ABSTRACTS . . . . Don Whyte, Editor

NOTE: We have been fortunate in being able to add an abstractor, Sinitiro Kawamura, for the Japanese journals. His abstracts will cover all our fields of interest. In order to give Mr. Kawamura credit for his work we will insert his name in front of each series of abstracts for which he is responsible.

• Oils and Fats

R. A. Reiners, Abstractor

Whale oils: content of saturated fatty acids in whale oils. T. Pederson. *Hvalradets Skrifter, Norske Videnskaps-Akad. Oslo* No. 34, 1-54 (1950). Analyses of fatty acid mixtures and experiments with C_{20}-C_{22} acids from whale oils showed that the Bertram method for the determination of saturated acids was applicable to antarctic whale oil and probably also to North-Atlantic fin whale oil. The mean content of saturated acids of commercial antarctic whale oils was slightly above 28%. North-Atlantic fin whale oil contained about 23% saturated acids. The data on the individual saturated acids of the antarctic oils indicated constant proportions between the individual constituents. The mixed free fatty acids of the blubber of pike whale *(Balaenoptera acutorostrata)* contained 15.7-17.8% saturated acids. Data from various parts of whale carcasses and from different strata of the blubber showed distinct differences in content of saturated acids.

Content of positional isomeric hexadecenoic and octadecenoic acids in partially hardened whale oil. *Ibid.* 55-64. Whale oil hardened to 40-42° was converted to methyl esters, and the C_{16} and C_{18} fatty acid esters were isolated by fractional distillation. Oxidizing this fraction in acetone with $KMnO_4$, conversion to methyl esters, and distillation indicated that there was some migration of the double bond from the 9 to the 10 and 11 positions in the carbon chains. (*Chem. Abs.* **46**, 4252)

Ion-exchange resins for removing the free fatty acidity of oils. T. A. Venkatasubrahamanian and S. S. De (Indian Inst. Sci., Bangalore). *Science and Culture* **17**, 180-1 (1951). Oils deacidified with acid-absorbing resin had better keeping qualities (judged by the induction period in an O_2 atmosphere) than those deacidified by other methods. (*Chem. Abs.* **46**, 4251)

Determination of the fat content of milk products. S. Anselmi (Ist. sup. sanita, Rome) and R. Cesari. *Mondo latte* **1952**, 23-4, 27-8, 31, 33. Thirty determinations were made by mixing cheese, butter, margarine, milk, or cream with an anhydrous salt (mostly Na_2SO_4), allowing to stand 1 hr., and extracting with ethyl ether in a Soxhlet apparatus for 4-5 hours. (*Chem. Abs.* **46**, 4138)

Chemical composition of meat and fat of Arkharomerinos sheep. U. T. Tashmukhametov and E. A. Nikolaeva. *Izvest. Akad. Nauk Kazakh. S.S.R.* No. 71, *Ser. Biol.* No. 5, 117-20 (1949). Arkharomerinos sheep, bred for high mountainous regions, exceed their original parent strains in the quality of meat. Fat analyses gave density 0.89, m. from 46° to 52.0°, f.p. 21-23°, acid no. from 1.07 to 8.2, saponification no. 218-248, and iodine no. 36.7-44.0. (*Chem. Abs.* **46**, 4140)

The technical constants of resins and oils. K. Meier (Tech. Univ., Berlin). *Farbe u. Lack* **57**, 483-6 (1951). The author suggests that the usual fat constants be expressed in terms of technical equivalents (mg. equivs./100 g.) so as to make comparisons simple. (*Chem. Abs.* **46**, 4254)

Processing okra seed for oil recovery. C. R. Holbrook, Jr. and A. C. Wamble. *Texas Eng. Expt. Sta. Research Rept.* No. **29**, 11 pp. (1951). Experimental data from processing 15 tons of okra seed in a hydraulic press system for cottonseed processing were presented. Modifications necessary were only those obvious, such as metal cloth of proper mesh for okra seed and adjustment of cottonseed huller to handle okra seed. Seeds of 9.0-10.0 moisture did not require humidification. Optimum temperature and time, respectively, for cooking were: 215°F. 30 min., 230°F. between 20 and 30 min., and 245°F. 20 min. Refining and bleaching caused losses comparable to or somewhat higher than average cottonseed oils. (*Chem. Abs.* **46**, 4254)

Preliminary study of the lipids of Rhodotorula gracilis. Vera R. Usdin and R. C. Burrell (Ohio State Univ., Columbus). *Arch. Biochem. Biophys.* **36**, 172 (1952). The average total lipid content of 9 air-dried samples of *Rhodotorula gracilis* was 31.25% of the dry weight. Of these lipids, 3.8% were phospholipids, and 8.6% were unsaponifiable. Ergosterol was the chief sterol. Choline, serine and glycerophosphoric acid were isolated from the phospholipid fraction.

Oil-bearing seeds of possible economic importance to West Africa. J. A. R. MacLean (W. African Cacao Res. Inst., Tafo, Gold Coast). *Nature* **169**, 589 (1952). Seeds from *Herrania balaensio, H. mariae* (sp. "A") and *Herrania* (sp. "B") were found to contain from 63-66% oil (d.b.). The oils had iodine values ranging from 39-47 and contained less than 1% unsaponifiable matter. The composition of the fatty acids was 74-76% saturated, 0-7% oleic and 18-26% linoleic acids.

Operations of an oil mill refinery. E. D. Garner (Western Cotton Oil Co., Chowchilla, Calif.). *Oil Mill Gaz.* **56**(10), 30 (1952). A brief review of processing operations.

Copra crushing and outlook for 1952. C. Hopper (Veg. Oil Prod. Co., Wilmington, Calif.). *Oil Mill Gaz.* **56**(10), 31 (1952). Due to overexpansion of the West Coast copra crushing capacity just after World War II, competition will be very keen.

Problems in solvent extraction of cottonseed. L. L. Touton (Ranchers Cotton Oil Co., Fresno, Calif.). *Oil Mill Gaz.* **56** (10), 41 (1952). A general discussion.

Preparation of milk fat. I. A study of some organic compounds as de-emulsifying agents. S. Patton (Penna. Agr. Exp. Station, State College). *J. Dairy Sci.* **35**, 324 (1952). An aqueous reagent containing n-butylamine and n-butyl alcohol was found capable of de-emulsifying a number of fluid dairy products. Advantages of the method employing this reagent are that it is rapid, reasonably quantitative, involves no tedious extraction, and does not require rigorous digestion.

The alpha-naphtholphthalein (ANP) method for measuring fat hydrolysis. II. Application to cream. W. J. Harper and T. V. Armstrong (Ohio State Univ., Columbus). *J. Dairy Sci.* **35**, 342 (1952). The rapid α-naphtholphthalein colorimitric test for water insoluble acids, previously used for butter, has been applied to cream. The fat for analysis is obtained by a solvent extraction method utilizing a mixture of ethyl alcohol and petroleum ether.

Dispersion of ultrasonic waves in fatty acids. Y. Wada, T. Shimpo, and M. Oda (Univ. Tokyo). *Kagaku* (Science) **20**, 187 (1950). Measurements of sound velocity in palmitic and stearic acids were made in the frequency region between 0.5 and 7 Mc. with an ultrasonic interferometer. Dispersion was observed up to 80° in the case of palmitic and to 75° in the case of stearic, and the maximums were found at 1.9 Mc. and 1.1 Mc., respectively; this seems to indicate that those dispersions are of different nature from that observed in relaxation phenomena. It can be supposed that fatty acid molecules are associated to form a dimer in their liquid state just above their m.p. and the dissociation equilibrium dimer $\leftrightarrows$ monomer may be shifted to the righhand side by the resonance of dimer molecule at some definite frequency. Thus dispersion disappears at higher temperatures at which dimer molecules disappear, and the lower the fatty acid, the higher the resonance frequency. (*Chem. Abs.* **46**, 3360)

The solubility of alcohols in glycerides of fatty and hydroxylated acids. B. A. Lindenberg (Commission intern. inds. Agr., Paris). *J. chim. phys.* **48**, 350-5 (1951). Measurements were made of the partition coefficients of homologous series of primary (normal and branched chain), secondary, and tertiary alcohols in the system water/triolein. The lipid solubility increases parallel with the water solubility in the sequence named. The activity coefficients in triolein vary considerably between the homologs within a group. In the system water/castor oil, however, the ratio of the activity coefficient in water to the partition coefficient is a constant. This fact can be used for the determination of activity coefficients. (*Chem. Abs.* **46**, 3370)

Lipid composition of Tenebrio molitor larvae. A. J. Finkel. *Physiol. Zool.* **21**, 111-33 (1948). Total fatty acids, total cholesterol, and phospholipids (from which total lipids and neutral fat were calculated) were determined during the development of *T. molitor* larvae raised at 20°, 25°, and 30°. As larvae grow, total lipids, neutral fat, and total fatty acids become increasing proportions of the wet weight of the larvae; phospholipids drop slowly and total cholesterol remains constant. During development, neutral fat increases, phospholipids decrease, and total cholesterol decreases very slowly in relation to total lipids. (*Chem. Abs.* **46**, 3665)

Composition of the fat acids of the adipose bodies of the toad Bufo arenarum. P. Cattaneo and G. Karman de Sutton (Oficina quim. munic., Buenos Aires). *Rev. brasil. quim.* (Sao Paulo) **32**, 388(1951). Fat from the reserve adipose bodies of the male toads had iodine no. 82.6, saponification no. 198, and unsaponified 0.58%. The approximate composition of the fat acids was: lauric 0.5, myristic 3.4, palmitic 18.2, stearic 3.8, arachidic 0.5, dodecenoic 0.1, tetradecenoic 1.1, hexadecenoic 13.1, unsaturated C_{18} (oleic, linoleic, linolenic) 57.9, and unsaturated C_{20} acids 1.4%. (*Chem. Abs.* **46**, 3667)

