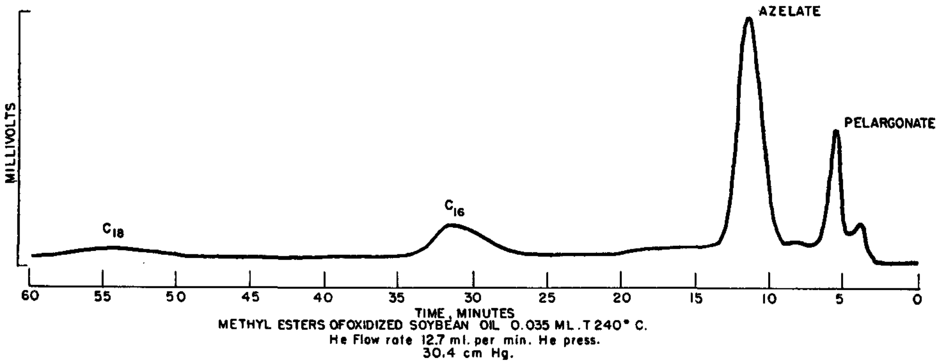

FIG. 7

ethane from the methylation process while the second peak may contain also malonate since retention volume of these two esters are practically the same.

The main oxidation products from soybean oil, Figure 7, are similar to those of Neo-Fat. The last two peaks, reading from right to left, are methyl esters of palmitic and stearic acids originally present in the saponified oil.

Conclusions

The oxidation of oleic, and particularly of linoleic and linolenic acids, indicated the presence of a considerable number of unexpected products in addition to those foreseen from a simple severance of the double bonds. The chromatograms of the oxidized pure C_{18} acids, of Neo-Fat No. 140, and of a mixture of fatty acids from hydrolyzed soybean oil showed a striking similarity in many respects. It was not possible to identify all the peaks, especially those of trace amounts, in the chromatograms and to obtain a quantitative estimate of the oxidation products.

Further work on this is in progress. The results indicate that gas-liquid partition chromatography is a sensitive method for the study of the oxidation of vegetable oils.

Acknowledgment

The authors wish to express their appreciation to C. H. Van Etten and W. B. Roth for carrying out the oxidation of the samples used in this work. Acknowledgment is also made for work performed by the laboratory shops and particularly for the assistance given by L. R. Bair and B. C. McGary because of their interest in the construction and installation of the column and constant-temperature, air bath.

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[Received January 25, 1957]

ABSTRACTS . . . R. A. REINERS, Editor

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• Oils and Fats

Melting point diagrams of saturated fatty acids. A. Kofler. *Z. Elektrochem.* 60, 1014–7(1956). Melting point diagrams of the 2-component systems palmitic acid-stearic acid, and margaric acid-stearic acid were investigated by micro-thermal analysis. Comparison with previously published data leads to the generalization that systems in which both acids have an even number of carbon atoms show 3 mixed-crystal phases, separated by a eutectic and peritectic, and the central phase is considered as a stabilized intermediate phase rather than a compound. Systems of adjacent even- and odd-numbered acids form continuous series of mixed crystals, which are complicated by a separate intermediate phase. When the acids differ by three carbon atoms, two intermediate phases may occur. (*C. A.* **51**, 6304)

Refractometric fat determination with alpha-bromonaphthalene in oil seeds. H. Grynberg and T. Patzek. *Przemysl Spozywczy* **6**, 455–9(1952). The refractometric method for fat determination is accurate and reproducible. It gives results which are higher than those obtained with the extraction method. (*C. A.* **51**, 7039)

Pale-colored fatty oil from kamala seeds. V. N. Ojha, P. G. Sharma, and J. S. Aggarwal(Natl. Chem. Lab., Poona). *J. Sci. Ind. Research(India)* **15B**, 551–2(1956). Kamala oil extracted with petroleum ether is too dark for use in pale-colored varnishes and paints. Washing to obtain a pale oil is uneconomical for industrial purposes. (*C. A.* **51**, 7040)

Examination of the fixed oil of Adhatoda vasica seeds. K. L. Handa, Ishwar Chandra and Vasudev(Drug Research Lab., Jammu). *J. Sci. Ind. Research(India)* **15B**, 612–3(1956). Dry seeds crushed and extracted with petroleum ether yielded 25.8% of a clear yellow oil: n^{24} 1.468, saponification number 169.2, acetyl number 3.4, iodine number 71.7 and unsaponifiable 3.2%. The over-all analysis of the acid components of the oil is arachidic 3.1, behenic 11.2, lignoceric 10.7, cerotic 5.0, oleic 49.9 and linoleic 12.3%. The unsaponifiable fraction is *beta*-sitosterol. (*C. A.* **51**, 7040)

Hydrophilic and sorptive properties of oil cake. A. V. Dumanskii, P. A. Demchenko, I. K. Girman and L. G. Demchenko. *Zhur Priklad. Khim.* **29**, 1555–61(1956). Hydrophilic and sorptive properties of sunflower cake, ground and dried at 105–110° for 16 hours in vacuo, were determined. From the experimental heat of sorption, 16.3–16.8 cal./g., the calculated amount of water absorbed was 20.5–21.0% (dry basis). This was identical with the values determined by absorption of water from xylene saturated with water and subsequent distillation with an excess of xylene. The rates of sorption and desorption as a function of humidity of the atmosphere (*loc.*

cit.) exhibited a hysteresis effect. Complete dehydration occurred at 180°. At 260° dehydration was associated with carbonization. To prevent spontaneous combustion in storage, preliminary saturation with water vapor was suggested. (*C. A.* **51**, 7040)

Separation and identification of oils and fats by paper chromatography. I. Plant oils. Tadaaki Bito. *Nagoya Kôgyô Daigaku Gakuho* **8**, 114–53 (1956). Oils were colored by Sudan III and were developed by a mixture of diacetone alcohol, chloroform, isobutyl alcohol, and amyl acetate (3:1:1:1) for 3 hours. R_f values and developed patterns are tabulated for 56 oils.

II. Animal oils and fats. *Ibid.*, 154–62. R_f values and developed patterns are tabulated for 64 oils.

III. Method of identification. *Ibid.*, 162–5. The colors, R_f values and patterns after developing can be used for identifying oils. (*C. A.* **51**, 7040)

Absorption spectra of a few vegetable oils in infrared and ultraviolet light. St. Vencov, D. Birca-Galateanu, and C. Gheorghita-Oangea. *Acad. rep. populare Romîne, Bul. stiint., sect. stiinte mal. fiz.* **8**, 391–404 (1956). A study of the absorption bands in the 0.9–3.7 micron region of castor, sunflower, and flax oils has shown that the differences in absorption intensities can be used to differentiate these oils. Linseed oil quality can be evaluated from its absorption curves. (*C. A.* **51**, 7040)

Vegetable oils. VI. Component acids of ergot oil. K. E. Bharucha and F. D. Gunstone (Univ. St. Andrews, Scot.). *J. Chem. Soc.* **1957**, 610–4. The component fatty acids of ergot oil were found to be: myristic 0.9; palmitic 23.9, stearic 3.2, arachidic 0.9, hexadecenoic 3.8, oleic 20.9, linoleic 12.3, and ricinoleic 34.1. Part of the ricinoleic acid is acylated with another fatty acid molecule.

