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

• Oils and Fats

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

The monomolecular surface film method for determining small quantities of yolk or fat in egg albumen. D. H. Bergquist and F. Wells(Central Lab., Henningsen, Inc., Springfield, Mo.). *Food Tech.* 10, 48–50(1956). The method of Heinemann and Rohr for determining microquantities of fat in skim milk has been adapted for determining small quantities of yolk, or fat, in egg white. In this method fat is extracted by using a combination of ethyl and petroleum ethers; an aliquot of the fat redissolved in petroleum ether is spread as a monolayer on the surface of an acetic acid solution. The area of the spread is a measure of the quantity of yolk present. The spreading coefficient of egg fat was determined and the method was shown to give good recovery of egg fat from egg white even after holding samples for extended periods both at 35°F. and —10°F. Errors which may cause variation in results have been pointed out.

Synthesis of linolenic acid. S. S. Nigan and B. C. L. Weedon (Dept. of Chem., Imperial Col. of Sci. and Tech., London). *Chem. and Ind.* **1955**, 1555. The structure assigned to linolenic acid on the basis of degradative studies has now been confirmed by synthesis of the crystalline hexabromide. A cuprous chloride catalyzed condensation of 1-bromopent-2-yne with the Grignard reagent of 2-prop-2′-ynyloxy-tetrahydropyran gave octa-2:5-diyn-1-ol, which when converted into its bromide by phosphorous tribromide could condense with the Grignard reagent of 2-non-8′-ynyl-1:3-dioxolane to give the triyne. The triyne was hydrogenated over Lindlar catalyst to the corresponding "all-cis" triene, followed by bromination, hydrolysis, and oxidation to yield a mixture of bromoacids. Direct crystallization of this synthetic mixture of bromoacids gave a 16% overall yield of 9,12,15-hexabromostearic acid (M.p. 180–181°) from which α-linolenic acid may be obtained by debromination with zinc.

The influence of moisture on the development of oxidative rancidity in biscuits. F. J. H. Ottaway, J. E. Morton, D. W. E. Axford, and J. B. M. Coppock(Baking Ind. Res. Station, Chorleywood, Herts.). *Chem. and Ind.* **1955**, 1633–4. A shortcake type of biscuit containing 24% of lard was stored in hermetically sealed glass jars at 37° at 0.75, 2.7, 5.1, and 7.4% moisture content. A marked inhibitory effect of water on the development of rancidity in the biscuits is shown clearly. The effect of moisture in biscuits is proved to be parallel to its effect on pure fat. The development of peroxide value in cottonseed oil at 96° by bubbling air through it is reduced in the presence of 1–1.5 or 3–5% of water by volume.

Effect of heat on the component acids of some fats. S. P. Pathak and S. S. Mathur(Banaras Hindu Univ., Banaras. *Indian Soap J.* 20, 41–8(1954). The changes in the composition of hydrogenated peanut oil and butter fat during heating which simulated cooking practice were studied. In the case of hydrogenated peanut oil some of its oleic acid was converted into isoöleic acid, and the unsaturation increased. The apparent linoleic acid content increased from 11.7 to 14.0%. In butter fat there was a negligible decrease in the proportion of lower saturated acids(C_4 to C_{10})and again an increase in unsaturation. Oleic acid content increased from 14.3 to 19.5 and octadecadienoic acid from 4.1 to 5.4%. Contrary to the older belief, there was no significant loss of the lower fatty acids present in butter fat during frying. The increased proportions of low-melting unsaturated acids produced during frying will, if they have any effect at all, improve the assimilability of both fats. (*C. A.* **49**, 16464)

Urea adducts of fatty acids. V. Component fatty acids of mustard oil. T. N. Mehta, B. Y. Rao and S. M. Abhyankar(Nagpur Univ.). *J. Indian Chem. Soc., Ind. and News Ed.* **18**, 1–8 (1955). The composition of fatty acids of mustard oil as determined by the urea adducts method is as follows: saturated acids 2.92, erucic acid 46.28, oleic acid 22.28, linoleic acid 19.16 and linolenic acid 1.00%. (*C. A.* **49**, 16465)

Fractionation of oil fatty acids by urea-complexes method: separation of erucic acid. K. D. Pathak and J. S. Aggarwal(Natl. Chem. Lab. India, Poona). *J. Sci. Ind. Research(India)* **14B**, 229–31(1955). The applicability of the urea-complex fractionation technique was studied for the separation of characteristic fatty acids of some common Indian vegetable oils (mustard, peanut, coconut, castor, safflower, linseed). The purity of erucic acid attained from urea complexes of fatty acids of mustard, mustard-safflower oils was determined by chromatographic examination of fractions over a silica gel column. (*C. A.* **49**, 16468)

Chemical examination of the fixed oil of Tamarindus indica. M. S. Tawakley and R. K. Bhatnagar(Shri Ram Inst. Ind. Research, Delhi). *Indian Soap J.* **19**, 113–15(1953). The seed of the tamarind tree contains a kernel which yields 6–8% of an amber colored oil. This had the following characteristics: d_{32} 0.9189, viscosity at 32° 56.02 centipoises, f.p. 16.5°, m.p. 18.5°, n_{25} 1.471, acetyl value 25.09, iodine value 118.2, Hehner value 94.21, saponification value 190.4, and unsaponifiable 2.64%. Constituents of the fatty acids were: palmitic 6.19, stearic 2.64, arachidic 4.42, behenic 6.86, oleic 38.00, and linoleic 41.34%. (*C. A.* **49**, 16469)

Separation of liquid and solid fatty acids. Nao Yokoi and Masahide Furukawa(Kanto Electro-chemical Industries Co.). *Japan 5805('54).* Tallow fatty acid(10 kg.) at 10° is shaved into thin pieces and stirred 5 hours in 25 kg. $CHCl = CCl_2$ at —30°, the liquid portion is filtered, and the solvent removed to give 5 kg. liquid fatty acid with iodine number 88.2. The solid portion is washed with a small amount of the solvent, and the solvent removed to give 4.7 kg. solid fatty acid with iodine number 4.7. (*C. A.* **49**, 16476)

Seed kernels of Prunus communis var. insititia. D. R. Dhingra and S. B. Dhingra(H. B. Technol. Inst., Kanpur). *Indian Soap J.* **18**, 187–91(1953). The seed of *P. communis*, known locally as alubukhara, contained kernel 20, water 13.9 and oil 39.1%. The oil had the following characteristics: $d_{18.5}$ 0.912, viscosity at 60°, 96 seconds $n_{13.5}$ 1.471, acid value 1.25, saponification value 191.8, saponification equivalent 292.5, acetyl value 3.02, iodine value (Wijs) 90.73, hexabromide value 0, unsaponifiable 1.56 and saturated fatty acids 14.51%. The oil contained the following fatty acids: lauric 0.61, myristic 3.08, palmitic 0.52, stearic 4.39, arachidic 6.01, oleic 64.39 and linoleic 19.44%. The composition of the cake free from oil was: protein 37.5, crude fiber 2.4, carbohydrate 40.88 and ash 5.32%. (*C. A.* **49**, 16469)

Composition and utilization of Indian tea seed oils. S. R. Chakrabarty and M. M. Chakrabarty(Presidency Coll., Calcutta). *Indian Soap J.* 20, 16–9(1954). The characteristics of the oils of the seeds of *Thea sasanqua* from Darjeeling and Assam were respectively: n_{40} 1.4640, 1.4636; iodine value (Wijs) 88.8, 88.1; saponification equivalent 298.9, 296.4; free fatty acids(as oleic acid) 1.7, 4.1%; and unsaponifiable 1.8, 2.2%. The component fatty acids were respectively: linoleic 22.3, 22.0; oleic 59.0, 58.7; and saturated acids 18.7, 19.3%. The average composition of the saturated acids was: myristic 11.60, palmitic 86.63, stearic 1.77, and arachidic 0%. These oils are recommended as a substitute for peanut oil. (*C. A.* **49**, 16469)

Effect of metals on vegetable oils. S. M. Husaini and S. A. Saletore(Central Labs. Sci & Ind. Research, Hyderabad). *Indian Soap J.* **18**, 192–5(1953). All metals and alloys tested adversely affected the storage stability of peanut oil. The following is the order of decreasing stability: silver, stainless steel, aluminum, iron, zinc, tin, brass, copper and lead. While the first two were the least pro-oxidant and copper and lead the most, there was not any significant difference among the other metals under the conditions of the experiment. SnO and Al_2O_3 affected the stability of the oil less than the corresponding free metals, but CuO was more active than Cu in promoting decomposition. (*C. A.* **49**, 16469)

Content of squaline in olive oil. F. Mihelić and J. Momorović. *Fram. Glasnik* **11**, 191–6(1955). The content of squalene in olive oil was iodometrically determined. Fresh olive oil contains 275–718(average 456) mg. % of squalene. Other oils, such as peanut, soybean, or sunflower contain 5–28.7 mg. % of squalene. (*C. A.* **49**, 16470)

Chemical examination of Cramble abyssinica seeds, oil, and seed cake. J. Krzymański. *Roczniki Nauk Rolniczych Ser. A*, **69**, 341–8(1954). *C. abyssinica* seed without the seed coat had a higher fat content than either spring or winter rape. The organoleptic properties of *C. abyssinica* seed oil were also better. The oil differed in chemical properties but slightly from rapeseed oil. The seed cake obtained from husked seeds contained up to 50% protein and was suggested as a possible feed concentrate. The seed cake contained a small amount of mustard oils and could, therefore, be fed without any limitations. (*C. A.* **49**, 16470)

Chemical examination of the oil seeds of ber. T. N. Mehta, C. V. N. Rao and V. Laxmikantam(Laxminarayan Inst. Technol., Nagpur). *Indian Soap J.* **19**, 94–5(1953). *Zizyphus jujuba* is a small wild tree which grows throughout India, where it is known as ber, yellantha, and regu. Extraction of the seeds by petroleum ether yielded 33% oil. This had the following characteristics: d_{25} 0.9117, n_{30} 1.4631, acid value 2.42, saponification value 194.5, iodine value 87.4, hexabromide value 0, Reichert-Meissl value 0.62, Polenské value 0.88, and unsaponifiable 0.81%. The oil contained saturated fatty acids 12.96, liquid fatty acids 86.96, and total fatty acids 94.63%. The fatty acids were made up of oleic 71.68, linoleic 15.36, and solid acids 12.96%. The latter may be a mixture of arachidic and behenic acids. (*C. A.* **49**, 16470)

Investigation of oils and fats in Japan. VI. Ultraviolet absorption spectra of oils. Tomotaro Tsuchiya and Ryohei Kaneko (Govt. Chem. Ind. Research Inst., Tokyo). *Repts. Govt. Chem. Ind. Research Inst. Tokyo* **49**, 273–7(1954). The ultraviolet absorption spectra of most of 13 visceral and 10 liver oils from 17 species of fish showed the maximum at 328 mμ, indicative of presence of vitamin A. The oils of *Euthynnus pelamys, Xiphias gladius, Tetrapturus metsukurii, Scoliodon wakbeehmi, Squalus wakyae, Beryx splendens,* and *Reinhardtius matsuurae* had strong absorption at 328 mμ, indicating the presence of a large amount of vitamin A. This was weaker for oils from *Conger myriaster, Seriola quinqueradiata, Gadus macrocephalus,* and *Pagrosomus unicolor* oils. The other oils showed no maximum absorption characteristic of vitamin A, but a brilliant blue color with $SbCl_3$. (*C. A.* **49**, 16470)

Safflower-seed oil. M. Narayana Rao and M. Swaminathan(Central Food Technol. Research Inst., Mysore). *Indian Soap J.* **19**, 71–3(1953). The oil of the seeds of *Carthamus tinctorius* from Bombay State, reported here and in the literature, had the following characteristics respectively: d. 0.921, 0.918–0.924; n_0 1.760, 1.474–1.476; free fatty acids, 0.45, 0.5–4.8; saponification value 192.0, 186.0–192.0; iodine value 130.3, 130.1–150.1; SCN value 84.0, 82.2–86.2; unsaponifiable 0.90, 0.52–0.96%; and saturated acids 6.1, 5.5–7.9%. The glyceride composition of the oil and the literature values were respectively: saturated 6.4, 4.8–18.8; unsaturated 93.6, 81.2–95.2; oleic 36.5, 13.4–37.6; and linoleic 57.1, 39–79%. Safflower seed oil is not as stable as peanut oil and is easily susceptible to oxidative rancidity. (*C. A.* **49**, 16470)

Spectrophotometric determination of melamine and formaldehyde in lard. R. C. Hirt, W. R. Doughman, R. G. Schmitt and S. T. Moore(Research Div., Am. Cyanamid Co., Stamford, Conn.). *J. Agr. and Food Chem.* **3**, 1044–1046(1955). Ultraviolet and visible spectrophotometric methods for the determination of micro amounts of melamine and formaldehyde in aqueous media have been modified in order to obtain the desired detectability in fats such as lard. These methods were used in the investigation of the degree to which melamine and formaldehyde might be extracted from wet-strength paper by lard.