Standard methods of analysis for the fat and wax industry. X. Physical tests. H. P. Kaufmann and J. Baltes (Univ. Munster, Westf., Ger.). *Fette u. Seifen* **53**, 445-55(1951). These methods cover the determination of density, m.p., pour point, drop point, titer, color, refractive index, ultraviolet-absorption curves, flash and fire points, and sieve analysis. (*Chem. Abs.* **46**, 3773)

A new method for determining stability of olein emulsions. N. Schonfeldt (A. B. Berol-Produkter, Gothenberg, Sweden). *Melliand Textilber.* **32**, 773-4(1951). The stability is estimated by determining the rate of increase in concentration of oleic acid in a series of samples taken 5 mm. below the surface. (*Chem. Abs.* **46**, 3775)

The iodine number of fatty acids. J. J. C. Alonso. pR(Montevideo) **1**, No. 2, 39-55(1951). A critical discussion of the various procedures used is given. The tetrachlorotetraiodoglyceride of terapic acid was isolated from cod-liver oil and the empirical formula confirmed. The ICl reagent was prepared by a modification of Bornemann's method. (*Chem. Abs.* **46**, 3775)

Ternary system of oleic acid, triolein, and alcohols. Application to the deacidification of vegetable oils. R. Rigamonti, C. Vaccarino, and A. Duzzi (Politech., Torino, Italy). *Chimica e industria* (Milan) **33**, 619-23(1951). The ternary systems of oleic acid, triolein, and alcohols have been studied at 20° for anhydrous methanol, 95% and 90% methanol, and 95% ethanol. The results are pertinent for industrial deacidification of vegetable oils by solvent extraction. They suggest the number of extractions required under varying conditions. Impurities (nonsaponifiable) as well as acids other than oleic tend to facilitate this refining. Best results are obtained with anhydrous or 95% methanol, the extractions decreasing from 12 to 1 for increase of solvent/oil ratio from 1 to 8. In countercurrent liquid-liquid extractions, the presence of surface-active agents permits shorter contact and smaller apparatus design. (*Chem. Abs.* **46**, 3775)

Rice Oil. I. Decolorization of dewaxed rice oil. I. Yamakita (Kyoto Univ.). *Bull. Inst. Chem. Research, Kyoto Univ.* **24**, 24-31(1951). Some physiochemical studies were made on the purification of rice oil whose color was difficult to remove. Activated acid clay up to 12% at 20-100° had some decolorizing action for the highly acid (acid no. 30-96.6) rice oils tested. Pretreatment of the oil with solutions of HCl, $ZnCl_2$, HCOOH, Na_2SO_4, $MgCl_2$ improved decolorizing by the clay; solutions of $CaCl_2$, $BaCl_2$, and $CuCl_2$ were ineffective; $FeCl_3$, $FeSO_4$, phenolic reducing agents (hydroquinone, resorcinal) were detrimental. The color of these highly acid oils was due mostly to Fe. Acid treatment before clay bleaching was most expedient. (*Chem. Abs.* **46**, 3775)

Components of the neem tree. I. Neem oil. H. Murai (Univ. Kyushu). *J. Pharm. Soc. Japan* **71**, 1463-6(1951.) The ether extract of fruits (seeds included) of neem *(Melia azedarach)* showed Reichert-Meissl no. 11.9 and Polenske no. 0.35 from which the content of volatile fat acids was 6.67%. Volatile fat acids contained acetic acid and caproic acid at the ratio of 1:2. (*Chem. Abs.* **46**, 3775)

Simmondsia or jojoba—a problem in economic botany. N. T. Mirov (Inst. of Forest Genetics, Berkeley, Calif.). *Econ. Botany* **6**, 41-7(1952). The occurrence and possible cultivation are discussed of *Simmondsia chinensis (Californica)* for its seed oil. The oil is not a glyceride, but a liquid wax containing esters of eicosanol (14.5%) and decosanol (33.7) with eicosanoic acid (30.3) and decosanoic acid (14.2), and small amounts of saturated palmitoleic and oleic acids. The usual fat constants and the physical properties are given. (*Chem. Abs.* **46**, 3775)

Chemical composition of oil from seeds of Rosa rubiginosa. P. Cattaneo and G. K. de Sutton (Oficina quim. municipal, Buenos Aires). *Rev. brasil. quim.* (Sao Paulo) **32**, 386(1951). The seeds yield 6.6% of a drying oil, of iodine no. 173, saponification no. 191, unsaponifiable 1.47%. The approximate composition of the acids is: myristic 0.4, palmitic 1.6, stearic 1.5, oleic 6.6, linoleic 73.6, and linolenic 16.3%.

Chemical composition of oil from seeds of Fagara coco. P. Cattaneo, G. K. de Sutton, and M. M. Gonzalez. *Ibid.* 386-7. The seeds yield 25% of oil with iodine no. 108, saponification no. 194, unsaponifiable 0.68%. The approximate composition of the acids is: myristic 1.6, palmitic 15.5, stearic 2.8, oleic 45.0, linoleic 23.3, and linolenic 11.8%.

Chemical composition of oil from seeds of Ammi visnaga. P. Cattaneo, G. K. de Sutton, and G. A. Robles. *Ibid.* 387. The seeds yield 6.5% of oil with iodine no. 100, saponification no. 201, unsaponifiable 7.9%. The approximate composition of the acids is: palmitic 4.8, stearic 1.6, arachidic 0.4, behenic 0.7, octadecenoic (mostly petroselinic with some oleic) 73.8, and linoleic 18.6%. (*Chem. Abs.* **46**, 3775)

Two new reactions characteristic of oils. F. L. Hahn. *Ciencia* (Mex.) **11**, 80(1951). Sesame oil when shaken with concentrated HCl developed an intense green color which is specific and whose intensity is proportional to the concentration. The possibility of its legal advantage is discussed. A simple, safe, relatively agreeable, sensitive reaction is described for olive oil. Sulfur (1 g.) is dissolved in a mixture of 50 cc. xylene and 50 cc. of a mixture of glacial acetic acid and acetic anhydride until the reaction is complete. Mixing an equal volume of olive oil and this reaction mixture yields a red color characteristic only of olive oil. (*Chem. Abs.* **46**, 3776)

Fats from the fruits and trees of German forests. H. Wienhaus. *Forschungen u. Fortschr.* **24**, 4-5(1948). A review of the oil and fat contents of various woodland materials, such as mushrooms, nuts, beech mast, seeds or berries, and some remarks on the toxicity and nutritive value of the oils obtainable. (*Chem. Abs.* **46**, 3776)

Influence of temperature and the time of deodorization on several properties of seal oil (Phoca groenlandica), and particularly on its stability. L. P. Dugal and A. Cardin. *J. Fisheries Research Board Can.* **8**, 189-94(1951). Commercial seal oil was refined by the method of Dugal and Cardin. It was then deodorized at 190, 210, 250, or 270° for periods up to 3 hours at a pressure of 6 mm. of Hg and with the introduction of 30 g. of steam/kg. of oil/hour. Optimum stability (21 days at 5°) and freedom from taste and odor were found in the oil treated at 210° for 30 minutes. The peroxide value was not a good index of stability. The refractive index and the iodine no. were little changed by up to 1.5 hours' deodorization at 210° while at 270° the iodine no. decreased markedly with duration of the treatment and the refractive index increased. These changes at the higher temperature were attributed to polymerization. (*Chem. Abs.* **46**, 3776)

Calophyllolide and calophyllic acid from the seeds of Calophyllum inophyllum. A. Ormancey-Potier, A. Buzas and E. Lederer (Inst. Research Cancer, Villejuif). *Bull. soc. chim. France* **1951**, 577-80. The seeds were treated with cold petroleum ether to remove oil, then extracted with warm petroleum ether. From 4 kilos of seeds 22 g. of the crystalline lactone calophyllolide $C_{25}H_{22}O_5$, m. 158-60° was obtained. On saponification in the cold the lactone gives a hydroxy acid $C_{25}H_{24}O_6$, m. 181-4°, which can be reconverted to lactone by heating. Both lactone and hydroxy acid contain a methoxy group. The methyl ester of hydroxy acid m. 135-8°. By hydrogenation of the lactone with PtO_2 a neutral substance and a crystalline acid, m. 145-7°, were obtained. After removal of lactone, the seeds were extracted with warm ethyl ether, giving 1.6 g. of calophyllic acid, $C_{25}H_{24}O_6$, m. 206-15°, $[\alpha]^{18}$ $-58°$ ($CHCl_3$, *c* 2.52); methyl ester, m. 148-51°, $[\alpha]^{18}$ $-60°$ ($CHCl_3$ *c* 0.75). Hydrogenation of calophyllic acid gave tetrahydrocalophyllic acid, m. 194-200°, $[\alpha]^{18}$ $-50°$ ($CHCl_3$ *c* 0.22). (*Chem. Abs.* **46**, 3301)

Separation of cholesterol from halibut-liver oil. S. Kristjanson (Pacific Fisheries Expt. Sta., Vancouver). *Fisheries Research Board Can., Progress Repts. Pacific Coast Stas.* No. **88**, 51-2(1951). Typical British Columbia halibut-liver oil was found to have 7.74% cholesterol. An efficient procedure for separating the existing cholesterol from most other components of the oil consists of heating the dried oil at 70° for 6 hours with 6 parts of methanol and 1% KOH based on the weight of oil as catalyst, removing the methanol, adding a light petroleum solvent, and putting through a column of alumina (previously activated by heat). The free cholesterol is adsorbed along with vitamin A and pigment, while most other materials are washed through. After elution with ethyl ether, the cholesterol is purified by crystallization. (*Chem. Abs.* **46**, 3302)