Phosphatides of Indian vegetable oils. II. Determination of phosphatide contents spectrophotometrically. K. V. Rao, B. Appu Rao, and K. S. Murti (Oil Technol. Inst., Anantapur). *J. Sci. Ind. Research (India)* **15C**, 224–6 (1956). The phosphatide content of 10 samples of peanut oil varied from 0.15 to 0.87% and of 10 samples of cottonseed oil from 0.46 to 2.40%. (*C. A.* **51**, 7040)

A modified hexabromide test for the detection of linseed and other highly unsaturated oils in mustard oil. D. C. Dey, S. N. Mitra, A. K. Sanyal (School Trop. Med., Calcutta). *Current Sci. (India)* **25**, 227 (1956). The method detects linseed oil at concentrations as low as 2% or even less. Instead of the usual acetic acid, chloroform and rectified spirit along with bromine and ethyl ether are used. A turbidity after the final addition of ether which soon settles indicates the presence of the oil. (*C. A.* **51**, 7041)

Technological studies on the processing of sea lions. R. M. Kyte (Fishery Products Lab., Ketchikan, Alaska). *Com. Fisheries Rev.* **18**(6), 1–7 (1956). Oil rendered from sea lions was reported similar in chemical composition to fur seal oil. (*C. A.* **51**, 7042)

Paper chromatography of phospholipides with solvent mixtures of ketones and acetic acid. R. G. Witter, G. V. Marinetti, Anne Morrison and Lillian Heicklin (Univ. of Rochester Sch. of Med. and Dentistry, Rochester, N. Y.). *Arch. Biochem. & Biophys.* **68**, 15–20 (1957). Mixtures of ketones and acetic acid, namely 2-pentanone-acetic acid 30:2, 3-methyl-2-butanone-acetic acid 30:3, 4-methyl-2-pentanone-acetic acid 30:2, and 2,6-dimethyl-4-heptanone-acetic acid 30:7 were found to give excellent separations of individual phospholipides on paper. It was possible to separate lysolecithin, sphingomyelin, phosphatidyl ethanolamine, lecithin, and phosphatidic acid in a unidimensional chromatogram. The individual phospholipides had to be present at concentrations from 10 to 25 micrograms/20 microliters in order to achieve good separations.

Preparation of cottonseed meats and the effects on the quality of the products. A. C. Wamble and W. B. Harris (Texas A. & M. Coll., College Station, Texas). *Oil Mill Gaz.* **61**(10), 11-15 (1957). Adding moisture prior to rolling cottonseed meats significantly reduced the amount of gossypol contained in the expressed oils. Addition of water also resulted in increase in the refining loss and color of oil. No significant effects of flake thickness, moisture, or type of rolling equipment used were evident with regard to extraction efficiency or amount of free gossypol left in pressed meals, except that a "Flake All" machine induced lower gossypol content in flakes and final meal.

The quantitative determination of the antioxidants propyl, octyl and dodecyl gallate in oils and fats. H. J. Vos, H. Wessels and C. W. Th. Six (Central Inst. for Nutrition Res., T.N.O., Utrecht, The Netherlands). *Analyst* **82**, 362–367 (1957). Propyl, octyl and dodecyl gallates are determined absorptiometrically in a sodium acetate buffer solution with ferrous tartrate, which is specific for the gallates. After solution of the fat in light petroleum, propyl gallate is extracted with water and the higher gallates with absolute methanol. The conditions governing the reaction were studied. With the extraction methods described a 95 to 97 per cent recovery of antioxidant from oils and fats was possible.

A new method for the preparation of fatty acid esters. R. Rigamonti and V. Riccio (Instituto di Chimica Industriale del Politecnico di Torino, Italy). *Olii Minerali–Grassi E Saponi–Colori E. Vernici* **34**, 95–98 (1957). A method has been studied for the preparation of esters based upon the interesterification of triglycerides by alcohol catalyzed by small amounts of NaOH. The urea added forms a complex with the esters formed and these separate out as crystalline products. The method offers the advantage of fairly good speed and since it is run at low temperatures no isomerization or deterioration of the acids occurs. The resulting product contains a certain amount of monoglycerides together with the alcohol ester, this amount can be considerably reduced by further interesterification. The authors point out the possibility of use in vitamin concentrates.

Analytical study of the alkaline neutralization of oils. VI. Influence of different factors on the losses of saponification during the continuous alkaline neutralization. M. Naudet, S. Bonjour, M. Arlaud, and P. Desnuelle. *Rev. franc. corps gras* **4**, 142–8 (1957). Effects of variables in continuous caustic refining of fatty oils on the entrainment and saponification losses were investigated. Generally, increases in concentration of caustic and use of excess caustic increases losses. Prolonging contact (mixing time) increased saponification losses even with use of theoretical quantities of alkali.

Analysis of distilled castor-oil fatty acids. N. Naudet and M. J. Perrot. *Rev. franc. corps gras* **4**, 61–2 (1957). Seven fractions and a residue were obtained upon distillation of castor oil. The fractions showed: OH values 20–138; hydroxy acids as ricinoleic (determined chromatographically on rubber) 5 to 77; non-hydroxy acids 15 to 93; estolides 1 to 11; conjugated linoleic acid (calculated from absorption at 232 millimicrons) 2.5 to 31.5; linoleic acid formed by dehydration (calculated) 5 to 63%. The still residue contained neutral fat 66% and estolides 54%.

Tung oil and its analytical tests. I. The I.V. of tung oil and its mixtures with linseed oil. C. R. Mayerhoffer. *Olearia* **11**, 55–58 (1957). From a study of iodine value of tung oil and its mixtures with linseed oil it was found that the weight of tung oil must be kept constant to obtain iodine values capable of evaluation, and that the margin of sample weight tolerance for linseed oil is larger than for tung oil. It is not possible to identify the presence of linseed oil in tung oil with the sole help of the iodine value, as the I.V. of such mixtures, whatever their proportion, is generally within the limits of iodine value (160–175), officially fixed for tung oil.

Application of urea crystalline adducts to fat chemistry. J. M. Martinez Moreno (Instituto de la Grasa, Sevilla, Spain). *Olii Minerali–Grassi E Saponi–Colori E Vernici* **34**, 139–149 (1957). The author makes a brief allusion to urea and thiourea adducts from the historic and theoretical viewpoint. After this preliminary he discusses the practical applications of urea adduct formation in the field of fat chemistry. It is pointed out that the urea protects the fat from oxidation. A discussion is given of the research at the Fats Institute of Seville in which urea complexes have been used. Much of this has already been published in various journals.

