ABSTRACTS . . . . E. S. Lutton, Editor

• Oils and Fats

Ralph W. Planck, Abstractor
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Vegetable oils and ice cream. Anon. *Chemurgic Digest* 12 (6/7), 32(1953). A study of statistics on the consumption of milk and butterfat in selected areas indicates that the marketing of vegetable oil frozen desserts during the last 7 months of 1952 did not significantly affect the demand for ice cream.

Fatty acids, phosphatides, sterols, and similar substances. Jean Asselineau (Inst. biol. phys. chim., Paris). *Bull. soc. chim. France* **1952**, 884-91. A review covering paper chromatographic separations of (1) C_1-C_8 fatty acids as hydroxamates, hydrazides, and Na and NH_4 salts; (2) higher fatty acids by development with MeOH and by inverted-phase procedures; and (3) sterols as hydrazones, by development in alcoholic mixtures, by inverted-phase procedures, and on paper impregnated with $HCONH_2$ or propylene glycol. Application to studies of phosphatides and other naturally occurring lipide complexes are mentioned. 87 references. (*Chem. Abs.* **47**, 8014)

Overflow sleeves in settling tanks. I. V. Baboshin. *Masloboino Zhirovaya Prom.* **18**(4), 27(1953). Crude cottonseed oil is pumped into the first of 2 settling tanks through a special sleeve 70 mm. in diam., 1 m. long, and provided with a slit 4 mm. wide, running its entire length. Placed at 25-30 mm. away from the inside wall of the tank, the sleeve allows the oil to flow down the wall. The sediment remains undisturbed, while the purified oil rises and overflows through another sleeve into the second tank. The oil then flows out of the tank through an open pipe, 600 mm. above the bottom. This type of oil-overflow sleeve reduced sedimentation of the oil during subsequent storage from an average of 0.4% to 0.08-0.16%. (*Chem. Abs.* **47**, 8392)

Preparation of carboxy-labelled oleic acid. Sune Bergström, Karin Pääbo, and Max Rottenberg (Univ. Lund, Sweden). *Acta Chem. Scand.* **6**, 1127-8(1952)(in English). From 9,10-dihydroxystearic acid the Ag salt of erythro-9,10-diacetoxyoctadecanoic acid was prepared and in turn 1-bromo-8,9-heptadecanediol which was converted to the labeled dihydroxy acid and finally oleic acid-1-C^{14}. (*Chem. Abs.* **47**, 8014)

Suitability of peroxide test as a measure of rancidity in fats and oils. S. M. Bose and V. Subrahmanyan (Central Food Technol. Inst., Mysore). *Bull. Central Food Technol. Research Inst., Mysore* **2**, 151-2(1953). From tests with peanut and coconut oils stored at 20-95° it is concluded that the peroxide no. is not a reliable test of oil deterioration. (*Chem. Abs.* **47**, 8391-2)

The fatty acid composition of caranga seed oil. L. N. Cole and B. M. Craig (Prairie Regional Lab., Natl. Research Council of Canada, Saskatoon, Sask.). *Can. J. Technol.* **31**, 196-201 (1953). Seed of the shrub *Caragana arborescens* yielded, on petroleum ether extraction, 11.8% of a reddish oil with the following properties: I no. 141.7, sapon. no. 185.9, n^{25} 1.4744, and unsapon. 2.9%. Fractionation and study of methyl esters prepared from the oil revealed fatty acid composition of the oil to be: palmitic 3.1, stearic 6.2, arachidic 1.0, behenic 2.9, hexadecenoic 0.2, oleic 6.2, eicosenic 0.2, linoleic 67.1, and linolenic 2.3%.

The fatty acid composition of safflower seed oil. B. M. Craig (Prairie Regional Lab., Natl. Research Council of Canada, Saskatoon, Sask.). *Can. J. Technol.* **31**, 202-7(1953). Safflower seed were extracted with petroleum ether, converted to methyl esters, and the esters fractionated and analyzed for component acids. The fatty acid compositions of seed grown in North Dakota and Saskatchewan were, resp.: myristic —, 0.4; palmitic 5.1, 4.1; stearic 6.5, 5.4; arachidic 0.5, 1.0; behenic 1.2, 0.5; hexadecenoic 0.1, 0.2; oleic 7.5, 7.1; eicosenoic 0.3, 0.3; erucic 0.2, 0.9; linoleic 78.5, 80.0; linolenic 0.1, 0.1%.

Reversion problems in edible fats. B. F. Daubert (Koppers Co., Pittsburgh, Pa.) and Paul W. O'Connell. *Advances in Food Research* (Academic Press Inc., New York, N. Y.) **4**, 185-207(1953).