Determination of small quantities of iron in technical red oils. Th. Francois and M. Juillard (Lab. Chevreul, Paris). *Bull. mens. ITERG* 5, 578-82(1951). After having ascertained that the addition of Fe salts to technical red oils does not increase their liability to oxidation, investigations were made in order to decide whether the same is true for the small quantities of Fe present in most commercial red oils. Determinations of Fe on 12 samples with the British Standard photocolorimetric method (ranging between 0.087 and 0.000%) when tabulated in decreasing order corresponded only approximately to that established by arranging the same samples of red oils according to their resistance to oxidation expressed by the Mackey test. Thus the influence of Fe seems doubtful. Addition of increasing quantities of linoleic acid reduces the resistance from 170 minutes at 0% of linoleic acid to 25 minutes at 20% of linoleic acid. (*Chem. Abs.* 46, 3302)

The physical and chemical characteristics of refined olive oil; a rapid test for the detection of peanut oil in refined olive oil. R. Isidoro. *Boll. lab. chim. provinciali* (Bologna) 1, No. 1, 18-21(1950). After a comparison of various physical and chemical constants found in analyzed samples of refined olive oil, natural olive oil, and peanut oil, the author proposed a modification of the Bellier test for peanut oil in refined olive oil by using 90% alcohol instead of 70%. This eliminates some inconsistencies observed in the examination of the above samples by the old method. (*Chem. Abs.* 46, 3302)

The assay of squalene in vegetable oils. Maria E. Wohlers de Almeida. *Rev. inst. Adolfo Lutz* 9, 123-36(1949). Forty-five samples of olive oils imported from different European and Asian countries were assayed for squalene according to the method of Fitelson. The squalene content varied from 309 to 635 mg. in 100 g. oil. Refined peanut, cottonseed, sesame, corn, soybean, grape-seed, pataua, babassu, and cashew-nut oils contained only 1-51 mg. squalene in 100 g. (*Chem. Abs.* 46, 3302)

The oil of apple seeds. J. B. A. Manrique and C. L. Moreno. *Farmacognosia* (Madrid) 11, 223-30(1951). Apple seeds extracted with ethyl ether gave an average yield of 27.6% oil. The oil is light-yellow, clear, of low viscosity, bittersweet odor, d^{20} 0.921, free acid 15.34, n^{20} 1.471.

The oil of seeds of Citrullus Colocynthus. *Ibid.* 231-6. The seeds contain 23.6% of a light-yellow, liquid oil of bitter taste and disagreeable odor, d^{20} 0.9275, free acid 4.44, n^{20} 1.475. (*Chem. Abs.* 46, 3301)

The problem of solvent losses in the extraction of oil seeds. M. Helme (Ets. Robbe, Dieppe, France). *Bull. mens. ITERG* 5, 535-47(1951). Losses are caused by entrainment with the air vented from the system, by solvent retained by the stripped oil, by the oil cakes, by the water, and by leakages and unknown reasons. Another cause of loss may be a slight decomposition of the solvent. Employment of technically pure hexane is recommended. (*Chem. Abs.* 46, 3301)

The polymerization of olefins produced from some fatty acids. I. The synthesis of lubricating oil from the fatty acids of coconut, palm, and chrysalis oil. T. Tokunaga. *J. Fuel Soc. Japan* 29, 243-9(1950). Synthetic lubricating oils are prepared by refining the pyrolytic decomposition products of the fatty acids of coconut, palm, and chrysalis oils. The optimum conditions of preparation are given. The decompositions were in the vapor phase, at atmospheric pressures with a mixture of active clay 100, and CaO or BaO 25% and at about 450-500°. The polymerization agent for refined olefin was anhydrous $AlCl_3$. These synthetic oils were suitable lubricants for automobiles or other internal-combustion engines.

II. The results of semi-industrial experiments. *Ibid.* 289-92. Tests were carried out in a decomposition plant consisting of 12 units, each capable of producing about 250 kg. of refined olefins, and a polymerization plant capable of producing about 200 kg. of polymerized oil per month. Results of these semi-industrial tests corresponded to those of fundamental experiments. (*Chem. Abs.* 46, 3300)

Some aspects of stearic acid manufacture in New Zealand. L. Hartman (Dept. Sci. Ind. Research, Wellington). *New Zealand J. Sci. Technol.* 33B, No. 1, 5-10(1951). By using an initial concentration of $2N$ H_2SO_4 and adding additional water as the reaction proceeds, the induction period in the Twitchell hydrolysis process is eliminated and the 1st-order rate is obtained throughout. A modified system of short-path distillation of the derived fatty acids is suggested to insure a crystal product. (*Chem. Abs.* 46, 3300)

Recent advances in the chemistry and technology of fats. R. Child. *Soap* (India) 2, No. 3, 9-16(1949). The historical development of the chemistry of fats, and methods of isolation and identification of the component fatty acids based on fractional distillation of the methyl esters, determination of SCN value, and spectrophotometry are described. Problems concerned with determination of glyceride structure, and the use of oxidation and hydrogenation methods are discussed. (*Chem. Abs.* 46, 3299)

Separation of fatty acids by selective adsorption. II. The use of silica as adsorbent. J. G. y Tous and A. V. Pizarro (Univ. Sevilla). *Anales real soc. espan. fis y quim* 46B, 375-84(1950). The effect of chain length and the introduction of a $C=C$ bond on adsorbability was studied with binary acid mixtures. Shortening of the chain or the presence of a $C=C$ bond enhances adsorbability. The following acid pairs could be separated completely: caprylic-oleic, caprylic-stearic, and oleic-stearic (3:1 ratio); almost completely: caproic-caprylic, palmitic-stearic (in both cases fractions with pure components were obtained), and stearic-oleic (1:4, 1:10, 10:1); and not separated: valeric-caproic and palmitic-oleic. (*Chem. Abs.* 46, 3300)

Thermochemistry of vegetable fats. II. Specific heats and specific gravities of industrial solutions of olive oil. J. O. Ruiz, J. de la Maza, and I. Borrero (Univ. Sevilla, Spain). *Anales real soc. espan. fis. y quim.* 45B, 1491-1500(1949). The specific heat and specific gravity were determined on mixtures of good-quality olive oil and benzene, CS_2, CCl_4 and trichloroethylene prepared in the laboratory. These properties gave straight-line graphs when plotted against the percentages by weight, showing that the behavior approaches that of ideal solutions and that when one coordinate is known the other can be read from the graph. (*Chem. Abs.* 46, 3179)

Sesame oil in butter and butter substitutes containing artificial coloring. R. Isidoro and L. Pavolini (Lab. chim. provinciale, Ancona, Italy). *Boll. lab. chim. provinciali* (Bologna) 1, No. 4, 18-19(1950). This test unlike the test agent of Villavecchia and Fabris, is not subject to interference by the synthetic dyes, e.g. amidoazobenzene. Mix 10 ml. of the fat in a small separatory funnel with 5-6 ml. acetic anhydride. Draw off the acetic anhydride into a flat porcelain dish and add 2-3 drops of 2% furfurol solution in ethanol and then a few drops of H_2SO_4 carefully down the side of the dish. If sesame oil is absent there is a red-brown color (dark rose-red at first if dyes are present). If sesame oil is present a cherry red first appears, soon turning to a greenish color which, with gentle stirring spreads throughout the liquid and becomes blue-green. The limit of dependability is 0.5%. In the presence of some dyes it may be 1%. It is not affected by age or rancidity. (*Chem. Abs.* 46, 3174)

Italian sheep-butter and cow-butter mixtures. R. Isidoro and V. Bonarelli. *Boll. lab. chim. provinciali* (Bologna) 1, No. 2, 19-21(1950). Analytical data are given concerning chemical constants of Italian butter and suggestions are made as to how to detect sheep butter in cow butter in the presence of other fats such as coconut oil. The detection is based on the interpretation of the numbers of Reicher-Meisel, Polenske, iodine, and the refractive index. (*Chem. Abs.* 46, 3174)

The identification of foreign fats in butter. G. Amibrosetti (Lab. chim. provinciale, Brescia, Italy). *Boll. lab. chim. provinciali* (Bologna) 2, No. ½, 9-11(1951). No more than 1.30% of twice recrystallized isooleic acid was found in authentic butter. Seventy % of commercial butter contained between 1.5 and 4%. Authentic hydrogenated porpoise oil contained 7 to 12%, depending on the manner of the hydrogenation. Three samples of authentic butter which contained less than 1% isooleic acid were hydrogenated, after which they contained 1.8%. Cacao butter had less than 1% after 2 recrystallizations. (*Chem. Abs.* 46, 3174)

Preparation of triglycerides of hydroxy acids. G. V. Piguelevskii and T. A. Starostina (A Zhdanov State Univ., Leningrad). *Doklady Akad. Nauk* S.S.S.R. 79, 261-2(1951). Peach oil was found to contain palmitodiolein. (*Chem. Abs.* 46, 3003)

Studies on lipase from oil seeds. I. Effect of different organic solvents on the synthesis and hydrolysis of esters by lipase. II. Synthetic activity of different lipases. C. V. Ramakrishnan and G. V. Nevgi (Wadia Coll., Poona). *J. Univ. Bombay* 19, Sect. A, Pt. 3, Sci. No. 28, 34-7(1950). Lipases from the mold, seed, and cake of castor and groundnut synthesized butyl oleate. Regarding % synthesis with respect to lipase source, mold > seed > cake. (*Chem. Abs.* 46, 3301)

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Fatty acid industries. Nobuaki Wada (Kôgyô Shôreikan, Osaka). *J. Oil Chemists' Soc. Japan* 1, No. 1, 5-11(1952). A review with 77 references.