Some new features in the technology of fats and oils. G. B. Martinenghi. *Olii Minerali–Grassi E Saponi–Colori E Vernici* **34**, 91–94 (1957). This is a summarized report about some processes applied on an industrial or semi-industrial scale, to the technology of fats and oils. The following subjects are examined successively: the transformation of rice acid oil into edible oil; the olive oil extraction; the rational distillation of oil-hexane mixture; the processing of winterization pastes; the separation of oleine from stearine; isomerization in the esterification; the future of esterification in the nutrition field.

Peanut oil refining by use of urea. M. Loury (Institut Technique des Corps Gras, Paris, France). *Olii Minerali–Grassi E Saponi–Colori E Vernici* **34**, 46–53 (1957). It has already been reported that the fatty acid of peanut oil can be separated from the triglycerides by use of urea. The author studied the recycling of the complex formed so as to reduce the amount of urea needed. This reduces the amount of urea required. Starting with an oil having 10–12% acidity it was possible to obtain a triglyceride fraction with 0.2% acidity and a mixture of fatty acids containing 75–90% fatty acids.

Studies of cuticular lipides of arthropods. I. The influence of biological factors on the composition of the wax from Ceroplastes destructor. A. R. Gilby and A. E. Alexander (New South Wales Univ. of Tech., Australia). *Arch. Biochem. Biophys.* 67, 302–306 (1957). The authors concluded that there is a typical composition for the type of wax produced by *Ceroplastes destructor*, white wax scale, although some variation in the relative amounts of components may occur. This typical composition is not greatly affected by the age of the insect or type and locality of host plant. Furthermore, the unsaturated compounds present do not arise from extraction of the insect body.

II. The chemical composition of the wax from Ceroplastes destructor. A. R. Gilby. *Ibid.*, 307–319 (1957). The wax from *Ceroplastes destructor* consists of *n*-paraffin-chain acids and alcohols, of average chain length about C_{27}. A significant proportion of short-chain (*ca.* C_{12}) acids and alcohols is present, the alcohols being unsaturated with at least two unconjugated double bonds per molecule. The molecular ratio of C_{27} to C_{12} molecules is about 1:2.5 for the hydrolyzed acids and about 2:1 for the hydrolyzed alcohols. There also exists a minor fraction of an unknown, conjugated, unsaturated compound (probably a diene).

III. The chemical composition of the wax from Boophilus microplus. A. R. Gilby. *Ibid.*, 320–324 (1957). The chemical composition of the cuticular wax from the cattle tick (*Boophilus microplus*) has been investigated by the techniques of monomolecular surface films and infrared spectroscopy. Free acids and alcohols, short-chain compounds, and unsaturated compounds appeared to be present only in small amounts, and it is concluded that the wax consists mainly of saturated acids and alcohols of chain length, about C_{30} largely combined in the form of esters.

Effects of storage on fat acidity in grains. M. Galrabchuk, H. Sorger-Domenigg, L. S. Cuendet, C. M. Christensen, and W. F. Geddes (Dept. of Agri. Biochem., Univ. Minn., St. Paul). *Cereal Chem.* 33, 45–52 (1956). One lot of wheat was inoculated with a suspension of common storage molds and a second lot was disinfected with 0.1% sodium hypochlorite and the moisture content of each raised to 18%. During the first seven days of storage the fat acidity of each lot increased only slightly. In subsequent storage at 24° during periods up to 18 months fat acidity of the mold-inoculated grain increased significantly more than in the hypochlorite treated grain.

Studies on the composition of lipids of the rabbit. J. H. Futter and F. B. Shorland (Fats Res. Lab., Dept. Sci. and Ind. Res., Wellington, New Zealand). *Biochem. J.* 65, 689–693 (1957). The fatty acid composition of the glyceride (non-phospholipid) and phospholipid fractions of the liver, kidney and longissimus dorsi, as well as that of the fatty tissues, of wild rabbits has been determined. In accordance with previous investigations on other animals, the phospholipids generally contained more C_{18} and C_{20} saturated and unsaturated C_{20-22} fatty acids than the corresponding glycerides but less palmitic and C_{16} unsaturated fatty acids. These differences are not rigid and exceptions are noted. In agreement with the previous work on the horse lipids, the glycerides, as compared with the phospholipids, invariably contained more triene but less diene C_{18} unsaturated acids.

On the indirect determination of the iodine value of olive oils. B. Frenguelli. *Olearia* 11, 59–63 (1957). A total of 46 samples of genuine olive oil coming from 10 different parts of Italy were examined. It was found that although they differed notably from each other in their composition and characteristics, that the ratio between the values of their respective iodine numbers (Hanus) and refractometric degrees (determined by the Zeiss butter-refractometer) may be considered constant. The constant found was 1.32.

Palm oil, palm kernels and palm kernel oil in the world. A. Ferrara. *Olearia* 11, 64–76 (1957). The author—former Vice-Director of the Overseas Agronomical Institute (Florence)—gives a panoramic picture of the oil-bearing palms in the world. He describes the origin, diffusion and essential characteristics of this oleaginous plant. A discussion is given of the oleaginous products, their respective uses, and the leading countries where they are produced, and the world trade in palm oil, palm kernels and palm kernel oil. He concludes his paper by describing the positions attained by these products in the period 1950–54 and the changes that have occurred as compared to the pre-war situation.

Comparison of the fatty acid composition of rapeseed and mustardseed oils. B. M. Craig. *Can. J. Tech.* 34, 335–339 (1956). The fatty acid composition of solvent extracted oils from Argentine, Polish, and Turkish types of rapeseed, commercial lots of Swedish and Montana rapeseed oils, and a commercial sample of mustardseed oil were determined. The iodine values ranged from 100.8 for Argentine to 127 for Turkish and mustardseed oils. Small variations were found in the total amount of C_{16} and C_{20} acids and large variations in the C_{18} and C_{22} acids. The variations in the content of palmitic, stearic, hexadecenoic, arachidic and behenic acids were small. The linolenic acid contents of Turkish rapeseed and mustardseed oils were 6% higher than for the other oils, which differed from one another by less than 2%. Linoleic, oleic, and erucic acids showed maximum variations of 16 to 27, 7 to 27, and 18 to 52%, respectively.

Antioxidant action of ascorbic acid in edible fats. G. Cerutti (Centro Ricerche Instituto Chemioterapico Italiano, Milan, Italy). *Olii Minerali–Grassi E Saponi–Colori E Vernici* 34, 41–45 (1957). Ascorbic acid as well as the palmitic ester of ascorbic acid were added to various edible fats of vegetable and animal origin. After five months of storage comparative tests have been carried out by treating the fats with other antioxidants (butyl-hydroxyanisole, propyl gallate, lecithins). The ascorbic acid and its esters have shown a marked antioxidant power. Minimum doses are about 200 mg. antioxidant per kilo of fat.

Characteristics of vegetable fats and oils. (Edited by C. Carola). *Olii Minerali–Grassi E. Saponi–Colori E Vernici* 33, 432–447 (1956). The chief chemical and physical properties are examined of the following vegetable fats and oils: peanut oil, coconut oil, colza and rape oil, cottonseed oil, sunflower oil, kapok oil, linseed oil, corn oil, palm oil, palm nut oil, poppyseed oil, tomato oil, castor oil, sesame oil, soybean oil, and grapeseed oil.

