TABLE II
Moisture Content of a Bar Soap at Various Sites

Sample No.	Percentage moisture loss at 105°C.
1	10.21
2	10.91
3	10.97
4	10.45
5	9.61
6	9.39
7	10.14
8	10.48
9	10.76
10	10.75
11	10.68
12	10.10
13	9.10
14	8.95
15	9.62
16	10.34
17	10.54
18	9.12
19	8.97
20	8.88
21	9.83
22	10.13
23	10.35
24	9.99

Inspection of the data in Table II shows that the moisture content of a bar varies over a wider range than is commonly suspected. The corners, in particular, dehydrate to a considerable extent and certainly cannot be ignored in attempting to determine the average moisture content of a bar product.

It will be noticed that the four corners of the bar, represented by samples numbered 14, 18, 19, and 20 yielded results varying from a low of 8.88 to a high of 9.12 as compared with the center of the bar (sample No. 3), which gave a moisture result of 10.97. The latter incidentally was the highest value for the 24 samples analyzed. Samples 14 to 17 progressed in magnitude linearly from 8.95 to 10.54 compared to the series 6 to 9 and 10 to 13 which varied from 9.39 to 10.76 and 9.10 to 10.75, respectively.

It would appear from both the viewpoint of accuracy and avoidance of possible disputes between laboratories that to obtain the correct average moisture content of a sample in the form of a bar, either the whole bar or a symmetrical portion, should be taken for analysis instead of slices from the interior of the bar.

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ABSTRACTS . . . R. A. REINERS, Editor

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• Oils and Fats

Rheology and viscometry. S. Le Sota(National Lead Co., Philadelphia, Pa.). *Paint and Varnish Production* **47,** 60(1957). The author gives a review of some of the fundamental concepts and definitions of rheology in outline form as an introduction to viscometry and continuous recording viscometry. A viscometer directory has been included to illustrate and describe the various types of viscometers, their units, range and principle of mechanism. The 34 figures illustrate the broad range of information provided.

Color measurement and control. O. H. Olson(Armour Res. Foundation, Chicago, Ill.). *Paint and Varnish Production* **47,** 76(1957). The complexity of color and its dependence on many factors impede automation in color control. The author discusses the dimensional nature of color, the ingredients of color, instruments of color measurement, spectrophotometers, tristimulus colorimeters, and abridged spectrophotometers.

Deacidification with urea of ground-nut oils of low and average acidity. M. Loury. *Olearia* **11,** 9/10, 213–217(1957). On the basis of previous experiments on the deacidification of oils by use of urea complexes the author suggests a plan for working directly on miscellas of the oil with solvent. The direct separation by centrifugal action of the deacidified oil, by the addition of a certain quantity of water, is possible. Although this method is more economical than ones previously described it still does not allow for a complete deacidification and needs to be further studied.

Soya seed and oil in the world. A. Ferrara. *Olearia* **11,** 218–228(1957). After some introductory remarks on the importance of soya in the group of fluid vegetable oils, the author draws a general picture of the place of soya in the world, discussing the origin, spread, and characteristics of soya. He then goes on to examine soya products and their respective uses, the chief producing countries and the world trade in soya seeds and oil. At the end he describes the positions held by these products in 1951–55, the changes as compared to prewar years, and future trends.

A study of reversion of walnut oil. Mme. S. Durant-Veron and A. Prevot(ITERG). *Rev. franc. corps gras* **4,** 502–505(1957). The authors discuss walnut oil produced in France, its reversion, causes and methods for detection. Two spectrum of the walnut oil with different stages of oxidation and examples with and without an antioxidant (Tioxan, 0.2% concentration) are shown.

Oxidation degradation in refining of edible oils. A. Dangoumau and H. Debruyne(Laboratoire Municipal de Bordeaux, France). *Rev. franc. corps gras* **4,** 478–501(1957). The authors discuss the effects of oxidation as a degrading effect on certain edible fats and oils. Oleic and linoleic acid are considered in regard to peanut oil with 54 spectra given of the ultraviolet region from 2300 to 2900 millimicrons and one infrared spectrum shown.

The normal C_{17} fatty acids of musk-ox fat. Mary J. Chisholm and C. Y. Hopkins(Nat. Res. Council, Ottawa, Can.). *Can. J. Chem.* **35,** 1434–1437(1957). A sample of body fat of the Canadian musk ox *(Ovibos moschatus subsp.)* was converted to methyl esters and distilled. The fraction containing esters of C_{17} acids was crystallized fractionally at low temperatures and two straight-chain C_{17} acids were isolated. *n*-Heptadecanoic acid was identified by analysis, by mixed melting point of the acid and two derivatives with authentic samples, and by its X-ray diffraction pattern. 9-Heptadecenoic acid was identified by analysis, by mixed melting point of two derivatives with authentic samples, and by oxidative cleavage. It is estimated that the fat contained 1.7% of *n*-heptadecanoic acid and 0.9% of *cis*-9-heptadecenoic acid, based on the total fatty acids. Although there was an appreciable content of *trans* acids in the fat, the heptadecenoic acid was found to contain little or none of the *trans* form.

The properties of some vegetable oils. Seiichi Ueno and Kenji Matsushima(Kinki Univ., Fuse, Osaka). *Abura Kagaku* **6,** 20–3(1957). The oil content and physical contents of oils extracted from the following seeds were studied: *Stauntonia hexaphylla, Aralia chinensis, Kraunhia floribunda, Syringa amurensis* var. *japonica* and *Hibiscus manihot*. The oil of the seed coat of *Acorus calamus* was also studied. (*C. A.* **51,** 18654)

The course of hydrogenation of sardine oil. Maromi Takeda and Yoshiyuki Toyama (Nagoya Univ.). *Abura Kagaku* **6,** 10–3 (1957). Purified sardine oil (acid number 0.5, saponification number 102.3, and iodine number 168.3) was hydrogenated in the presence of 2% nickel catalyst at 180° up to 8 hours.