The isolation of n-pentadecanoic and n-heptadecanoic acids from shark (Galeorhinus australis Macleay) liver oil. Isobel M. Morice and F. B. Shorland(Fats Research Lab., Dept. of Scientific and Industrial Research Wellington, New Zealand). *Biochem. J.* **61**, 453–456(1955). From the liver oil of the New Zealand school shark(*Galeorhinus australis* Macleay) *n*-pentadecanoic and *n*-heptadecanoic acids have been isolated in amounts corresponding respectively to 0.28 and 0.17% of the total fatty acids.

Branched-chain fatty acids of ox fat. 3. The isolation of 14-methylpentadecanoic acid (isopalmitic acid) from ox perinephric fat. R. P. Hansen, F. B. Shorland, and N. June Cooke (Fats Research Lab. Dept. Scientific & Industrial Research, Wellington, New Zealand). *Biochem. J.* **61**, 547–549(1955). The 14-methylpentadecanoic acid is shown to be present in ox perinephric fat and is estimated to represent 0.1% of the weight of the total fatty acids.

The trans-unsaturated acid contents of fats of ruminants and non-ruminants. L. Hartman, F. B. Shorland, I. R. C. McDonald(Fats Research Lab., Dept. of Scientific and Industrial Research, Wellington, New Zealand). *Biochem. J.* **61**, 603–607 (1955). An examination of the depot fats of ruminants showed the presence of 3.5–11.2% of *trans*-acids. The fats of non-ruminants were found to contain not more than 0.9% of *trans*-acids, apart from those of certain marsupials, such as the wallaby and the quokka, in which the *trans*-acid contents varied from 18.1 to 21.0%. From the available evidence it appears that the *trans*-acids arise mainly from hydrogenation of dietary unsaturated acids by bacteria in the rumen, or in the rumen-like stomach of marsupials.

Branched-chain fatty acids of butterfat. 7. Investigation of C_{13} acids. F. B. Shorland, T. Gerson, and R. P. Hansen(Fats Research Lab., Dept. Scientific and Industrial Research, Wellington, New Zealand). *Biochem. J.* **61**, 702–704(1955). The following acids have been identified in butterfat: (+)-10-methyldodecanoic, 11-methyldodecanoic and *n*-tridecanoic, in amounts corresponding respectively to approximately 0.01, 0.05, and 0.03% of the total fatty acids.

Recent research on hydrolysis and esterification of fatty substances. C. Paquot. *Revue Francaise des Corps Gras* **2**, 475–487(1955). This article is a discussion of hydrolysis of fatty substances by the Twitchell procedure, by enzymatic methods, by high pressure techniques and by spontaneous hydrolysis. The mechanism of hydrolysis is discussed. Under esterification the author considers catalysts, esterification of tall oils and the mechanism of esterification.

Fractionation of the fatty acids from linseed oil by urea. M. Loury and H. Heliot. *Ibid.* **2**, 488–495(1955). This article discusses the use of urea complexes as a technique for separation of fatty acids from linseed oils. The authors report their results when they use methanol, methylisobutylketone, and water, as solvents for the urea complexes of the fatty acids.

Glycerine. R. Eeckelaers. *Ibid.* **2**, 681–690(1955). E. discusses soap making and treatment of glycerine by ion exchangers. Advantages and disadvantages of ion exchange technique as compared to the distillation method are presented.

The antioxidant properties of rosemary (Rosmarinus officinalis). M. Rac and Miss Biserka Ostric. *Ibid.* **2**, 796–803(1955). The article discusses the antioxidant effects of rosemary extracts. Six spectra are given in various fractions from rosemary in various solvents. The authors believe that further research along this line will be of considerable value.

General considerations and various techniques of estimation for determination of oil colors. M. Naudet and E. Sambuc. *Ibid.* **2**, 851–858(1955). The authors show eight spectra in this discussion of methods for measuring the color of drying oils. A table is given of the procedure for use of the Lovibond-Wesson technique.

The problem of deodorization of edible oils from intermediate and small refinery. Present progress of this technique. C. Berti. *Ibid.* **2**, 863–869(1955). The article discusses the problems of deodorization of edible fats from the viewpoint of refineries where the production is less than 40 tons per day. It is pointed out that for such refineries there are many problems which are not faced by the large refineries.

Cottonseed oil: extraction by solvents. Y. Bagot. *Oleagineux* **10**(11), 723–729(1955). The author discusses the various solvents that are or may be used for cottonseed oil extraction. **Part II. Cottonseed oil: extraction of solvents.** Y. Bagot. *Ibid.* **10**(12), 815–822(1955). This part covers the technology of extraction. Nine figures of various types of machinery and diagrams are shown.

Crystalline complexes of urea with fatty materials. IX. Application to the purification of technical monoglycerides. F. M. Vela and V. Roncero. *Grassas y Aceites.* **6**, 230–232(1955). By application of this urea complex method to the purification and fractionation of monoglycerides obtained from esterification and transesterification of various oils one can obtain fractions with a high content of monoglycerides not strongly saturated.

Applications of the ultraviolet spectrophotometric analyses technique to fatty substances. A. V. Roncero. *Grasas y Aceites* **6**, 233–239(1955). The author discusses the theory behind spectroscopy and shows how a knowledge of spectroscopy is essential to the understanding of its use in analyses of fatty acids.

Study of the protection of partially deoiled peanut meal. J. Xabregas, J. Lessiau, and Y. Bagot. *Oleagineux* **10**, 681–685 (1955). The authors discuss the problem of protecting peanut meal after it has been partially pressed to remove some of the oil. The tendency to oxidize is discussed and the need of antioxidants shown. Both the natural and synthetic antioxidants are used.

Physical and chemical characteristics of rectified "B" olive oil. M. Truddaiu. *Olearia* 9/10, 207–209(1955). The author briefly reviews the methods of preparation and describes the physical and chemical characteristics of the several samples of rectified "B" oils that he has examined. The Tortelli-Jaffe reaction, which is held to be specific for fish and other marine oils, has been found to be positive in over 100 samples of rectified "B" oils which are undoubtedly genuine. The author clearly shows the need of defining an official method of analysis.

On the utilization of the rice oil of high acidity. G. B. Martinenghi. *Olearia* 9/10, 201–206(1955). The new process falls into the following stages: the pre-refining of the crude oil by boiling with a diluted solution of sulfuric acid; the acid water is eliminated without washing with water; decoloration with earth. Esterification of the free acidity with glycerol to a residual acidity not more than 5%. Dewaxing, by diluting the esterified solution with ¼ or ⅓ of its volume of hexane; cooling to about —1°; filtering and recovering the solvent, oil, and wax; and refining the oil thus obtained. When thus prepared, the oil is quite edible and does not become turbid at 5°, and often not even at 2°.

Fatty oils of aquatic invertebrates. IV. Fatty acids and sterols in the fat of Spisula sachalinensis. Yoshiyuki Toyama and Toru Takagi(Nagoya Univ.). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 1238–41(1954). Fractional distillation of methyl esters of fatty acids, and determinations of saponification no., iodine no., and the yield of the fractions gave the following approximate composition: saturated acids C_{14} 0.8, C_{16} 12.4, C_{18} and higher 4.3%; unsaturated acids C_{16} (degree of unsaturation —H, 2.4) 15.3, C_{18} (—H, 4.0) 33.7, C_{20} (—H, 6.8), 23.1, and C_{22} (—H, 8.7) 10.4%. The sterols consisted of those with 2 and 1 ethylenic bonds, of which the latter was presumed to be β-sitosterol or clionasterol. The crude sterols contained 5.6% provitamin D ($\Delta^{5,7}$-sterol).

V. Properties of some Japanese shellfish oils with special reference to provitamin D content of the crude sterols. *Ibid.* 1241–3. Sixteen shellfishes were analyzed for ether extract, unsaponifiable matter, sterol content, and provitamin D content. Their ranges were, respectively, 0.9–9.6, 22.95–52.85, 15–36, and 0–19.3.

VI. Fatty oils of Gorgonocephalus caryi and Ophioplocus japonicus. *Ibid.* **76**, 237–40(1955). The fatty acids of *G. caryi* oil consisted of saturated acids of C_{14} 2.0, C_{16} 13.1, and C_{18} and higher 4.4%, and unsaturated acids C_{16} (—H, 2.0) 11.1, C_{18} (—H, 3.9) 29.5, C_{20} (—H, 5.8) 21.9, and C_{22} (—H, more than 7.4) 18.0%. The sterols consisted of mainly Δ^5-sterol (β-sitosterol) with some sterols with 2 double bonds. The fatty acids of *O. japonicus* oil showed low iodine no. (94.1). The sterols consisted mainly of Δ^5-sterol.

VII. Fatty oils from eleven kinds of Japanese shellfish. *Ibid.* 240–3. They were analyzed for ether extract, unsaponifiable matter, sterol content, and provitamin D content. The ranges were, respectively, 1.8–16.6, 17.24–73.46, 52–76, and 0.37–15.5%.

VIII. Fatty oils from Cucumaria chronhjelmi, Coscinasterias acutespina, and Comanthus japonica with special reference to their sterol components. *Ibid.* 243–6. The main sterol of the first 2 oils was Δ^7-sterol, while that of *C. japonica* was Δ^5-sterol. They all contained much pentaenoic acid.

IX. Properties of fatty oils from thirteen kinds of Japanese shellfish. Yoshiyuki Toyama, Tatsuo Tanaka, and Takeo Maeda. *Ibid.* 1155–9. These shellfish oils showed unsaponifiable matter 6.19–48.47%, sterol content of unsaponifiable 32.95–72.40%, and provitamin D content of sterol 0.11–7.5%. Fatty oil compositions were also studied.

Vegetable fats and oils. II. Takeji Kashimoto(Kanazawa Univ.). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 1110–15 (1954). The plant, the part from which the fat was extracted, the yield of fat, solidification point of the fatty oil, saponification no., iodine number, and unsaponifiable matter %, were, respectively, *Rhodotypos scandens*, fruit, 8.80%, —11°, 199.7, 93.67, 2.43%; *Albizzia julibrissin*, seed, 7.16%, —7°, 199.6, 95.37, 9.88%; *Robinia pseudoacacia*, seed, 8.17%, —20°, 193.7, 139.3, 2.95%; *Astragalus sinicus*, seed, 5.80%, —20°, 214.0, 120.9, 1.76%; *Wistaria floribunda*, seed, 11.50%, —15°, 206.9, 117.4, 1.58%; *Sophora japonica*, seed, 6.10%, —15°, 202.9, 129.1, 3.92%; *Allium fistulosum*, seed, 23.86%, —18°, 189.4, 134.5, 0.80%; *Tetragonia expansa*, fruit, 4.25%, 10°, 188.9, 68.2, 4.50%; *Spinacia oleracea*, fruit, 3.67%, 0°, 197.0, 115.9, 4.33%; and *Beta vulgaris* var. *cicla*, fruit, 5.52%, —10°, 204.9, 102.0, 3.90%. Palmitic, stearic, arachidic, oleic, linoleic acids were detected in all these oils; cerotic acid was detected in the fruit oil from *Spinacia oleracea*, and linolenic acid was detected from oils of *Robinia pseudoacacia* and *Astragalus sinicus*.

III. *Ibid.* **76**, 664–7(1955). Similar data were, respectively, *Datura tatura*, seed, 31.7%, —20°, 200.4, 98.11, 3.10%; *Sciadopitys verticillata*, seed, 57.67%, —20°, 186.4, 116.2, 2.46%; *Xanthoxylum piperitum*, seed, 12.44%, —16°, 208.4, 94.82, 3.84%; *Actinidia polygama*, fruit, 6.92%, —18°, 190.7, 121.4, 2.70%; and *Plantago major* var. *asiatica*, seed, 8.10%, —18°, 191.5, 139.3, 3.08%. Palmitic, oleic, and linoleic acids were detected in all these oils, stearic in all but *X. p.* oil, arachidic in *S. v.*, *A. p.*, and *P. m.* oils, montanic in *A. p.* oil, and linolenic in *X. p.*, *A. p.*, and *P. m.* oils.

The unsaponifiable matter of echinoderms. I. Δ^7-cholestenol in the fat of star fish. Taro Matsumoto and Toru Wainai(Nihon Univ., Tokyo). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 756–8(1954). The fat extracted from *Asterias amurensis*, d_4^{20} 0.9792, n_D^{20} 1.4841, acid no. 18.0, sapon. no. 130.3, iodine no. 84.3, gave in the unsaponifiable matter Δ^7-cholestenol and bachyl alcohol.