Characteristics of vegetable fats and oils. II. Edited by C. Carola. *Olii Minerali–Grassi E Saponi–Colori E Vernici* 34, 54–58 (1957). The chief chemical and physical properties are examined of the following vegetable fats and oils: babassu kernel oil, safflower oil, wheat oil, tung oil, shinia nut oil, almond oil, niger seed oil, walnut oil, oiticica oil, perilla oil, rice oil or rice bran oil, stillingia oil, teaseed oil, cacao butter, Japan tallow or Japan wax, illipe or Mowcath butter, and shea butter. The author quotes 61 references.

Analyses of fatty substances by infrared absorption. A. Berton. *Oleagineux* 12, 281–289 (1957). The author discusses the significance and theory of infrared spectroscopy in relation to fatty substances. A list of the various absorption points found between 2 and 15 microns for the more important fatty acids and oils is given. A discussion of the peak at 10.35 due to *trans* isomers is given. A total of 18 references are cited.

Identification of organic acids—p-phenyl-azo-phenacyl esters. E. Viozue and M. a del Pilar de la Mazo. *Grasas y Aceites* 8, 19–23 (1957). A method is described for the production and purification of organic acid derivatives from *p*-phenyl-azo-phenacyl bromide. Quantities of the order of 5 x 10^{-5} moles are employed. Values are given by these authors which are in good agreement with those previously reported by others for the normal saturated monocarboxylic acids. New compounds of the following acids are now reported in this article: oleic, undecylenic, linoleic, erucic, lactic, dihydroxystearic, tetrahydroxystearic, oxalic, and sebacic.

The ultraviolet spectrophotometer and industrial control of linseed oils. G. F. Pouchon. *Chimie & Industrie*, 77, 547–554 (1957). After giving a few generalities on the theory of spectrophotometric analysis, the author discusses the use of ultraviolet for the analysis of linseed oils. The statistical evaluation of a large number of analyses over a period of three years enables the author to draw some conclusions on the average composition of linseed oils and to make also some correlations of composition of the oil with the origin of the seeds. A discussion is given of the value of the ultraviolet technique in the determination of the composition of linseed oil.

Determination of saponification number. P. Paquot. *Olearia* 11, 5–7 (1957). Saponification numbers were obtained experimentally for various oils in which solvents other than ethanol were used. Different KOH concentrations and temperatures were investigated. The results show: (1) under the usual conditions with *N*/2 alcoholic KOH no perceptible deterioration occurs in the saturated fats and the S.N. is correct; (2) when the solvent used has a high boiling point (such as ethylene glycol) the S.N. is changed due to production of double bonds, the greater the saturation the more marked is the change;

(3) explanations are offered regarding what takes place under these conditions.

Paper chromatography in the field of fats. H. P. Kaufmann. *Olii Minerali–Grassi E Saponi–Colori E Vernici* **34**, 2–9(1957). Chromatography is discussed by the author as a means of qualitatively identifying saturated, unsaturated and cyclic fatty acids. By use of undecane as the fixed and the diluted acetic acid as the mobile phase the separation of the fatty acids are possible. The author quotes some examples of methods that gave quantitative results.

A system of synergistic antioxidants in herrings. E. Jannesson and R. Marcuse. *Olii Minerali–Grassi E Saponi–Colori E Vernici,* **34**, 10–14(1957). Within the frame of a work on oxidative rancidity in herring the presence of antioxidants and particularly of a synergistic system of tocopherols and amino acids has been studied. The aqueous phase of the herring was separated from the fatty one and the experiments done either in emulsions of herring oil or by means of a rapid test on filter paper. The emulsions were kept in Petri dishes and the peroxide value determined at intervals. The test on filter paper has been developed from a method previously described by Taufel: a drop of the fat solution is put on the paper which has been pretreated with the aqueous solution to be tested. The spots are later developed by a ferrosulfate-thiocyanate reagent, red color indicating rancidity. It is shown that the aqueous phase of the herring has an antioxidant effect on the herring oil and that certain amino acids are responsible for this action. These amino acids have been separated and identified by paper chromatography. Further, it is shown that a synergism exists between tocopherols as primary antioxidants and amino acids as synergistic substances.

Production of oleic acid(in the laboratory) by formation of urea-adducts from vegetable and animal fats and oils. L. De Luca. *Report of the Faculty of Applied Chemistry of the National University of La Plata, Argentina.* This is a report from the year 1953–1954(Vol. 27) and published in 1956. The author was able to obtain oleic acid of 97% purity. A discussion is given of the problems encountered in using the urea-adduct technique to purify or concentrate other fatty acid portions.

Differentiation between olive oil and ''sulfur'' olive oil. J. Gracian and J. Martel. *Grasas y Aceites* **8**, 3–10(1957). The methods used for testing refined sulfur olive oils are reviewed and discussed. The most efficient is the Vizern's test, based on the insolubility of part of the unsaponifiable matter of the oil in 85% ethanol. The main difficulty with the method is that it gives positive results with olive oils having a high amount of unsaponifiable matter. It is shown that the higher fatty alcohols are responsible for the positive test in sulfur olive oil, and that in the case of olive oil, the positive result is due to the presence of hydrocarbons. It is therefore possible to make an accurate test on sulfur olive oil by determination of the high molecular weight alcohols in the insoluble fraction produced in the Vizern's test.

The mechanism of permanganate oxidation. IV. Hydroxylation of olefins and related reactions. K. B. Wiberg and K. A. Saegebarth(Dept. of Chem., Univ. of Washington, Seattle, Washington). *J. Am. Chem. Soc.* **79**, 2822–2824(1957). The *oxygen introduced into oleic acid in its conversion to 9,10-dihydroxystearic acid by* permanganate has been found to arise from the oxidizing agent.

Volatile carbonyl compounds produced in skimmilk by high-heat treatment. M. E. Morgan(Dept. of Animal Industries, Storrs Ag. Experiment Station, Storrs, Conn.). D. A. Forss and S. Patton. *J. Dairy Sci.* **40**, 571–578(1957). Furfural and acetaldehyde are the principal volatile carbonyl compounds generated in skimmilk by high-heat treatment. None of the aldehydes which could result from a heat-induced reaction between the free leucine, isoleucine, or valine and the dicarbonyl compounds present in raw and heated skimmilk was detected in skimmilk heated as long as 90 minutes at 121°. When leucine or isoleucine was added to skimmilks prior to heat treatment, 3-methylbutanal or 2-methylbutanal was isolated from the distillates of the heated skimmilks. The apparent low yield of these compounds suggests that the Strecker degradation may be somewhat inhibited in a medium such as skimmilk.

Displacement separation of some of the component fatty acids of milk fat. S. Kuramoto, and J. J. Jezeski(Department of Dairy Husbandry, University of Minnesota, St. Paul) and R. T. Holman. *J. Dairy Sci.,* **40**, 314(1957). Nine fatty acids of milk fat, from butyric to stearic, were separated by *displacement chromatography. This method appears to be adapt*able to the separation of volatile and nonvolatile fatty acids by first saponifying the fat and then acidifying the soaps just prior to carrier displacement analysis.