Saturated acids increased slowly initially but increased rapidly from the time the ethyl ether insoluble bromides disappeared. Tetraenoic, pentaenoic, and hexaenoic acids never accumulated in the course of hydrogenation. Dienoic acids accumulated in the initial stage. Trienoic acids also accumulated slightly in the initial stage. Monoenoic acids accumulated gradually according to the progress of hydrogenation up to a maximum at iodine number of 89–78, and then decreased. Conjugated dienoic and trienoic acids accumulated initially but disappeared when hydrogenation proceeded considerably. (*C. A.* **51**, 18655)

Sperm oil—some possible uses. E. Wahnon. *Ing. chim. (Milan).* **38**(205), 107–18(1956). From 2500 to 11,000 kg. of oil can be extracted from a whale, 25 kg. of it from the liver. These oils are of lower molecular weight and less unsaturated than ordinary whale oil. The oil from the head contains 26% triglycerides besides considerable quantities of capric and lauric acids. The unsaturated acids are exclusively monoethylenic. The body oil contains 34% triglycerides, slight amounts of lauric acid and no stearic, large amounts of palmitoleic but little oleic acid. The liver oil is chiefly glyceridic and its acid compounds are similar to those of the livers of other marine animals. The extraction of spermaceti, representing 11% of the oil, is described, and the procedures used to analyze it are discussed. Possible use of the oil in synthetic detergents was studied. (*C. A.* **51**, 18655)

Chromatographic analysis of some constituents of marine animal oils. R. Reiser, Mary Frances Sorrels, and M. Bender (Texas A. & M. Coll., College Station). *Comm. Fisheries Rev.* **19**(4a), 9–10(1957). The technique of separating and identifying lipide constituents of marine oils by means of the silicic acid impregnated glass fiber filter paper was proved satisfactory for qualitative but not quantitative assays. (*C. A.* **51**, 18655)

Seasonal and regional variations in some chemical and physical properties of Alberta butterfat. F. W. Wood(Univ. Alberta, Edmonton). *Can. J. Agr. Sci.* **36**, 422–9(1956). Reichert-Meissl and iodine values, softening point and refractive index of butterfat from 7 creameries showed marked regional and seasonal variations. High refractive index, iodine number and Reichert-Meissl values were observed during the spring and summer and low values during winter and autumn. Softening points were inversely correlated with iodine values and with Reichert-Meissl values. (*C. A.* **51**, 18368)

Fractionation of butterfat by urea complexes in detecting adulteration. Saroj Tawde and N. G. Magar(Inst. Sci., Bombay). *Indian J. Dairy Sci.* **10**, 43–7(1957). Ghee containing 5 or 10% of hydrogenated peanut oil was converted to the fatty acids and dissolved in methyl alcohol containing an equivalent weight of urea. Urea forms a complex with the *cis* isomers of natural fatty acids but not as readily with the *trans* isomers of the hydrogenated acids. Thus treatment with urea produces different amounts of fatty acids in a series of 3 fractions, depending upon the amount of hydrogenated peanut oil present. The iodine value of the mixed fatty acids increases with increasing adulteration, the values being for one series 25.05, 28.08 and 33.27, respectively. (*C. A.* **51**, 18368)

The role of beta-carotene in the oxidation of butter. W. Schuller(Hochschulle Bodenkultur, Vienna). *Milchwissensch. Ber.* **7**, 1–26(1957). Butter containing 8 or 16 γ *beta*-carotene per g. oxidized after 13 days at 14° in diffuse daylight but was not yet oxidized after 19 days in darkness. Peroxide values of samples containing *beta*-carotene were lower than those of untreated butter during the induction period. The oxidation-inhibitory power of carotene was increased by the addition of 0.02 mg. ascorbic acid, 0.03 mg. copper lactate, or 0.2 g. lecithin per 100 g. butter in daylight but only by copper lactate in darkness. Diacetyl at 0.1 mg. per 100 g. butter increased the inhibitory activity of carotene during the first 3 days of storage, after which carotene promoted the oxidation. Carotene decomposition was considerable during the induction period but decreased with increasing oxidation. (*C. A.* **51**, 18368)

New types of fats as food concentrates. E. G. Chinenova and M. L. Minkvits. *Knoserv j Ovoshchesushil. Prom.* **12**(6), 6–9 (1957). Various holding test results (up to 15 months) are tabulated to demonstrate that low moisture (1.6%) butters are very stable in storage. Acid and peroxide values and development of aldehydes were used as criteria. Various amounts of moisture can be emulsified into the products in preparation for consumption. (*C. A.* **51**, 18368)

Autoxidation of ghee (butterfat). II. Absorption of oxygen, production of water and carbon dioxide during oxidation. S. L. Vachha, V. K. Laley, N. Narayana and J. A. Daji(Coll. Agr., Poona). *Indian J. Dairy Sci.* **10**, 6–15(1957). Twice as much oxygen was used up from an air stream by butter fat of buffalo milk at 98° than by fat from cow milk. The lower rate of oxygen usage by cow milk fat is attributed to its content of carotenoid pigments of antioxidant power. (*C. A.* **51**, 18369)

The use of synthetic sesamol in the detection of fatty adulterants. A. Daghetta and Ornella Bruss(Univ. Milan). *Ann. sper. agrar.(Rome)* **11**(4), Suppl. 97–106(1957). Synthetic sesamol can be used instead of the natural derivatives of sesame oil. The addition to oils of seeds would make it possible to detect them, before or after hydrogenation, as adulterants of olive oil or of butter. (*C. A.* **51**, 18372)

Seed fat composition of Citrullus colocynthis. A. Sengupta and M. M. Chakrabarty (Coll. Pharm., Pilani, Rajasthan, India). *Sci. and Culture(Calcutta)* **22**, 581–2(1957). Extractions and fractionations of oils show that small amounts of linolenic and arachidic acids constitute the only significant difference between oil from *C. colocynthis* of India origin and *C. colocynthis* from the Sahara region. (*C. A.* **51**, 18653)

The oil of uchi (Saccoglottis uchi). G. Pereira Pinto (Inst. agron. nord., Pernambuco, Brazil, S. A.). *Bol. téc. inst. agron. norte (Belém, Brazil)* **31**, 187–93(1956). This oil is extracted from the fruit pulp which constitutes 39.5% of the weight of the fresh fruit (about 50 g.). The author is of the opinion that uchi oil which resembles olive oil with regard to its organoleptic properties and its chemical composition could find application as a salad or frying oil. However, the low oil content of the fruit has been put as an argument against its commercial utilization. (*C. A.* **51**, 18653)

Oxidative deterioration in fish and fishery products. II. Progress on studies concerning mechanism of oxidation of oil in fish tissues. W. D. Brown, A. W. Venolia, A. L. Tappel, H. S. Olcott, and M. E. Stansby(Univ. of Calif. Davis). *Com. Fisheries Rev.* **19**(5a), 27–31(1957).

