U. S. 2,833,798.* Raw wool is leached, with a mixture of methylene chloride and water and/or polar organic liquids soluble in methylene chloride.

**Oxidized waxes.** (South African Coal, Oil, and Gas Corp. Ltd.). *Brit. 786,654.* Oxidized waxes are used as substitutes for carnauba and beeswax in industrial formulations. For example: oxidize hard paraffin wax from the Fischer-Tropsch synthesis

(mean molecule weight 870, softening point 105–7°) at 140–5° with 2 ml. per gram per minute air in the presence of 0.1% manganese stearate on the weight of wax as catalyst. Stop when the acid number is 38 and the saponification number is 72 (4–5 hours). Vacuum distill the lower-molecular impurities. The final product acid number is 36 and the saponification number is 68. Clarify at 130–70° with calcium carbonate 0.75, zinc carbonate 0.2, sodium carbonate 1.3, and potassium carbonate 0.5 part and decant the clear wax. (*C. A.* **52**, 7742)

**Recovery of free fatty acid (or) resinous acids from an aqueous solution of soap.** (Aktiebolaget Separator). *Brit. 787,715.* In the recovery of fatty acids from soapstock obtained as a by-product of the alkali refining of oils and fats, the lumping on addition of sulfuric acid is avoided by dilution of the soapstock with water to 10–25% fatty acid content, mixing, dosing with sulfuric acid in amount sufficient to split the soapstock, and centrifuging the emulsion formed to separate fatty acids. The apparatus for the process is designed to recover the fatty acids, sulfuric acid, and heat contained in the emulsion. (*C. A.* **52**, 7741)

**Fats with higher melting points.** B. Blaser and W. Stein (Henkel & Cie G.m.-b.H.). *Ger. 842,046.* By treating fats or other esters of unsaturated fatty acids with a metal carbonyl, which can either be prepared in the reaction vessel or introduced from outside, products with considerably higher melting points, but little changed iodine numbers, were obtained. (*C. A.* **52**, 6818)

**Removal of free acids from natural fats.** O. Bruecke and A. Milbers(Metallgesellschaft A.-G.). *Ger. 918,401.* Free acids in natural fats are removed by steam distillation under vacuum followed by treatment with 10° Baumé sodium carbonate for twenty minutes at 35° with stirring. The apparatus is evacuated, the water removed, and the sodium salts are precipitated and separated by centrifugation. Peanut oil containing 5% free acids contained 0.03% after this treatment. Additional treatment with active carbon is useful. (*C. A.* **52**, 7741)

**Extraction of oil from (vegetable) materials containing it.** S. Castorina and F. Hausner. *Ital. 541,829.* Materials, such as olive fruits, are minced to a paste, mixed with three parts water, and the emulsion is subjected to electrophoresis and electroösmosis, by which oil is separated. (*C. A.* **52**, 7742)

**Sodium salt solutions of fatty acids.** K. Tanaka. *Japan. 976('57).* A hydrous sodium salt of fatty acid (600 g. as anhydrous) was added to 2 kg. cresol at 120°. After the water was completely evaporated at 135°, the mixture was cooled to 60° and 400 g. turpentine oil was added to give the desired solution. A mixed solution of, for example, the above solution 45, solvent naphtha 115, and DDT 40 g. can be diluted with water to give a stable DDT emulsion. (*C. A.* **52**, 7741)

## FATTY ACID DERIVATIVES

**Some N-disubstituted amides of long-chain fatty acids as vinyl plasticizers.** F. C. Magne, R. R. Mod, and E. L. Skau(Southern Regional Research Lab, New Orleans 19, La.). *Ind. Eng. Chem.* **50**, 617–618(1958). *N*-disubstituted amides of the major individual and mixed component acids of cottonseed and peanut oils have been prepared and subjected to a preliminary screening evaluation as primary plasticizers for vinyl resins. The morpholipide of oleic acid, the unsaturated fraction of selectively hydrogenated cottonseed or peanut fatty acids, and the partially epoxidized morpholide of the unsaturated fraction of cottonseed acids were found to exhibit excellent plasticizer characteristics, tempered to a degree by their questionable thermal stability. Equally satisfactory morpholide plasticizers can also be obtained from many other vegetable, animal, and fish oils by application of the principles and treatments described.

**Monoglycerides preparation by olive oil glycerolysis in the presence of urea.** R. Rigamonti and A. Vacirca. *Olearia* **12**, 49–52 (1958). Experimental tests on the preparation of monoglycerides by glycerolysis of olive oil in the presence of urea were carried out. The urea formed an adduct with the monoglyceride. This precipitates and the interesterification equilibrium keeps shifting toward the formation of monoglycerides. To increase the rate of reaction various solvents were used: acetone helped keep the glycerine and the oil in solution; isopropanol helped the interesterification in the direction of increase of the monoglycerides. The reaction is fairly rapid and the final glycerides had a total of 62% of monoglycerides.

**Fatty acid esters suitable for replacement of cocoa butter in ointments.** W. Schluter(Edelfettwerke G.m.-b.H.). *Brit. 785,933.* A process is outlined for the manufacture of fatty-acid esters suitable for use as ointment bases, suppository masses, etc. (*C. A.* **52**, 6819)

**Sulfurized cutting oil compositions.** J. Rinse(Sulfo Inc.). *U. S. 2,829,101.* A cutting oil is prepared from a mineral oil, finely divided sulfur and a small amount of an ester of hydroxy stearic acid.

**Polymeric light-sensitive photographic elements.** S. H. Merrill, C. C. Unruh and E. M. Robertson(Eastman Kodak Co.). *U. S. 2,831,768.* The light-sensitive layer may include 12-hydroxystearic acid or its ethyl ester and a film-forming polymer which is a benzophenone derivative.

**Novel polymerizable compounds.** F. Fekete(Pittsburgh Plate Glass Co.). *U. S. 2,831,838.* The desired composition of matter has the general formula

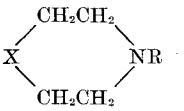
$$(HOCH_2)_4 - P - R$$

wherein R is the radical derived by removing the carboxyl hydrogen atom from an unsaturated aliphatic monocarboxylic acid containing 3 to 18 carbon atoms.

**Method for preparing fatty esters of non-reducing oligosaccharides in the presence of an amide.** N. B. Tucker and J. B. Martin(The Procter & Gamble Co.). *U. S. 2,831,854.* The non-reducing oligosaccharide is reacted with fatty acid esters of a monohydroxy or polyhydroxy alcohol under interesterification conditions at temperatures between 20° and 150°. The preferred catalyst is an amide of a low molecular weight secondary amine.

**Method for preparing fatty esters of non-reducing oligosaccharides in the presence of pyridine.** J. B. Martin(The Procter & Gamble Co.). *U. S. 2,831,855.* See preceding abstract. The preferred temperature is between 50° and 115°; the preferred catalyst is pyridine in an amount from one-third to 50 times the weight of fatty acid ester.

**Method for preparing fatty esters of non-reducing oligosaccharides in the presence of an amide.** N. B. Tucker(The Procter & Gamble Co.). *U. S. 2,831,856.* See preceding abstracts. The preferred amide has the general formula:



wherein X is oxygen or $CH_2$ group and R is a formyl, acetyl or propionyl radical.