Hydrogenation of rapeseed oil. Kimitoshi Nakazawa, Shinji Mitsunaga, and Kyujiro Tada(Nihon Yushi Co., Tokyo). *J. Japan Oil Chemists' Soc.* **5**, 292–6(1956). Hydrogenation was carried out with reduced nickel under the following conditions: 180°, 10 lb./sq. in. (No. 1); 150°, 30 lb./sq. in. (No. 2); 130°, 30 lb./sq. in. (No. 3); and 110°, 60 lb./sq. in. (No. 4). Analyses were made at 4–5 time intervals for iodine no., m.p., n_D^{60}, micropenetration at 15–35° (at 5° intervals), iodine no. and thiocyanogen no. of fatty acids, and linoleic acid content. The reaction velocity was 100:71:54:39 in Nos. 1 to 4. The m.p. was increased according to No. 1 to No. 4. The decrease in linoleic acid was highest in No. 1(i.e. most selective) and lowest in No. 4(i.e. nonselective). No. 4 showed the broadest plastic range, and No. 1 the narrowest. Under the moderately selective conditions(Nos. 2 and 3) the product was softest at 25° at the same iodine no., while linoleic acid content was not lowest at the same consistency. Conclusion: No. 1 was the most suitable for margarine base, and No. 2 or 3 was suitable for shortening.

Liver oil of Laemonema morosum. III. The components of low-boiling fractions of unsaponifiable matter. Saburo Komori, Toshio Agawa, Yoshio Hirao, and Koji Kumata(Osaka Univ.). *J. Japan Oil Chemists' Soc.* **5**, 284–7(1956). The unsaponifiable matter of this oil was acetylated and then fractionated by distilling at 2 mm. Hg pressure. Each fraction was examined for the yield, saponification no., and iodine no., and when necessary was refractionated. Unsaturated alcohols were studied by the $LiAlH_4$ method of Greenwood (*J. Org. Chem.* **20**, 803[1955]). This unsaponifiable matter consisted of about 10% cetyl alcohol, small amounts of octadecanol and eicosanol, about 50% 11-docosenol, a considerable amount of 9-eicosenol, small amounts of 9-octadecenol, cholesterol, and polyethylenic alcohols.

Seed oils of three Japanese species of Celastraceae, Euonymus japonica, E. alata, and E. sieboldiana. Yoshiyuki Toyama and Hideko Takai(Nagoya Univ.). *J. Japan Oil Chemists' Soc.* **5**, 281–4(1956). These 3 oils had the following characteristics, respectively: d_D^{20} 0.9692, 0.9579, 0.9485; n_D^{20} —, 1.4751, 1.4726; acid no. 2.4, 2.7, 1.8; saponification no. 287.7, 270.1, 256.5; iodine no. 71.3, 87.6, 75.8. They all contained about 20% saturated acids, oleic, linoleic, and a little linolenic acid as well as acetic, caproic, and benzoic acids. The latter 2 oils contained also formic and butyric acids.

Fats and radioisotopes. Michio Hiraoka(Nippon Soda Co., Nihongi, Niigata). *J. Japan Oil Chemists' Soc.* **6**, 127–35(1957). A review with 172 references.

Vitaminizing vegetable or animal oils. D. Libermann and Société du radiogène (S.à r.l.). *Fr. 1,004,199.* Animal or vegetable oils are subjected to alpha-rays, generated in the decomposition of Rn, to accelerate the oxidation reactions which may take place in the oils, especially the formation of vitamin A. Also, synthetic rubber can be made by accelerating the polymerization of linseed oil by means of Rn. (*C. A.* **51**, 7043)

Oils and fat acids. Emilio Santelli. *Ital. 499,756.* Details are given of a plant for the distillation, deodorization, and synthesis of fat acids and acid oils. (*C. A.* **51**, 7043)

Deodorization of bleached Japan Wax. Takayoshi Wachi (Noda Wax Manufg. Co.). *Japan. 1679('56).* The peroxide contained in bleached wax is decomposed by stirring 2 kg. wax with 13 g. copper powder and 1 l. 4% sulfuric acid for 2 hours at 75°. The wax layer is washed with warm water and deodorized in vacuo(50 mm.) with steam at 100°. (*C. A.* **51**, 7044)

Recovery of wool fat from waste waters. A. S. Salin, S. N. Shcherbak, G. M. Otrokov and K. S. Salina. *U.S.S.R. 104,212.* Spent waters are first subjected to flotation, and the collected fatty concentrate is heated and passed through a vibrating filter and separator. (*C. A.* **51**, 7043)

FATTY ACID DERIVATIVES

Formylated fatty compounds and hydroxylated products therefrom. D. Swern, H. B. Knight, and R. E. Koos. *Brit. 756,981.* Unsaturated fatty compounds can be formylated by treatment with commercial formic acid(85–95% pure) in the presence of a strong mineral acid, e.g. sulfuric acid, at a temperature between 70° and the boiling point of the mixture. The formulated compounds may be hydrolyzed to the corresponding hydroxyl compounds. (*C. A.* **51**, 7043)

Aliphatic carboxylic acids. Emery Industries, Inc. *Brit. 757,355.* Aliphatic carboxylic acids are prepared from unsaturated fatty acids containing double bonds by ozonizing with oxygen containing 1–5% ozone at 45° or less and oxidizing the fatty ozonides with oxygen at 75–120°. (*C. A.* 51, 7043)

Chemistry of epoxy compounds. XVIII. Epoxidation of linolenic (cis,cis,cis-9,12,15-octadecatrienoic) acid. D. Swern and W. E. Parker (Eastern Regional Research Lab., Philadelphia 18, Pa.). *J. Organic Chem.* 22, 583–585 (1957). In the reaction of linolenic acid (1 mole) with an excess of peracetic acid in acetic acid solution, calculated consumption of peracid (3 moles) is 90% complete within 1 hr. and 98% complete in 3 to 6 hours at room temperature or below. In the latter case, the crude reaction product contains only two instead of the anticipated three oxirane groups even though the residual unsaturation may be less than 2% of the original.

Reactions of conjugated fatty acids. IV. Diels-Alder adducts of 9,11-octadecadienoic acid. H. M. Teeter, J. L. O'Donnell, W. J. Schneider, L. E. Gast, and M. J. Danzig (Northern Utilization Research Branch, Ag. Research Service, U. S. Dept. of Ag., Peoria, Ill.). *J. Organic Chem.* 22, 512–514 (1957). Adducts of *trans,trans*-9,11-octadecadienoic acid and dienophiles including nitroethylene, β-nitrostyrene, acrylic acid, acrylonitrile, acrolein, methacrolein, methyl vinyl ketone, methyl vinyl sufone, and acetylene carboxylic acid have been prepared. The presence of a six-membered ring in the adducts of acrolein, acrylic acid, and acetylene carboxylic acid was demonstrated by dehydrogenation of the latter adduct and oxidation of the product to trimellitic acid. Hydrogenation of the acrylic acid and the acetylene carboxylic acid adduct gave the same product. Oxidation of the acrolein adduct gave the acrylic acid adduct. The nitroethylene adduct has been shown to exist in two isomeric forms.