Molecular distillation of whale-liver oil. Toshio Agawa, Saburô Komori, and Yôichi Nishimura (Osaka Univ.). *J. Oil Chem-*

ists' Soc., Japan 1, No. 1, 12-16(1952). Whale-liver oil was molecularly distilled at 250-260°, to give 135-170% of vitamin A due to the decomposition of kitol. Whale-liver oil with lower acid value and volatile-acid content gave up to 6-8 times higher ratio of concentration of vitamin A. One molecular distillation produced an oil of 500,000 i.u. vitamin A, and redistillation of such oil produced an oil containing 1,000,000 i.u. vitamin A. A new substance having absorption maximum at 260 mμ was found in a small amount by separating the residual oil by chromatographic adsorption. The methods of determining vitamin A were critically compared. Some substance affecting the absorption maximum of kitol (286 mμ) was found to be removed by chromatographing. From industrial viewpoint whale-liver oil should be distilled at 250°, and the residual oil redistilled; about 40% of the residual oil could be recovered as the refined oil containing 80,000 i.u. vitamin A.

Solvent purification of fats and oils. Toshio Sakurai (Tokyo Inst. Technol., Tokyo). *J. Oil Chemists' Soc., Japan* 1, No. 1, 33-41(1952). A review with 25 references.

Inhibition of the autoxidation of oils and fats. I. The influences of sulfur-containing compounds on the autoxidation of methyl oleate. Yusuke Sumiki, Saburô Tamura, and Kenji Satake (Univ. Tokyo). *J. Agr. Chem. Soc. Japan* 25, 237-40 (1951). Autoxidation of Me oleate was measured by observing the amount of absorbed oxygen with the Warburg respirometer. Among S-containing compounds examined, thiocarbanilide, Na_2SO_3, $Na_2S_2O_3$, benzenethiol, cysteine-HCl, and *S*-methylisothiourea sulfate were effective (in the decreasing order) as antioxidants. Thioanalide, thiourea, and 1-phenyl-2-thiourea accelerated the autoxidation of Me oleate. Thiocarbanilide was more effective than hydroquinone as an antioxidant. Urea inhibited the autoxidation distinctly in comparison with thiourea. No relation was found between the effectiveness and chemical structure of these compounds.

Separation and identification of fatty acids. XIII. Investigation of the constitution of unsaturated fatty acids by paper chromatography. 1. Yoshiyuki Inoue, Manjirô Noda, and Yasumasa Hamuro (Kyoto Univ., Kyoto). *J. Agr. Chem. Soc. Japan* 25, 491-5(1952). An unsaturated fatty acid is subjected to ozonolysis, the products of ozonolysis are treated with alkaline AgO suspension to oxidize the carbonyl of aldehydes and semi-aldehydes to carboxyl, the salts of mono- and dicarboxylic acids thus obtained are esterified, and converted to their hydroxamic acid derivatives; then paper chromatography can be applied to separate and identify the derivatives. This method was successfully applied to oleic, erucic, linoleic, and linolenic acids.

XIV. Paper chromatography of fatty acids using the filter paper impregnated with silicic acid. Y. Inoue and M. Noda. *Ibid.* 496-9. Filter paper immersed in Na silicate soln. and then in 6 *N* HCl was washed with water and air-dried. Such filter paper impregnated with silicic acid was used to separate higher fatty acids, using as the solvent *n*-butanol-benzene (1:1). Saturated fatty acids themselves were chromatographed with methanol as the fixing liquid phase and naphtha (b.p. 70-90°) as the migrating liquid phase on ordinary or silica-impregnated filter paper, but with inferior result to the paper chromatography of hydroxamic acids.

The fat of buckwheat. Tetsujirô Obara and Mitsuo Kitamura (Tokyo Education Univ., Tokyo). *J. Agr. Chem. Soc. Japan* 25, 426-30(1952). The fatty oil, extracted with ether from the buckwheat grain had d^{15} 0.9227, sp. viscosity at 15° 79.019, n^{15} 1.4571, acid value 22, sapon. value 189, iodine value (Wijs) 102, Hehner value 95, Reichert-Meissl value 1.05, Polenske value 0.71, and acetyl value 13. Fractional distillation of methyl esters of solid acids, oxidation and bromination of liquid acids led to the conclusion that this oil contained approximately 55% oleic, 20% linoleic, 13% palmitic, 5% carnaubic acids with some saturated fatty acids higher than C_{18}.

The fatty oil of Sapium japonicum. Tetsujirô Obara and Mitsuo Kitamura (Tokyo Education University, Tokyo). *J. Agr. Chem. Soc. Japan* 25, 528-31(1952). The fatty oil, from the seeds of *Sapium japonicum*, had d^{15} 0.9375, specific viscosity at 15° 48.66, n^{20} 1.4787, acid value 1.12, saponification value 198, iodine value 162, Reichert-Meissl value 0.47, and unsaponifiable matter 0.61%. Fractional distillation of solid acids, and oxidation and bromination of liquid acids revealed that this oil consisted of approximately 55% linoleic, 19% oleic, 8% linolenic, 4% palmitic, 1% stearic, and lesser amounts of higher saturated acids.

PATENTS

Treatment of nonalpha tocopherols. L. Weisler (Eastman Kodak Co.). *U. S. 2,592,628.* A formylated tocopherol is claimed.

Solvent extraction of vegetable oils. W. H. Williamson (The Procter and Gamble Co.). *U. S. 2,595,825.* Flaked cottonseed meats are contacted with a pre-wetting agent consisting at least in part of a water-miscible organic solvent having affinity for water-soluble substances in the meats to effect pre-wetting and swelling of the meats, forming the pre-wetted and swelled meats into a plurality of separate beds and thereafter passing successively through the beds an oil extraction solvent capable of extracting oil from the meats and comprising a water-miscible organic solvent having affinity for water-soluble substances in the meats.

Solvent extraction of vegetable oils. C. C. Crawford (Phillips Petroleum Co.). *U. S. 2,596,010.* The improved method of selectively extracting vegetable oil with a minimum of color bodies from a vegetable material is disclosed which comprises the steps of flaking the vegetable material; contacting the flaked vegetable material with a solvent consisting essentially of C_6 isoparaffins and containing at least 80 volume per cent of a methylpentane selected from the group consisting of 2-methylpentane and 3-methylpentane, not more than 0.5 volume per cent aromatics, and not more than 5 volume per cent naphthenes; separating resulting miscella from residue vegetable meal; and stripping the solvent from the extracted oil.

Propane decolorizing. R. I. Brabets (Swift & Co.). *U. S. 2,596,065.* In the decolorization of low bottoms potential fat and fatty acid feed stock by treatment thereof with a liquefied, normally gaseous hydrocarbon under conditions of elevated temperatures and pressures, the step is claimed which comprises incorporating ebony fat in the low bottoms potential feed stock prior to decolorization.

Method of treating tocopherols. J. G. Baxter (Eastman Kodak Co.). *U. S. 2,596,090.* The method of enhancing the vitamin E biological activity of relatively low potency tocopherol material is claimed which comprises reacting tocopherol material having at least one aromatic hydrogen atom on the benzenoid nucleus with formaldehyde and a hydrogen halide, oxidizing the resulting substituent groups introduced on the nucleus of the tocopherol material with an oxidizing agent having an oxidation potential not substantially higher than p-nitroso diethylaniline, and reducing the formyl groups to methyl groups.

Modified vegetable oil. J. S. Aggarwal, N. C. Budhraja and P. G. Sharma. *Indian 42,885.* Vegetable oils containing at least 40% linoleic acid are converted to modified oils having substantial drying properties for use in paints or varnishes by heating the raw oils at temperatures varying from 150° to 180° for a period of 5 to 12 hours in the presence of a catalyst comprising one or a combination of the following chemicals: resorcinol, anthraquinone, phenanthraquinone, naphthaquinone, activated Ni-C, activated silica, alumina, fuller's earth. Examples of vegetable oils containing at least 40% linoleic acid are the oils of tobacco seed, safflower seed, poppy seed, rubber seed, lajwanti seed, or soybean. These modified oils can either be used as such or in admixture with other natural or synthetic drying oils, such as linseed oil, for the preparation of varnishes or paints. (*Chem. Abs.* 46, 3303)

Refining of rice oil having a high acid number. K. Sagawa (Kao Soap Co. Inc.). *Japanese, 179,842.* Alcohol is blown through the nozzle set at the bottom of the tank containing the rice oil, and the alcohol floating on top of the oil is transferred to the still, the condenser of which is connected to the alcohol tank to be used for recycling. Use of 350 kg. of the oil (acid no. 88.3) with 650 l. 85% ethanol gives 160 kg. (45.7%) of oil having acid no. 3.5. (*Chem. Abs.* 46, 4256)