**Amides of polyunsaturated long chain dibasic acids and resinous products prepared therefrom.** G. B. Payne, C. W. Smith, and A. C. Mueller(Shell Development Co.). *U. S. 2,832,799.* A process is described for the preparation of N, N'-dicarballyloxy-8,12-eicosadiene-1,20-diamide and similar compounds.

**Stabilized isoölefin polyolefin interpolymer derivatives.** R. T. Morrissey and H. J. Weiss(The B. F. Goodrich Co.). *U. S. 2,833,734.* A partially brominated rubbery interpolymer of isobutylene and isoprene is stabilized by the addition of about 1 to 5% by wt. of an epoxidized vegetable oil containing glycerides of oleic and linoleic acids and having about 1 epoxy group per mol of fatty acid.

**Epoxidation process using hydrogen peroxide and an acid salt of a heavy metal peracid.** G. J. Carlson, J. R. Skinner, C. W. Smith and C. H. Wilcoxen, Jr.(Shell Development Co.). *U. S. 2,833,787.* The production of an epoxide by the reaction of a non-conjugated ethylenic compound with hydrogen peroxide in the presence of an unstable peracid-forming acid is catalyzed by salts of tungsten and molybdenum.

**Production of epoxides.** J. R. Skinner, C. H. Wilcoxen, Jr. and G. J. Carlson(Shell Development Co.). *U. S. 2,833,788.* See preceding abstract. The process is applied to the epoxidation of a monoethylenic alcohol having 3 to 18 carbon atoms per molecule.

**Halogenated physic-nut oil compositions.** M. Dubien and R. Specklin(Société centrale de recherches et d'applications techniques). *Fr. 1,042,021.* Physic-nut oil from *Jatropha curcas* is halogenated to give products useful as placticizers, softeners for hides, and as hydraulic fluids. (*C. A.* **52**, 5860)

# • Biology and Nutrition

**Digestibility of individual fatty acids in the rat.** K. K. Carroll (Univ. of Western Ontario, London, Ontario, Canada). *J. Nutrition*, **64**, 399-409(1958). The digestibility of straight-chain saturated fatty acids from $C_4$ to $C_{22}$ and of mono-unsaturated

fatty acids from $C_{18}$ to $C_{24}$ has been measured in the rat. Short-chain saturated fatty acids up to $C_{10}$ were completely digested. From $C_{10}$ to $C_{18}$ the digestibility decreased progressively and very small amounts of the $C_{18}$ and higher fatty acids were absorbed. The digestibilities of the mono-unsaturated fatty acids were approximately the same as those of saturated fatty acids with 6 less carbon atoms. These results do not support the concept of an inverse relationship between the digestibility of fatty acids and their melting points.

**Factors affecting digestibility of fatty acids in the rat.** K. K. Carroll and J. F. Richards(Univ. of Western Ontario, London, Ontario, Canada). *J. Nutrition* **64**, 411–424(1958). Triolein, trilinolein and trierucin were more completely digested than the corresponding non-esterified fatty acids. Palmitic and stearic acids were very poorly digested either as triglycerides or as free acids. When diets containing oleic, linoleic, eicosenoic or erucic acids were fed, the neutral ether extract of the feces contained large amounts of calcium and phosphorus. This also occurred with trierucin but not with other triglycerides, saturated fatty acids or nervonic acid. The digestibility of erucic acid appeared to improve as the protein level in the diet was increased. The addition of desiccated thyroid or of thiouracil did not affect the digestibility although the total amount of fatty acid ingested was much greater in the former case. The digestibility of erucic acid seemed to be lower in old than in young rats.

**Cholesterol metabolism in gonadectomized rats.** R. D. Coleman, Y. M. Chen, and Roslyn B. Alfin-Slater(Dept. of Biochem. and Nutrition, Univ. Southern California School of Medicine, Los Angeles, Calif.). *Circulation Res.* **6**, 172–177(1958). In studies in which tissue concentrations of cholesterol and total lipids were determined in male and female rats fed a control diet containing fat, the effects of gonadectomy were much smaller than in animals fed a fat-free diet in which gonadectomy tended to reverse the sex differences observed in these lipid values. Other phases of lipid metabolism were shown to be sex-linked as well. Gonadectomy resulted in decreased synthesis of cholesterol in rat liver slices and changes in the fatty acid composition of cholesterol esters in the liver.

**Effects of feeding wool-fat sterols on the sterol content of serum and liver of the rat.** C. H. Duncan and M. M. Best (Dept. of Medicine, Univ. of Louisville School of Medicine, Louisville, Ky.). *J. Nutrition* **64**, 425–433(1958). Sterols derived from wool fat have been added to a 1% cholesterol diet and their effects on serum and liver sterol content of the rat determined. So studied were the mixture of 30-carbon sterols designated "isocholesterol" and three of its purified components, lanosterol, dihydrolanosterol and agnosterol. At a 2% concentration in the diet all the wool-fat sterols exerted some inhibitory effect on cholesterol accumulation in the liver. Dihydrolanosterol was most effective in this regard, followed in order by agnosterol, "isocholesterol" and lanosterol.

**Quantitative studies of triglyceride lipolysis after heparin administration.** H. Engelberg(Dept. of Medicine, Cedars of Lebanon Hospital, Los Angeles, Calif.). *Circulation Res.* **6**, 266–270(1958). The extent of triglyceride lipolysis by postheparin lipemia clearing factor (lipoprotein lipase) was studied *in vitro* in 8 atherosclerotic individuals. Varying doses of heparin were injected intravenously and subcutaneously and blood was drawn at stated time intervals for analysis. The rate of splitting of human low density lipoproteins was then determined by measurement of the rate of release of unesterified fatty acids upon incubation of postheparin plasma plus lipoproteins *in vitro* at 37°. The data obtained gives a range of the minimum *in vivo* removal of alimentary neutral fat following an injection of heparin.

**Effect in man of large doses of pyridoxine on serum cholesterol.** R. B. Failey, Jr.(Dept. of Medicine, Indiana Univ. School of Medicine, Indianapolis, Ind.). *Circulation Res.* **6**, 203–206 (1958). Pyridoxine (400 mg./day) was given to 21 individuals for periods up to a maximum of 36 days. A slight but significant fall in serum cholesterol levels was observed, the effect being more marked in diabetic than in nondiabetic subjects.

**A new phospholipid, malignolipin, in human malignant tumors.** T. Kosadi, T. Ikoda, Y. Kotani, and S. Nakagawa(Dept. of Biochem., School of Medicine, Mie Prefectural Univ., Tsu City, Mie, Japan). *Science* **127**, 1176-1177(1958). It has been ascertained that malignolipin is never found in normal tissues, such as cattle brain or whole bodies of normal mice. As malignolipin is found to exist richly in tumors of high malignancy and in the rapidly growing part of a tumor and scantily in necrotic tumors or in the degrading part of a tumor, this lipid is supposed to be intimately related to the malignancy of tumor cells.