IV. Progress on studies concerning oxidation of extracted oils. *Ibid.* 35–7. An inverse correlation was found between the rate of autoxidation and tocopherol content of the oils. Treatment that tended to destroy the tocopherols also accelerated autoxidation. (*C. A.* **51**, 18373)

Isoöleic acids. V. Isoöleic acids of beef-body and cow-butter fats. M. R. Subbaram and A. P. Mahadevan(Nutrition Res. Labs., Coonor). *J. Sci. Ind. Res.(India)* **16C**, 130–3(1957). Partition chromatography has been employed to separate quantitatively and to estimate the isoöleic acid fractions of beef-body and cow-butter fats. This study confirms in a quantitative manner earlier observations that vaccenic acid, obtained from these natural sources is not a homogeneous substance. (*C. A.* **51**, 18372)

Stabilization of edible fats by spices. II. S. C. Sethi and J. S. Aggarwal(Natl. Chem. Lab. India, Poona). *J. Sci. Ind. Res. (India)* **16A**, 181–2(1957). The antioxidant properties of the various essential oils, phenols, etc, extracted from turmeric, dried ginger, onions, cinnamon leaves, garlic, and pepper were studied. A yellow solid extracted from onions exhibited the most antioxidant activity of the group, but it was not of a high order. (*C. A.* **51**, 18372)

Examination of solid floor wax and floor stains in oil bases. G. Feldmeier, Ursula Ritter and H. Schulze(VEB WITT-OL, Lutherstadt-Wittenberg, Ger.). *Seifen-Öle-Fette-Wachse* **82**, 196–7(1956). A discussion of penetrometer studies on wax with various loads and of the determination of the solidification point. (*C. A.* **51**, 18657)

Effect of alcohol on the iodine value of fat peroxides. A. R. S. Kartha(Maharaja's Coll., Ernakulam). *J. Sci. Ind. Res.(India)* **16B**, 272–4(1957). The present results do not support the theory that peroxides with blocked iodine values are present in the initial autoxidation products of unsaturated esters of fats. Treatment of the initial products of fat autoxidation with aliphatic alcohols was found to produce a decrease in iodine value. The results indicate that aliphatic alcohols can produce isomerization of the initially formed peroxides to give isomers in which iodine absorption is blocked by the peroxide radical. (*C. A.* **51**, 18647)

Trimethylene glycol in glycerol. D. S. Davis(Univ. of Alabama, University). *Chem. Processing* **20**(3), 212(1957). The amount of trimethylene glycol in crude glycerol can be estimated when the specific gravity at 20° and the acetin value as % glycerol are known. A nomograph to facilitate the estimation is presented. (*C. A.* **51**, 18648)

Tall oil fatty acids in flavor wax. R. S. Kondrath, A. D. Nevers and J. L. Eaton(Pennsalt Chemicals Corp., Philadelphia, Pa.). *Soap Chem. Specialties* **33**(9), 77–80, 115, 117 (1957). Tall oil fatty acid can replace oleic acid in a number of no-rub floor wax emulsions and thus reduce cost without significantly altering important wax properties. (*C. A.* **51**, 18657)

Chemistry of Andiroba (crabwood) oil (Carapa guianensis). G. Pereria Pinto(Inst. agron. norde., Pernambuco, Brazil). *Bol téc. inst. agron. norte (Belém, Brazil)* **31**, 195–206(1956). Not less than 20% of the vegetable oil produced in extreme Northern Brazil is extracted from the crabwood fruit. Although the oil content of the dry kernel is not less than 56.7%, the local industry rarely succeeds in obtaining yields above 30%. Yields over 18% are exceptional among the popular methods for extracting the oil. Physical and chemical constants of the oil are given. (C. A. **51**, 18654)

Effect of antioxidants on the iodine value of fats autoxidizing in air. A. R. S. Kartha(Maharaja's Coll., Ernakulam). *J. Sci. Ind. Research(India)* **16B**, 271–2(1957). The results show that antioxidants can produce less reactive peroxides by isomerization of the more reactive types. This may not be directly related to the arrestment of oxygen absorption by the action of the antioxidants on the reactive peroxides which catalyze autoxidation. Any peroxides which may develop in the presence of antioxidants (e.g., during the induction period) can only be of the nonreactive type, incapable of producing a decrease in iodine value. (*C. A.* **51**, 18654)

Vegetable oils and fats. II. Takeji Kashimoto(Kanazawa Univ.). *Nippon Kagaku Zasshi* **75**, 1110–5(1954); cf. *Nippon Gakujutsu Kyokai Hokoku* **14**, 263(1939). The nature of oils extracted from *Rhodotypos scandens, Albizzia julibrissin, Robinia pseudoacacia, Astragalus sinicus, Wistaria floribunda, Sophora japonica, Allium fistulosum, Tetragonia expansa, Spinacia oleracea* and *Beta vulgaris* var. *cicla* have been studied. All species contained palmitic, stearic, arachidic, oleic, and linoleic acid. In addition, *Spinacia oleracea* contained cerotic acid, and *Robinia pseudoacacia* and *Astragalus sinicus* contained linolenic acid.