• Biology and Nutrition

R. A. Reiners, Abstractor

The chemical constitution of the mycolic acids from two virulent human strains of Mycobacterium tuberculosis. J. Asselineau and E. Lederer (Inst. biol. phys. chim., Paris). *Biochim. et Biophys. Acta* 7, 126-45(1951). The structure $RCH(OH)CH(C_{24}H_{49})CO_2H$ $[R = C_{60}H_{120}\text{-}(OCH_3) \pm 5CH_2]$ was proposed for α-mycolic acid, m. 55-6°, [α] 1.8° ± 0.5 ($CHCl_3$) (methyl ester, m. 43-6°); and for β-mycolic acid, m. 71-3°, [α] 2.3° ± 0.5 ($CHCl_3$) (methyl ester, m. 52-5°). These were obtained by saponification of the lipids from Aeschbacher and Test strains of *Mycobacterium tuberculosis*, precipitation from ethyl ether by methanol, and chromatography on Al_2O_3, α-mycolic acid being eluted with 0.1% acetic acid in ethyl ether and β-mycolic acid with 0.5-1.0%. (*Chem. Abs.* 46, 3004)

The mycolic acids of the bovine Vallee strain of Mycobacterium tuberculosis. Helene Demarteau. *Compt. rend.* **232**, 2494-6 (1951). The following acids were obtained from lipids extracted from *Mycobacterium tuberculosis* Vallee, $RCH(OH)CH(C_{24}H_{49})CO_2H$: acid α ($R = C_{60}H_{121} \pm 5CH_2$), m. 65-7°; acid β [$R = C_{60}H_{120}(OCH_3) \pm 5CH_2$], m. 54-6°; acid γ ($R = C_{60}H_{120}(OH) \pm 5CH_2$), m. 62-4°. All 3 gave hexacosanoic acid, m. 85-6°, on pyrolysis, neutral ketones with CrO_3, and anhydromycolic acids with absorption bands ($\log \epsilon = 4.1$) at 220 mμ. (*Chem. Abs.* **46**, 3005)

Liver fats from partial hepatectomy, after nephrectomy or adrenalectomy. C. Pellegrino (Univ. Pisa, Italy). *Atti soc. toscana sci. nat. (Pisa), Mem.*, Ser. B, **57**, 104-8(1950). The lipid content of liver in rats (1) normal, (2) nephrectomized, and (3) adrenalectomized increased, respectively, from (average) 4.99, 5.13, and 4.77 to 11.52, 12.43, and 9.15 g. % because of partial hepatectomy. (*Chem. Abs.* **46**, 4092)

Lipids in some wild mammals. C. G. Wilber (St. Louis Univ., St. Louis, Mo.). *J. Mammalogy* **33**, 105(1952). Average values in mg. per 100 cc. for fatty acids, cholesterol, and phospholipid from opossum *(Didelphus virginiana)* blood and bile, muskrat *(Ondatra zibethica spatulata)* blood, and caribou blood and plasma and opossum blood 400, 150, 600; opossum bile 171, 635, 142; muskrat blood 600, 110, 400; caribou blood 600, 157, 275; plasma 377, 68, 125. Blood cholesterol does not vary greatly from the general mammalian pattern; but opossum bile contains a large amount of cholesterol. (*Chem. Abs.* **46**, 4090)

Unsaturated fat acid content of the erythrocytes of the blood of normal human adults. A. Chevalier, S. Manuel and J. Rouillard (Univ. Strasbourg, France). *Compt. rend. soc. biol.* **145**, 924-7(1951). The lipids were extracted from 20 samples of washed corpuscles. The fat acid composition, in mg./g. total lipids, was oleic 370-720, average 593; diene acids 9-45, average 23.5; triene acids 0-10, average 3; and tetraene acids 54-91, average 74. Difficulties encountered in the determinations are discussed. (*Chem. Abs.* **46**, 4084)

Inositolmonophosphoric acid in soybean phosphatide. D. Nomura (Kyoto Univ.). *Kagaku no Ryoiki* (J. Japan. Chem.) **3**, 145-7(1949). The crude phosphatide, obtained as a by-product of soybean-oil extraction with ethanol, was fractionated with solvents to obtain inositolmonophosphoric acid, glycerophosphate, galactose and arabinose. It is suggested that a complex of inositolmonophosphoric acid with glycerophosphate and sugars is present in the soybean. (*Chem. Abs.* **46**, 3962)

The absorption of vitamin A natural esters and of carotene by young male Holstein calves. M. Ronning and C. B. Knodt (Penna. Agr. Exp. Station, State College). *J. Dairy Sci.* **35**, 283 (1952). The most active absorption of vitamin A takes place in the upper two-thirds of the intestine. Apparently carotene is absorbed most rapidly in the middle third of the small intestine.

The rate of absorption of vitamin A natural esters and of carotene by male Holstein calves as measured by changes in blood plasma levels. *Ibid.* 320. Administration of carotene in single doses of 1,275,000 and 319,000 I.U. vitamin A equivalent had little or no effect on blood plasma carotene and did not appear to affect blood levels of vitamin A within 72 hrs. Administration of similar doses of vitamin A resulted in the same maximum blood plasma vitamin A levels but in the low dosage group a less persistent increase was noted. Only a small and temporary increase in blood plasma vitamin A resulted from the daily administration of carotene.

The intestinal resorption of fats studied with deuteroglycerol and labeled fatty acids. P. Favarger, R. A. Collet and E. Cherbuliez (Univ. Geneva, Switz.). *Helv. Chim. Acta* **34**, 1641-54 (1951). Young albino rats and monkeys were fed elaidin followed by D-labeled glycerol. The rats were sacrificed after 3 hrs. The fatty acids were isolated from the blood and intestines and examined for D. In the monkeys parts of the intestines were resected and similarly tested. About 5% of the labeled glycerol was incorporated in the ingested fats in the rats. Slightly higher results were obtained in the monkey. A total hydrolysis of the fats is not essential for their intestinal resorption. (*Chem. Abs.* **46**, 4078)

The value of synthetic fats in nutrition. I. Chemistry and technology. A. Scheunert. *Pharmazie* **6**, 571-7(1951). A review with 35 references. (*Chem. Abs.* **46**, 4080).

A case of DDT storage in human fat. D. E. Howell (Oklahoma A. & M. Col., Stillwater). *Proc. Okla. Acad. Sci.* **29**, 31-2 (1948)(Pub. 1950). Fatty tissue obtained by biopsy from a healthy male subject exposed to DDT in sprays and contaminated foods for over 4 years contained organic chloride equivalent to 17 p.p.m. DDT. (*Chem. Abs.* **46**, 4113)

Effect of certain tocopherols and other antioxidants on the utilization of β-carotene from vitamin A storage. R. W. Swick and C. A. Baumann (Univ. Wisc., Madison). *Arch. Biochem. Biophys.* **36**, 120(1952). High doses of α-tocopherol, γ-tocopherol or α-tocopherol acetate diminished the storage of vitamin A in the livers and kidneys of rats fed moderate amounts of β-carotene. When vitamin A was fed, tissue stores of the vitamin were not adversely affected by any of the antioxidants. The optimal amount of tocopherol for rats fed moderate amounts of carotene appears to range from 0.24 mg./day to less than 5.5 mg./day.

Influence of soybean-oil meal on roughage digestion in cattle. W. Burroughs and P. Gerlaugh. *J. Animal Sci.* **8**, 3-8(1949). Experiments were made with 4 steers fed on rations normally used for fattening cattle, the roughage provided being corncobs and timothy hay. In 2 trial series, 4 rations were used: 1 with and 1 without corncobs at an 8% protein level; and 2 similar rations at a 15% protein level. The inclusion of soybean-oil meal increased the digestion of dry matter by 14 and 17% in the case of corncobs and timothy hay, respectively, in both the low- and high-protein rations. (*Chem. Abs.* **46**, 3621)

The effect of carotene intake on the vitamin A contents of the liver and blood of lambs. J. A. Hoefer and W. D. Gallup (Oklahoma Agr. Expt. Sta., Stillwater). *Proc. Okla. Acad. Sci.* **26**, 21-4(1946). There is a positive correlation between carotene intake and vitamin A concentration in the blood plasma and liver of fattening lambs. (*Chem. Abs.* **46**, 3622)

Effect of certain substances on vitamin A storage in the liver of the chick. H. Dam, I. Prange and E. Sondergaard (Polytech. Inst., Copenhagen). *Acta Pharmacol. et Toxicol.* **8**, 1-22 (1952). Methylene blue, phenothiazine, or antabuse added to vitamin E-deficient diets containing 10% of cod-liver oil caused an increased deposition of vitamin A in the livers and an improved growth rate of the chicks. This effect resembles that of *dl*-α-tocopherol and its acetate. When cod-liver oil was replaced by lard or when fat was omitted from the diet, no important effect on vitamin A storage was noted for methylene blue or tocopherol acetate. Cod-liver oil may have a deleterious effect. With the basal diets used, addition of 0.5% of cystine improved growth but had no influence on vitamin A storage. (*Chem. Abs.* **46**, 3623)

Effect of certain substances on vitamin A storage in the liver of the rat. H. Dam, I. Prange and E. Sondergaard (Polytech. Inst., Copenhagen). *Acta Pharmacol. et Toxicol.* **8**, 23-9(1952). Methylene blue or phenothiazine added to vitamin E deficient diets containing 10-20% of cod-liver oil caused an increased deposition of vitamin A in the livers of rats after 14 weeks. Methylene blue did not have this effect when the cod-liver oil was omitted from the diet or replaced by lard. (*Chem. Abs.* **46**, 3623)

Effect of dietary methylene blue on the reproduction capacity of vitamin E deficient rats. H. Dam and H. Granados (Polytech. Inst., Copenhagen). *Acta Pharmacol et Toxicol.* **8**, 47-54 (1952). Methylene blue improved markedly, and to about the same extent as vitamin E, the reproductive capacity of female rats reared on vitamin E deficient, fat free, and cod-liver oil-containing diets. With lard-containing diets without vitamin E, reproductive performance was less impaired, but was also improved by methylene blue and vitamin E. (*Chem. Abs.* **46**, 3623)

Exchange of glycerol in the phospholipids during intestinal absorption of fats. R. A. Collet and P. Favarger (Univ. Geneva, Switz.). *Helv. Physiol. et Pharmacol. Acta* **9**, C61-2 (1951). Glycerol, elaidic acid, palmitic acid, and tripalmitin, all labeled with D, were fed to rats or monkeys. A significant portion of the labeled fat acids, but very little of the labeled glycerol, was incorporated into the phospholipids of the intestinal mucosa.