**A study of surface active agents in broiler diets.** R. J. Lillie, J. R. Sizemore, and C. A. Denton(Agricultural Research Service, Beltsville, Md.). *Poultry Sci.* **37**, 288–292(1958). In a series of two broiler experiments, studies were undertaken to determine the nutritional significance of surfactants in the drinking water or in the diet. All of the blends produced a larger growth response based on the average weight of both sexes than procaine penicillin fed at a level of 4 grams per ton. Feed conversion was improved by 4 of the 5 surfactant blends and by procaine penicillin. Evidence was obtained that under a given environment blended surfactants of the type employed will compare favorably to antibiotic supplements in their effect on chick performance.

**Effect of dietary protein and heated fat on serum cholesterol and beta-lipoprotein levels, and on the incidence of experimental atherosclerosis in chicks.** T. Nishida, F. Takenaka, and F. A. Kummerow(Dept. of Food Tech., Univ. of Ill., Urbana, Ill.). *Circulation Res.* **6**, 194–202(1958). The present results indicate that dietary protein tends to depress the atherogenic effect of dietary cholesterol and fat. The substitution of heated oil for fresh oil depresses the serum cholesterol and $\beta$-lipoprotein levels, but the incidence of atherosclerosis is at least as high as with fresh oil, indicating that the serum cholesterol and $\beta$-lipoprotein levels are not necessarily proportional to the degree of experimental atherosclerosis.

**The structure of pig heart plasmalogens.** G. V. Marinetti, J. Erbland, and E. Stotz(Dept. of Biochem., Univ. of Rochester School of Medicine and Dentistry). *J. Am. Chem. Soc.* **80**, 1624–1628(1958). A long chain glycerol ether has been isolated by prolonged acid hydrolysis of reduced total pig heart phosphatides, pig heart lecithin and pig heart cephalin. In all cases the glycerol ethers react with one mole of periodic acid per mole of compound and therefore must be $\alpha$-ethers. The infrared spectra and paper chromatographic mobility of the isolated glycerol ethers are identical to those of an authentic synthetic sample of d-$\alpha$-octadecyl glycerol ether. Elementary analysis is also in agreement with this latter structure.

**Failure of parenterally administered pyridoxine to influence serum cholesterol levels and development of atherosclerosis in cholesterol-fed rabbits.** F. W. Martens and D. W. Hoskins (The New York Hospital, Cornell Medical Center, N. Y.). *Circulation Res.* **6**, 158–162(1958). The effect of pyridoxine on cholesterol metabolism and atherosclerosis in the rabbit was studied. Pyridoxine had no effect on the serum cholesterol levels of rabbits fed a normal stock diet and did not affect the degree of hypercholesterolemia in rabbits fed a cholesterol-rich diet. In addition, pyridoxine had no significant effect on the degree of atherosclerosis produced by cholesterol feeding.

**Effect of altitude and diet on hematopoiesis and serum cholesterol.** Irene R. Payne(Home Economics Division, Univ. of Wyoming, Laramie, Wyoming). *J. Nutrition* **64**, 433–445(1958). The results of the study indicate that altitude does have an effect upon the factors considered. The theory is proposed that increase in hemoglobin, coinciding with increase in red cell count, which occurs at high altitude, is accompanied by an increase in degenerate "ghost" cells which contribute cholesterol to the serum. It is suggested that the increase in serum cholesterol which occurs with increase in age may be due to hematopoietic changes which occur with age and which resemble those changes found with increase in altitude.

**Effect of initial vitamin A status on subsequent response of Holstein calves to carotene intake from artificially dehydrated alfalfa.** J. E. Rousseau, Jr., R. Teichman, H. D. Eaton, Martha W. Dicks, C. F. Helmboldt and E. L. Jungherr(Animal Ind. Dept., Ag. Experimental Station, Storrs, Conn.). *J. Dairy Sci.* **41**, 514–523(1958). Thirty-six male Holstein calves, $89 \pm 9$ days of age and partially depleted of their vitamin A stores to an average of $8.9 \pm 4.0$ $\gamma$ per 100 ml. of plasma, were fed one of three initial carotene intakes 100, 300, or 900 $\gamma$ per lb. live weight per day, for a 6-week period, and thereafter, one of four final carotene intakes, 20, 60, 180, or 540 $\gamma$, for a 12-week period. Both plasma carotenoids and vitamin A concentrations were found to respond to current carotene intake, with the more rapid changes observed when the carotene intake was changed from a high to a low intake. The initial vitamin A status influenced the response of plasma and liver vitamin A concentration observed for the final 12-week carotene intake period. Based on calculated tocopherol intakes, artificially dehydrated alfalfa resulted in increased plasma and liver concentrations of this vitamin.

**Heredity, environment, and serum cholesterol: a study of 201 healthy families.** L. E. Schaefer, D. Adlersberg, and A. G. Steinberg(Depts. of Medicine and Chemistry, Mt. Sinai Hospital and Central Manhattan Medical Group, New York, N. Y.).

*Circulation* **17**, 537–542(1958). Serum cholesterol levels of 1,236 healthy persons, including 775 members of 201 families, were analyzed in the investigation of the genetic control of serum cholesterol. It was concluded that there is an important genetic component in the determination of this level in healthy persons, that the gene is probably not sex-linked, and that environmental factors seem to play a lesser role.

**Effect of intravenous tocopherol injection on tissue content and carcass fat stability in chickens.** O. L. Voth, R. C. Miller, and W. R. Lewis(Penn. State Univ., University Park, Pa. and W. Va. Univ., Morgantown, W. Va.). *Poultry Sci.* **37**, 301–307 (1958). A study was made of the effect of intravenously injected tocopherol upon tissue content and carcass fat stability in chickens. Tocopherol was injected as an aqueous emulsion and fat stability was determined by the accelerated oxidation method. Under the conditions of this experiment the amount of tocopherol in the depot fat of chickens was not significantly increased by the intravenous injection of aqueous tocopherol emulsions. Subsequent resistance of the fat to oxidative rancidity was not increased by this treatment.

**Effects of saturated and unsaturated fat on cholesterol metabolism in the rat.** J. Avigan and D. Steinberg(Lab. of Cellular Physiol. & Metab., Nat. Heart Inst., N.I.H., Bethesda, Md.). *Proc. Soc. Exptl. Biol. & Med.* **97**, 814–6(1958). Rats fed a diet containing 20% corn oil have significantly lower concentrations of serum cholesterol than those fed equal amounts of coconut oil, but both high-fat diets lead to elevation of serum cholesterol above that seen on control diets. There is a very marked increase in esterified cholesterol of livers of rats fed corn oil whereas coconut oil-fed rats show no significant changes in liver cholesterol compared to controls. Rate of incorporation of 1-$C^{14}$-acetate or of $T_2O$ is higher in corn oil-fed rats than in others. Some implications with respect to the mechanism by which unsatd. fats alter cholesterol metabolism are discussed.

**Affinity between protein and lipide. VI. Interaction between various proteins and boiled sesame oil.** K. Kuroda, Y. Mishiro, S. Watanabe, and T. Kai(Tokushima Univ.). *Igakuto Seibutsugaku* **38**, 129–33(1956). Conalbumin, $G_2$, and $G_3$ from egg white, serum γ-globulin, milk β-lactoglobulin, muscle myosin, rice oryzenin, wheat glutenin, and soybean glycinin combined abundantly on the surface of boiled sesame oil droplets. Those proteins which bound more abundantly on oil droplets gave more shrinkage on the surface of oil droplets.