II. Properties of hitodesterol. Taro Matsumoto and Toru Wainai. *Ibid.* 1147–9. Hitodesterol isolated from the same star fish as in Part I was a $\Delta^{7,22}$-sterol of either $C_{29}H_{48}O$ (2 double bonds) or $C_{28}H_{46}O$ (2 double bonds) from color reactions, infrared absorption, partial hydrogenation, isomerization, and esterification of hydrogenated product. Previous results as $C_{28}H_{42}O$ or $C_{29}H_{44}O$ (Matsumoto, Toyama, *ibid.* **64**, 1069, 1203 [1943]) should be corrected.

The steroids of fresh-water green algae, "Elodea densa planchon." Taro Matsumoto and Choichiro Hirai. *Ibid.* **76**, 830–2 (1955). From the unsaponifiable matter of this alga stigmasterol and β-sitosterol were isolated as the bromide of their acetate.

The sterol of tea leaves. Taro Matsumoto, Toru Wainai, and Yoshinobu Miyake. *Ibid.* 1057–9. The sterol of tea leaves was confirmed to be α-spinasterol from the properties of several derivatives and the result of ozonolysis.

Separation of a new $\Delta^{5,7}$-sterol from the fat of Cristaria spatiosa. Taro Matsumoto and Toshitake Tamura. *Ibid.* 1413–16. This newly isolated sterol was proved to be identical with 7-dehydrostigmasterol synthesized by O. Linsert (*Z. physiol. Chem.* **241**, 125 [1936]). The isolation from biological material is new.

Copper and iron contents of soybean and rape oils. Yoshiyuki Toyama, Takeo Maeda, and Miki Hayashi(Nagoya Univ.). *J. Japan Oil Chemists' Soc.* **4**, 255–6(1955). Cu and Fe were determined by acid extraction and photometry. Soybean oils contained 0.35–0.6 p.p.m. Cu and 8.3–19.6 p.p.m. Fe, while rape oils contained 0.8–1.25 p.p.m. Cu and 11.0–20.1 p.p.m. Fe. Purification processes had no effect on Cu or Fe content.

Six hitherto unknown Japanese vegetable oils. Yoshiyuki Toyama and Hideko Takai(Nagoya Univ.). *J. Japan Oil Chemists' Soc.* **4**, 321–4(1955). The plant, oil content (%) of seeds, d_4^{20}, n_D^{20}, acid no., sapon. no., idoine no., unsaponifiable matter (%), and the presence of linoleic and linolenic acids were, respectively, *Clerodendron tricotomum*, 24.5, 0.9103, 1.4663, 60.8, 195.0, 90.5, 1.03, yes, no; *Euonymus japonica*, 37.6, 0.9534, 1.4707, 1.6, 264.5, 85.4, 2.27, yes, yes (little); *Mallotus japonicus*, 34.7, 0.9275, 1.4862, 33.8, 199.0, 110.0, 0.63, yes, no; *Hamamelis japonica*, 10.4, —, 1.4782, 8.4, 190.4, 161.8, 1.45, yes, yes; *Pittosporum tobira*, very little, 0.9272, 1.4807, 5.3, 171.5, 87.4, 15.20, —, —; and *Phytolacca americana*, 10.8, 0.9228, 1.4737, 4.6, 189.6, 110.3, 2.48, yes, no. The oil from *E. japonica* contained volatile fatty acids as well as nonvolatile water-soluble acids; and α- and β-kamlolenic acids were separated from the oil of *M. japonica*.

Safflower oil. Enjitsu Takeda and Yoshiyuki Toyama(Nagoya Univ.). *J. Japan Oil Chemists' Soc.* **4**, 331–4(1955). A review with 30 references.

Kamala oil. Enjitsu Takeda and Yoshiyuki Toyama(Nagoya Univ.). *J. Japan Oil Chemists' Soc.* **4**, 329–31(1955). A review with 20 references.

Coöperative studies on the measurement of colors of fatty oils. Committee reports. *J. Japan Oil Chemists' Soc.* **4**, 285–91 (1955). The colors of soybean, rape, and whale oils were measured by the Lovibond colorimeter by 8 different institutes with statistical considerations. The experimental errors were large. Transmittancy curves are given for red, yellow, and blue color glasses for the Lovibond colorimeter. Data are presented for F.A.C. color number and standard tallow.

The methods of examination of fats and fat products. Committee reports. Tomotaro Tsuchiya, *et al.* *J. Japan Oil Chemists' Soc.* **4**, 273–84(1955). The methods described include physical tests for color, specific gravity, refractive index, viscosity, smoke point, flash point, fire point, and solidification point.

Biochemical studies on Corbicula sandai. II. Fatty acids and sterol. Taro Hori(Shiga Univ., Ootsu). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 1144–6(1954). Acetone-soluble oil of this shellfish (sapon. no. 170.3, unsaponifiable matter 21.1%, saturated fatty acids 29.1%, N 0.09%, P 0.17%) contained fatty acids in the following approximate ratio: C_{12} 1, C_{14} 6, C_{16} 34 (mainly zoomaric), C_{18} 35 (palmitic, oleic, and more unsaturated), C_{20} 20 (highly unsaturated), and C_{22} 3% (highly unsaturated). The sterol was corbisterol.

III. Glycolipide. Taro Hori and Tadashi Sugimoto(Shiga Univ., Ootsu). *Ibid.* **76**, 987–90(1955). Acetone-insoluble lipide of this shellfish gave white solid, which gave upon hydrolysis fatty acids (mainly palmitic), N-containing compound (sphingosine-like substance), and xylose (14.6% as reducing sugar). This might be a glycolipide.

Polarography of the saturated and nonconjugated unsaturated fatty acids. Senjiro Maruta and Fumio Iwama(Yamanashi Univ., Kôfu). *J. Chem. Soc. Japan, Pure Chem. Sect.* **76**, 548–51(1955). Polarographic analyses were made on saturated fatty acids, oleic acid, and epoxystearic acid, and their methyl esters. Saturated fatty acids and nonconjugated unsaturated acids gave polarographic waves, but methyl esters and fatty alcohols gave no waves, when dropping mercury electrode was used. Under certain conditions the fatty acids gave the same half-wave potential and the wave height was proportional to the concentration of fatty acid.

Liver oil of Laemonema morosum. II. Docosenol. Saburo Komori and Toshio Agawa(Osaka Univ.). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 1051–4(1954). This cod liver oil contained as much as 34.9% unsaponifiable matter, about half of which was 11-docosen-1-ol, a new alcohol.

Occurrence of trilaurin in the seed oil of Tetradenia glauca and Lindera citriodora. Tomataro Tsuchiya and Akio Tanaka (Govt. Chem. Ind. Research Inst., Tokyo). *J. Chem. Soc. Japan, Pure Chem. Sect.* **75**, 1091–3(1954). From the 2 seed oils crystalline trilaurin, m.p. 44–5°, was isolated.

A detergent test for the milk fat content of dairy products. I. Milk, cream, and ice cream. O. S. Sager, G. P. Sanders, G. H. Norman, and M. B. Middleton(Dairy Products Section, Eastern Utilization Res. Branch, Agr. Res. Service, U. S. Dept. Agr., Washington 25, D. C.). *J. Assoc. Official Agr. Chemists* **38**, 931–40(1955). In order to improve accuracy and usefulness, several changes in the original BDI detergent test for butterfat were made. These include, addition of 2% of sodium bicarbonate to the detergent-tetraphosphate reagent, and changes in the heating and ''tempering'' cycles. When silicone-treated bottles were used, results with the modified detergent test on cream averaged the same as the Babcock test results, and on ice cream averaged about 0.25% higher than Roese-Gottlieb results.

Preparation of fatty peroxides. R. O. Carter, Jr.(The Procter & Gamble Co.). *U. S. 2,727,857.* Liquid, unsaturated fatty material at temperatures below 100°C. is reacted with oxygen and chlorophyll under visible light (600 to 660 mμ and free from ultraviolet). The mixture must be free of copper and other deperoxidation catalysts. The product contains at least one mole of peroxidic oxygen per kg.

Textile lubricants. M. Duke, F. Fortess and C. Hohing, Jr. (Celenese Corp. of Amer.). *U. S. 2,727,860.* The lubricant is a mixture of: (as per cent by wt.) mineral oil, 30–65; alkylphenol, 2–5; formyl, acetyl, propionyl and butyryl esters of castor oil or butyl acetyl ricinoleate, 2–6; oxidized peanut oil, sulfonated olive oil, sulfated higher fatty alcohols, oxidized olive oil or oxidized teaseed oil, 5–25; higher fatty acids, 2–10; amine, 3–20; and alkylphosphate, 4–20.

Process for producing tall oil alcohol. A. N. Hoffmann and J. B. Montgomery(Hercules Powder Co.). *U. S. 2,727,885.* Highly saturated tall oil alcohols are prepared by high pressure catalytic hydrogenolysis of tall oil acids and esters of the acids with a lower aliphatic alcohol. Prior to the hydrogenolysis, the tall oil is hydrogenated at over 120° and in the presence of an active hydrogenation catalyst. After the tall oil is at least 10% saturated, the spent catalyst is removed.

Method of obtaining concentrated monoglycerides. N. H. Kuhrt and Eileen A. Welch(Eastman Kodak Co.). *U. S. 2,727,913.* Monoglycerides in admixture with other fatty material, including diglycerides, are extracted with methanol containing not over 10% water. The extract is then further extracted with methanol containing 30–60% water. The product is predominantly monoglycerides.

Rice bran oil extraction process. E. A. Gastrock, H. L. E. Vix, E. L. D'Aquin, A. V. Graci, Jr., and J. J. Spadaro(U. S. A., Secy. Agr.). *U. S. 2,727,914.* Rice bran is cooked so that moisture falls from an initial level of 14–26% to a final level of 6–18%. The over-all cooking time is 15–70 min. during which the temperature is gradually increased from an initial level of 170–210°F. to about 235°F. The bran is then crisped by cooling under such conditions that the temperature falls below 130°F. and the moisture content drops to 2–4%. Oil is removed from the finished bran by batchwise solvent extraction.

Method for making stable saturated fatty acids. R. L. Logan (Kessler Chem. Co., Inc.). *U. S. 2,727,916.* Under an inert atmosphere, small portions of unsubstituted aliphatic saturated C_{9-22} fatty acids are added to caustic maintained in a molten state at temperatures below 475°. The finished fatty acids have improved stability.

Method for manufacturing shortening. D. H. Griffin, R. N. Fiss, and L. Kiers(Hunter Packing Co.). *U. S. 2,728,674.* A method for converting lard to a high-ratio shortening is described. Molten lard is continuously introduced into a closed system where it is thoroughly mixed with air, cooled to a free flowing paste and then blended with a hot aqueous colloidal dispersion of animal phosphatides. Mixing is continued until a smoothly emulsified shortening is obtained.

Method for manufacturing shortening. D. H. Griffin, R. N. Fiss, and L. Kiers(Hunter Packing Co.). *U. S. 2,728,675.* A method for converting lard to a high-ratio shortening is described. Molten lard is continuously introduced into a closed system where it is thoroughly mixed with a gas, cooled to a free flowing paste, and then blended with a solution of animal phosphatides in oil. Mixing is continued until a smoothly emulsified shortening is obtained.

Fat composition for intravenous injection. G. Barsky(E. F. Drew & Co., Inc.). *U. S. 2,728,706.* Fat used in the preparation of these aqueous emulsions for intravenous injections consists of neutral glycerides of coconut type C_{12-18} fatty acids which have not been hydrogenated. The preferred glycerides contain primarily lauric and myristic acids and are free from water-soluble acids.

Solvent fractionation of stearin-containing oils. H. J. Passino (The M. W. Kellogg Co.). *U. S. 2,728,707.* Oil is contacted with a low boiling solvent (having a critical temperature below 450°F.) at temperatures at which the solubility of the oil in the solvent decreases with a rising temperature in the extraction zone. The overhead fraction, containing stearin and other relatively high melting substances, is withdrawn and cooled so that the stearins, etc., crystallize out.

Stabilization of oxidizable materials. A. Bell, C. E. Tholstrup, and G. R. Lappin(Eastman Kodak Co.). *U. S. 2,728,784.* Fatty materials are stabilized by the addition of 3,4-dihydroxyphenylpropenones.

Process for the preparation of butter from high concentrated cream. B. deGoede(De Nederlandse Centrale Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek). *U. S. 2,729,563.* Conversion of high-fat cream to butter without churning is achieved by mixing the cream with some butter at 17–33°.

Production of sterols. S. E. Miller and C. M. Berry(General Mills, Inc.). *U. S. 2,729,655.* Fatty materials, such as fatty acid distillation residues and deodorizer sludges, are saponified. The mixture is acidified and then esterified with a lower alcohol. Sterols are recovered from the esterification mixture.

Isolation of sterols. C. M. Berry and S. E. Miller(General Mills, Inc.). *U. S. 2,729,656.* The fatty material is saponified with anhydrous alcoholic alkali. Alkali metal soaps and sterols are crystallized out. The separated precipitate is extracted with acetone or ethylene dichloride. The sterol-containing extract is separated from the soap which has been kept anhydrous throughout the separation and extraction stages.