Are fat acids partially desaturated during absorption? P. Favarger. *Ibid.* C67. No detectable desaturation occurred during absorption of D-labeled palmitic and stearic acids fed to rats. (*Chem. Abs.* **46**, 3629)

Vapor toxicity of trichloroethylene determined by experiments on laboratory animals. E. M. Adams, H. C. Spencer, V. K. Rowe, D. D. McCollister and D. D. Irish (Dow Chem. Co., Midland, Mich.). *Arch. Ind. Hyg. Occupational Med.* **4**, 469-81 (1951). When rats were given single exposures to trichloroethylene vapors, 100% survival was observed for exposures to 3,000 p.p.m. for 7 hours, to 6,400 p.p.m. for 1.4 hours, to 12,000 p.p.m. for 0.6 hours, and to 20,000 p.p.m. for 0.4 hour. The only important toxic effect from such exposures was a depressant action on the central nervous system. In chronic exposures of 7 hours/day, 5 days/week, for 6 months, the maximum vapor concentration without adverse effects was 400 p.p.m. for rhesus monkeys, 200 p.p.m. for rats and rabbits, and 100 p.p.m. for guinea pigs. The probability of any adverse effects on humans is extremely small if vapor concentrations are kept below 100 p.p.m. (*Chem. Abs.* 46, 3647)

Cottonseed cake (KUSB): properties and uses. K. Khalil. *Egypt. Cott. Gaz.* **1948**, No. 4, 55-9. The compositions of undecorticated and decorticated cake are tabulated, and use of the cake for feeding purposes, as fuel, and as a fertilizer is discussed. Results of comparative fertilizing tests with cottonseed meal and $NaNO_3$ are given. For cotton fertilization the efficiency of N in the meal is approximately 60% of that in $NaNO_3$. (*Chem. Abs.* 46, 3775)

The carotene content of palm-nut press cake. P. Cavier and M. Servant. *Compt. rend.* **233**, 1386-8(1951). Examination of oil obtained from the husks and meat of palm nuts *(Elaeis guineensis)* by expeller and solvent extraction methods indicates that the carotene content of the oil from the husks is higher than that from the meat. Extraction methods yielded more oil and carotene than did expeller processing when applied to 5 samples obtained from 4 areas in Africa. The carotene content of a sample from the Ivory Coast was approximately 5.7%, while that from Dahomey and Cameroun appeared to be of the order of 2% (extraction method used to obtain oil from husks). (*Chem. Abs.* 46, 3301)

Extraction of cottonseed proteins. A. Hussain and F. Muhammad (Agr. Coll. Research Inst., Lyallpar). *Pakistan J. Sci. Research* **3**, 4-9 (in *Pakistan J. Sci.*) (1951). When extracted, with occasional shaking, during 3 hours with 0.1 *N* NaOH at 60° the maximum amount of nitrogenous protein compounds that could be obtained from commercial Pakistan cottonseed cake was 70%. Extraction yields were much lower when 3% NaCl, 10% NaCl, 5% NaCl, and 0.05 *N* H_2SO_4 were used as solvents. (*Chem. Abs.* 46, 3301)

Experiments on the feeding of Swedish rape-seed-oil meal to dairy cows. F. Jarl. *Kgl. Lantbrukshogskol. och Statens Lantbruksforsok, Statens Husdjursforsok, Medd.* **No. 45**, 5-40(1951). Swedish rape-seed-oil meal is a good high-protein concentrate for dairy cows and can be fed at a level of at least 2 kg./day/cow, but it must always be fed dry. Swedish rape-seed-oil meal of average composition at 90% dry matter was calculated to contain 91.6 feed units per 100 kg., 30.1% digestible crude protein, and 28.3% digestible true protein. (*Chem. Abs.* **46**, 3180)

The utilization of vitamin A. I. Effect of feeding massive doses on liver storage. G. C. Esh and S. Bhattacharya (Bengal Immunity Research Inst., Calcutta). *Indian J. Physiol.* **5**, 15-20(1951). Approximately 1,800 units of vitamin A alcohol or vitamin A acetate diluted in peanut oil, ethyl oleate, or water containing 20% Tween 20, was fed to vitamin A-depleted rats during a 3-day period. Liver storage of vitamin A was greatest when vitamin A alcohol was administered as an aqueous suspension. The diluents listed had no significant effect on the amount of storage of vitamin A after administration as vitamin A acetate. Females stored somewhat more vitamin A than males. (*Chem. Abs.* 46, 3132)

SINITIRO KAWAMURA

The effect of soybean oil on the shaking culture of Penicillium chrysogenum Q 176. I. The effect of soybean oil. Shuntarô Yasuda, H. Hori, K. Yamasaki, and S. Mizoguchi (Meiji Confectionary Co., Kawasaki). *J. Agr. Chem. Soc. Japan* **25**, 310-14(1952). A remarkable decrease in penicillin potency was observed in some media when 1% soybean oil was added as the defoaming agent after 48-72 hrs. of fermentation. When the time of addition was different, increase in penicillin potency was eventually noticed.

II. Chemical change during fermentation by the addition of soybean oil. S. Yasuda, K. Enomoto, and Y. Sakamoto. *Ibid.* 314-17. There appeared a maximum of NH_3-H content at 48th hr., when the decrease in penicillin potency occurred.

III. The activity of lipase of P. chrysogenum Q 176 on soybean oil. S. Yasuda, H. Hori, and A. Hibiya. *Ibid.* 357-61. The lipase inside the organism was powerful at 24th hr., but that outside the organism was almost negligible. The lipase of this mold had optimum pH 5, was inhibited by acetic acid, and was activated by NH_4OH and $(NH_4)_2SO_4$. The autolysis due to the addition of soybean oil after 48-72 hrs. of fermentation was accompanied by a maximum activity of the mold lipase.

IV. Remedies against the toxicity of soybean oil. S. Yasuda, K. Yamasaki, and S. Mizoguchi. *Ibid.* 361-4. Addition of 0.1% K acetate, 0.05-0.1% boric acid, and the control of the initial pH at 4.5-5.0 were effective.

V. The effect of the constituents of soybean oil on penicillin yield. S. Yasuda, K. Kinoshita, and H. Enomoto. *Ibid.* 465-8. Oleic acid showed decrease (or at least no decrease) in penicillin yield when added to the medium at the time of sterilization, but revealed a remarkable increase in potency when added after 24-48 hrs. of fermentation. Glycerol had no remarkable effect. Saturated fatty acids showed no remarkable effect but palmitic acid had a little unfavorable effect and stearic acid less than 0.1% showed the increase in potency. Lauric acid, though not a constituent of soybean oil, worked as a stimulant next to oleic acid.

VI. Comparison of soybean and other oils in regard to the penicillin yield. S. Yasuda, K. Yamasaki, K. Kinoshita, S. Mizoguchi, and H. Enomoto. *Ibid.* 469-72. A remarkable increase in potency was observed by adding soybean, rapeseed, sesame, cottonseed, peanut, rice-bran, or olive oil, lard, or oleic acid after 24 hrs. of fermentation. The addition of oils after 48 hrs. of fermentation resulted in more or less inhibition of mycelium growth and autolysis. Even in the case of adding oils after 24 hrs. of fermentation, remarkably bad results were obtained when phenylacetic acid was used together. However, the bad effects were slight in the cases of adding machine oil, defoamer B, rapeseed oil, whale, and lard.

• Drying Oils

Stuart A. Harrison, Abstractor

Oxidation of synthetic drying oils. J. R. Chipault, E. C. Nickell and W. O. Lundberg. *Official Digest Federation Paint and Varnish Production Clubs* **No. 328**, 319(1952). The rate of oxygen uptake of oleate, linoleate, linolenate, and eleostearate long and short oil alkyds was followed. Both P. E. and glycerol alkyds were studied. The change in peroxide value and specific alpha at 2320 Å and 2680 Å were also followed and their values noted at the time the film became hard.

An infrared spectrophotometric investigation of the acetoxidation of drying oil films. R. V. V. Nicholls and W. H. Hoffman. *Official Digest Federation Paint and Varnish Production Clubs.* **No. 327**, 245(1952). The autoxidation process responsible for the drying of oils was investigated by the study of infrared spectra obtained from films of the pentaerythritol esters of linseed oil fatty acids. The most noticeable changes in the spectra as the exposure time increased were the appearance of a hydroxyl band at 2.9 microns and the growth of the carbonyl band at 5.75 microns. The amounts of hydroxyl present were not determined but appeared to be appreciable. The carbonyl absorption doubled during drying. Absorption in other regions indicated the presence of epoxide groups, trans double bonds, and hydroperoxide groups.

Dependence of viscosity of linseed oil on its oxidation II and III. *Zhur, Priklad, Khim* **24**, 772(1951). Linseed oil does not thicken at 100° in the absence of oxygen. In the presence of benzoyl peroxide the oxidation induction period disappears. Oxygen or air always gives an induction period for oxidation and viscosity increase. No oxidation catalysts are formed during the induction period, however catalysts are formed during the subsequent oxidation process. At low levels of oxidation viscosity increase is dependent on oxidation while at high levels it increases independently. Linseed oil and synthetic esters of linseed oil behave alike in the dependence of viscosity on degree of oxidation.