**VII. Relation between the shape of oil droplet and the degree of oxidation of oil.** K. Kuroda, Y. Mishiro and M. Inaba. *Ibid.* **39**, 160–3(1956). Oxidation of sesame or linseed oil was carried out either spontaneously at 37° of by heating at 220–250°. As oxidation proceeded, as determined by the increase in peroxide value or viscosity, the oil-protein droplets formed in sodium chloride solution showed flattening or convex disks in shape and more shrinkages on their surfaces. Photomicrographs are given of oil droplets formed from egg white protein in sodium chloride solution and oils at various stages of oxidation. (*C. A.* **52**, 6434)

**Carotinization of "kombizhir"(combined fats).** V. M. Kushko and L. A. Rutkvoskiĭ. *Nauch. Zapiski, Uzhgorod. Univ.* **7**, 65–70(1953. Kombizhir can be carotenized industrially by introducing 2 mg. carotene for every 100 g. kombizhir. The color of the material after addition of carotene was similar to that of sweet butter. Biological test on vitamin activity, carried out on rats, after storing carotenized kombizhir for two months, showed good stability with no noticeable loss in vitamin activity. The taste, smell, and color of carotenized kombizhir was superior to those of plain kombizhir. (*C. A.* **52**, 6661)

**Rancidification of fats and nutritional consequences.** M. Loury. *Bull. soc. sci. hyg. aliment.* **45**, 255–68(1957). Discussion of the causes, mechanism, and nutritional aspects of rancidification of edible fats. Twenty-six references. (*C. A.* **52**, 6660)

**Fat studies in dairy calves. I. Influence of various levels of fat on the apparent digestibility of milk replacers.** C. A. Lassiter, C. W. Duncan, and L. D. Christie(Michigan State Univ., East Lansing). *Mich. State Univ., Agr. Expt. Sta., Quart. Bull.* **40**, 282–5(1957). Sixteen newborn dairy calves were used in a series of digestion trials to determine the apparent digestibility of milk replacers containing 0.0, 10.0, 20.0, and 30.0% of a plant fat (modified Marcol B-75—characterized chemically as the methyl esters of the various fatty acids from cottonseed foots). The level of fat did not have any significant effect on the apparent digestibility of dry matter, crude protein, or nitrogen free extract. All levels of fat increased the digestibility of the ether extract fraction but there was no difference among fat levels. Coefficient of digestibility of all nutrients except the nitrogen free extract increased with increasing age of the calf. (*C. A.* **52**, 6519)

**The nutritional value of triglyceride fats.** M. N. Ismailov. *Izvest. Akad. Nauk Uzbek. S.S.R., Ser. Biol.* **1957**, No. 1, 79–94. Rats were fed beef fat. The results indicated that beef fat played a minor role in growth, gain of weight, and accumulation of lipides and proteins in the organism as compared with beef tallow, margarine or butterfat. It can be improved in the above respects by reducing the quantity of the low-temperature-melting triglycerides to 6–17%. (*C. A.* **52**, 6521)

**Serum cholesterol studies in Japan, Hawaii, and Los Angeles.** A. Keys, N. Kimura, A. Kusukawa, B. Bronte-Stuart, N. Larsen, and Margaret Haney Keys(Univ. of Minnisota, Minneapolis). *Ann. Internal Med.* **48**, 83–94(1958). Coronary heart disease is rare in Japan, fairly common among Japanese in Hawaii, and very high among Japanese in the United States (10 times as high as in Japan). In 475 Japanese the serum cholesterol concentrations showed a linear relation to the percentage of calories provided by fats in the diet, ranging from a low among farmers at Kogo, Japan, slightly higher at Shume, Japan, to a high among Nisei in Los Angeles, who were not significantly different in this respect from local Caucasians. The Kogo farmers ate less than 10% of the fat calories used by the Nisei in Los Angeles. These differences were accounted for by β-lipoprotein cholesterol, the α-fractions showing no significant variations. These findings support the theory that an important factor in producing differences in the frequency of coronary disease in populations is the proportion of calories in the diet which is provided by fats, particularly the common saturated fats. (*C. A.* **52**, 6522)

**Food value of oils and fats eaten in Spain.** Anon(Cuidad Univ., Madrid). *Anales bromatol.* **9**, 49–56(1957). Samples on commercial olive, cotton, and soybean oils and mixtures of these, butter, margarine, and lard were taken. Both soybean and cottonseed oil, either separately or in mixtures, were satisfactory as frying fats, and their behavior in use was not significantly different from that of olive oil. The feeding trials did not reveal differences in nutritive value or pharmacological effects. There was no apparent difference in the nutritive value of flavor of fish (hake) deep-fried in the fats tested. (*C. A.* **52**, 6660)

**Metabolism of the essential fatty acids.** D. Gamba(Purdue Univ., Lafayette, Indiana). *Univ. Microfilms* (Ann Arbor, Mich.), **Publ. No. 24157**, 49 pp.; *Dissertation Abstr.* **18**, 54 (1958). (*C. A.* **52**, 6527)

**Carotene and vitamin A in normal plasma.** F. D. Galindo (Univ. San Marcos, Lima, Peru). *Anales fac. farm. y bioquím., Univ. nacl, mayor San Marcos (Lima)* **6**, 333–43(1955). The average values for carotene and vitamin A in plasma of 60 normal subjects were 190.9 γ per 100 ml. and 195.3 I.U. per 100 ml., respectively. The method of Dann and Evelyn was used. 69 references. (*C. A.* **52**, 6534)

**Fat tolerance test as a practical measure of increased atherogenic susceptibility. I. Background from the literature.** P. P. Maycock and T. D. Swan(Guthrie Clin., Sayre, Pa.). *Guthrie Clin. Bull.* **27**, 14–21(1957). A review with 56 references.

**II. Preliminary report.** R. B. Winston and D. E. Dutrey(Guthrie Clin., Sayre, Pa.). *Ibid.* 22–4. Serum lipide determinations in 82 subjects showed that in atherosclerosis, in contrast to normal controls, there is clearly an inability to dispose of ingested fat after a loading dose of 60 grams. (*C. A.* **52**, 6568)

**Lipide patterns and atherogenesis in cholesterol-fed chickens.** D. M. Tennent, H. Siegel, G. W. Kuron, W. H. Ott, and C. W. Mushett(Merck Inst. for Therapeutic Research, Rahway, N. J.). *Proc. Soc. Exptl. Biol. Med.* **96**, 679–83(1957). A study is reported of experimental atherosclerosis produced by feeding cholesterol to a large number of chickens for eight weeks beginning at eight weeks of age. The degree of atheromatosis in thoracic aortas and brachiocephalic arteries has been correlated with results of analysis for total cholesterol and lipide phosphorus in plasma and for cholesterol in the lipoprotein fractions. Methods of scoring and their reliability are discussed. ( *C. A.* **52**, 7461)