Dyeing assistant for chrome-complex dyestuff. I. Application of polyoxyethylene alkyl ethers. Michio Mizuno, Yoshio Nemoto, Akira Nagata, and Hiroshi Tajimi (Tokai Seiyu Kôgyô Co., Nagoya). *J. Japan Oil Chemists' Soc.* 5, 271–4 (1946). Nonionic surface-active agents were prepared from lauryl, oleyl, or stearyl alcohol with 10–31 moles of ethylene oxide. Degree of dyeing power and dyeing velocity were measured for the dyestuffs Neolan Black WA, Palatine Fast Pink BN, and Palatine Fast Blue 2 GN. Stearyl ether with 30 moles of ethylene oxide was the most suitable.

• Biology and Nutrition

Nutritive value of fats and oils. Takashi Kaneda (Tokai Regional Fisheries Lab., Tokyo). *J. Japan Oil Chemists' Soc.* 6, 2–9 (1957). A review with 29 references.

Milk fat synthesis from acetate in mammary gland of the cow. T. A. Rogers and M. Kleiber (Dept. Animal Husbandry, Univ. of Calif., Davis). *Proc. Soc. Exptl. Biol. & Med.* 94, 705–708 (1957). C^{14} labeled acetate was injected into the milk cistern of the right front quarter of a lactating cow. This quarter was subsequently milked separately from the other 3 quarters and radioactivities of milk fat constituents from each were determined. The data confirm that there is a delay of several hours between synthesis and secretion of milk fat. A surprisingly small amount of the injected acetate diffused into the other three quarters or into the rest of the body. This can be accounted for by its rapid utilization for milk synthesis near the site of injection. Fatty acids of all chain lengths and glycerol seem to be synthesized from acetate in the mammary gland itself. The glycerol synthesis, however, is on a smaller scale.

Inositol-phospholipid in Neurospora and its relationship ot morphology. R. C. Fuller and E. L. Tatum. *Am. J. Botany* 43, 361–365 (1956). It has been shown that in *Neurospora crassa* most of the inositol present is bound in the form of a phospholipid. This complex is not readily available as a source of inositol for the inositol-requiring mutant strain 37401. The bound inositol can be made available by autolysis or by acid hydrolysis. The colonial form of the inositolless mutant strain, which results from an inositol deficiency, has a characteristically low level of inositol-phospholipid, amounting to only one-fifth of that found in the wild-type or in the morphologically normal mutant. It is suggested that this lipid deficiency is the biochemical basis of the altered morphology.

The determination of serum cholesterol. A. A. Henly (Little Bromwich General Hosp., Birmingham 9). *Analyst* 973, 286 (1957). The method of Zlatkis, Zak and Boyle for the determination of cholesterol in serum consists in adding a sulfuric acid solution of ferric chloride to a small amount of serum dispersed in glacial acetic acid. The disadvantages are that the chromgenic reagent is unstable, and bilirubin increases the cholesterol values. In the proposed alternative method, proteins are precipitated by adding the serum to a stable ferric chloride-acetic acid reagent, and the color is developed by adding sulfuric acid to a portion of the protein-free extract.

Effect of products of the browning reaction on fat stability in stored sugar cookies. T. Griffith and J. A. Johnson (Kansas Agri. Exp. Sta., Manhattan, Kansas). *Cereal Chem.* 34, 159–169 (1957). The effect of moisture and storage on rancidity of browned sugar cookies was studied. The addition of 5% dextrose to sugar cookies produced a marked browning of the cookies when baked, with greatest stability to oxidative rancidity than cookies with no dextrose and in which no browning occurred.

The specificity of milk lipase. IV. Partition of the lipase system in milk. N. P. Tarassuk and E. N. Frankel (Department of Dairy Industry, University of California, Davis). *J. Dairy Sci.*, 40, 418 (1957). Cow's milk contains at least two lipases that are present in the plasma of warm, freshly drawn milk. One, the membrane lipase, is irreversibly adsorbed on the fat globules as milk is cooled. It is abundant and active in milk from cows late in their lactation. The other one plasma lipase is associated with the caseinate system and it can be activated to produce lipolysis in milk.

Regulation of liver cholesterol synthesis by lymph cholesterol. L. Swell, E. C. Trout, Jr., H. Field, Jr., and C. R. Treadwell (Dept. of Biochem., George Washington Univ., School of Medicine, Washington, D. C.). *Science* 125, 1195 (1957). These findings provide further evidence that the homeostatic control of cholesterol synthesis is sensitive to fluctuations in the cholesterol supply. Exogenous cholesterol depresses synthesis; in the present experiments, the bleeding out of 8 to 10 mg. of endogenous cholesterol by way of the lymph fistula produced a marked increase in synthesis. These experiments pose a question whether the removal of endogenous cholesterol would be effective in lowering the levels of blood and tissue cholesterol.

Lipogenesis in particle-free extracts of rat liver. II. Experimental diabetes. W. N. Shaw, F. Dituri, and S. Gurin (Dept. of Biochem., School of Medicine, Univ. of Penn., Philadelphia, Penn.). *J. Biol. Chem.* 226, 417–425 (1957). In the particle-free systems of alloxan-diabetic rat liver, there is a significantly depressed lipogenesis when compared with systems derived from the normal animal. The defect appears to be localized in the supernatant fraction of the diabetic homogenate. Addition of phosphorylated intermediates of glycolysis to the diabetic particle-free systems produces a partial restoration of lipogenic activity. Washed mitochondria of rat liver can convert labled pyruvate to long chain fatty acids, provided butyryl co-enzyme A (CoA) is supplied; diphosphopyridine nucleotide and citrate are required. Butyryl CoA can effectively replace the supernatant fraction of both normal and diabetic rat liver systems. Under these conditions there is no difference in the lipogenic activity of normal and diabetic mitochondria. Glycolytic intermediates have no effect upon lipogenesis by mitochondria fortified with butyryl CoA.

The effect of increased dietary fat upon the protein requirement of the growing dog. J. A. Ontko, R. E. Wuthier, and P. H. Phillips (Dept. of Biochemistry, University of Wisconsin, Madison). *J. Nutrition* 62, 163 (1957). The effect of a high-fat, or high-calorie diet upon the percentage protein requirements of the weanling pup has been investigated. The data show that, under *ad libitum* feeding, increased increments of dietary fat in the ration of the weanling dog increased the present protein requirement as measured by rate of growth and by food efficiency.