Thermal polymerization of drying oils. R. F. Paschke, J. E. Jackson, and D. H. Wheeler. *Ind. Eng. Chem.* **44**, 1113(1952). A study of the kinetics of thermal polymerization of the isomeric forms of methyl linoleate was made. On the basis of the results, a mechanism for the thermal polymerization of oils is proposed. Conjugated linoleates polymerize much more rapidly than nonconjugated isomers. Trans-trans conjugated linoleate polymerizes more rapidly than the cis-trans conjugated isomer. Cis-trans isomerization occurs at bodying temperatures, with both conjugated and nonconjugated isomers. Dimer-trimer ratio is high for trans-trans and low for cis-trans conjugated linoleate. Nonconjugated linoleate has a high ratio at low conversion and low ratio at high conversion. Nonconjugated isomers apparently dimerize largely by thermal conjugation, followed by Diels-Alder addition of the conjugated isomer with a nonconjugated linoleate. Conjugated linoleates dimerize by Diels-Alder addition.

Preparation of oil-modified glyceryl phthalate drying resins. Investigation of the monoglyceride method. R. H. Runk. *Ind. Eng. Chem.* **44**, 1124(1952). The alcoholysis of linseed oil at

235° was followed using calcium oxide and lead oxide catalysts. Lead oxide is the more effective catalyst. An equilibrium at about 60% monoglyceride is established with both catalysts. The minimum monoester content necessary to insure compatibility with phthalic anhydride is about 35%. The best alkyds are obtained from alcoholysis products containing 55-60% monoglyceride.

Formation of wrinkles during film formation of drying oils. H. P. Kaufmann and K. Strüber. *Fette u Seifen* **53**, 543 (1951). The phenomenon of wrinkle drying is due to an increase in surface area and drying of the upper layer into which oxygen has penetrated over a lower layer into which oxygen has not penetrated. It does not occur in vacuo or in very thin oil layers. It cannot occur in drying processes that do not involve oxygen. (*Chem. Abs.* **46**, 3770)

PATENTS

Production of drying oils. H. S. Block and R. C. Wackher. *U. S. 2,590,923.* A drying oil is produced from an unsaturated hydrocarbon fraction resulting from cracking petroleum hydrocarbons and an aromatic polymerizable hydrocarbon such as styrene, e.g. 23 grams of styrene, 185 grams of polymer gasoline (boiling range 83-436°F., having a bromine number of 132) and 178 grams of anhydrous hydrogen fluoride are heated to 90-95° in an autoclave. The product separates into two layers. The lower layer is hydrolyzed with ice, washed with caustic and dried. The yield was 65 grams of oil having a bromine number of 188. This oil dried hard in five days but became somewhat brittle after 26 days of exposure.

Manufacture of paints and varnish. M. Kaufman and A. F. Williams. *U. S. 2,595,676.* The heat resistance of films of styrenated oils is improved by the incorporation of acenaphthylene in the polymerization mixture, i.e. styrene (10), linseed oil (2), and acenaphthylene (1) are dissolved in turpentine (30). The solution, after refluxing for 12 hours, is clear and homogeneous. After diluting and adding drier, the solution is a suitable varnish.

Interpolymers of drying oils, monoalkenyl-aromatic hydrocarbons and divinylbenzene. *British 656,994.* Nontacky interpolymers are produced by heating at 100-200° a mixture of a drying oil having less than 35% conjugated polyene, with 30-60% styrene, 1-40% α-methyl styrene or vinyl aryl benzene, 0.5-5% divinylbenzene and 2% benzoyl peroxide. A varnish may be prepared by dissolving 55-65% by weight of the interpolymer in an aromatic solvent (*Chem. Abs.* **46**, 3774)

• Waxes

E. H. McMullen, Abstractor

Oil content of petroleum waxes. Tappi suggested method T. 636 sm-51. Anon. *Tappi,* **34**, 9, A140-142(1951). Oil in petroleum waxes having melting point not less than 105°F. and containing not more than 15% of oil is determined by dissolving the wax in butan-2-one, cooling to —25°F. to precipitate the wax, filtering, and evaporating the filtrate. (*Brit. Abs.* BI, 1210, 1951)

Lignites of South India. II. Extraction of waxy constituents from the lignite of Neyveli (Arcot). B. S. Srikantan and B. K. Shenoy. *J. Indian Chem. Soc., Ind. & News Ed.* **14**, 1-5(1951). Extraction of the lignite from Neyveli in South Arcot with benzene or, better, toluene, yields 40-60% of a waxy substance, melting point 73-74°, density 1.04, acid value 34, saponification value 80, similar in properties to crude montan wax. This substance consists of 50% ether-soluble resins and 50% ether-insoluble "montan wax." The lignite residue can be used as a fuel. (*Brit. Abs.* BI, 1198, 1951)

• Detergents

Lenore Petchaft, Abstractor

Kettle house operations. J. L. Boyle. *Soap, Sanit. Chemicals* **28**, No. 5, 44-45(1952). A review of various kettle house operations often causing trouble in soap manufacture. These include lye reduction, details of saponification, number of washes, and handling of nigres.

Sudsing properties of soap. P. I. Smith. *Am. Perfumer Essent. Oil Rev.* **59**, 381, 384(1952). Sudsing properties of soap can be controlled by proper selection of fats. Good sudsing soaps having reasonable foam stability can be made from stock rich in low molecular weight acids enriched with high molecular fatty acids. Monounsaturated fatty acids of a high degree of purity tend to give better sudsing soaps than fully saturated acids. Foaming ability is also influenced by the pH of the soap solution. Each soap has a critical pH. This may, in some cases be improved by use of certain alkaline builders such as various silicates.

Alkyl benzene sulfonates as detergents. A. Davidsohn. *Ind. Chemist* **28**, 198-203(1952). Detailed review of method of preparation of alkyl-aryl condensates such as dodecyl benzene, testing of purity of product, the sulfonation reaction, and neutralization. These products are used in detergents containing builders. The characteristics of various builders used in these detergent mixtures such as silicates, phosphates, etc. are tabulated. Formulations including various builders with alkyl aryl compounds for use as mechanical dishwashing detergents, and laundry detergents are given. A new type of compound containing alkyl-aryl sulfonates in combination with a solvent such as kerosene, xylene and isopropanol is described. It is completely water soluble, has strong foaming properties, and may have many applications in textile processing and in various solvent cleaning operations.

Spray drying. Anon. *Soap, Sanit. Chemicals,* **28**, No. 5, 67, 69, 71(1952). Review of spray drying particularly adopted to small soap manufacturers. There are two spray drying systems: nozzle spraying, in which the liquid mass is atomized by stationary nozzles and disk spraying in which the liquid is atomized by a disk rotating at very high speed. The disk spray system is preferred for drying washing powders, bleaching soda, soaps, etc. In this system fast rotating disks operating rather simply may give a production volume of up to 10 tons or more of washing powder per hour. Figures are included outlining both systems.

Wetting of textiles in theory and practice. K. J. Nieuwenhuis. *Ingenieur* (Utrache) **9**, MK 26-30(1949). A survey is given of the theory of wetting of textile materials and of experimental results obtained at the Experimental Station of laundering at Delft. A low value for interfacial tension, and a high rate of diffusion of the surface-(or interfacial-) active material are essential for a high rate of wetting. This explains the differences in wetting by materials such as Na_2dialkylsulfosuccinates, alkyl sulfates, and fatty acid soaps, and the effects of adding inorganic salts, the variation of pH with soap solutions, the differences between fatty acid soaps, and effects of changes of temperature. Conclusions reached for wetting of yarns are not necessarily valid for fabrics owing to differences in the geometrical shape of the capillary voids. (*Chem. Abs.* **46**, 3286)

Titration of anion-active colloidal electrolytes with p-toluidine. H. Stupel and A. v. Segesser (Seifenfabrick Hochdorf A.-G., Hochdorf, Switz.). *Helv. Chim. Acta.* **34**, 1362-8(1951). The anion-active, colloidal electrolytes of most industrial importance as detergents can be determined by complex-formation with p-toluidine-HCl, extraction of the complex with an organic solvent, and titration with standard base. The structures of the solvatable and primary valence groups sometimes require modifications of the method. The method requires use of an empirically determined factor which depends on the molecular weight and number of solvatable groups. The method is well adapted to routine analyses. Analyses of several commercially important detergents are given. (*Chem. Abs.* **46**, 3447)

Soiling and soil retention in textile fibers. Primary deposition of grease-free carbon black on chopped cotton fibers. W. J. Hart and Jack Compton (Institute of Textile Technology, Charlottesville, Va.) *Ind. Eng. Chem.* **44**, 1135-41(1952). The present investigation is concerned with the effect of the following variables on the rate of primary deposition of carbon black soils on cotton fibers and the stability of the soil-fiber complex: time of exposure to the soiling mixtures; concentration of the soiling mixtures; ratio of soil-fiber weight at constant concentrations of soiling dispersions; effect of varying turbulence of mixing during soiling; primary particle size of the carbon black; qualitative effect of particle size distribution; presteeping of the cotton fiber in water over the pH range of 3.5 to 11.5; action of surfactants in the soiling mixtures; and temperature effects. The chief factors controlling the formation and stability of the soil-fiber complex are the geometric relationship between the sizes and shapes of the soil particles and the sizes and shapes of the functional rugosities upon the fiber surface, and the probability of close approach.