Tin ricinoleate—a new light and heat stabilizer for PVC (polyvinyl chloride). F. Furter (Oil Chem. Works A.-G., Brugg, Switzerland). *Kunststoffe* **43**, 189-91(1953). The combination of the known PVC-stabilizing characteristics of Sn salts with similar properties of the only recently discovered ricinoleic acid esters led to comparative investigations with Sn(II) ricinoleate which is a light-brown, viscous liquid, d^{20} 1.112, n^{20} 1.504, viscosity at 20° 4000-7000 cp., with a slight odor. It contains 12-14% Sn and is not toxic. It reduces viscosity and increases transparency of foils. Good results were also obtained in combination with other Sn and Pb stabilizers (*Chem. Abs.* **47**, 7817)

Crystal structure of formic acid. F. Holtzberg, B. Post, and I. Fankuchen (Polytech. Inst. of Brooklyn, Brooklyn, N. Y.). *Acta Cryst.* **6**, 127-30(1953)(in English). Oscillation photographs and Patterson projections were used at $-50 \pm 5°$. The unit cell of formic acid is orthorhombic, space group *Pna*, unit cell of formic acid is orthohombic, space group *Pna*, $a = 10.23 \pm 0.02$, $b = 3.64 \pm 0.01$, $c = 5.34 \pm 0.01$ A. (*Chem. Abs.* **47**, 7284)

Use of isopropyl acetate as a solvent for the determination of glycerol by periodic oxidation. P. Jacquin and J. Tavernier. *Inds. agr, et aliment.* (Paris) **69**, 497-9(1952). The use of isopropyl acetate instead of ether as a solvent in the determination of glycerol is suggested. The solubility of glycerol in ether is about 0.770 g./l. and in isopropyl acetate about 4.3 g./l. (*Chem. Abs.* **47**, 7364)

Spectral analysis of fat. Andreas Lembke, Werner Kaufmann, and Pietro Luigi Farfoletti-Casali (Bokt. Inst. Forschungsanstalt Milchwirtschaft, Kiel, Germany). *Milchwissenschaft* **8**, 118-20(1953). Measurements were made in the range 2200-3300 A. on solutions containing 3.333 g. per l. Butterfat showed characteristic absorption maxima—one at 2280-2300 A. ascribed to dienes, another at 2680 ascribed to trienes, and a third at 3020 due to tetraenes. For calculation of the di-, tri-, and tetraene content, the following values of $E^{1\%}_{1\,cm.}$ were employed: for dienes 1190, for trienes 1930, and for tetraenes 2850. Data on the free fatty acids obtained from fat saponified in the cold with alcoholic KOH showed only a small dimunition in the percentage of conjugated fatty acids. Margarine differs from butter in that its fat has 3 peaks in the triene absorption range compared to the 2 peaks for butterfat. In the tetraene range butterfat has peaks at 3020 and 3170 A., whereas margarine is lacking in the first peak. Based on this difference, a method accurate to ±1% was developed capable of distinguishing butter from butter containing margarine. With increasing margarine content, the difference in height expressed in mm. between the absorption at 3020 A. and that at approximately 3000 A. decreased. (*Chem. Abs.* **47**, 7691)

Analysis of fatty acids and unsaponifiable material of plant tissue. Composition of some animal feeds. A. M. Leroy and A. Francois (Natl. agron. inst., Paris). *Ann. inst. natl. recherche agron., Sér. D, Ann. zootech.* 1(1), 51-9 (1952). Unsaponifiable material and fatty acids in forage were analyzed by a method involving prolonged hydrolysis in 10% HCl, saponification in 50% alcohol, extraction of unsaponifiables with petroleum ether, acidification, then extraction of fatty acids with petroleum ether. Analyses were made of flax, peanuts, grains (oats and barley), wheat bran, etc. The method is accurate to 5% for fatty acids. Chemical composition of several animal feeds is given. (*Chem. Abs.* **47**, 8283)

Soyin, a toxic protein from the soybean. II. Physical characterization. Michael J. Pallansch and Irvin E. Liener (Univ. Minnesota, St. Paul). *Arch. Biochem. Biophys.* **45**, 366-74 (1953). A procedure is described for the preparation of soyin from defatted soybean flour. The following physical constants have been provisionally established: isoelectric point, 6.1; diffusion constant (D_{20}), 5.72×10^{-7} sq. cm./sec.; sedimentation constant (s_{20}), 6.4×10^{-13} sec.; molecular weight, 105,000; frictional ratio (f/f_0), 1.19.