Carotenoid and vitamin A content of milk and blood of dairy cattle fed moderate amounts of ground soybeans, soybean oil meal, and linseed oil meal. C. F. Monroe, J. W. Hibbs, and R. G. Washburn (Ohio Ag. Experiment Station, Wooster, Ohio). *J. Dairy Sci.* 40, 503–509 (1957). Total milk production and carotenoids and vitamin A in the milk of cows and in the blood of heifers fed liberal amounts of roughage were not affected by soybeans fed with a sample grain ration. Analyses of the carotenoids and vitamin A in the milk of cows and in the blood of growing heifers fed liberal amounts of good roughage showed no evidence that ground soybeans caused carotene destruction or interfered with its absorption or conversion to vitamin A when fed as the protein supplement in simple grain rations. Therefore, under practical dairy feeding conditions, where good roughage is fed liberally, soybeans could be used, where advantageous, as the protein supplement in grain mixtures without danger of vitamin A deficiency. No significant effects of feeding ground soybeans on total milk production were observed in these experiments except that butterfat per cent was higher during the period when ground soybeans were fed.

The incorporation in vivo of P^{32}-labeled orthophosphate into individual phosphatides of rat tissues. G. V. Marinetti, R. F. Witter, and E. Stotz (Dept. of Biochem., School of Medicine and Dentistry, Univ. of Rochester, Rochester, N. Y.). *J. Biol. Chem.* **226**, 475–483 (1957). The *in vivo* incorporation of P^{32}-labeled orthophosphate into the individual phosphatides of various tissues of the rat was determined by the use of paper chromatographic methods. In all the tissues studied, lecithin, phosphatidyl ethanolamine, and a component behaving like inositol phosphatide were major lipide constituents and showed the highest amount of labeling. The finding of as many as fifteen labeled phosphatides in a single tissue point to the complex nature of tissue lipides and indicates the presence of new types of phosphatides.

Lipase systems used in the manufacture of Italian cheese. II. Selective hydrolysis. W. J. Harper (Dept. of Dairy Technology, Ohio State Univ., Columbus, Ohio). *J. Dairy Sci.* **40**, 556–563 (1957). Crude lipase preparations selectively hydrolyzed, at different rates, individual fatty acids from triglycerides. Pancreatic lipase liberated C-12 fatty acids or higher, that from *Aspergillus niger* released the lower ones, and milk lipase released both lower and higher acids. Lipases used in manufacturing Italian cheese hydrolyzed much butyric acid which varied with the enzyme source. Those from the same gland but from different animals varied in their lipolytic activity.

A simple method for the isolation and purification of total lipides from animal tissues. J. Folch, M. Lees, and G. H. Sloane Stanley (Dept. of Biological Chem., Harvard Medical School, Boston, Mass.). *J. Biol. Chem.* **226**, 497–509 (1957). A simple method for the preparation of total pure lipid extracts from various tissues is described. The method consists of homogenizing the tissue with a 2:1 chloroform-methanol mixture and washing the extract by addition to it of 0.2 its volume of either water or an appropriate salt solution. The resulting mixture separates into two phases. The lower phase is the total pure lipide extract. The advantages and limitations of this procedure have been established by brain gray and white matter, for liver, and for muscle.

Effect of feeding certain silages on the relative concentrations of rumen volatile fatty acids. J. M. Elliot, E. Bennett, and J. G. Archibald (Dept. of Dairy and Animal Science, University of Massachusetts, Amherst). *J. Dairy Sci.*, **40**, 356 (1957). Corn silage as the only roughage increased rumen acidity with more propionic and less butyric and acetic acids than did hay-crop silage used alone. Rumen acidity was not increased by either hay-crop or corn silage when they were part of the roughage ration.

The state of esterification of the sterols of rat skin. I. D. Frantz, Jr., Elinor Dulit, and Ann G. Davidson (Dept. of Medicine, Medical School, Univ. of Minnesota, Minneapolis, Minn.). *J. Biol. Chem.* **226**, 139–144 (1957). The sterols of rat skin were extracted with acetone without saponification. The Schoenheimer-Sperry method was applied to an aliquot of the extract, but with colorimetric readings at 1.5 as well as 30 minutes after addition of the reagents. This analysis provided values for total, free, and esterified cholesterol and fast acting sterol. The sterols of additional aliquots of the extract were divided into free and esterified fractions, both chromatographically and by precipitation with digitonin. The free and esterified fractions were further separated into their components by chromatography on silicic acid. By these various procedures, less than 20 per cent of the cholesterol but more than 70 per cent of the lathosterol appeared to be esterified.

Hydrogenation versus chromatography in the estimation of tocopherol in calf plasma. Martha W. Dicks, J. E. Rousseau, Jr., and H. D. Eaton (Storrs Ag. Experiment Station, Storrs, Conn.). *J. Dairy Sci.* **40**, 590–591 (1957). In the Emmerie-Engle reaction for the estimation of tocopherol in blood plasma, interference is due principally to carotenoids and these apparently can be eliminated by either selective hydrogenation or chromatography. In the course of experiments conducted during 1955–1956, plasma samples from 19 calves fed varying amounts of carotene and/or vitamin A, as well as D-α-tocopherylacetate, were analyzed by two procedures, hydrogenation or chromatography, to determine whether differences existed between the two methods. Although saponification is not included in the method of Quaife and Harris, it was found necessary for calf plasma, in order to eliminate turbidity in the final ethanol solutions, as was the case whether hydrogenation or chromatography was employed.

• Detergents

Evaluation of whitening efficiency of fluorescent whitening agents. E. Allen (Am. Cyanamid Co., Bound Brook, N. J.). *Am. Dyestuff Reptr.* **46**, 425–32 (1957). Fluorescent whitening agents are dyes which absorb ultraviolet radiant energy and fluoresce blue. The fluorescence improves the appearance of textiles in two ways: first, by shifting the color from yellow toward blue, and second, by increasing the lightness. These dyes may be evaluated by several methods: visual examination of the dyed cloth in the daylight, under ultraviolet radiation, and by means of a fluorimeter. The advantages and disadvantages of each of these methods are discussed.

Role of interfacial electrical conditions in detergency. K. Durham. *J. Appl. Chem.* **6**, 153–61 (1956). An attempt is made to analyse theoretically the role of electrical effects in detergency by application of concepts found useful in the study of lyophobic colloids. The analysis is restricted to consideration of lyophobic systems containing particular soils.

Physico-chemical properties of solutions of para long chain alkylbenzenesulfonates. Jacqueline W. Gershman (Colgate-Palmolive Co., Jersey City, N. J.). *J. Phys. Chem.* **61**, 581–4 (1957). Solubility-temperature curves were determined for the branched alkylbenzenesulfonates with the general formula sodium *p*–(1-methyl-alkyl)–benzenesulfonate where the alkyl group contained from 10 to 16 carbon atoms. Krafft temperatures and CMC values were derived for each compound. Surface tension measurements were made for aqueous solutions of alkylbenzenesulfonates with the general formula of either sodium *p*–(1-methylalkyl)–benzenesulfonate or sodium *p*-alkylbenzenesulfonate, where the alkyl group varied from 10 to 16 carbon atoms in the former and 8 to 10 in the latter. The surface tension and critical micelle concentration are seen to be lowered by the addition of a methyl group. Electrical conductance measurements were made for aqueous solutions of the above compounds and for sodium *p*-dodecylbenzenesulfonate. The CMC values obtained by solubility, surface tension and conductance are compared and their differences discussed. Contrary to prior experiments with commercial sulfonate, it was found possible to form slow draining films with some of the compounds studied.