III. *Ibid.* **76**, 664–7(1955). Oils from the seeds or fruits of *Datura tatula, Sciadopitys verticillata, Zanthoxylum piperitum, Actinidia polygama* and *Plantago major* var. *asiatica* were extracted and analyzed. (*C. A.* **51**, 18652)

Estimates of cost and optimum plot size and shape for measuring yield and chemical characters in soybeans. C. R. Weber and T. W. Horner(Iowa State Coll., Ames). *Agron. J.* **49**, 444–9(1957). Seed yield was 6 to 28 times more variable than chemical characters. Total cost, in hours, was 39% for obtaining yield and 61% for chemical attributes. Optimum plot size, apportioning cost among characters, was 3.2 times the basic unit (8 by 2 ft.). Yield required 33, 50, and 700 times more replication than oil, protein, and iodine number, respectively, for comparable precision. (*C. A.* **51**, 18651)

Hyderabad earth for bleaching vegetable oils: II. S. S. Joshi, S. A. Saletore and S. H. Zaheer(Regional Res. Lab., Hyderabad). *J. Sci. Ind. Research(India)* **16A**, 179–80(1957). Earths from Korvi and Chime-idlai were equivalent to samples of commercial earths tested at the same time, and are considered suitable for exploitation commercially. (*C. A.* **51**, 18651)

Production of phospholipide concentrate and high quality oil. G. I. Baglai, E. G. Patkanov, V. P. Rzhekhin and E. A. Semennov(Oil-Fat Combine, Dnepropetrovsk). *Masloboino-Zhirovaya Prom.* **23**(7), 7–10(1957). Apparatus and method for the manufacture of phospholipide concentrate and high quality oil are discussed. (*C. A.* **51**, 18650)

The oil from the seed of Aristolochia clematitis. A. E. Petrov-Spiridonov and N. Ya. Maslov. *Doklady, Moskov. Sel'skokhoz. Akad. im. K. A. Timiryazeva, Nauch. Konf.* **1956, No.** 22, 167–71. The physical constants of the oil are: d^{20} 0.9336, n_D^{20} 1.4675, acid value 151.8, saponification value 193.15, Reichert-Meissl number 2.76, and iodine value 102.81. (*C. A.* **51**, 18650)

Selective adduction of urea with fatty acids. V. V. R. Subrahmanyam and K. T. Achaya(Regional Res. Lab., Hyderabad). *J. Sci. Ind. Res.(India)* **16B**, 269–70(1957). In order to determine whether sharp selectivity can be obtained in adduct formation, the induction periods and rates of adduction of the mixed fatty acids of safflower oil and beef tallow were studied under different conditions. While differential adduction is an excellent method for the separation of linoleic acid from saturated and/or oleic acid as with safflower oil fatty acids, the method is of little value in obtaining sharp separation of saturated acids from oleic acid as in the case of beef tallow fatty acids. (*C. A.* **51**, 18649)

The composition of fatty acids and glycerides of corn oil and its winterization residual oil. Maromi Takeda, Hideko Takai, Futara Ono and Yoshiyuki Toyama(Nagoya Univ.). *Abura Kagaku* **6**, 13–7(1957). The values for saturated oleic, linoleic acid and the mole per cent of trisaturated, disaturated, monosaturated, and triunsaturated glycerides for the decolorized oil from the yellow dent corn of the U.S.A. are 11.4, 31.8, 56.9% and 0, 4.6, 28.4 and 67.0. Those for its winterized residual oil are 15.0, 31.5, 53.4% and 0, 7.0, 32.8 and 60.2. Those for decolorized oil from white dent corn of South Africa are 15.4, 36.3 and 48.4%, and 0, 17.4, 33.9 and 59.1. Those for its winterization residual oil are 23.4, 31.5 and 45.1% and 0, 17.4, 39.1 and 43.5. (*C. A.* **51**, 18648)

Production of edible high-quality hydrogenated fat. M. K. Yakubov(Polytech. Inst., Kharkov). *Masloboino-Zhirovaya Prom.* **23**(7), 12–5(1957). Study revealed that selective hydrogenation of oil was enhanced and the side reactions resulting in the development of unpleasant hydrogenated flavors were either prevented or reduced to the minimum when dried (4.4–4 g. of moisture per cu. m.), well dispersed hydrogen gas was passed through a 500-g. body of oil at the rate of 0.5 l. per min. at 100–120 and 240–260°, respectively in the presence of 0.3–0.8% of worked out catalyst. The rate of inactivation for the catalyst decreased with the moisture content of hydrogen, and very active catalyst and excess of hydrogen promoted hydrogenated flavors. (*C. A.* **51**, 18648)

Effect of component acid composition on the peroxide value of fats during initial stages of autoxidation. A. R. S. Kartha (Maharaja's Coll., Ernakulam). *J. Sci. Ind. Res.(India)* **16B**, 270–1(1957). The autoxidation of peanut oil and mixtures of the oil containing 25 and 50%, respectively, of ethyl stearate was followed by peroxide determinations and organoleptic evaluations. The relative proportion of unsaturated acid glycerides present in the fat is mainly responsible for determining the end of the induction period and the peroxide values during the initial stages of autoxidation. (*C. A.* **51**, 18647)

Fatty oils of aquatic invertebrates. IV. Fatty acids and sterols in the fat of Spisula sachalinensis. Yoshiyuki Toyama and Toru Takagi(Nagoya Univ.). *Nippon kagaku Zasshi* **75**, 1238–41(1954).

V. Properties of some Japanese shellfish oils with special reference to provitamin D content of crude sterols. *Ibid.* 1241–3.

VI. Fatty oils of Gorgonocephalus caryi and Ophioplocus japonicus. *Ibid.* **76**, 237–40(1950).

VII. Properties of the fats from eleven species of Japanese shellfish. *Ibid.* 240–3.

VIII. Fatty oils from Cucumaria chronhjelmi, Coscinasterias acutespina, and Comanthus japonica with special references to sterol components. *Ibid.* 243–6. (*C. A.* **51**, 18656)

Determination of fat in whale-meat extract. A Benterud(Collett & Co. A/S Oslo, Norway). *Norsk Hvalfangst-Tidende* **45**, 511–2(1956). An analytical method with accuracy adequate for process control on extracts containing 0.01–0.5% fat was reported. (*C. A.* **51**, 18656)