Lard oil and oleo oil. W. C. Ault and S. G. Morris(U. S. A., Secy. Agr.). *U. S. 2,729,659.* In the preparation of low titer glyceride fractions from animal fats and oils, the fat is hydrogenated at 300–350° until polyunsaturated components have been reduced to saturated or monoethenoid compounds but the monoethenoid components originally present in the fat have not been affected. The high titer glycerides are removed by crystallization. The remaining low titer glycerides remain liquid and have improved resistance to rancidity and reversion.

Meal recycling solvent extraction process. J. Pominski and H. L. E. Vix(U. S. A., Secy. Agr.). *U. S. 2,729,661.* Oil-bearing flakes are mixed with 14–45% by wt. of desolventized, dried oil-free meal. The mixture is then solvent extracted. The residual meal having a moisture content of 8–20% is desolventized by heating at 145–230°F. until it is free of solvent and the moisture content is reduced to 5.0–12.0%.

Method for continuous refining of fatty oils. I. A. Afzelius (Aktiebolaget Separator). *U. S. 2,729,662.* During a continuous process for refining oil, the alkali treatment is effected in two stages. Soap is removed at each stage. During the second alkali treatment, steam is blown through the oil.

Vitamin concentration by destearinizing between successive extractions with a paracritical solvent. H. J. Passino (The M. W. Kellogg Co.). *U. S. 2,730,484.* A process is described for the preparation of a high potency vitamin concentrate from a low potency marine oil containing stearins. The oil is extracted countercurrently with a solvent (critical temperature less than 450°F.) at temperatures near the critical temperature of the solvent-oil mixture at which miscibility decreases with rising temperature. At least 3% and not more than 10% of the oil is removed in the primary extraction phase which is then concentrated under reduced pressure until the solvent-oil ratio is less than 5:1. The solution is chilled to —40 to 10°F. and the precipitated stearins are removed. The destearinated extract phase is reextracted at temperatures at least 2°F. higher than those during the first extraction. The resulting extract contains the desired vitamins.

Recovery of ergosterol. R. J. Feeney (Chas. Pfizer & Co., Inc.). *U. S. 2,730,536.* Fungus fermentation mycelia were extracted with a partially water-soluble lower aliphatic alcohol at elevated temperatures. The extract is concentrated in the presence of sufficient water to form distinct organic and aqueous phases. The mixture is heated with caustic until sterol esters have been saponified. The organic phase is separated, dehydrated, and filtered. The dry filtrate is saturated with water which causes the ergosterol to crystallize from solution.

Sperm oil fractionation. R. I. Brabets, R. J. Hlavacek, and E. Fritz (Swift and Co.). *U. S. 2,730,538.* Crude sperm oil, tout oil or hydrogenated tout oil is subjected to a countercurrent extraction with a liquefied hydrocarbon at 205–215°F. and pressure of 600–700 p.s.i. The overhead fraction contains the wax esters.

Method of manufacturing pie dough. E. A. Busch. *U. S. 2,731,350.* Flour, salt, and sugar are creamed with a high ratio shortening. Water is added and the mixture is blended to the consistency of soft putty.

Stabilizer for unsaturated compounds. N. H. Kuhrt (Eastman Kodak Co.). *U. S. 2,732,386.* Unsaturated glycerides, free fatty acids or partial esters of polyhydric alcohols are stabilized by the addition of a hydrohalide of ethylenediaminetetraacetic acid.

Method of making monoglycerides. G. Y. Brokaw and M. I. Van Graafeiland (Eastman Kodak Co.). *U. S. 2,732,387.* Monoglycerides are prepared by the reaction of fatty material with an excess of a polyhydric alcohol in dioxane containing a basic metal soap catalyst at temperatures over 170°C. and under sufficient pressure to maintain the dioxane liquid.

Treatment of fatty oils. F. S. Sadler (The Sharples Corp.). *U. S. 2,732,388.* Gum is removed from crude fatty oil by treatment with at least 0.01% by wt. of sodium hydrosulfite.

White, pure glycerol. R. Eeckelaers. *Belg. 505,125.* A solution of glycerol is purified by treatment with ion exchangers. If the solution is alkaline, it is led first through a cation-exchanging resin which is resistant to a pH above 8 and thereafter through an anion exchanger. For an acid solution the sequence of the treatments is reversed. The ion exchange can be accelerated by applying an electric or electromagnetic field to the column. (*C. A.* **49**, 15950)

White, pure glycerol. R. Eeckelaers. *Belg. 524,300.* By treating the solution at least twice with exchangers of the same kind (anion or cation exchangers) before alternative treatment or treatment on a mixed-bed exchanger and concentration, glycerol is obtained with a purity of more than 98%. (*C. A.* **49**, 15951)

Refining of highly acidic oils. Hiroo Hori (Hokuriku Fats and Oils Co.). *Japan 5532('54).* Wax-free rice oil (20 kg.) with acid number 92 in 52.2 liters of 65% ethyl alcohol containing 2.6 g. sodium hydroxide per 100 ml. is allowed to stand for 2 hours at room temperature, and the oily layer is washed with 5 liters of 65% ethyl alcohol and dried to obtain 10.2 kg. neutral glyceride oil. The alcohol layer and alcoholic washing are combined, neutralized, and the alcohol is distilled off to obtain 9.2 kg. fat acid with acid number 187. (*C. A.* **49**, 16476)

FATTY ACID DERIVATIVES

Rust inhibitors. III. Rust-preventive properties of monoesters and monoamides of dibasic acids. Seimi Sato (Technol. Sta. Aichi Pref., Nagoya). *J. Japan Oil Chemists' Soc.* **4**, 184–8 (1955). The monoesters of stearyl alcohol with phthalic, maleic, and succinic acids, the monoamide of maleic acid with fatty acid amine mixture (consisting of 65% stearyl and 35% palmityl amines), and maleic anhydride adduct of butyl oleate were examined as the rust inhibitor for soft steel, aluminum, zinc, bronze, and gun metal. They were more or less effective.

Plasticizers from fatty oils. IV. Polymeric plasticizers. Giichi Akazome (Nihon Yushi Co., Osaka). *J. Japan Oil Chemists' Soc.* **4**, 250–4 (1955). The polyesters of the general formula $LCO(OGOCORCO)_n$-OGOCOL were synthesized, where LCOOH is lauric acid, HOGOH is glycols (1,2-propylene glycol, 1,3-butylene glycole, 1,4-butylene glycol, or triethylene glycol), and HOOCRCOOH is dicarboxylic acids (maleic, adipic, azelaic acid or phthalic anhydride). The mean mol. wt. was about 2000. The synthesized polyesters were examined as plasticizers for polyvinyl chloride. Maleic acid was not suitable as dicarboxylic acid. The polyester from adipic acid and 1,4-butanediol had too high m.p. 1,3-Butanediol gave with adipic or azelaic acid the products with lower mol. wt., presumably owing to the low activity of secondary alcohol. Phthalic anhydride was not suitable, as it gave inferior plasticizers. Azelaic or adipic acid were suitable as the raw materials, especially owing to high oil resistance.

Dehydration of methyl ricinoleate at vapor phase. Senjiro Maruta and Fumio Iwama (Yamanashi Univ., Kôfu). *J. Chem. Soc. Japan, Pure Chem. Sect.* **76**, 480–2 (1955). It was suitable to dehydrate at 380° with acid clay as the catalyst. About 80% of methyl ricinoleate was converted to methyl octadecadienoate, of which about 47% was of conjugated double bond. Aluminum sulfate, alumina, boric acid, magnesia, and silica gel could be used as the catalyst.

On hydroxylation of fatty acids and their derivatives. M. Naudet. *Revue Francaise des Corps Gras* **2**, 781–790 (1955). The author discusses the field of hydroxylation of fatty acids and fatty acid derivatives.

Preparation of aliphatic alcohols from vegetable oils by reduction with metallic sodium. Olava Romanus (Inst. biol. e pesquisas technol., Curitiba, Parana, Brazil). *Arquiv. biol. e tecnol., Inst. biol. e pesquisas tecnol.* **8**, 313–47 (1953). Babassu oil was reduced with sodium using xylene and butyl alcohol as solvent. About 35 g. of higher alcohols were obtained from 150 g. of the oil. Ucuhuba fat of an acid value of 17.16, when treated similarly, gave a yield of 33 g. of higher alcohols, b. p_{10} 145–81°. (*C. A.* **49**, 15273)

Fatty acid symposium. Opening remarks. D. H. Terry (Bon Ami Co., New York City). *Proc. Chem. Specialties Mfrs. Assoc.* **May 1955**, 131. **Basic chemistry of fatty acids.** H. C. Black (Swift and Co., Chicago). *Ibid.* 131–3. A discussion. **The relationship of use of fatty acids to their properties and to analytical methods.** W. S. Baldwin and Harold Wittcoff (General Mills, Inc., Minneapolis, Minn.). *Ibid.* 133–8. A discussion of the properties of fatty acids used in a few important applications and the analytical methods used to determine these properties. **Nitrogen containing derivatives of the fatty acids.** M. R. McCorkle and P. L. Du Brow (Armour and Co., Chicago). *Ibid.* 138–41. A discussion of the preparation and application of the organic soaps, amides, nitriles, amines, and quaternary ammonium compounds. **Storage and handling of fatty acids.** Geo. Zinzalian (E. F. Drew and Co., Inc., New York City). *Ibid.* 141–2. **Applications for fatty acids.** R. D. Aylesworth, R. H. Dhonau and L. A. Stegemeyer (Emery Industries, Inc., Cincinnati, O.). *Ibid.* 142–6. Major fatty acid products used for metallic soaps and applications of these soaps are discussed. **Fats and oils in the automotive chemical and industrial chemical maintenance field.** W. J. Shibe, Jr. (R. M. Hollingshead Corp., Camden, N. J.). *Ibid.* 146–7. A discussion. **Panel discussion.** *Ibid.* 147. (*C. A.* **49**, 16465)

Dimerization of linoleic acid and condensation of the dimers with difunctional compounds. B. de Surville. *J. recherches centre natl. recherche sci., Lab. Bellevue (Paris)* **30**, 169–93 (1955). Optimum conditions for the dimerization of a fatty acid mixture containing linoleic 72.5 and oleic acid 27.5% were: reaction temperature, 360°; time, 7 hours; and weight ratio of acid to water, 4:1. The dimeric product (acid number 181, saponification number 200, and molecular weight 550 ± 50) was separated by molecular distillation. Condensations of the dimeric product with $HO(CH_2)_nOH$, where $n = 2$, 4, 6, or 10 yielded polyesters which were useful as plasticizers. (*C. A.* **49**, 16466)

Isothiocyanates. XIII. Methyl isothiocyanate, a new naturally occurring mustard oil, present as glucoside (glucopapparin) in Capparidaceae. A. Kjaer, R. Gmelin, and I. Larsen (Univ. Copenhagen). *Acta Chem. Scand.* 9, 857–8(1955). All species of *Capparidaceae* investigated are considered to contain methyl isothiocyanate in the form of a glucoside, glucocapparin. Treatment of seeds containing glucocapparin with myrosinase gives a steam-distillable oil which after standing with aqueous ammonia and evaporation to dryness in vacuo gives N-methylthiourea. (*C. A.* 49, 16468)

Preparation of 10-undecenoic acid by the pyrolysis of castor oil. H. T. Li(Natl. Defense Med. Center, Taiwan). *J. Taiwan Pharm. Assoc.* 6, 21–3(1954). The pyrolysis was carried out with or without catalyst, such as rosin, mastic, sandarac, polyvinyl chloride, platinum, or zinc powder. The presence of polyvinyl chloride increased the yield and that of zinc decreased the yield. (*C. A.* 49, 16470)

Therapeutic compositions comprising water-soluble chlorophyll and salts of fatty acids. S. M. Peck(Rystan Co.). *U. S. 2,729,-586.* The compositions consist of water soluble chlorophyll and the sodium, potassium and/or ammonium salts of C_{3-11} fatty acids.

Preparation of fatty acyl derivatives of amino acids. I. J. Krems (Colgate-Palmolive Co.). *U. S. 2,729,657.* In the preparation of a higher fatty acid amide of a lower aliphatic amino-monocarboxylic acid, the fatty acid halide is reacted with a salt of the amino acid at pH 9–12.5 in the presence of a hydrogen halide acceptor. After the reaction mixture has been acidified to pH 2–4.5, the amide is removed.

Phosphite esters as esterification catalysts. S. A. Harrison(General Mills, Inc.). *U. S. 2,729,660.* Higher fatty acids and rosin acids are esterified by heating with an aliphatic alcohol in the presence of an aliphatic or aromatic phosphite ester.

Copolymer of fatty acid and rosin acid. K. E. McCaleb(General Mills, Inc.). *U. S. 2,730,520.* Rosin esters and unsaturated fatty acids are copolymerized by heating at 75–100° in the presence of a phosphoric acid-boron trifluoride catalyst.