**The nature of phospholipide complexes in the intestinal lumen and the feces of the rat in presence and absence of bile.** Jeanine Raulin and Jacqueline Clément-Champougny(Inst. recherches Cancer, Villejuif, France). *Compt. rend.* **245**, 1971–4 (1957). Young male rats (35 grams) with or without biliary fistulas were fed a diet containing 3% cholesterol and 15% free unsaturated fatty acid (from sunflower oil). The acetone-precipitable phospholipide of the feces and intestinal contents

of fistula rats contained calcium and had different proportions of fatty acid, phosphorus, and nickel from that found in intact rats. (*C. A.* **52**, 7461)

**Metabolism of trans fatty acids.** Patricia V. Johnston(Univ. of Illinois, Urbana). *Univ. Microfilms* (Ann Arbor, Mich.). **Publ. No. 25234**, 60 pp.; *Dissertation Abstr.* **18**, 553-4(1958). (*C. A.* **52**, 7467)

**The adsorption of lipides from the erythrocyte surface by silica and alumina.** E. A. Brown(Univ. Birmingham, Engl.). *J. Cellular Comp. Physiol.* **50**, 49–56(1957). Hyflo-Super-Cel rapidly hemolyzed human erythrocytes. Hyflo-Super-Cel that had been allowed to settle through a saline suspension of erythrocytes was thoroughly washed with water, dried, and extracted with 3 to 1 ratio of methyl chloride to methyl alcohol. The extract contained cholesterol, phospholipide, and protein. The hemolysis that occurred probably was due to adsorption of lipides from the cell surface. (*C. A.* **52**, 6432)

**Effect of oleic acid on the response of Lactobacillus fermenti to thiamin and its moieties.** F. M. MaciasR(Nutrilite Products, Inc., Buena Park, Calif). *J. Bacteriol.* **75**, 561–6(1958). Oleic acid and Tween 80 enhance whereas sodium acetate depresses the utilization of thiamin and its split products by *L. fermenti.* Although the thiazole portion in sufficient quantity could replace thiamin completely, pyrimidine was required under thiazole-limiting conditions. Under aerobic conditions, oleic acid was necessary for growth in media supplemented with the thiamin moieties but not with thiamin.

**Quantitative determination of the carotenoids in yeasts of the genus Rhodotorula.** W. J. Peterson, W. R. Evans, Eileen Lecce, T. A. Bell, and J. L. Etchells(Depts. of Chem. & Animal Industry, N. Carolina Agr. Expt. Station, and U. S. Food Fermentation Lab., Raleigh, N. Carolina). *J. Bacteriol.* **75**, 586–91(1958). Procedures for the extraction and chromatography on MgO-Supercel of carotenoids from yeast are described. In all of the eight yeasts studied, $\beta$-carotene and $\gamma$-carotene were found; torulene was observed in seven (absent from *R. flava*) and torularhodin in five (absent from *R. aurantiaca, R. pallida* and *R. flava*). The largest concentrations of carotenoids were found in *R. glutinis*, its variety *rubescens*, and in *R. mucilaginosa.*

**Time of [soybean] planting studies. Northern states.** J. L. Cartter (U. S. Regional Soybean Lab., Urbana, Ill.). *Soybean Digest* **18**(7), 12–14(1958). Data on the relationship of planting time to various characteristics of soybeans are reviewed, including oil content of the seeds and iodine number of the oil.

**Time of planting soybeans in the south.** E. E. Hartwig (Crops Research Div., USDA). *Soybean Digest* **18**(7), 16, 19(1958). The relationship of planting time to soybean quality is reviewed briefly.

**Breeding for oil content.** F. I. Collins(U. S. Regional Soybean Lab., Urbana, Ill.). *Soybean Digest* **18**(7), 26 (1958). Oil contents of high and low yielding varieties of Lincoln and Hawkeye soybeans are summarized. In all varieties, the oil content of seeds from different nodes varies considerably.

**Edible annatto coloring composition.** R. B. Kocher. *U. S. 2,831,775.* A pigmenting solution suitable for use in either low or high fat content dairy and other food products is prepared by extracting annato seed with warm alkaline propylene glycol.

**Vitamin compositions.** F. A. Bacher and H. T. Meriwether (Merck & Co., Inc.). *U. S. 2,832,720.* Transparent particles of a stabilized vitamin composition are prepared by reacting an alcoholate (aluminum, calcium or magnesium) with an aliphatic monocarboxylic acid, containing more than eight carbon atoms, in the presence of the vitamin. The salt of the acid is thus intimately mixed as a solid solution with the vitamin. The solid solution is separated from the reaction mixture and pulverized.

**Vitamin emulsions.** R. R. Degwitz(Merck & Co., Inc.). *U. S. 2,832,721.* A process is described for the preparation of an aqueous emulsion of vitamin $K_1$ suitable for intravenous injection. A solution of vitamin $K_1$ in isopropanol is mixed with a solution of lecithin in chloroform in proportions to provide a solution containing about 1 part of lecithin to each 5 parts of vitamin. To the solution is added 1.5 to 2 volumes of pyrogen free water with rapid stirring to emulsify the mixture. Organic solvents are removed by low pressure evaporation.

## • Drying Oils and Paints

**Effect of various substrates on drying of oil films.** N. S. Bharati and S. H. Desai(Elephant Oil Mills, Bombay). *Paintindia* **7**(1), 102–3(1957). Raw oil films without driers were spread on glass and various weighed metal panels. Linseed, tobacco-seed, and dehydrated castor oils dried most rapidly on lead panels and slowest on brass and copper. Drying time on aluminum, chromium, zinc, iron, nickel, tin, and stainless steel was about the same as on glass. Tung oil dried in forty hours on lead and in 16–26 hours on the other surfaces. Stripping the dried films and weighing the panels showed that the lead panels lost weight to the extent of 9–15% of the weight of the oil film. The others were unchanged in weight. (*C. A.* **52**, 7733)

**Unsaponifiable film formers from fatty acids.** J. D. v. Mikusch and K. H. Mebes(Margarine Union A.-G., Hamburg, Ger.). *Farbe u. Lack* **64**, 17–25(1958). A new method for the production of drying oils from fatty acids without esterification is described. The process is particularly applicable to the upgrading of by-products, such as tall oil and refinery acids. (*C. A.* **52**, 7733)

**Mechanism of drier action.** V. Sankholkar(Univ. Bombay). *Paintindia* **7**(1), 96–7(1957). The mechanism of drying of oil paints and varnishes is discussed. The drying rate at ordinary temperatures is governed by the concentration of dissolved oxygen in the film; the drier accelerates the decomposition of the hydroperoxides but has no other influence on the over-all rate. (*C. A.* **52**, 7734)

**Water as a paint solvent.** G. Swann(Beck, Koller & Co., Ltd., England). *Paint Technol.* **22**, 117–19, 121(1958). The merits of water as a paint solvent are reviewed briefly. Practical applications are discussed, including polyethylene glycol alkyd systems, polyester/polyester-amides, and phenolic and amino alkyd systems.

**Arylene diisocyanate-fatty acid triglyceride-polyol cellular materials.** E. Barthel, Jr.(E. I. duPont de Nemours & Co.). *U. S. 2,833,730.* A cellular plastic material is formed by the reaction of water with a polyurethane product prepared by the reaction between (a) an arylene diisocyanate, (b) a triglyceride having a hydroxyl number of at least 49, such as castor oil or blown drying oils, and (c) a saturated diol or triol having a molecular weight below 200.