Vitamin A in dairy products. V. Relative stability of synthetic vitamin A in ghee, oils, and fat on storage. S. R. Sampath, C. P. Anantakrishnan and K. C. Sen(Natl. Dairy Res. Ins., Bangalore). *Indian J. Dairy Sci.* **10**, 34–42(1957). Loss in vitamin A during 6 months' storage at 37° of oils fortified with 50 I.U. per g. of synthetic vitamin A acetate were: cow-milk ghee 12, coconut oil 75, hydrogenated peanut oil 82, peanut oil 87, refined peanut oil 92, and sesame oil 100%. Similar values were obtained for the same materials fortified with a vegetable-oil concentrate of vitamin A. Neither butylhydroxyanisol nor ethyl gallate improved the stability of vitamin A during storage of the oils, though ethyl gallate did suppress the development of peroxide. (*C. A.* **51**, 18369)

Physicochemical process for the separation of seed oils by semi-solvents of the series of saturated gaseous hydrocarbons mixed with noncombustible gas. Mario Jannetti and L. Fimiani. *Ital. 515,612.* A closed system utilizing a volatile hydrocarbon under pressure is disclosed. The liquid hydrocarbon is forced by its vapor pressure into a vessel containing the seed paste. The liquid percolates down through the bed and a supporting felt-covered piston and drains into a jacketed vessel. In this vessel the hydrocarbon is evaporated *in vacuo* and returned to the hydrocarbon storage reservoir where it condenses. The oil and water are drained from the jacketed vessel into another and separated. The piston can be moved up by pressure applied to a piston on the other end of the supporting shaft thereby squeezing additional fluid from the insoluble meal. The vapor space in the hydrocarbon storage vessel is pressured with sufficient noncombustible gas to render the mixture safe at all times. The jacketed vessel is heated by the compressor which evaporates the volatile contents by suction. (*C. A.* **51**, 18661)

Catalysts for isomerization of oils. Keizo Tanabe (Agency of Industrial Science and Technology). *Japan 8065('55).* The catalysts are suitable for transferring or conjugating the double bonds in the acid radicals of soybean oil, etc., to make drying oils. In an example, nickel sulfate, 5 parts was dissolved in 50 parts of water and 4 parts of active carbon was added to it. The precipitate formed by addition of 15% sodium hydroxide solution at room temperature was filtered and washed. Nickel sulfate (1 part) dissolved in 50 parts of water was added, the mixture then being dried over a water bath with stirring. The residue was reduced in a hydrogen atmosphere at 350–70° for 2 hours. Soybean oil (50 parts) in the presence of 5 parts of catalyst gave a 29% yield after 3–6 hours' reaction in an inert atmosphere at 180–200°. The sulfates of Mn, Cr, Cu, and Co gave yields of 29, 30, 26, 22 and 21%, respectively. Bone charcoal, graphite, kieselguhr or acid clay can be used as carriers. (*C. A.* **51**, 18645)

Prevention of oxidative changes of foods. Yusuke Sumiki and Saburo Tamura. *Japan 8124('55).* Use of 0.005–0.5% ω,ω'-bis-(3,4-dihydroxyphenyl)alkanes is claimed for prevention of oxidative changes of foods containing fats, oils, vitamin A, or carotene. (*C. A.* **51**, 18387)

Treatment of a sediment of a pressed oil. Takao Wakabayashi (Nippon Oil Co.). *Japan 8722('55).* A sediment (100 g.) from soybean oil was boiled with 100 l. of 10% sodium hydroxide at 250° under pressure for 30 minutes, acidified by dilute sulfuric acid, and formed into layers. The separated fatty acids layer was distilled under diminished pressure, and 88 parts of fatty acids distillate were esterified with 12 parts of pentaerythritol to give a drying oil product. (*C. A.* **51**, 18661)

FATTY ACID DERIVATIVES

Technology of production of higher fatty alcohols by direct oxidation of paraffin hydrocarbons. A. N. Bashkirov, V. V. Kamzolkin and S. A. Lodzik. *Masloboino-Zhirovaya Prom.* **23**(7), 24–6(1957). Theoretical and practical considerations of a direct oxidative method are discussed with special reference to raw materials, oxidation of hydrocarbons, separation and hydrolysis of boric acid esters of higher fatty alcohols, treatment of raw alcohols with caustic soda and distillation of fatty alcohols. (*C. A.* **51**, 18657)

Preparation of hydroxystearin. G. V. Pigulevskii and A. E. Saprokhina (A. A. Zhdanov State Univ., Leningrad). *Zhur. Priklad. Khim.* **30**, 1104–5(1957). Trihydroxystearin was prepared from *Euphorbia lathyris* oil. These triglycerides can be used for the study of the structure of mixed triglycerides in vegetable oils. (*C. A.* **51**, 18650)

Comparative surface activity of monoglycerides from different oils. K. Rama Varma (Tata Oil Mills Co., Bombay). *Indian Soap J.* **22**, 191–4(1957). Monoglycerides of coconut, peanut, and castor oils were prepared by heating a mixture of oil, 500% of the theoretical quantity of glycerol required for the formation of monoglycerides and 1% soap on the fat basis. Of the three monoglycerides tested, the one from coconut oil had the highest wetting power, and this increased with the increase in concentration. (*C. A.* **51**, 18650)

New products from fish oils. I. Introduction. M. E. Stansby (U. S. Fish and Wildlife Service, Seattle, Wash.). *Comm. Fisheries Rev.* **18**(8), 1–3(1956).

II. Polyamino fatty acids derived from fish oils. R. N. McDonald and E. H. Gruger, Jr. (U. S. Fish and Wildlife Service, Seattle, Wash.). *Ibid.* **18**(9), 7–11.

III. Preparation and separation of fatty alcohols made from fish oils—a preliminary study. E. H. Gruger, Jr. *Ibid.* **19**(4a), 13–7(1957).

IV. Preliminary investigations on alkyl halides, silicones and quaternary ammonium salts. *Ibid.* 18–23 (*C. A.* **51**, 18652)

• Biology and Nutrition

Paroxysmal nocturnal hemoglobinuria. Evidence of defect of red cell stroma manifested by abnormalities of lipides. J. I. Munn and W. H. Crosby (Walter Reed Army Institute Research, Washington, D. C.). *Proc. Soc. Exptl. Biol. & Med.* **96**, 480–482(1957). The extracted lipids from the red cells of 2 patients were analyzed for cholesterol, unsaturated and saturated fatty acids. The ratios of the various lipids were established and the values were related to the total lipids and also to the surface area of the red cells. Compared to the normal red cells the PNH cells showed an increased concentration of arachidonic and pentaenoic acids and a decreased concentration of oleic acid. These results suggest that the lipid pattern of the lipoproteins in the stroma of PNH cells is abnormal.