Dimeric fatty acids. S. A. Harrison and K. E. McCaleb(General Mills, Inc.). *U. S. 2,731,481.* Higher monoethenoid fatty acids and their lower aliphatic alcohol esters are dimerized at temperatures over 100° in the presence of an organic peroxide having the formula ROOR′ in which *R* is *tert*-alkyl and *R′* is *tert*-alkyl or *tert*-alkylperoxyalkyl group.

Fatty acid anhydrides. J. L. Ohlson and C. W. Hoerr(Swift and Co.). *U. S. 2,730,530.* In a process for the preparation of fatty acid anhydrides, fatty acids having at least 3 carbon atoms, dicarboxylic acids and their methyl or ethyl esters are contacted with activated alumina at 150–300° under sufficient pressure to maintain the reactants in the liquid phase.

Anti-halation layers containing fatty acid amides. S. Richman and R. P. Easton(General Aniline & Film Corp.). *U. S. 2,732,-305.* An anti-halation backing layer for photographic film is prepared from an alkali-soluble resin solution containing a C_{8-18} fatty acid amide.

Modified esters of polyglycerol or glycerol, with polymerized and (or) oxidized fatty acids. Aktieselskabet Grindstedvaerket. *Brit. 731,934.* Glycerol is etherified by heating at 245–60° in the presence of caustic soda until an average composition corresponding to penta-octaglycerol is formed. Lactic acid(10% of glycerol) is added under esterification conditions, and the product(10 parts) is further esterified by adding 100 parts polymerized triglyceride or polymerized fatty acid. The products are useful for the production of water-in-oil emulsions for bakery purposes. (*C. A.* 49, 16478)

• Biology and Nutrition

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

Lipide constituents of human male reproductive cells as determined by Sudan black B. R. L. Brown(3956 Oakwood Place, Riverside, Calif.). *J. Urol.* 67, 557–64(1952). Sudan black B-stained slides indicate that most of the kinetically important cellular structures of the spermatogenesis series of cells contain lipides. The lipides of these functionally important structures are believed to enter chemically and physiologically into their vital processes. (*C. A.* 49, 16116)

Interrelation of the plasma and lymph lipide fractions before and during fat absorption. B. Morris(Univ. Adelaide). *Australian J. Exptl. Biol. Med. Sci.* 32, 763–82(1954). Plasma lipide concentration in the cat was higher than in thoracic duct lymph, which in turn was higher than cervical duct lymph. The concentration gradient between the plasma and lymph lipide was similar to plasma and lymph globulins. Fatty acid concentration in thoracic duct lymph and plasma was correlated with the amount of phospholipide present, and to a lesser degree, with the concentration of cholesterol. It was proposed that an active metabolic relation exists between fat absorption and phospholipide synthesis, and increased cholesterol output by thoracic lymph is a passive association following absorption of fat. (*C. A.* 49, 16132)

An evaluation of serum lipide investigations. G. Schulze(Med. Univ., Göttingen, Ger.). *Rec. trav. chim.* 74, 679–81(1955). Statistical methods were applied to a study of the quantitative relations that exist between phosphatides, cholesterol ester, and the neutral fats of blood serum. It was concluded that single determinations were of little value in diagnosis, but that enduring displacements in the relations indicate disturbances. (*C. A.* 49, 16031)

Chemistry and biology of lipides. XX. Interconversion in vitro of blood groups A and B. H. Masamune and J. Akama(Tohoku Univ., Sendai). *Tohoku J. Exptl. Med.* 62, 81–91(1955). On standing in contact with moisture, specimens of group B lipide of pig lung became group A active with a decrease in Group B activity, the conversion being most marked at pH 7.0 and 40°. On further standing, both group activities diminished gradually, but at 0°, the B potency recovered to its original strength with simultaneous disappearance of A potency. Moreover, the A and B potencies after standing at pH 7.0 and 40° could be nullified separately by addition of normal α- and β-agglutinins, respectively. (*C. A.* 49, 16123)

The determination of the higher saturated fatty acids in blood serum. N. A. Pikaar(Univ. Hosp., Utrecht, Neth.). *Rec. trav. chim.* 74, 627–32(1955). The saturated fatty acids of serum are extracted and concentrated for chromatography. The unsaturated fatty acids are removed by oxidation with alkaline potassium permanganate since they interfere with the analysis of saturated fatty acids. A reversed-phase partition chromatography is used in which the immobile phase is formed by finely divided rubber swollen with neutral peanut oil, and the mobile phase is formed by acetone-water dilutions. Each dilution elutes a different fatty acid. The estimated error is about 5% for 1 mg., more for smaller amounts. (*C. A.* 49, 16031)

Effect of diet on the blood pressure and heart rate of normal dogs. Animal fat. C. M. Wilhelmj, D. E. Gunderson, Darinka Shuput, and H. H. McCarthy(Creighton Univ., Omaha, Neb.). *Am. J. Digestive Disease* 22, 219–27(1955). Dogs were subjected to repeated prolonged fasts and realimentation with diets containing 50% or more of the calorie from beef suet or butter. The blood pressure during the high fat diet was not predictable; usually it was normal or low, less often higher than normal. After several fat episodes, the blood pressure was abnormally high on a balanced high calorie diet. A very pronounced and persistent eosinopenia developed. (*C. A.* 49, 16102)

The fatty acid cycle. F. Lynen(Univ. Munich, Ger.). *Angew. Chem.* 67, 463–70(1955). A treatise covering activated acetic acid, enzymes of the cycle, fatty acid activation, synthesis of fats, reactions of acetyl coenzyme A, and adenosinetriphosphate requirements of fat oxidation. (*C. A.* 49, 16103)

The chemical estimation of vitamin E activity in cereal products. III. The application of partition chromatography to the isolation of ε-tocopherol from bran and to the determination of individual tocopherols of cereals. P. W. Russell Eggitt and F. W. Norris(Dept. Applied Biochem., The Univ., Birmingham). *J. Sci. Food Agr.* 6, 689–96(1955). A reversed-phase partition chromatographic procedure is described for the quantitative analysis of individual tocopherols in cereal products. The stationary phase consists of liquid paraffin supported on kieselguhr made hydrophobic with dimethyl-dichlorosilane. The mobile phase is aqueous ethanol. When 75% ethanol was used, R_f values for the tocopherols were: α-, 0.056; β- and γ- 0.19; and δ- and ε-, 0.36. Results are compared with those previously obtained by paper chromatography. By the present method, concentrations of tocopherols (as mg./100 g. of meal) were: wheat germ, α- 18.2, β-(and δ-) 8.7, and ε- 0.45; fine wheatfeed (middlings), α- 2.5, β-(and δ-) 2.1, and ε- 3.3; and coarse bran, α- 7, β-(and δ-) 1.3, and ε- 4.2. Using the same procedure, ε- tocopherol was isolated from bran in quantities sufficient for study of its chemical and physical properties. Absorption maxima (in hexane) were at 300 and 410 mμ; minimum at 360 mμ; and $E_{1\text{cm.}}^{1\%}$ at 410 mμ was 43.6. It forms a yellow nitroso-compound.

Carotenoids. Sylvia Frank (Washington Square College, N. Y. Univ.). *Sci. American* **194**(1), 80–2, 84, 86 (1956). The biochemical roles of carotenoids are reviewed briefly. Particular emphasis is put on data supporting the hypothesis that carotenoids are involved in the synthesis of chlorophyll.

The demucilagination of fatty materials. P. Merat. *Revue Francaise des Corps Gras* 2, 615–627 (1955). This discussion of mucilages (lecithins) in fatty materials gives the chemical nature of lecithins together with a study of the various methods of removing the lecithins from the fatty materials. Both chemical and physical methods are given with suggestions of advantages and disadvantages in the phospholipid removals. The article points out the economic factors to be considered in the use of various methods of removal and also the machinery that may be used. A discussion of the possible use of the lecithins for animal feeds briefly points out the success of such use in the United States.

Comparative value of linseed cake defatted by pressure and "reconstituted" linseed cake. E. Letard and P. Szumowski. *Ibid.* 2, 628–634 (1955). This article reports new experimental data on the comparative values of the two linseed cakes for food. The experimental animals used were cows. The results obtained showed that both kinds of linseed cake were equal in the per cent of butterfat produced by the milk. The "reconstituted" cake had a good appearance, an agreeable aroma, and a satisfactory taste which insured its being consumed by the cows.

The muscle and integument lipids in female Ascaris lumbricoides. D. Fairbairn (McGill Univ., Macdonald College, Quebec). *Can. J. Biochem. & Physiol.* 34, 39–45 (1956). Total lipids of the body wall (muscle plus integument) consisted of phospholipids (38%), unsaponifiables (8.1%) and fatty acids from triglycerides (47%). The phospholipid fraction contained major amounts of phosphoacetals, lecithins, and phosphatidylethanolamine. Sphingolipids and phosphatidylserine were probably present in smaller amounts. Much of the unsaponifiable matter was similar to, but not identical with, the ascaryl alcohol of the reproductive tissues, although sterols were also present. The triglycerides contained an approximately equimolar mixture of volatile and non-volatile acids. Phospholipidacids, on the other hand, were entirely non-volatile. The integument lipid fractions were similar in amount and kind to those of the muscle.

Effects of X-irradiation on lipide metabolism. I. Plasma phospholipide levels in several species. C. Entenman, R. A. Neve, H. Supplee and C. A. Olmsted (Biochem. Branch, U. S. Naval Radiological Defense Lab., San Francisco, Calif.). *Arch. Biochem. Biophys.* 59, 97–105 (1955). Plasma phospholipide phosphorus (PLP) concentrations were determined in rats, dogs, mice, rabbits, and guinea pigs following whole-body X-irradiation. Increased concentrations of plasma PLP were observed in all species studied. However, the magnitude and time of onset of the change differed in the different species. In the dog, where the PLP concentrations were determined at frequent intervals both before and after irradiation, the levels were found to increase sharply several days prior to death.

Inhibition of lipid synthesis by alpha-phenyl-n-butyrate and related compounds. D. Steinberg and D. S. Fredrickson (National Heart Institute, National Institutes of Health, Bethesda, Md.). *Proc. Soc. Expl. Biol. Med.* 90, 232–236 (1955). Alpha-phenyl-*n*-butyrate at 1×10^{-3} *M* has been shown to decrease rate of incorporation of acetate-1-C^{14} into cholesterol and into fatty acids by rat liver slices. Incorporation of acetate into acetoacetate is inhibited about the same extent, while oxidation to CO_2 is generally less strongly inhibited.

Fatty liver induced by orotic acid feeding. Susan B. Standerfer and P. Handler (Duke Univ. School of Medicine, Durham, N. C.). *Proc. Soc. Expl. Biol. Med.* 90, 270–271 (1955). Inclusion of orotic acid in the diet of young rats resulted in fatty liver formation. Uracil and thymine, known to be synthesized from orotic acid, are without effect on liver fat content. This effect of orotic acid is not counteracted by lipotropic factors such as folic acid, cobalamine, methionine or choline.

The metabolism of phospholipids in the lactating mammary gland of the rabbit. G. A. Garton (The Rowett Research Institute, Bucksburn, Aberdeenshire). *Biochem. J.* 61, 402–406 (1955). It was concluded that phospholipids are synthesized by the lactating gland and also taken up from the plasma and degraded to the extent of about 20% in 2 hr.; it is probable that the same amount was also synthesized. The results are briefly discussed in relation to the composition and secretion of milk lipids.

Effects of lipemia and heparin on free fatty acid concentration of serum in humans. M. I. Grossman, H. C. Moeller, and Lucille Palm (U. S. Army Medical Nutrition Lab., Fitzsimons Army Hospital, Denver). *Proc. Soc. Expl. Biol. Med.* 90, 106–109 (1955). During alimentary lipemia and lipemia produced by intravenous injection of fat emulsions there was a rise in the concentration of free fatty acid in the serum. The free fatty acid was found in the non-turbid portion of serum (infranatant of high speed centrifugation). Injection of heparin produced an elevation of free fatty acid concentration which was greater in lipemic than in fasting subjects. A portion of this elevation after heparin was attributable to *in vitro* lipolysis. It is suggested that lipolysis with free fatty acid formation may play a role in normal fat metabolism and transport.

Estimation of total free reducing plasma steroids. C. Chen, Sylvia Voegtli, and S. Freeman (Dept. of Biochem., Northwestern Univ. Med. School, Chicago, Illinois). *J. Biol. Chem.* 217, 709–719 (1955). A method is described for the determination of plasma-free reducing cortical steroids that is simple and reproducible. The method is based on partition of the neutral methylene chloride extract on paper with different solvents and determination of steroids by the blue tetrazolium method. The normal values calculated at 17-hydroxycorticosterone for human subjects were found to be 35.1 ± 7.9 γ for males and 32.4 ± 5.4 γ for females.