**Manufacture of interpolymers of styrene with drying oil fatty acids.** J. A. Cottrell, D. H. Hewitt, E. Booth and R. H. Buckle (The Sherwin-Williams Co.). *U. S. 2,833,733.* Liquid styrenated drying oil fatty acids are prepared by the alkaline saponification of a styrene-partially polymerized drying oil copolymer.

## • Detergents

**Micellar dispersion of $\alpha$-monoglycerides in benzene and chlorobenzene.** P. Debye and W. Prins(Cornell Univ., Ithaca, N.Y.). *J. Colloid Sci.* **13**, 86–98(1958). Hardly any data are available on the behavior of oil-soluble, pure non-ionic detergents in solutions. Thus, a series of $\alpha$-monoesters of glycerol and normal fatty acids, $C_{10}$–$C_{18}$ have been prepared. These compounds are surface-active in benzene and chlorobenzene. By means of light scattering, it is shown that they form small micelles in these solvents. It is found that small amounts of impurities, like free fatty acid and free glycerol, enhance the scattering considerably. From the infrared spectra, evidence is gained for the existence of intermolecular hydrogen bonding in the micelles in benzene, whereas only intramolecular hydrogen bonds are found to exist in chloroform. The experimental decrease in micellar size with increasing C-number, and the decrease in size when passing from benzene to chlorobenzene as a solvent, can be explained by existing theories.

**Determination of active detergents in mixtures.** G. Zubieta (Buenos Aires). *Ind. y. quim.* **18**, 299(1957). Two methods were developed for the determination of quaternary ammonium compounds (1). (a) A sample containing 1–5 mg. I is acidified with concentrated $H_2SO_4$ to a 5–15% concentration of the latter, 2 ml. 1% aqueous Na salt of bromocresol green is added, and the mixture is extracted with $CHCl_3$. The $CHCl_3$ is read in a Klett-Summerson colorimeter, blue filter No. 42) against a $CHCl_3$ blank. The color intensity is proportional to the I concentration. (b) The insoluble iodine-I compound forms a suspension which absorbs red light. Thus, a sample containing 1–3 mg. detergent is acidified with $H_2SO_4$ and treated with iodine in the presence of starch to oxidize all reducing substances. Then, 5 cc. of about 2*N* iodine in KI is added, the solution diluted to a 2% $H_2SO_4$ level, and read in a photocolorimeter with a No. 66 red filter. Zn, Pb, sulfate, $H_2S$, $CS_2$, and carbohydrates do not interfere. (*C. A.* **52**, 6818)

**Determination of ion types of capillary-active materials by means of color indicators.** R. Bennewitz(VEB Fettchem., Karl-Marx-Stadt, Ger.). *Fette, Seifen, Anstrichmittel* **55**, 832–3 (1956). The color changes accompanying the addition of various indicators to anionic, cationic, and nonionic surface-active agents are determined and tabulated. The following reagents are used for qualitative identification of species present: 0.005*N* HCl (I), 0.1*N* HCl (II), pH 4.6 acetate buffer (III), 0.1 g. thymol blue with 2.15 ml. 0.1*N* NaOH diluted to 100 ml. (IV), 0.1% Metanil yellow (V), 0.1 g. bromophenol blue with 1.5 ml. *N* NaOH diluted to 100 ml. (VI), the indicator solutions all being in water. After mixing 1–2 drops IV with 2 ml. I, the addition of 2 ml. of solution containing an anionic agent turns the red-yellow solution a violet-red. The presence of a cationic agent can be detected by either of two tests. The addition of 2 ml. of test solution to 2 ml. III with 1–2 drops VI turns the solution from blue-violet to pure blue in the presence of a cationic agent. Also 2 ml. of test solution will change 2 ml. II with 1–2 drops IV from red to yellow. The presence of an anionic agent in the presence of ionic types can be detected only by a positive test from each of the following: a change from cherry-red to dark yellow on the addition of 2 ml. test solution to 2 ml. II with 1–2 drops V, and a change from blue-violet to green with 2 ml. test solution added to 2 ml. III with 1–2 drops VI, (*C. A.* **52**, 5005)

**Surface-active properties of monoglyceride sulfates.** A. K. Biswas. *Indian Soap J.*, **23**, 109–112(1957). It has been noticed that lowering of surface tension is more pronounced, higher the concentration of wetting agents in the aqueous solution. The products, however, were found to have limited solubility range in water, which is not appreciably increased even after addition of soap. Lowering of surface tension in different cases could be correlated with the wetting characteristic of the solutions. From data so far obtained products from different oils can be arranged in order of superiority of surface active properties as follows: Neem, Polang, Karanjia, Nahor. Superior tensiometric property of sulfated Neem monoglyceride and its sodium salt can be explained in terms of low average molecular weight, i.e. high saponification value of Neem oil and also the high percentage of sulfated group present in it. Although monoglyceride sulfate from Polang oil contains less organic sulfate group (1.6%) than that from either Neem(5.7%) or Karanjia oil (4.1%), its surface-activity is high as a result of considerable proportions of fatty soaps present in it. Addition of soap to the sodium salt of sulfated monoglyceride has been found to improve the tensiometric and wetting properties but not the calcium stability. Thus, surfactant from Polang oil possesses the least calcium stability. Although suspending capacity of surfactant prepared from Neem oil is greater than that from Polang oil, the latter, due to its fatty soap content(soap solutions are kown to be highly viscoelastic), possesses better foam characteristics including foam stability.

**Color fastness to washing—household detergents.** D. Cooper. *Canadian Textile J.* **74**, 58–9(1957). The effect of 14 household detergents, comprising built synthetic detergents, neutral synthetic detergents and soaps, was compared with that of soap in fastness-to-washing tests on 14 fabrics, by treatment in 0.5% solution at 130°F., followed by rinsing. No noticeable difference was observed in change of color, but some household detergents caused more staining, particularly on nylon.

**Hygroscopicity and sweating of soaps.** C. Defromont, M. Loury, J. P. Sisley, and J. Vallee(Iterg, Paris). *Rev. franc. corps gras* **4**, 416–26(1957). The interdependence between hydroscopicity (I) and sweating (II) of soaps is discussed. The increase of weight of 5-g. samples of powdered anhydrous soaps, due to I depends on the relative humidity of the surrounding air; the approximate limit 0.78, 1.16, 2.24 g. at, respectively, 23.9, 47.8, and 75% humidity is reached after 1–5 days. Marseille's soap in cake form kept its weight constant during 3 months if placed in an atmosphere of 87% humidity. Samples of a perfectly neutral soap exposed to air saturated with water during 35 days manifests its I by a simple swelling (increase of weight 7.95 g.). The same soap containing 1% of NaCl and exposed to saturated air causes II with formation of droplets after 2 days, and after 4–6 days if 1% of other electrolytes as NaOH, $Na_2CO_3$, and $Na_2HPO_4$ are present. Ion migration from the interior into the droplets takes place and finally, upon evaporation of the water, exudations are formed. (*C. A.* **51**, 18658).