Selection of surface active agents for detergent applications. Suspending power and micellar solubilization. A. M. Mankowich (Paint & Chemical Laboratory, Aberdeen Proving Ground, Aberdeen, Md.). *Ind. Eng. Chem.* **44**, 1151-59(1952). A scientific method of selecting surface active agents for specific detergent applications is proposed based on the determination of the numerical criteria of the fundamental factors of the detergency process and the "cofactors" for soil removal. Physico-chemical factors of the process studied were suspending power and micellar solubilization. Important generalizations were established relating the suspendibility of polar and nonpolar powders, and the micellar solubilization of water-insoluble dyestuffs of different polarity, with type of surface active agent, type of builder, concentration, temperature, and pH.

Cationic surface active agents. Vladimir Dvorkovitz (Diversey Corp., Chicago, Ill.). *Soap Sanit. Chemicals* 28, No. 5, 41-3, 129(1952). Review of general chemistry of various wetting agents. Cationic and anionic compounds differ mainly in that the former are much more strongly adsorbed onto surfaces. This is the main basis for their various applications. These applications are reviewed and include flotation, textile softening, dye fixing, water repellency, and bactericidal uses. However, recent work has indicated that the bactericidal properties may be rather, bacteriostatic. Problems involved in this connection are reviewed, and future fields for uses of quaternaries are discussed.

Use of linseed oil fatty acids. P. I. Smith. *Am. Perfumer Essent. Oil Rev.* 59, 289-90(1952). Review of the advantages of using linseed oil fatty acids rather than soybean in soap products. These include low titer of the acids, improved color, good lathering properties, greater solubility, less viscosity and greater soap concentration than soybean acids. Linseed oil has been used extensively for floor scrub soaps, but pure linseed oil fatty acids may also be used for high grade liquid soaps.

Action of laundering compounds on the human skin. I. Statistics and methods. H. Bober. *Fette u. Seifen.* 53, 548-51(1951). Since patch-testing yielded nonreproducible and inconclusive results, the following method was developed to simulate household laundering conditions: A linen cloth was tied around the hand which was then immersed in a warm (45°, thermostatically controlled) 2% solution of the laundering compounds. A rubber brush set on a vertical rod rotating at about 300 r.p.m. was allowed to rotate on the cloth over the back of the hand under slight pressure. Pathological observations were statistically analyzed on subjects from various trades in tests on the various types of soap (powder, shaving soap, soilet soap, laundry soap). (*Chem. Abs.* 46, 4255)

Use of whiteners (in laundering). Oscar Uhl. *Fette u. Seifen* 53, 545-8(1951). A review and discussion of the use of the optical bleaches (Blancophors, Tinopals), and regular bleaches (hypochlorites, peroxides). (*Chem. Abs.* 46, 4254)

SINITIRO KAWAMURA

Synthesis of alkylarylsulfonic acid and the properties of its sodium salt. IV. Adsorption of sodium alkylbenzenesulfonate on active carbon. Kenzô Fusegawa, Michihiko Andô, and Hirozô Nobori (Kaô Yushi Co., Tokyo). *J. Chem Soc. Japan,* Ind. Chem. Sect. 54, 802-3(1951). Adsorption of Na alkylbenzenesulfonate "D-100" on active carbon in the aqueous solution of 0.3-0.6% follows the Freudlich's adsorption equation.

Higher fatty acid amides and their derivatives. II. Condensation of higher fatty acid amide and formaldehyde in the presence of alkali and its application to water-proofing agents. Tokuzô Yoshizaki (Nichiwa Sangyô Co.). *J. Chem. Soc. Japan,* Ind. Chem. Sect. 54, 777-9(1951). Fatty acid amide (1 *M*) was condensed with HCHO (1.3 *M*) using 2.5% K_2CO_3 based on formalin, at 50-55°, for 6 hrs. The softening and water-proofing effect was in the increasing order with the condensates with HCHO of lauric, palmitic, and stearic acid amides.

Synthesis of non-ionic surface active agents. V. Transesterification between coconut oil or olive oil and 2,2,6,6-tetramethylol-1-cyclohexanol. Kôichi Isoda, Sôzô Maekawa, and Ryôhei Oda (Kyoto Univ., Kyoto). *J. Chem. Soc. Japan,* Ind. Chem. Sect. 54, 773-4(1951). When 1.5 or 2 *M* of 2,2,6,6-tetramethylol-1-cyclohexanol (T.M.C.) was used for 1 *M* of coconut oil, the transesterification was almost quantitative. When 3 *M* of T.M.C. was used with 1 *M* of coconut oil, only 2 *M* of the former reacted. Either 1.5 or 2 *M* of T.M.C. reacted quantitatively with 1 *M* of olive oil. These transesterification products were red-brown viscous liquids, soluble in alcohol, benzene, and dispersible in water. They were surface active. The transesterification products of a complete monoglyceride composition were condensed with 2-4 *M* of ethylene oxide. These also were surface active. Surface tension and interfacial tension between water and benzene were measured.

Non-ionic surface-active agents. Shûji Kawamura and Yasushi Minami (Miyoshi Yushi Co., Tokyo). *J. Oil Chemists' Soc., Japan* 1, No. 1, 26-32(1952). Condensation products of ethylene oxide with fatty alcohols (lauryl, cetyl, and sperm oil fatty alcohol), fatty acids (lauric and sperm oil fatty acids), and alkyl phenol (from sperm oil fatty alcohol and phenol) were synthesized. Specific surface tension was measured for aqueous solutions of these condensates in 0.05-1.0 g./dl. concentration. There is a minimum of specific surface tension of aqueous solution between the oil-soluble and water-soluble types (resulting from the ratio of ethylene oxide in the condensates), and the molar ratio of ethylene oxide where the minimum surface tension occurs and the minimum surface tension increases with the increase in the size of hydrophobic chain. The clouding points of the aqueous solutions of these agents were measured. The ether-type agents were useful as leveling agents.

Hydrogenation of soaps. Tomotarô Tsuchiya and Shigeru Kinomura (Tokyo Kôgyô Shikenjo, Tokyo). *J. Oil Chemists' Soc., Japan* 1, No. 1, 22-5(1952). Sardine oil fatty acid soaps were more easily hydrogenated than sardine oil, when the mixture of these two was hydrogenated. The alkaline oil foots of cod-liver oil apparently containing considerable amounts of oxidized acids, protein, and other impurities could also be hydrogenated at room temperature with Raney Ni. The alkaline oil foots of rice oil was saponified, and 150 kg. of the soap thus obtained was hydrogenated with 1.5 kg. Na_2CO_3 and 300 kg. H_2O in the presence of 1 kg. Raney Ni to produce the hardened soap, whose fatty acids showed iodine value 20.7 (from original value 106.8) and m.p. 52-52.5°.

Rancidity of soap and its inhibition. Shin'ichi Tomiyama, Ikumi Yamane, Kunio Onoguchi, and Masuzô Nagayama (Lion Yushi Co., Tokyo). *J. Oil Chemists' Soc., Japan* 1, No. 1, 17-21 (1952). An important cause of rancidity of soap is the effect of Fe oleate, especially ferrous oleate. Fe salts of more unsaturated fatty acids had smaller effects on rancidity. Isosafroeugenol and Na silicate were effective as the inhibitor of rancidity of soap.

PATENTS

Hard water detergent composition. E. W. Gluesenkamp (Monsanto Chemical Co.). *U. S. 2,594,421.* A dry, powdered detergent especially effective in hard water comprises the condensation product of oleic nitrile with ethylene oxide, tetrasodium pyrophosphate, and the balance a mixture of starch and carboxymethylcellulose.

Detergent composition. J. C. Harris and M. Kosmin (Monsanto chemical Co.). *U. S. 2,594,431.* Preparation of a low sudsing detergent, stable to alkali, consisting of the condensation product of abietic acid or tall oil with ethylene oxide, a phosphate salt, and a carbohydrate material such as a mixture of starch and carboxymethylcellulose.

Low sudsing detergent. M. Kosmin and J. C. Harris (Monsanto Chemical Co.). *U. S. 2,594,453.* A low sudsing detergent effective in automatic machines comprises the condensation product of tall oil with ethylene oxide, a sodium phosphate, a non-phosphate salt and carboxymethylcellulose.

Soap compositions and soap flakes. L. Safrin and F. W. Volz (Wilson & Co.). *U. S. 2,595,300.* A soap composition capable of giving maintained sudsing and detergency in hard water comprising about 75 to 85% anhydrous soap, 5 to 12% of a non-ionic detergent, which is an alkyl phenol ether of a polyethylene glycol, and 5 to 18% of anhydrous borax.

Cationic surface active agents. Colgate-Palmolive-Peet Co. *British 670,326.* A process for preparing a surface active agent of the amino alkylene monoamide type by contacting with CO_2 a liquid medium containing an amino alkylene monoamide and an alkylene diamide or an amino polyalkylene polyamide so as to precipitate a CO_2 addition compound of the monoamide, and separating this precipitated addition compound from the residual liquid.

Detergent product. Bozel-Maletra (Societe Industrielle de Produits Chimiques). *French 981,638.* A block of soap obtained by grinding under a pressure of less than 200 kg./cm.^{2} of powdered lye to obtain a block of soap homogeneous and not brittle which dissolves slowly in water. It does not disintegrate when used over long periods of time in a humid state.

Preparation of new detergents based on the salts of tertiary hydroxylamines. Societe des Laboratories de Recherches pour Application Industrielles. *French 981,937.* Products useful as detergents, foaming agents, wetting agents, and dispersing agents prepared by sulfonating the esters of a higher aliphatic carboxylic acid and a salt of a hydroxylated tertiary amine, the sulfonating agent being an alkyl-naphthalene sulfonic acid.