Effects of octachloronaphthalene on vitamin A metabolism in the rat. Ruth E. Deadrick (Surgical Res. Unit, Brooke Army Medical Center, Fort Sam Houston, Texas), J. G. Bieri and R. R. Cardenas, Jr. *J. Nutrition* 57, 287–295 (1955). The addition of 0.05 to 0.30% of octachloronaphthalene to the diet of rats greatly accelerated the loss of vitamin A from the liver. There was no effect on the vitamin A or vitamin E in the blood, nor did the vitamin E in the liver change significantly. Utilization of injected carotene was not impaired by feeding octachloronaphthalene but a marked decrease in utilization occurred with carotene given *per os.*

Determination of carotene in dehydrated alfalfa meal treated with n,n′-diphenyl-p-phenylenediamine. H. A. Kaler (National Alfalfa Dehydrating and Milling Co., Lamar, Colo.). *J. Agr. and Food Chem.* 4, 70–71 (1956). The AOAC method for the determination of carotene in alfalfa has been modified to eliminate interference from N,N′-diphenyl-*p*-phenylenediamine, a carotene antioxidant. The diamine causes the formation of a yellow color when chromatographed on magnesia as in the official method, interfering with the colorimetric determination of carotene. After chromatography, this color can be removed from the carotene eluate without affecting the carotene by adding dilute alcoholic stannous chloride.

Food and nutrition in 1955. C. G. King (Nutrition Foundation, New York, N. Y.). *J. Agr. & Food Chem.* 4, 33–37 (1956). Scientific and technological advances last year continued to equip us better to combat various forms of malnutrition and to improve our food supply.

Detoxification of tung meal. J. G. Lee (Dept. of Agr. and Biological Chem., Louisiana State Univ., Baton Rouge, La.). *J. Agr. & Food Chem.* 4, 67–68 (1956). The possibility has been explored that treated tung meals which are nontoxic to chicks might be toxic to the albino rat. They are not; both species require the same steps of alcohol extraction, moistening, and steaming if meals are to be completely detoxified. The quality of the tung protein for the rat is low and lysine is the first limiting amino acid. Such detoxified tung meals do not offer much promise as economical sources of protein for cereal supplementation.

Further studies in fatty acid metabolism and hepatic lipogenesis. I. Lyon, R. P. Geyer, and Linda D. Marshall (Harvard School of Public Health, Boston, Mass.). *J. Biol. Chem.* 217, 757–764 (1955). The conversion of octanoate-1-C^{14} into respiratory $C^{14}O_2$, acetoacetate-1-C^{14}, glycogen-C^{14}, long and short chain fatty acids-C^{14}, and cholesterol-C^{14} was studied with liver slices from fed and fasted rats incubated in phosphate, bicarbonate, or buffer-free media of varied ionic content and with or without *in vitro* supplements of glucose, pyruvate, or succinate. All results were compared to those obtained with the supplement-free phosphate medium. Regardless of the medium employed or the presence of supplements, fatty acid synthesis and cholesterogenesis by liver slices from fasted rats were markedly depressed.

Oxidation effects of phospholipides in rat liver systems. G. V. Marinetti and E. Stotz (Univ. of Rochester School of Med. and Dentistry, Rochester, N. Y.). *J. Biol. Chem.* 217, 745–756 (1955). Experimental data are presented which demonstrate that lecithin, cephalin, sphingomyelin, and cerebroside are either oxidized by rat liver enzymes or act to stimulate respiration in these systems. For optimal activity either adenosine-5′-phosphate or hypoxanthine is required in addition to phosphate ions. ATP and ADP were less effective than AMP for phospholipide oxidation by rat liver homogenates.

Determination of cerebrosides. N. S. Radin, F. B. Lavin, and J. R. Brown(Radioisotope Unit, Vet. Ad. and Res. Hospital, and the Dept. of Biochem., Northwestern Univ., Medical School, Chicago, Ill.). *J. Biol. Chem.* **217**, 789–796(1955). A colorimetric micromethod for the determination of cerebrosides in brain is presented. The procedure involves removal of interfering lipides and non-cerebroside carbohydrate lipides by a column packed with Florisil and mixed ion exchange resins. The resultant crude cerebrosides are determined by a modification of the anthrone procedure in which the lipoidal material is rendered soluble by preliminary heating with phosphoric acid. An inverse phase partition column is described in which polystyrene spherules are used to immobilize the organic non-polar phase.

Characteristic infrared absorption bands of steroids with reduced ring A. 3-keto-5α- and 5β- compounds. H. Rosenkrantz and P. Skogstrom(Worcester Foundation for Experimental Biology, Shrewsbury, Mass.). *Anal. Chem.* **28**, 31–34(1956). A band for band analysis has been made of the infrared spectra of 27 3-keto reduced ring *A* steroids, 12 related structures, and 11 acetylated derivatives. The 5β-configuration gave rise to a combination of bands near 1337, 1299, 1103, and 1005 cm.$^{-1}$ Both allo and normal arrangements appeared to have characteristic absorption near 1254, 1154, and 965 cm.$^{-1}$ 3-Keto-5α- or 5β- and 3-hydroxy-5α- or 5β-steroids were differentiated in the 1100 to 1000-cm.$^{-1}$ region, as it has been demonstrated that ketones and hydroxyls at positions other than 3 have their effect usually at frequencies above 1050 cm.$^{-1}$ Contrariwise the identifying bands of 3-hydroxy-5α- or 5β-steroids were at frequencies below 1050 cm.$^{-1}$

Resonance force theory of carotenoid pigments. W. T. Simpson (Dept. of Chem., Univ. of Washington). *J. Am. Chem. Soc.* **77**, 6164–6168(1955). A theory of the electronic spectra of carotenoid pigments is presented in which the double bonds are treated as quasi-independent weakly interacting systems. The excited states are described as derived from n-fold degenerate maniford, where n is the number of double bonds. The states split under a perturbation patterned after simple electrostatic resonance interaction. A number of experimentally observed phenomena are considered including the positions of energy levels, the ground state steric configuration, isomerization processes, intensities and intensity changes.

Unsaturated lipide oxidation catalyzed by hematin compounds. A. L. Tappel(Dept. of Food Tech., Univ. of Calif., Davis, Calif.). *J. Biol. Chem.* **217**, 721–733(1955). Hematin compounds are non-specific catalysts for the decomposition of peroxides. Myoglobin has catalytic activity quantitatively similar to that of hemin, cytochrome *c*, and hemoglobin. A wide range of unsaturated lipides and peroxide-forming organic compounds is catalytically oxidized by hemin. During the decomposition of linoleate peroxide there is a loss of double bonds and formation of carbonyl compounds.

Cholesterol and related compounds. IV. Synthesis of 11-ketocholestan-3β-ol. K. Tsuda and R. Hayatsu(Phar. Inst., Medical Faculty, Univ. of Kyushu). *J. Am. Chem. Soc.* **77**, 6582–6584 (1955). Chromic acid oxidation of 7-keto-$\Delta^{5,8(9)}$-cholestadien-3β-ol benzoate yielded 7,11-diketo-$\Delta^{5,8(9)}$-cholestadien-3β-ol benzoate which, on reduction with acetic acid and zinc, formed 7,11-diketocholesteryl benzoate. Catalytic reduction of 7,11-diketocholesteryl benzoate yielded 7,11-diketocholestan-3β-ol benzoate which was converted to 11-ketocholestanol by the Wolff-Kishner reaction.

• Waxes

James E. Anderson, Abstractor

Competition between natural and refined waxes in the leather and floor polish industries. H. Hollaender(F. Schacht, A.-G., Braunschweig, Germany). *Seifen Öle Fette Wachse* **81**, 65–7 (1955). A review. (*C. A.* **49**, 14353)

Natural and synthetic waxes used in paper conversion. H. Hollaender(F. Schacht, A.-G., Braunschweig, Germany). *Allgem. Papier Rundschau* **1955**, 14–15. Descriptive. (*C. A.* **49**, 14321)

Measurement of the hardness of waxes. G. V. Rosenberg(Farbwerke Hochst, Gersthofen, Germany). *Fette Seifen Anstrichmittel* **56**, 214–18(1954). The measurement of ball penetration gives results which are useful in determining deflection of hard waxes. (*C. A.* **49**, 14351)

Thermal capillary analysis of organic compounds, waxes, fats, and proteins. F. J. Lauer(Inst. Kolloidkunde, Poppenhausen A. I., Wasserkuppe, Germany). *Fette Seifen Anstrichmittel* **56**, 149–53(1954). A discussion. (*C. A.* **49**, 14351)

Waxes in edible and technical oils. H. P. Kaufmann(Deut. Inst. Fellforsch, Munster, Germany) and H. Schuppan. *Fette Seifen Anstrichmittel* **57**, 402–5(1955). Presence of waxes in oils causes turbidity on storage and undesirable properties in paint. High temperatures during pressing are responsible for the increased wax content. Extraction time is of no importance. A wax of linseed oil was found after saponification to contain ceryl alcohol, steric acid, and cerotic acid, and an unsaturated hydrocarbon. For practical purposes, the wax can be considered to consist of three fractions, of which one separates rapidly on cooling, a second only slowly, and a third whose solubility is relatively independent of temperature. (*C. A.* **49**, 14339)

Chromatographic separation of beeswax. W. Fuchs(Tech. Hochschule, Aachen, Germany), and A. deJong. *Fette Seifen Anstrichmittel* **56**, 218–20(1954). A method is described by which beeswax can be separated into paraffins, *n*-esters, unsaturated esters, hydroxy esters, and acids by adsorption on Al_2O_3 and elution with CCl_4, toluene, $CHCl_3$, and $CHCl_3$ containing 5–8% ethyl alcohol; silica gel can replace the Al_2O_3. (*C. A.* **49**, 14351)

Speed of reaction and equilibrium in the saponification of ester waxes. W. Fuchs(Tech. Hochschule, Aachen, Germany), B. Wilden, A. deJong, and H. Dresia. *Fette Seifen Anstrichmittel* **56**, 14–17(1954). By measuring the change of condition with time, the acid number, saponification number, ester number, the speed of reaction, and the equilibrium point can be determined. Graphs and mathematical data are given and discussed. (*C. A.* **49**, 14351)

Preliminary cost study of rice wax filtration-extraction. J. Pominski, P. H. Eaves, H. L. Vix, E. F. Pollard(Southern Regional Research Lab., New Orleans, La.). *Ind. Eng. Chem.* **47**, 2109–2111(1955). A preliminary cost study based on bench scale data and current equipment prices has been made for the commercial filtration-extraction of rice bran to produce rice wax. Estimated cost and profits for producing rice wax by a new process in which wax and oil were simultaneously and separately recovered from rice bran by filtration-extraction are given.

Vegetable and animal waxes. P. Blaizot. *Oleagineux* **10**(11), 731–736(1955). The author discusses various commercial waxes produced from animal and vegetable sources. Also included are the steroids such as the vitamin D group, cholesterol, bile sterols, androsterone, testosterone, oestrone, and progesterone.

Deodoration of bleached Japan wax. Takayoshi Wach(Noda Mfg. Co.). *Japan 5387(1954).* The bleached wax (200 g.) with organic peroxide number 18 at 90° is treated with 10 g. $FeSO_4 \cdot 7H_2O$, 2.5 ml. concentrated H_2SO_4 and 100 ml. water, and the mixture is steam distilled in vacuo (50 mm.) at 100° to remove the peroxide. (*C. A.* **49**, 14354)

• Drying Oils and Paints

Raymond Paschke, Abstractor

The advantages of thixotropic paints. J. Baker(Wm. A. Halstead Ltd.). *Paint Manufacturers* **25**, 451(1955). Advantages include freedom from settling, ease of application, freedom from running, and freedom from pigment flotation.

Linseed oil emulsion paints. W. Bosch, M. V. Carneri, and Inderjit Nylar(N. Dakota Agr. College, Fargo). *Proc. N. Dak. Acad. Science* **9**, 16(1955). A copolymer of linseed oil and *p*-$MeC_6H_4CH_2CH{:}CH_2$(1:1), prepared by heating the mixture at 180° for 3 hours, dried and hardened faster than linseed oil. A 70% solution of the copolymer in mineral spirits, with appropriate driers, dried dust-free in 15 minutes and tack-free in 2 hours. This varnish formed a stable pigmented oil in aqueous emulsion of 45% nonvolatile content by use of ammonium or morpholine soaps, and compared favorably with commercial products. (*C. A.* **50**, 583)

A survey of novelty finishes. H. Burrel(Interchemical Corp., Cincinnati, Ohio). *Org. Finishing* **16**(11), 7(1955).

The analysis of phosphating preparations used for the protection of steel surfaces. G. H. Bush, D. G. Higgs, and F. W. Box. *Analyst* **80**, 885(1955).