Lipogenesis by adipose tissue, dietary effects. J. P. Miller, J. A. D. Cooper, and S. Freeman (Northwestern Univ. Med. Sch., Chicago, Ill.). *Prc. Soc. Exptl. Biol. & Med.* **95**, 817–819 (1957). The incorporation of C^{14}-acetate into lipid and CO_2 by rat tissue (in vitro) was studied, with emphasis on the effect of nutritional status upon the lipogenic activity of adipose tissue. Fasting was found to produce an increase in lipid concentration and lipogenic activity. In normal rats lipogenic activity of the tissue was found to increase during recovery feeding, following fasting. The increased activity was paralleled by increased nitrogen and glucose content of the tissue and by decreased lipid content. Lipogenic activity of adipose tissue of rats could be made relatively constant by depletion of fat stores followed by recovery feeding.

Effect of a brain extract on turnover rate of serum cholesterol. R. J. Jones, O. K. Reiss, E. L. Balter and L. Cohen (Univ. of Chicago). *Proc. Soc. Evptl. Biol. & Med.* **96**, 442–446(1957). In radioisotope studies in the chick and the dog, the turnover rate of the serum cholesterol, as measured by the biological decay of endogenously labeled C^{14} cholesterol, was substantially increased by the feeding of a cerebroside-rich extract of mammalian brain, Much less influence was found on the turnover rat of P^{32} labeled phospholipids. Some evidence is presented to suggest that the increased turnover rate of serum cholesterol is produced by an increased fecal excretion of endogenous cholesterol.

Effect of dietary lipids on the lipids of rats' milk. L. E. Hallanger and M. O. Schultze (Univ. Minn., St. Paul). *Proc. Soc. Exptl. Biol. & Med.* **96**, 473–476(1957). Spectrophotometric determination of polyenoic acids showed that the milk of rats whose diets contained methyl linoleate as the only source of fatty acid contained significant quantities of unconjugated dienoic, trienoic and tetraenoic acids. Feeding of vegetable oils caused a great increase in concentration of unconjugated dienoic acid and, to a smaller extent, an increase of trienoic and tetraenoic acids in milk fat.

Potassium acetate inhibition of Lactobacillus casei and its reversal by lithium, sodium and fatty acids. M. N. Camien and M. S. Dunn (Chem. Lab., Univ. of Calif., Los Angeles). *Proc. Soc. Exptl. Biol. & Med.* **95**, 697–700(1957). Growth of *L. casei* 7469 in a low-sodium, fatty acid-free medium is inhibited synergistically by potassium and acetate. Neither potassium nor acetate is significantly inhibitory when tested separately. The inhibition is readily reversed by either lithium or sodium and by a wide variety of fatty acids, the most effective of which are lactobacillic, oleic, linoleic, and linolenic acids.

Alteration of serum cholesterol by dietary fats. W. D. Armstrong, J. Van Pilsum, A. Keys, F. Grande, J. T. Anderson, and L. Tobian (Univ. Minn., Minneapolis). *Proc. Soc. Exptl. Biol. & Med.* **96**, 302–306(1957). Serum total cholesterol concentrations were measured in 122 young men and 19 women before and after 9 days during which each person ingested daily 57 g. of corn oil, olive oil, safflower oil or butterfat. The subjects who ingested butterfat showed a slight but statistically insignificant rise in the serum cholesterol while those who ingested the other fats exhibited a statistically significant decrease, averaging 23.0 ± 2.8 mg. per 100 ml. with corn oil, 18.0 ± 4.6 with safflower oil and 10.7 ± 2.3 with olive oil. It appears that the degree of unsaturation is not the sole explanation of the amount of effect of the fats.

Effect of aureomycin on hepatic utilization of labeled body fat in rats. J. E. Anderson and J. G. Conoglio (Vanderbilt Univ. Sch. Med., Nashville, Tenn.). *Proc. Soc. Exptl. Biol. & Med.* **96**, 352–354(1957). Administration of 5 mg. aureomycin to rats, the body fat of which had been labeled previously with C^{14}-tripalmitin did not result in accumulation of excessive C^{14} activity in hepatic fatty acids. The amount and radioactivity of total fatty acids of carcass and of intestine were likewise similar in experimental and control animals. These findings are discussed in relation to the observation that aureomycin causes an increase in incorporation of C^{14}-acetate into hepatic fatty acids of rats. A 4-day metabolic balance study showed that from 81 to 93% of the fed tripalmitin was absorbed.

• Drying Oils and Paints

Selective hydrogenation of tung oil. M. R. Mills (Brit. Oil & Cake Mills Ltd., Albion Wharf, Erith, Engl.). *J. Oil & Colour Chemists' Assoc.* 40, 10–22, discussion 22–3 (1957). Tung oil is conjugated by isomerization at 140°, by using hydrogen and nickel catalysts artificially poisoned with sulfur or selenium. The reaction is selective, with a range of oils obtained. The maximum dienoic content of these oils is $>50\%$. If the temperature is raised from 140° to 170°, polymerization rather than isomerization occurs. The amount of conjugated diene produced is greater than obtained by using an active catalyst, but in all cases a maximum of 30% is obtained. This range is compared with other artificially isomerized oils (*C. A.* **51**, 18653)

Effect of wax in refined linseed oil on high-gloss enamels. F. Mort (Taubmans Inds. Ltd., St. Peters, N. S. Wales). *J. Oil & Colour Chemists' Assoc.* 40, 24–9 (1957). Wax present as an impurity in linseed causes visible defects in films of high-gloss enamels. The presence of the wax is proven by chemical and spectroscopic analysis. Efforts to remove the wax completely have not been successful. (*C. A.* **51**, 18641)

Drying oils. B. N. Totonnikov and Z. I. Bukhshtab. *U.S.S.R. 106,569.* Normal, saturated fatty acids with 7–10 carbon atoms are combined with 20–30% saturated fatty acids having branched carbon chains. (*C. A.* **51**, 18645)

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• Detergents

Continuous soap making. Anon. *Soap & Chem. Specialties* **33** (11), 135, 137, 139 (1957). The Podbielniak multi-stage countercurrent centrifugal "soaprazon" unit used in the continuous washing and finishing of soap, consists of a horizontal rotor, pressure tight, which is rotated on its axis. Centrifugal forces ranging from 2,000 to 5,000 times gravity ensure high extraction efficiency and phase separation. Controlled orifice design permits intimate mixing of soap and brine phases.