**Apparatus for measurement of the wetting power of detergents.** R. Desalme. *Rev. franc. corps gras* **4**, 545–7(1957). Improvements of the rondelle-method which is based on penetration of test solution through a felt disk are described. A small metallic tube placed on a support, the bottom of which is closed by an exchangeable disk of felt 43 mm. in diameter and 7 mm. thick, is filled up to a fixed mark with the test solution. With the aid of a mirror the lower face of the disk is observed and the time required by the liquid to penetrate the felt is recorded. The time is 250 seconds for distilled $H_2O$ and, respectively, (average 8–10 determinations) 14, 7, 13, 6, 10 seconds for solutions containing 2 g. per l. of Teepol, Lipon IS 20, Coptal BN, octylphenol, and dodecylbenzenesulfate or 41, 18, 59, 18, 33 seconds for respective solutions containing 1 g. per l. (*C. A.* **52**, 3370)

**X-ray investigations on water-free and water-containing alkylpolyethylene oxides. I. Literature search.** M. Kehrem and M. Rosch(Chem. Fabrik Stockhausen & Cie., Krefeld, Ger.). *Fette, Seifen, Anstrichmittel.* **59**, 1–8(1957). The literature on general X-ray investigations on various washing agents and their solutions, with particular emphasis on the polyoxyethylated substances, especially the myristyl and stearyl alcohol derivatives, is reviewed. (*C. A.* **52**, 6816)

**The influence of condensed phosphates on active oxygen in washing agents and washing liquors.** K. Lindner. *Fette, Seifen, Anstrichmittel.* **59**, 8–16(1957). In perborate stability tests with 10 boiling washing agents and 12 quick washing agents, the behavior of the various condensed phosphates with and without stabilizers was examined. The most effective stabilizing phosphate is the pyro- followed by a poly-mixture with medium- and high-molecular portions, then a modified Graham's salt, and finally tripolyphosphate. Other complexing agents also help to stabilize the perborate. (*C. A.* **52**, 6818)

**The iodine color value.** M. Loury and A. Prevot(Iterg, Paris). *Rev. franc. corps gras.* **4**, 442–4(1957). Evaluation is made of tallow for soapmaking by comparing the color of a saponified sample dissolved in glycerol with solutions of iodine in $H_2O$. Determinations of the absorbed spectra are not sufficiently reliable for this purpose, and it is recommended that the transmissions be measured at wave lengths of 600, 552, 478, and 439 mμ, and the colors be expressed in international trichromatic coordinates. The values found are tabulated for 10 different tallows, x varying between 0.36632 and 0.50343 and y between 0.33818–0.41913. For 18 iodine solutions x varies between 0.31281 and 0.45418 and y equals 0.31914–0.46602. Details are given for this method with samples of 0.5 g. (*C. A.* **51**, 18659)

**Structure of the liquid-crystal phases of the soap-water system: middle soap and neat soap.** V. Luzzati, H. Mustacchi and A. Skoulios(Centre recherches macromols., Strasbourg, France). *Nature* **180**, 600–1(1957). X-ray diagrams of aqueous K palmitate solutions at various concentrations and temperatures indicate the presence of liquid-crystal structures under certain conditions. Between 33 and 53% soap concentration at 100° in the middle soap region, there is a series of sharp lines with Bragg spacings indicating the presence of a structure consisting of long, identical, parallel rods in regular hexagonal array. The diameter of the rods is fairly consistent at 37.8 to 38.5 A. over the concentration range 31.4–51.4%. The thickness of the water layer decreases as concentration increases. At 64–87% soap concentration (100°) in the neat soap region, X-ray diagrams indicate a structure consisting of parallel equidistant sheets which are presumably double layers of soap molecules with the polar ends sticking outward. As the soap concentration increases, the thickness of the sheets increases and the thickness of the water layer decreases. (*C. A.* **52**, 4288)

**Wet-soiling studies on resin-treated cotton fabrics.** L. W. Mazzeno, Jr., R. M. H. Kullman, R. M. Reinhardt, H. B. Moore and J. D. Reid(Southern Research Lab., New Orleans). *Am. Dyestuff Reporter.* **47**, 299–302(1958). The complaint has been made by a number of observers that some resin-treated textiles are highly susceptible to wet-soiling during laundering. In the course of research on "wash-and-wear" cottons the tendency toward wet soiling has been studied. Conditions under which wet-soiling occurs have been determined and various components of a number of commercial resin formulations have been examined to determine causes of soiling. A simple laboratory test for wet-soiling has been adopted using a Launder-Ometer with soap solution as the detergent and carbon black as the soiling agent under conditions approximating those encountered in commercial laundering. The effect of variables on soiling has been determined. Causes of soiling are outlined and the effects illustrated with photographs, electron micrographs, tables and graphs.

**The absorbency of terry towels.** B. G. Murphy and A. R. Marcomac(Univ. of Alabama, University, Ala.). *Textile Research J.* **28**, 337–42(1958). Samples from eleven undyed cotton terry towels, ranging from 9.7 to 14.8 oz. per square

yard, were laundered up to 100 times in a household type washer. Their weights, maximum rates of absorption, and ultimate absorptions were determined after various numbers of laundering and drying cycles. The unlaundered samples had the lowest values for both rate and ultimate absorption. Both values increased markedly with successive launderings up to about 10; after that the increases were slight. At 100 launderings the rate had passed maximum, but the ultimate absorption was still increasing. Ultimate absorption correlates well with fabric weight, but the rate shows no such correlation. The absorption per gram of cotton was somewhat greater for the lighter weight fabrics.

**Analysis of nonionic surfactants.** S. Siggia(General Anilin & Film Corp., Easton, Pa.). *Soap & Chemical Specialties* **34**, 51–3, 133(1958). A review has been presented of the analytical methods and approaches available for identifying and determining nonionic surface active agents. The quantitative methods indicated cover the range from methods to determine traces of nonionics to methods for determining high concentrations. 18 references.

**The behavior of textiles made of synthetic fibers during the washing process.** O. Viertel. *Melliand Textilber.* **38**, 1023–9 (1957). The three important factors which affect the washing process, the nature of the dirt to be removed, the chemical composition of the fiber, and the detergent used are reviewed. The synthetic fibers discussed are based on polyesters, polyamides, and acrylic resins. With proper selection of the detergents, alkalies, and the use of sufficiently high temperatures, it is possible to remove dirt as efficiently from the synthetic fibers as from cotton. The amount of skin fat removed during the washing process and the change of the whiteness of the fabric during the process are given. For white goods from synthetic fibers the use of suitable bleach for at least every second wash is recommended at 60°. (*C. A.* **52**, 2416)