Engineering problems in the utilization of tonnage ozone. V. A. Hann(The Welsbach Corp., Philadelphia, Penn.). *Chem. Eng. Progress* **51**, 523(1955).

Thixotropic alkyds. A. G. North(Cray Valley Products Ltd.). *Paint Technology* **19**, 409(1955). A short discussion.

Blown linseed oil. F. Wilborn and J. Morgner(Lab. Anstrichforsch. Leipzig, Ger.). *Fette-Seifen-Antrichmittel* **57**, 178–81 (1955). Linseed oil was blown with air at temperatures of 100–200° in a laboratory apparatus, and samples were analyzed at intervals. The *n*, saponification no., d., acid no., viscosity, hydroxyl no., and EtOH tolerance increased with time and temperature. I number(Rossman method) and drying time decreased. Peroxide number rose to a maximum at about 6 hours, then declined. Straight-line relations were found between O content and hydroxyl number, peroxide number and hydroxyl number, and I number and viscosity(log scale). The presence of Co resinate during the reaction resulted in higher viscosity and hydroxyl number but lower peroxide number. Oil intended for quick-drying finishes should be blown at a low temperature without catalyst so as to produce a high peroxide content. Oils to be used with polar film-formers should be blown with Co drier so as to have a high hydroxyl content. During storage, blown oils undergo increases in viscosity, hydroxyl number, and acid number, while the peroxide number decreases. (*C. A.* **49**, 16458)

Ultraviolet spectrophotometry of the oxidation of linseed oil. J. P. Wolff. *Peintures, pigments, vernis* **31**, 612–17(1955). An ultraviolet absorption study has been made of the air oxidation of linseed oil at 30°, 100°, and 150°. At 30°, absorption at 232 mμ(typical of single conjugation and of the hydroperoxide of linoleic acid) increases with the peroxide value, but absorption at 270 mμ and above also increases(typical of double and higher conjugation when the ratio R of the extinctions at 232 and 270 is high, e.g. 200, but typical of secondary, probably ketonic, oxidation products when R is small, e.g. 2); since R is about 6–9, hydroperoxides are thought to be unstable and to turn into secondary oxidations products rapidly. At 100°, the value for R is close to 2, indicating the disappearance or absence of the cyclic peroxide(which does not absorb in the ultraviolet and of conjugated systems). At 150°, no peroxide value is observed after 15 minutes, and the R value falls from 6.4(0 minutes) to 3.2(15 minutes) and 2.1(180 minutes), while the iodine value falls from 190 to 179. Stability of *n*, d., viscosity, and iodine value indicate absence of polymerization, but the high peaks at 232, 270, 303, and 318 mμ indicate the formation of multi-conjugated derivatives which disappear on further oxidation. The differences in R are suggested for the differentiation of stand oil($R = 10$) and boiled oil($R = 2$), for an estimation of boiled oil in stand oil, and to distinguish extracted oil(which is heated to expel solvent)($R = 3$) from pressed raw oil($R = 6$). Treatment with decolorizing earths of an oxidized oil(peroxide value 280) lowered its peroxide value to 160, but brought about a sharp change in the ultraviolet spectrum: It lowered the peak at 232 mμ, but produced distinct new peaks at 280, 303, and 318 mμ. This is thought to indicate the formation of very unstable triple or quadruple conjugation products by the decomposition of an unknown oxidation product(the peaks equal about 1.5% arachidonic isomerization product). Treatment with the earth at 150° also produced absorption at 303 and 317 mμ without producing changes at 232 or 270 mμ. (*C. A.* **49**, 16458)

Modification of drying oils. I. Synthesis of ethyleneglycol-D-glucoside and glycerol-D-glucoside and the properties of the drying oils synthesized from these glucosides and drying oil fatty acids. Toshio Takeshita(Kagoshima Univ.). *J. Japan Oil Chemists' Soc.* **4**, 245–50(1955). Ethylene glycol(containing 0.5% HCl as the catalyst) and glucose in the molar ratio of 6 to 1 were heated 40 min. at 100° to give a product, which was assumed to be ethyleneglycol-D-monoglucoside from OH content(theory 37.9, found 37.0%) and mol wt.(theory 224, found 211). Glycerol and glucose in the molar ratio of 4 to 1 were reacted similarly to obtain the monoglucoside(OH 38.1%, mol. wt. 239). These glucosides were esterified by heating up to 230° with fatty acids from linseed or soybean oil. The synthesized drying oils were superior to the original oils in drying properties.

Printing ink (non-toxic). F. Jager. *Austrian 183,764.* In a nontoxic ink for printing on foodstuffs or hygienic articles, the dye consists of one or more natural plant dyes, e.g. chlorophyll or chlorophyllin, and the carrier is basic fuller earth, $CaCO_3$, or Al_2O_3. It is preferably used in the form of solutions or emulsions. (*C. A.* **50**, 585)

Coating compositions from fatty acids. Unilever Ltd. *Brit. 735,697.* Straight-chain fatty acids containing 13–25 C atoms/molecule are heated with a keto fatty acid or glyceride to cause a reaction which decreases the free fatty acid content of the mixture with elimination of water. Thus, a mixture of tall oil fatty acids 33.3, oiticica oil 33.3, NaOH 0.5, and Zn dust 0.3 kilograms was heated in absence of air to 240–50° with agitation, and kept at that temperature for five hours with stirring. The product was bodied varnish of stand oil consistency containing 10% free fatty acids. After addition of drier and naphtha, this material dried to a satisfactory varnish film in 24 hours. Fatty acids from rapeseed, soybean, or linseed oils can also be used; reaction of the latter oil with oiticica oil gives a water-resistant film. (C. A. **50**, 585)

• Detergents

Lenore Petschaft Africk, Abstractor

Lyophilic properties of sodium and calcium salts of saturated and unsaturated fatty acids. A. V. Dumanskii, V. I. Solnyshkin, and P. A. Demchenko. *Ukrain, Khim. Zhur.* **20**, 635–40 (1954). Oleophilic properties of Ca and Na soaps of stearic, oleic, ricinoleic, myristic, and pelargonic acids were studied by measuring(in a calorimeter) the heat given off when they react with vaseline oil(this is taken as evidence that the soap and the hydrocarbon combine). Intra- and intermolecular combination are both shown to be possible. The hydrophilic properties of Na ricinoleate, oleate, and stearate were studied; it was shown that the $-CO_2-$, the OH, and C–C double bond in the soaps can each coordinate 1 mol. H_2O to form compounds near to a dihydrate of Na oleate and a trihydrate of Na ricinoleate. In aqueous solutions of Na oleate or stearate, with increased concentration, the formation of gels passes through an intermediary area in which heat capacity of the system does not change with increasing % content of the soap. (*C. A.* **49**, 14637)

Bactericidal nonionic detergents. H. J. Ferlin and J. V. Karabinos(Blockson Chem. Co., Joliet, Ill.). *Trans. Illinois State Acad. Sci.* **47**, 86–8(1955). Polyethenoxy tallate(I) abietate (II), and oleate(III), prepared by condensing 1 part acid with 2 of ethylene oxide, were ozonized 15–20 hrs. and absorbed 10.7, 7.3 and 7.5% O_3, respectively. Bactericidal activity of ozonides toward *Staphylococcus aureus* started high but decreased rapidly with time for I and III, but showed constant low value for II. High initial activity and rapid decrease were also shown by oleic acid ozonide. Possible structures of ozonides and their role are discussed. (*C. A.* **49**, 16070)

Evaluation of textile assistants. F. Gasser. *Textil-Praxis* **9**, 186–91(1954). Largely a general discussion of the numerous difficulties of evaluating commercial textile assistants and chemical specialties. A method is described for comparing synthetic detergents which depends on the colorimetric determination of the amount of dye washed from a specially prepared wool or cotton cloth. The latter is impregnated with a mixture of 50 g. each of olein, olive oil, and mineral oil(spindle oil), 5 g. Ceres Red g(oil-soluble dye), and acetone to make one liter. In the washing process oil and dye are removed in nearly proportionate amounts. The dye in the wash solution is extracted with ligroine and compared against that obtained under like conditions with a standard detergent sample, or with a ligroine extract of a known weight of the impregnated cloth. The marked detergent action of OH– is discussed. (*C. A.* **49**, 16445)

Relation between detergency and adsorption of surfactant by the fiber. J. M. Goodall. *Textielwezen.* **9**(11), 25–6, 28–30, 32–3, 35(1953). Data are given to show the effect of temperature, nonionic surfactant concentration, acid concentration and salt concentration on detergent efficiency on wool, and on the adsorption of the surfactant on the wool. A rise in temperature from 50 to 80–90° increases detergency without adsorption by the fiber. Beyond an optimum acidity, adsorption increases and detergency decreases unless excess surfactant is available. This increase in adsorption at low pH is attributed to a conversion of the adsorbed soap to fatty acids which then unite with the surfactant through H bonding between the OH group of the acid and the ether O of the surfactant. The optimum NaCl concentration for maximum detergency varies inversely with the temperature, this relation not being due to a change in the degree of adsorption up to a critical salt concentration of about 12 g. NaCl per 100 ml. solutions. (*C. A.* **50**, 588)

Polymorphism of soap and the Mazzoni process. M. Fock. *Seifen-Öle-Fette-Wachse* 81, 348, 382–4(1955). The effect of the Mazzoni process on the crystalline phases in soaps is investigated by x-ray analysis of 2 soap cakes, A containing approximately 62% fatty acids and some coconut oil in the raw materials and B containing approximately 70% fatty acids and produced from tallow fats of low titer. The relative intensities of the rings corresponding to the ω phase (diam. 2.95 Å.) and B phase (diam. 2.75 Å) are determined. For A, the ratio of the intensities is 1.5:1, and B, 1:3; this shows some conversion of ω to B phase. The δ phase is absent in soap produced according to the Mazzoni process (*C. A.* 50, 589)

Analysis of washing and cleaning compositions. XI. Reaction of alkylated bisaminoethylaminoacetic acids with polyphosphates of varying degrees of condensation. R. Neu and P. Hagedorn. *Fette u. Seifen Anstrichmittel* 56, 298–302(1954). The degree of turbidity given by octyl, dioctyl, and dodecyl derivatives of bis-(aminoethyl)glycine-HCl with 7 types of polyphosphates, containing 57.88–60.6% P_2O_5 in the presence and absence of AcOH is described. The use of this reaction for analytical purposes is suggested. (*C. A.* 49, 16475)

Thymol Blue as a reagent for anionic surfactants. K. Peter (Farbwerke Hochst, Frankfurt/Main, Ger.). *Fette u. Seifen Anstrichmittel* 56, 997–1001(1954). Anionic surfactants give a definite red-violet color with Thymol Blue; 5 ml. neutral surfactant solution is added to 5 ml. 0.005 *N* HCl containing 3 drops of 0.1% Thymol Blue. (*C. A.* 49, 13819)

Qualitative analysis of surface-active agents. V. W. Reid, T. Alston, and B. W. Young(Petrochemicals Ltd., Urmstone, Manchester, Engl.). *Analyst* 80, 682–9(1955). A considerable simplification can be effected if an ultraviolet spectrogram covering 2100–3500 Å is prepared. Four distinct groups are anionic compounds containing no N, nonionic compounds containing no N, anionic compounds containing N, and cationic compounds containing N. The characteristics of each group are described. About 100 commercial proprietary compounds have been examined, and the classification indicated agreed with data in the literature for the products examined, when such data was available. (*C. A.* 49, 15599)

The problems of wetting rates. K. Schafer(Badischen Anilin-u. Soda- Fabrik, Ludwigshafen a Rh., Ger.). *Z. Electrochem.* 59, 273–80, 280–2(1955). Wetting as determined by sinking of fibers in wetting solution is investigated. Surface tension vs. time curves have been determined for a number of surface-active materials. The results can be expressed by formulas which have a theoretical basis and which contain the diffusion coefficient and the spreading pressure of the surface-active material. There is a close relationship between the constants of these formulas and the rate of wetting. It is possible that a potential barrier between the surface and the "inside" also enters into the process. (*C. A.* 49, 15264)

The interface behavior of carboxymethylcellulose on cotton. J. Stawitz, W. Klaus and H. Kramer. *Kolloid-Z.* 142, 166 (1955). In order to investigate the behavior of CMC at the cotton/water interface(of great interest with regard to the washing-process theory), solutions of a radio-active CMC-preparation were prepared over a concentration range of 0.00005–0.025 per cent and their radiation intensity determined. In adsorption tests, solutions with 0.02 per cent CMC in distilled water were allowed to act on cotton for 1 hour at 24°(at a wash-liquor ratio of 1:50). Prior to the test, the cotton fibers (cut into 1-mm. lengths) were boiled with 2 per cent sodium hydroxide in nitrogen atmosphere and extracted with solvents. On testing, it was found that the concentration of the CMC-solution is not reduced by the contact with cotton, and the fibers show only very small amounts of CMC(of the order of several γ/g. of fiber) adhering to them. These results exclude the possibility of even a monomolecular CMC-film forming on the cotton fibers.