Influence of molecular size of esterifying alcohol on surface activity of sulfated ester of a higher fatty acid. J. Hell. *Chem. prumsyl* 7(2), 61–3 (1957). The surface activity of solutions containing Na salts of sulfated esters of oleic acid and primary alcohols (C_1–C_4) decreases with the increasing molecular weight of the esterifying alcohol. If, however, secondary alcohols (C_3–C_5) were used, the surface energy of corresponding compounds increases slightly with increasing molecular weight. In case of iso-alcohols, the influence of molecular weight on surface tension is not as pronounced as with normal alcohols. (*C. A.* **51**, 18649)

Determination of foaming power and synergistic phenomena. L. Kaertkemeyer (Soc. Carbochim., Tretre, Belg.). *Parfums, cosmet., savons* **138**, 31–7 (1957). A test is described for the measurement of foaming power, under dynamic and static conditions. Five hundred cc. of a solution containing 0.056 g./l. of active material are stirred in a standard manner in a 1 l. beaker under specific conditions of temperature and water hardness. The rate of foam buildup under stirring is observed for 15 min.; stirring is stopped and the foam breakdown is followed for an additional 30 minutes. The application of the test to the demonstration of the synergistic effect of various fatty acid ethanolamides on the foam of household detergents is described. (*C. A.* **51**, 18659)

Continuous manufacture of soap under vacuum. P. D. Kupchinskii, G. A. Belan, and S. K. Akatov. *Masloboino-Zhirovaya Prom.* 23(7), 19–24 (1957). Vacuum apparatus for the continuous manufacture of soap is discussed with regard to composition, drying, sanitary conditions, labor, cost, etc. (*C. A.* **51**, 18658)

The effects of adding organic liquids on the structure and mechanical properties of aqueous sodium oleate solutions. Z. N. Markina and P. A. Rebinder (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* **109**, 1156–9 (1956). The solubilization of hydrocarbons or low-polarity organic liquids in aqueous semicolloidal solutions (soaps) is a colloidal phenomenon, and is governed by the structural peculiarities of the micelles and the development of the spatial structure at high soap concentrations. The colloidal dispersibility, being to a greater extent determined by the micellar structure of the surface-active semicolloids, exerts in its turn a strong effect on that structure. The organic liquids tested were of 2 kinds, and affected the colloidal properties in opposite ways: nonpolar liquids solubilize the micelles and cause a thinning out of the system; polar liquids thicken the solution by converting it into a true gel, and the stiffening is caused by bridging of the micelles by the polar molecules. (*C. A.* **51**, 13516)

The detergency of some alkyl benzenesulfonate mixtures with soaps. J. Profic (Inst. Przemyslu Tluszezowego, Warsaw). *Olii minerali, grassi e saponi, colori e vernici* **34**, 230–1 (1957). The detergency of mixtures of dodecyl benzenesulfonate (I) with colza oil, tallow and coconut soaps was examined with the launderometer. In both distilled and hard water the components of the mixtures do not interfere with each other, and the maximum of washing power coincides with the maximum content of I. (*C. A.* **51**, 18659)

Polyoxyethylation of alcohol. W. B. Satkowski and C. G. Hsu (Monsanto Chem. Co., Everett, Mass.). *Ind. Eng. Chem.* **49**, 1875–8 (1957). The polyoxyethylation of alcohols such as isooctyl, decyl, and tridecyl, was carefully studied. The effect of different catalysts, catalyst concentration, reaction temperature, reaction pressure, and different alcohols was examined and results discussed. A mechanism for this reaction was postulated. Some interesting work is reported on a process that is of current industrial application in nonionic surfactants.

The nomenclature of the surface-active substances. J. de Launoit Stas and G. Verheggen (Union chim. belg., Brussels). *Ind. chim. belge* 22, 683–95 (1957). A classification of industrial surface-active products is proposed. (*C. A.* **51**, 18658)

The mode of operation of anti-redeposition agents in detergent solutions. H. S. Stillo and R. S. Kolat (Dow Chem. Co., Bay City, Mich.). *Textile Research J.* 27, 949–61 (1957). Application of colloid stability theory to soil redeposition in detergent liquors has enabled the formulation of a working hypothesis for the effect of polymeric additives on the process. Ionogenic additives are presumed to function by increasing the electrical repulsive forces between soil and fabric, while nonionogenic or weakly ionogenic additives may decrease the attractive dispersion forces or increase the nonelectrical repulsive forces. The electrical repulsive force is inferred from soil redeposition tests to be at a maximum when the *zeta* potentials of soil and fabric are equal in sign and magnitude. As the difference in *zeta* potential between the two substrates is increased, an attractive force results, even though the sign of the *zeta* potential is the same for both substrates. The behavior is attributed to an induced charge effect.

Bar form synthetic detergents. J. K. Weil, A. J. Stirton, E. W. Mauer and W. E. Palm (Eastern Regional Research Lab., Philadelphia 18, Pa.). *Soap & Chem. Specialties* 33(12), 49–52, 143, 145 (1957). Experimental detergent bars were made based entirely on selected salts of α-sulfonated saturated tallow acids. Hardness, solubility and foam production, lather characteristics, and dish life were found to correlate in a general way with detergent composition. Attractive bars can be made from the monosodium or monoammonium salt $RCH(SO_3M)CO_2H$ by partial neutralization of the carboxyl group with an amine or mixtures of amines. Hardness and solubility can be controlled by choice of the amine and the extent of the partial neutralization. Triethanolamine, isopropanolamine, and triethylamine tend to produce softer and more soluble bars than do ethanolamine or ethylamine. Hardness and solubility are also influenced by water content. A relatively low water content tends to produce a somewhat harder and less soluble bar.