**Influence of alkalies in washing.** W. Wondrak. *Deut. Textiltech.* **7**, 569–71(1957). Damaging of cotton in washing cannot be blamed on the alkali, since less than 1% soda ash is usually present. Washing for 48 hours with 5 g./l. soap of fatty alcohol sulfonate and 10 g./l. soda ash or silicate at different temperatures increased tearing strength in cotton with rising temperature and increased length of shrinkage, especially with the strongly alkaline silicate bath. Although increasing pH, especially at higher temperatures, always causes increased textile damage, such strongly alkaline solutions remove pectins, lignin, and low-molecular-weight cellulosic constituents, causing a subsequent preferential orientation of the crystallite regions and an appearance similar to mercerization. With stable fiber viscose, such baths caused rapidly increasing damage with increasing temperature, especially with the higher pH silicate bath. Fabrics subjected to 50 washings show that only 12% of the damage can be assigned to chemical causes, on the average, the rest being of a mechanical nature. But part of the mechanical damage is due to the somewhat swollen condition of the fibers because of the alkali present, in which state they are less resistant to mechanical wear. Substantive dyes bleed least when washed with $Na_4P_2O_7$, $Na_5P_3O_{10}$, or $Na_2CO_3$. These weak alkalies decrease bleeding below that caused by fatty alcohol sulfonate used alone. Silicates increase bleeding the most. Bleeding is increased more by raising the wash temperature from 40° to 60° than by increasing the concentration of wash materials from 2 to 4 g./l. (*C. A.* **52**, 5006)

**Influence of various alkalies on stain removal in laundering.** S. V. Vaeck and G. E. Boorsma. *Industrie Chimique Belge* **23**, 107–114(1958). The influence of 9 different alkalies on stain removal in a complete laundering cycle has been studied in pure solutions or with soap and alkyl aryl sulfonate. A Launderometer and different stained test fabrics prepared in the laboratory were used. The action of the alkalies is the result of three independent factors: pH, ionic concentration and degree of polymerization of the molecules. The best results were obtained with pure soap solutions or with solutions containing strong alkalies (e.g., metasilicate).

**Symposium of the progress of surface active agents.** *Abura Kagaku*(J. Japan Oil Chemists' Soc.) **6**, 365–487(1957). This consists of the following reviews. **General trends.** Jiro Mikumo(Yamanashi Univ.). pp. 365–9. 39 references. **The products of the Fischer-Tropsch process as the raw material for detergents.** Taiseki Kunugi(Univ. Tokyo). pp. 369–73. **Protein, cellulose, and sugars as the raw material for surface active agents.** Atau Mugishima(Kôgakuin Univ., Tokyo). pp. 373–9. **Synthesis of newer surface active agents.** Saburô Komori(Osaka Univ.). pp. 379–83. 34 references. **Sulfation and sulfonation.** Shoji Igarashi(Takemoto Yushi K. K., Aichiken). pp. 384–91. 61 references. **Fundamental problems in the synthesis of nonionic surface active agents. Addition of ethylene oxide.** Yoshio Ishii(Nagoya Univ.). pp. 391–9. 37 references. **Emulsification and solubilization.** Toshizo Isemura (Osaka Univ., Sakai). pp. 399–404. 33 references. **Wetting, especially of solid powder.** Teruzo Asahara and Shigeo Hayano (Univ. Tokyo). pp. 404–10. 22 references. **Theory of formation of foams.** Tsunetaka Sasaki(Tokyo Metropol. Univ.). pp. 410–15. 24 references. **Application (of surface active agents) to chemical reactions.** Jiro Mikumo. pp. 415–19. 39 references. **Detergents and the skin.** Masao Nonaka(Mitsuwa Chem. Inst., Tokyo). pp. 419–23. 27 references. **Washing of textile fibers with nonionic surface active agents.** Akio Nino(Dai Ichi Kôgyô Seiyaku K. K., Tokyo). pp. 424–30. 20 references. **Antistatic agents for textile fibers.** Koshitami Takahashi Nihon Yushi K. K., Amagasaki). pp. 430–6. 141 references. **Application of surface active agents to cosmetics.** Yasota Kawakami. pp. 437–43. 21 references. **Dispersion of pigments.** Ieyasu Ichikawa(Govt. Printing Office, Tokyo). pp. 444–9. **Rust preventives for metals, especially organic polar additives.** Teruzo Asahara(Univ. Tokyo) and Ken'ichi Goto. pp. 449–54. 56 references. **Agricultural chemicals and surface active agents.** Koki Hirota(Sankyô Co., Nosu, Shiga-ken). pp. 454–9. 37 references. **Methods for detergency evaluation. I. The committee on the methods for detergency evaluation.** Masao Nonaka. pp. 460–1. **II. Artificially soiled cloth in detergency evaluation.** Akihiko Yabe(Ochanomizu Univ., Tokyo). pp. 461–5. **III. Studies on the method of detergency evaluation.** Masao Kobayashi(Nihon Yushi K. K., Tokyo). pp. 466–76. **Trends in the detergent industry in Japan.** Tsuneharu Chiba. pp. 475–81. **Detergents in Europe.** Shin'ichi Tomiyama (Lion Yushi K. K., Tokyo). pp. 481–7.

**Odorless alkyl aryl sulfonate detergent.** R. D. Stayner(California Research Corporation), *U. S. 2,831,021.* A composition suitable for sulfonation and neutralization to produce a neutral detergent product free of neutralized acid sludge odor, consists of an alkyl benzene hydrocarbon having 9 to 18 carbon atoms in the alkyl chain, in which is dispersed from 0.02 to 0.1% by weight of at least one quinone from the group consisting of parabenzoquinone, orthobenzoquinone and toluquinone.

**Detergent compositions.** S. C. Klisch(Colgate-Palmolive Company) *U. S. 2,831,815.* A non-ionic detergent with improved foam properties consists of water-soluble non-ionic polyoxyethylene esters of tall oil fatty acids having about 12 to 30 moles of ethylene oxide and as an organic builder an amide compound having the formula: R-CO-N-$(CH_2CH_2OH)_2$ in which R-CO- is a saturated fatty acyl radical of 10 to 16 carbons. The ratio of non-ionic to amide is from about 100:1 to about 1:4 by weight, and sufficient to improve foaming power.

**Hydroxyalkylated fatty acid chloride-peptide condensation product and process.** H. D. Selle(VEB Chemische Fabrik Grunau, Berlin-Grunau, Germany). *U. S. 2,831,847.* A useful detergent is prepared by reacting a mineral acid treated unsaturated higher fatty acid-peptide condensation product with ethylene oxide under pressure and at a temperature within the range of 50–55°, and recovering the reaction product, said peptide comprising a partial hydrolysis product of albumin while the condensation product contains free carboxyl group.

**Free flowing alkyl aryl sulfonate detergent compositions.** L. H. Libby and L. F. Henderson(Lever Brothers Co.). *U. S. 2,832,743.* A free flowing detergent may be made by neutralizing alkyl aryl sulfonic acid with guanidine or a guanidine base, such as commercially available guanidine carbonate and the resulting guanidine alkyl aryl sulfonate may be drum or spray dried to a friable, non-sticky, free-flowing powder which may be formulated into a general household detergent powder.

**Detergent compositions.** G. O. Funderburk, R. C. Johnson and R. H. Smith(E. I. du Pont de Nemours and Company). *U. S. 2,833,722.* The power of a detergent to emulsify greasy soil is improved by adding to a detergent, such as the salts of mono-*n*-dodecyl sulfuric acid, a small amount of an N-alkyl-beta-amino propionate in the proportion of 80:20 by weight.