Micellar molecular weights of some paraffin chain salts by light scattering. H. V. Tartar(U. of Washington, Seattle, Wash.) and A. L. M. LeLong(State College of Washington, Pullman, Wash.). *J. Phys. Chem.* 59, 1185–90(1955). By the use of light scattering methods, the micellar molecular weights have been determined for thirteen normal paraffin chain salts in aqueous solution, alkane sulfonates, alkyl sulfates and alkyl-quaternary ammonium salts. The results with 1–1 salts with single paraffin chains form a counter-part to previous results. The necessity for proper screening of electric charge is considered.

Estimation of fluorescent brightening agents. G. G. Taylor (Clayton Dyestuffs Co., Ltd., Clayton, Manchester, Engl.). *J. Soc. Dyers and Colourists.* 71, 697–704(1955). Review of instrumental and visual methods of determining strength of fluorescent brightening agents.

Correlation of the Launder-Ometer test with the electric washing machine test with artificially soiled cotton cloth. Yoshiro Namba, Seizaburo Hayashi, and Toyozo Fuchizawa(Nihon Yushi Co., Osaka). *J. Japan Oil Chemists' Soc.* 4, 304–8 (1955). The tests with ordinary commercial soap and alkyl benzenesulfonate detergent showed that the evaluation of detergency by the Launder-Ometer was sufficiently suitable to give the same order of result with that by practical test with an electric washing machine, though the absolute value of the detergency could not be compared.

Detergency evaluation. IV. Preparation of the artificially soiled cotton fabrics. 3. Akihiko Yabe and Michie Hara(*Ochinomizu* Univ., Tokyo). *J. Japan Oil Chemists' Soc.* 4, 308–13(1955). The optimum conditions of preparing the soiled cloth were selected from 2 kinds of cotton cloth, 2 kinds of carbon black, treatment of the cloth after soiling, and the aging(1 and 56 days) after soiling the cloth. The conditions were so selected as to give the highest reproducibility and the greatest difference between the washing with 0.3% standard soap solution and with distilled water.

Factors affecting detergency. I. Experiments with sodium soaps of saturated fatty acids. Yoshiro Namba, Seizaburo Hayashi, and Toyozo Fuchizawa(Nihon Yushi Co., Osaka). *J. Japan Oil Chemists' Soc.* 4, 238–44(1955). Experiments with 0.25% aqueous solution of Na soaps of C_{10}–C_{18} saturated fatty acids showed that detergency, dispersion ability, emulsifying power, solubilization power, and redeposition prevention were higher with C_{16}–C_{18} soaps, while surface tension, interfacial tension, foaming power, and penetrating power were superior with C_{12}–C_{14} soaps. The detergency was measured with Launder-Ometer with cotton cloth soiled with C, tallow, and liquid paraffin.

Detergency evaluation of detergents. I. Relation between the effect of mechanical action of Launder-Ometer and reproducibility of the results. Fumio Takei, Yoshiro Namba, and Seizaburo Hayashi(Nihon Yushi Co., Osaka). *J. Japan Oil Chemists' Soc.* 4, 128–31(1955). Experiments were made with soiling solution consisting of carbon black, liquid paraffin, hydrogenated tallow, and CCl_4, and Launder-Ometer Model B-5 of Atlas Co. The reflection was measured by reflection meter model No. 610 of Photovolt Co. The detergent used is of the type Na alkylbenzenesulfonate. There was a difference in the effects of steel balls and rubber balls. The reproducibility of the results was obtained with a certain degree of mechanical action, which did not necessarily give the highest whiteness. In some cases the whiteness was higher but the result was not uniform and was of poor reproducibility.

II. Detergency of sodium soaps of saturated fatty acids. Fumio Takei, Yoshiro Namba, and Seizaburo Hayashi. *Ibid.* 181–4 (1955). Among myristic, lauric, palmitic, and stearic acid soaps the latter two are much superior to the former two in detergency. Even at 25° stearic acid soap had superior detergency power, though its solubility was low. The optimum temperature seemed to be 40° and the optimum concentration seemed 0.25%. The experiments were conducted and analyzed statistically.

III. Relation between the conditions of preparing artificially soiled cotton cloth and detergency. 1. Yoshiro Namba and Seizaburo Hayashi. *Ibid.* 233–7(1955). The optimum soiled cloth was obtained with white cotton calico soiled with 1 part of hydrogenated tallow and 3 parts of liquid paraffin in CCl_4. Carbon black was included in the soiling solution, but the kind of carbon black could not be settled. Statistical considerations were fully applied.

Detergency evaluation of detergents. IV. Relation between the conditions of preparing artificially soiled cotton cloth and detergency. 2. Yoshiro Namba and Seizaburo Hayashi(Nihon Yushi Co., Osaka). *Ibid.*, 299–304(1955). Experiments were made to determine the most suitable conditions of preparing soiled cloth on the following items: the kind of cotton cloth (3 kinds), the kind of carbon black(2 kinds), treatment of the cloth after soiling(with or without washing with hot water), and the times of soiling(once or twice). The conditions were so selected as to give the greatest difference among detergents, the fair detergency, and the least change of aging of the soiled cloth.

Analysis of nonionic detergents. Masao Kurata(Dai-ichi Kogyo Seiyaku Co., Kyoto). *J. Japan Oil Chemists' Soc.* 4, 293–8 (1955). A review with 25 references.

The rapid determination of total fatty acid in unbuilt soap products. H. L. Webster and A. Robertson (Thos. Hedley & Co., Ltd., Chemical Division, Newcastle Upon Tyne, 1). *The Analyst* 80, 616–619 (1955). A method is described for the rapid determination of total fatty acid in unbuilt soaps. The method takes about 15 minutes to carry out and gives results comparable with the usual longer extraction method. Correction is required for small quantities of sodium carbonate, if present. An excess of standard calcium chloride solution is added to a weighed sample of soap in solution, and after heating, the calcium soap is removed by filtration. The excess of calcium is then determined by titration with ethylenediamine-tetra-acetate solution, murexide being used as indicator. The method, with modification, may be used for built soaps, but there is then little or no time-saving.

The mesomorphic behavior of anhydrous soaps, Part 1. Light transmission by alkali metal stearates. D. P. Benton, P. G. Howe, and I. E. Puddington (Div. of Applied Chem. Nat. Res. Council, Ottawa, Canada). *Can. J. Chem.* 33, 1384 (1955). The anhydrous salts of the long chain fatty acids are known to pass through a number of well-defined mesomorphic forms between the true crystalline solid and the isotropic liquid. The nature of some of these mesomorphic forms has been investigated by a study of their optical properties, electrical conductivity, density, and viscosity. In this paper, results obtained by an optical method are presented for phase transition temperatures of the alkali metal stearates and a number of sodium stearates having substituents in the hydrocarbon chain.

Some aspects of solvation of nonionic detergents. J. V. Karabinos, G. E. Kapella, H. J. Ferlin, and D. L. Sawhill. *Euclides* 15, 174–175, 253–259 (1955). Detergency of nonionics as indicated by soil removal experiments is promoted by increasing temperature. This parallels the increase in hydration of these substances with temperature obtained by polarimetric studies. In addition, the detrimental effect on detergency of NaCl and phenol as well as in nonaqueous solvents strongly supports the theory that the solvated ethenoxy units themselves play an important role in the effectiveness of a nonionic detergent. Furthermore, a particular hydrophobic group requires enough ethenoxy units to form a hydrate of sufficient size to solubilize the entire molecule and hence promote optimum detergency. It is noteworthy that the point of apparent solubility of a nonionic detergent usually corresponds to the point of optimum detergency.

The mesomorphic behavior of anhydrous soaps. Part II. Densities of alkali metal stearates. D. P. Benton, P. G. Howe, R. Farnand and I. E. Puddington (Division of Applied Chemistry, National Research Council, Ottawa, Canada). *Can. J. Chem.* 33, 1798–1805 (1955). The densities of the series of alkali metal stearates and of a number of sodium stearates having substituents in the hydrocarbon chain have been measured over a temperature range of 25–380°. Discontinuities in the density-temperature relationships indicate the transitions between the various mesomorphic forms in which these soaps exist and the results are compared with transition data obtained by an optical method, described in Part I of this series. Mesomorphism is found to be much less pronounced in the substituted stearates examined than in the normal soaps.

Technical developments in soap making. G. Marroc. *Revue Francaise des Corps Gras* 2, 496–510 (1955). The article comprises a discussion of the manufacture of soaps with a review of the original raw materials, various manufacturing problems and an overall survey of modern machinery used in soap making. An excellent discussion of the Mazzoni process is given. The amount of soap and fatty acids utilized by each person is given for France, United States, Belgium, Netherlands, Germany and Switzerland.

Raw materials in soap making. G. Marroc. *Ibid.* 2, 577–583 (1955). A discussion of some of the problems in the use of various raw materials for soap production. The author reviews some of the commercial aspects such as the probable availability of certain types of fatty materials like olive oil, palm, etc.

A discussion of the various types of soaps, detergents, and various other fatty acid derivatives. J. P. Sisley. *Ibid.* 2, 584–601 (1955). The author reports on the various types and amounts of compounds produced by the United States and France with a discussion of sulfonated oils, alkylsulfosuccinates, alkylmethyltuaride, alkyl beta amino propionates, alkylsarcosides, sulfates of alcohols from fats, salts of ethylenediamine tetraacetic acid, alkylarylsulfonates, quaternary ammonium salts, compounds without active ions, soaps for dry cleaning, deodorizing and antiseptic soaps, and bactericidal soaps.

Soap and dermatology. E. Sidi. *Ibid.* 2, 602–614 (1955). This article is an excellent report on some of the problems of dermatitis in which the dermatitis has been caused by some of the soap products. The discussion includes clinical studies, tests for eczema-producing activity of soaps, and a consideration of various factors which help produce dermatosis. The author also discusses the effect of acids such as the sulfonates as it reacts with other factors to produce problems in dermatology. The rapid rise in the use of detergents creates a rapidly increasing problem for dermatologists. A discussion of medicinal soaps of several types and their effects on skin shows certain risks that should be avoided.

Cooling and molding of soap by modern mechanical processes. M. Libault. *Ibid.* 2, 691–694 (1955). A discussion of the Meccaniche Moderne a Busto Arsizio, Italie, Process as used in a soap-making plant in a Paris suburb. The author describes the machinery in use together with the cost and other factors involved.

The "Mazzoni" process. J. Ricard. *Ibid.* 2, 695–698 (1955). Over 115 installations now utilize the "Mazzoni" process in soap making. The method is essentially a spraying of the soap liquid into an enclosure in which, by lowering the temperature, the soap solidifies and some of the water is removed. The soap film is removed from the enclosure surface by scraping and pressing under reduced pressure for finishing.

A rapid method for the drawing of soap diagrams. Second report. Example of drawing of a very accurate diagram. M. Loury and A. Prevot. *Ibid.* 2, 859–862 (1955). The authors refer to a previous publication: *Ibid.* 2, 225 (1955), in which they describe their procedure. In this article they give a soap diagram of 80% tallow and 20% copra. They discuss the information that may be obtained from this diagram.

Method and apparatus for milling soap and similar plasticizable material. D. E. Marshall (Micro Processing Equipment). *U. S. 2,723,242.* A method of milling soap and other plasticizable material is described.

Detergent-germicide composition. L. L. Little and G. Chen (E. F. Drew & Co.)., Inc.). *U. S. 2,727,007.* A quaternary ammonium germicide-detergent effective in hard water and against both Gram positive and negative organisms is obtained by mixing the quaternary with an alkali metal polyphosphate, an alkali metal carbonate and a non-ionic wetting agent.

Compacting pulverized solids. D. E. Marshall (Micro Processing Equipment). *Brit. 736,591.* Aerated cakes of detergents, chemicals, foodstuffs, medicines, beverages, etc., are made by fluidizing dry pulverized material in a closed die chamber of considerably greater volume than the materials, and suddenly decreasing the chamber volume in a single operation without escape of gas, thus simultaneously compressing the gas and effecting cohesion of the material.

An improved detergent composition and method of making same. H. F. Johnston. *Brit. 737,824.* A detergent bar composition useful in hard water is made from alkyl benzene sulfonate in a vehicle of commercial stearic acid and additives.

Improved particulate detergent compositions. California Research Corp. *Brit. 737,999.* An alkyl benzene sulfonate type detergent with improved storage properties and reduced caking tendency is produced by the addition of from 1 to 10 parts by weight of a sodium salt of an alkyl sulfuric acid containing from 2 to 6 carbon atoms in the alkyl chain.

Improved particulate detergent compositions. California Research Corp. *Brit. 738,000.* The caking tendency of alkyl benzene sulfonic acids is reduced by the addition of from 0.5 to 10 parts by weight of an additive such as sodium benzene monosulfonate or a sodium toluene monosulfonate.