Dielectric constants of fatty acids. III. The application of Jatkar's equation to concentrated solutions of esters of fatty acids. R. S. Phadke (Indian Inst. Sci., Bangalore). *J. Indian Inst. Sci.* **35A**, 31-7(1953). Jatkar's equation holds for Et ricinoleate and Et ricinelaidate in solution in C_6H_6, CCl_4, and dioxane over the entire concentration range from very dilute solutions up to almost-pure ester. (*Chem. Abs.* **47**, 7274)

The properties of New Zealand butters and butterfats. III. Seasonal variations in the nature of the unsaturated acids of butterfat as estimated by spectrophotometric methods. A. K. R. McDowell (Dairy Research Inst., Palmerston North, N. Z.). *J. Dairy Research* **20**, 101-7(1953). Variations in the unsaturated acid constituents of butterfat samples from the Manawatu district of the North Island of New Zealand over the months of October to April were studied by the spectrophotometric technique, applied both before and after alkali isomerization of the fat. The seasonal variations in the I values of the butterfats were found to be closely related to the changes in oleic acid content. Conjugated dienoic acids, though present in relatively small amounts, showed a somewhat similar seasonal trend in values to oleic acid. The results for percentage content of nonconjugated dienoic acids were low, and they fluctuated considerably from month to month. Conjugated trienoic and tetraenoic acids were absent or present only in traces. Small but fairly consistent quantities of nonconjugated trienoic and tetraenoic acids were found in all samples. (*Chem. Abs.* **47**, 7688-9)

A note on the stability of vitamin A in Canadian margarine. T. K. Murray and J. A. Campbell (Food and Drug Labs., Dept. of Natl. Health and Welfare, Ottawa). *Can. J. Technol.* **31**, 193-5(1953). Ten out of 13 samples of margarine produced by 13 manufacturers met or surpassed label claims for vitamin A content after 12 months' storage at room temperature. These samples lost an average of 10% of their vitamin A during this storage, but they lost only 1.7% in 12 months at 5°. Peroxide values of stored samples indicated a correlation between loss of vitamin A and oxidative changes in the margarine.

Mahaleb seeds. Remziye Salih Hisar (Tech. Univ., Istanbul). *Turk. Bull. Hyg. Exptl. Biol.* **12**, 227-40(1952) (French Summary). The seeds of mahaleb contain protein 18.98-29.36, ash 3.68-5.00, P_2O_5 1.36, and lipides 27.9-33.9%. Mahaleb oil has $d_{15} = 0.9324$, contains 1.62% unsapon., I no. 127, sapon. no. 168.7. An alkaloid similar to sparteine has been isolated. (*Chem. Abs.* **47**, 7598)

Advances in the chemistry and physiology of conjugated unsaturated fatty acids. I. Physical chemical status of the problem. E. Schauenstein (Univ. Graz, Austria). *Österr. Chem.-Ztg.* **53**, 187-92(1952). Consideration of the relations between structure and the physical and chemical properties of conjugated and nonconjugated unsaturated fatty acids and the identification of the former in an Et_2O-EtOH extract of silk-worm cocoons prompts the conclusion that conjugated fatty acids play a leading role in the transformation of silk fibroin from the globular to the fibrillar form. (*Chem. Abs.* **47**, 7563)

Refining cottonseed oil by an emulsification method. A. G. Sergeev and B. Ya. Sterlin. *Masloboĭna Zhirovaya Prom.* **18**(4), 6-8(1953). Gossypol by-products, which were formed during the heat-treatment of oil and which impart a black color to crude oil and a red color to poorly refined oil, are removed by mixing the oil and an alkali solution at 22-4° in an air-tight emulsifier, neutralizing the emulsion within 1 hr. (to prevent the resorption of colored matter), washing immediately with water, heating at 45-55°, settling, washing with water, drying, bleaching, filtering, etc. The emulsification method can be used for the purification of other oils and fats. (*Chem. Abs.* **47**, 8392-3)

Analytical applications of gossypol. A new microchemical test for molybdenum in steel. A. Vioque-Pizarro and H. Malissa (Tech. Hochschule, Graz, Austria). *Mikrochemie ver. Mikrochim. Acta.* **40**, 396-9(1953). To a cleaned surface of the steel add, from a fine capillary, a drop of 8 N HNO_3 and allow it to react for 2-5 min. Remove the drop with a capillary pipet and transfer it to a Schleicher and Schüll No. 601 filter paper. Rinse with 10 drops (0.5 ml. max.) of 8 N HNO_3 and add 0.1% solution of gossypol in EtOH to give, on the paper, a circle of about 1 cm. diam. Dry at about 60° and look for the development of an orange-red to purple-red color. As little as 0.1% Mo in the steel can be detected. (*Chem. Abs.* **47**, 7370)