Cake detergent and method for its production. E. A. Vitalis (American Cyanamid Co.). *U. S. 2,813,078.* A non-dermatitic detergent in a durable hardened cake is prepared by compacting under a pressure of at least 100 pounds per square inch a normally plastic alkali metal sulfosuccinate selected from the group consisting of di-n-octyl, di-n-nonyl and di-n-decyl sulfosuccinates and mixtures thereof.

Soap composition. V. C. Fusco and R. C. Harshman (Olin Mathieson Chem. Corp.). *U. S. 2,813,112.* Soap compositions can be stabilized to color and odor formation by the incorporation, after saponification, of minor amounts of azines prepared by the reaction of hydrazine with aldehydes or ketones.

Germicidal soap composition. J. M. Wenneis, T. F. Cleary and S. Chodroff (Norda Essential Oil & Chem. Co.). *U. S. 2,814,597.* An effective germicidal soap contains as the active germicide, a compound such as 2-hydroxy-3-methyl-5-chloro phenyl sulfide which is found to be non-toxic, non-irritating and nonsensitizing.

High solids detergent compositions. D. Aelony (General Mills, Inc.). *U. S. 2,814,643.* Fatty amine-acrylate condensation esters are hydrolyzed by heating with an aqueous solution of an alkali metal hydroxide having a concentration of at least 15% and including a small quantity of a lower aliphatic alcohol until the hydrolysis is complete to produce detergent compositions of very high solids content.

Measurement of detergent properties by stretching thin films of detergent solutions. J. Vallee (Iterg, Paris) and R. Guillaumin. *Rev. franc. corps gras* **4**, 309–314 (1957). The aqueous solutions of 9 commercial laundering products were examined in the stretching apparatus of J. Thibaud at 18° as described previously (*C. A.* **15**, 1629, 4029). Their detergent capacity, expressed in a conventional scale, was 450–2450, with active-substance contents of 18–40%. Results were compared with tests on washing artificially soiled tissue in a Lavomatic apparatus. The whiteness was determined with a Photovolt device. It is concluded that stretching method results indicate detergent capacity. The stretching values of Na oleate, sulfonated dodecylbenzene, and 7 other pure compounds at concentrations 1/50 to 2/2400 *M* are presented.

A study on hygroscopicity and the sweating of soaps. C. Defromont, M. Loury, J. P. Sisley, and J. Vallee. *Rev. franc. corps gras* **4**, 417–426 (1957). The authors discuss the difference between hygroscopicity and the sweating of soaps. The 8 figures and 6 tables sum up their findings.

Germicidal detergent composition. F. W. Gray (Colgate-Palmolive Co.). *U. S. 2,809,937.* A germicidal detergent composition is prepared consisting of from about 5 to 95% of a water-soluble organic anionic detergent and from about 0.01 to 50% of a N-chlorinated higher alkyl aryl sulfonamide compound such as sodium salt of dodecylbenzene monosulfonmonochloramide.

Preparation of beta amino propionate surfactants. R. C. Freese (General Mills, Inc.). *U. S. 2,810,752.* Surfactants having the formula $RNHCH_2CH_2COOM$ in which R is an aliphatic hydrocarbon group containing from 8–22 carbon atoms and M is a salt-forming group are prepared by reacting an undistilled fatty amine RNH_2 with a lower aliphatic ester of acrylic acid to produce the corresponding β-amino propionate ester, hydrolyzing the ester, adjusting the pH of the solution to produce a low viscosity and separating suspended material from the aqueous solution.

Process of preparing high solids β-alanine detergents. D. Aelony (General Mills, Inc.). *U. S. 2,811,549.* The foam characteristics of a β-alanine detergent are improved by extracting the detergent with an organic solvent for foam depressants which is non-gelling to the detergent, said solvent being selected from the group consisting of ethyl acetate, methyl ethyl ketone, 1-nitropropane, etc.

Improvements in or relating to high density spray-dried granular, soapless detergent composition. Purex Corp. Ltd. *Brit. 774,804.* A detergent composition having a bulk density between 0.33 to 0.45 grams/cc. is prepared by spray drying a mixture of water soluble builder salt and 35 to 45% by weight of a water soluble detergent such as alkyl arylsulfonate, sulfated alkylolamide etc., in which the hollow beads result from deaeration of an aqueous slurry, and yield a more dense product.

Improvements in soap compositions. J. P. Parke (Unilever Ltd.). *Brit. 775,364.* A soap composition which shows a reduced tendency to form a ''bath tub ring'' contains soap and a water-soluble, surface-active alkali metal salt of a N-substituted amino acid such as sodium N-*n*-dodecyl-δ-amino valerate or sodium-β-methyl-N-*n*-dodecyl-β-amino propionate.

Separation of nonionic surface-active agents from mixtures with anionics by batch ion exchange. M. J. Rosen (Brooklyn College, Brooklyn, N. Y.). *Anal. Chem.* **29**, 1675–6 (1957). Nonionic surface agents can be separated from mixtures with anionics by a batch ion exchange method in which a solution of the surfactant mixture is stirred with a relatively small amount of a strong anionic exchange resin. The anionic material is adsorbed firmly by the resin, and is removed together with it by filtration; it is then washed free of nonionic material with methanol. The nonionic material is recovered in substantially quantitative yield from the filtrate and washings. Results with 14 binary nonionic-cationic mixtures are discussed.

Granulated detergents. Chimiotechnic, Union Chimique du Nord et du Rhone. *Brit. 776,626.* Relatively large amounts of liquid are incorporated into a pasty mass which is granulated, the granules are then subjected to a cold blast of air to separate and set the granules thus preventing agglutination, and the remaining liquid enclosed in the granules is evaporated suddenly by heating, whereby the detergent granules thus formed result in a porous structure having a low specific weight and a high rate of dissolution.

Improved germicide. J. H. Christie (Kay Brothers Ltd.). *Brit. 777,887.* An improved germicide having detergent properties and which is functional over a wider pH range is prepared by sulfonating a mixture of a phenol such as chlorothymol, and a glyceride, and then successively reacting the resultant product with a polyhydric alcohol such as propylene glycol and then with an unsaturated aldehyde—such as acrolein, and phenol.