Permanence of odorous esters in soap. J. Sfiras (Stab. Roure Bertrand Fils et Justin Dupont, Argenteuil, France). *Riv. ital. essenze, profumi, piante offic., oli vegetali, saponi* **38**, 561–3 (1956). Data on saponification of nonyl, cedryl, isobornyl, terpenyl, menthyl, linalyl, geranyl, styryl, phenylethyl, cinnamyl, and benzyl acetate, phenylethyl and methyl benzoate, amyl salicylate and anthraniliate, and acetyleugenol, under various conditions (with or without water, immediately or after 2 months) are tabulated. Autoxidation in wet soap exposed to air is much higher than in dry and wrapped soap. Many of the above esters resisted well the saponifying action of soap. To investigate this effect, the action of 0.5*N* NaOH on the ester is helpful. (*C.A.* **51**, 8457)

Mechanical handling of soap flakes. P. I. Smith. *Am. Perfumer Aromatic.* **69**(6), 78 (1957). Various conveyor systems used for transporting soap flakes in the plant are discussed. It was shown that the tubular conveyor is well fitted for the soap industry and finds a very valuable application for conveying soap flakes from the dryer to the packing machines.

The interface behavior of carboxymethylcellulose on textile fibers. J. Stawitz, W. Klaur and H. Kramer. *Kolloid-Z.* **150** (1), 39–44 (1957). Clear, radioactive carboxymethylcellulose solutions (CMC) with a specific activity of 0.075 mC/g were used to study the adsorption of CMC from aqueous solution on textile fibers, especially cotton. No adsorption was found by measuring the changes in the concentration of CMC-solutions in contact with the fibers. On mixing the CMC-solutions with the cotton fibers and evaporating the solution, intensive migration of the CMC to the surface of the fiber layer was observed, even at concentrations at which the CMC was not able to cover, in a monomolecular layer, more than only a fraction of the "external" fiber surface. This is considered a proof that no adsorption takes place on cotton. The fact that about 10γ MC per 1 g. cotton is not removable by repeated rinsing is attributed to occlusion. The same results were obtained on acetate fiber, Perlon and wool.

Industries dependent on the chemical industry—the synthetic detergent industry in Australia. P. H. A. Strasser. *Proc. Royal Australian Chem. Inst.* **24**, 85–90 (1957). The history and development of the synthetic detergent industry in Australia is reviewed. The trend toward replacement of soap by synthetics has not yet taken place there. Australia has adequate raw materials for soap which have been held at an artificially low price level, while the principal raw material for detergents is still imported. Also, because of the availability of very soft water supplies, the advantages of detergents over soap cannot be shown. However, future developments for the detergent industry are outlined.

Comparative surface activity of monoglycerides from different oils. K. Rama Varma (The Tata Oil Mills Co., Ltd., Bombay). *Indian Soap J.* 22, 191–4 (1957). Monoglycerides from coconut, groundnut and castor oils were prepared and tested for their surface active properties. Monoglycerides are insoluble in water but can be dispersed by traces of soap. Surface tension and wetting power of their dispersions were found by standard methods. Coconut oil monoglyceride was found to possess good wetting power.

Radioisotopes in surface-active agents. Tsunetaka Sasaki (Tokyo Metropolitan Univ.). *J. Japan Oil Chemists' Soc.* **6**, 67–78 (1957). A review with 33 references.

Hydrolysis of the sodium tripolyphosphate during the atomization of detergent compounds. O. Pfrengle. *Rev. franc. corps gras* **4**, 5–16 (1957). The spray drying of alkylaryl sulfonate-tripolyphosphate ($Na_5P_3O_{10}$) mixtures was investigated to determine the effect of spray nozzle temperature, aging, working, and presence of sulfate and silicate on the decomposition of $Na_5P_3O_{10}$ to pyro- and *o*-phosphates. It was found that the decomposition can be limited but not completely eliminated.

Antiseptic soap composition. R. S. Shumard (Monsanto Chem. Co.). *U. S. 2,795,554.* Efficient antiseptic detergents consist of a detergent soap and 1–3% by weight based upon the detergent of a *beta*-aryloyl acrylic acid or a salt or an ester thereof.

Antiseptic soap composition. R. S. Shumard (Monsanto Chem. Co.). *U. S. 2,795,555.* An efficient antiseptic detergent composition consists of a detergent soap and 1–3% by weight based upon the detergent of a 2-nitro-ethylene compound such as 2-nitro styrene or 2-nitro-*p*-chlorostyrene. The antiseptic agents are readily incorporated in either solid or liquid detergent compositions. The new agents are non-volatile and remain permanently in the detergent composition. They do not affect the lathering, cleansing or physical properties of the detergent nor do they impart any unpleasant odors nor discolor the finished detergent composition.

Drying machine for the production of sheet soap. R. Vettorello (Safodik). *Brit. 752,517.* A drying machine for the continuous production of sheet soap consists of a standard supporting a reel of thin paper ribbon to be coated with soap, a soap bath, a standard for the driving and winding mechanism for the finished sheet, a tunnel type drier through which the coated sheet passes and which is heated by electric resistances, and within which, by means of blowers, air streams are caused to flow so as to ensure uniform and perfect drying of the sheet.

Detergent compositions. G. L. Busch. *Brit. 754,705.* A detergent composition having improved foam stability and dirt-removing powers consists of a water-soluble anion-active or non-ionized surface-active agent, a salt of a polycarboxylated amine and either an alkanol-amide of a fatty acid containing at least 8 carbon atoms in the molecule or a sulfonamide obtainable from an alkanolamine and an aliphatic monosulfochloride containing at least 8 carbon atoms in the molecule.

Soap-synthetic bar. Thomas Hedley & Co. *Brit. 756,502.* A detergent with reduced tendency to crack and smear consists essentially of a water-soluble form-retaining alkali metal salt of an anionic synthetic detergent of the organic sulfuric reaction type, a water-soluble form-retaining alkali metal soap, a hydrated alkaline earth metal soap, and a salting-out electrolyte. This formulation results in a water resistant layer on the bar surface which reduces water penetration on the bar.

Surface-active agents. Chimiotechnic (Union chimique du nor et du Rhone) and Jean N. Duperray. *Fr. 1,004,350.* New surface-active agents are prepared by treating hydroxyethylamides of fatty acids of the general formula $HO(CH_2)_2NHOCR$ (R = alkyl), with compounds prepared by reaction of SO_3HCl with secondary or tertiary, cyclic, acyclic, or heterocyclic amines. Thus, in an enamelled container, 116.5 kg. SO_3HCl is caused to react gradually, while cooling and stirring, with 196 kg. dry, pure methylpyridine for 5 hrs. In another container, 245 kg. hydroxyethylamine of palm oil and copra fatty acids is melted. The reaction mixture from the first step is added, and the temperature raised to 190°, until a sample of the mixture dissolves to a clear solution in H_2O. The products are useful as cleansing and preserving agents. (*C.A.* **51**, 7044)