Composition of whale milk. J. C. D. White (Hannah Dairy Research Inst., Kirkhill, Ayr, Scotland). *Nature* **171**, 612 (1952). Eight samples of whale milk had the following percentage composition (average composition of milk from Ayrshire cows in parenthesis): water 51.7 (87.2), fat 35.1 (4.0), protein 10.3 (3.3), ash 1.2 (0.9), and lactose 2.3 (4.3). (*Chem. Abs.* **47**, 7625)

Oxidation number of fat and butter. Ya. Zaĭkovskiĭ and A. Chizhkova. *Molochnaya Prom.* **14**(4), 32-3(1953). The oxidation no. of fresh butterfat is 0.43-0.85 (determined by volume of 0.01 N $KMnO_4$ needed for oxidation of volatiles obtained by steaming a 25-g. sample). As butter spoils this can rise to 4-8 or even to 20. No correlation with taste could be found. The oxidation no. of butter is always higher than that of butterfat alone. (*Chem. Abs.* **47**, 7689)

Some methods of determining the rancidity of oil—a test with reduced phenolphthalein. L. Kehren. *Oleagineux* **8**, 555-560 (1953). A test using reduced phenolphthalein is proposed for the detection of rancidity in oils. A reduced phenolphthalein solution first is prepared by heating a mixture of 2 grams of phenolphthalein, 20 grams of potassium hydroxide, 100 ml. of distilled water and 10 grams of zinc powder to boiling until it becomes colorless. The solution is stored in a tightly stoppered flask along with the excess zinc. To test for rancidity 0.500 g. of the oil is dissolved in 1.5 ml. of benzene in a test tube. Next 2.5 ml. of a buffer solution of pH 9 diluted to 1/5 is added followed by 0.4 ml. of 0.2% copper sulfate solution and 0.5 ml. of the reduced phenolphthalein solution and the mixture is shaken for 10 seconds. The presence of a pink color (with a slight violet cast because of the presence of the copper sulfate) in the emulsion indicates the start of oxidation and not an effective rancidity while a definite red color indicates that the oil is rancid. If no color change is encountered the oil has undergone no oxidation. In some cases where the oil has become very rancid, the emulsion may become orange and then yellow. Details of a micro-test using the same principle also are given.

Action of ultrasonic-waves on some of the substances present in vegetable oils. F. Maffei and M. Buonsanto. *Olearia* **7**, 132-136(1953). Ether and alcohol solutions of chlorophyll, chlorophyll a and b, carotene and xanthophyll were treated with ultrasonic irradiation in an attempt to explain the modifications caused by ultrasonic-waves on vegetable oils. Definite variations in fluorescence and absorption bands were observed when the irradiated solutions were tested and compared with the original solutions.

Application of crystalline urea complexes to the chemistry of fats. III. The fractionation of fatty acids and fatty acid esters on columns of urea. J. M. Martinez Moreno, A. Vazquez Roncero, and M. L. Del Valle. *Anales De Fisica y Quimica* **49** (B), 539-546(1953). Solutions of fatty acids or fatty acid esters in benzene or ether were passed through columns of urea mixed with sand. It was possible to develop the column with either methyl or ethyl alcohol. Good separations of mixtures of stearic and oleic acids or their esters were effected by this technique.

Sees big gain in mellorine in '53. Anonymous. *Soybean Digest* 13, No. 11, 73(1953). Summary of monthly production during 1952 in Illinois, Missouri, Oklahoma, and Texas.

The separation of glyceride concentrates from natural fats by crystallization from solvents. J. S. Cama, M. M. Chakrabarty, T. P. Hilditch, and M. L. Meara (The University, Liverpool). *J. Sci. Food Agric.* **4**, 321-8(1953). The limits of experimental accuracy of systematic crystallization of fats and fatty oils from solvents as a method of determining glyceride constitution are critically considered. Artificial fat mixtures of approximately known composition were prepared from the following concentrates: a) Trisaturated (palmitostearins) from a beef depot fat; b) Disaturated-mono-unsaturated (i) oleopalmitostearin from a beef depot fat, (ii) oleodipalmitin from piquia fat, and (iii) oleodistearin from *Allanblackia floribunda* seed fat; c) Monosaturated-diunsaturated (i) palmitodiolein from palm oil and (ii) stearodiolein from Baku fat; d) Triunsaturated (oleolinoleins) from sunflower-seed oil. Detailed systematic crystallizations of these mixtures gave results in agreement with the known proportions of the various glycerides. More conclusive evidence of the validity of the crystallization procedure is, however, to be gained from a summary of data on numerous vegetable and animal fats. These data show a) that the trisaturated glyceride content of a fat is the same whether it is determined chemically (by removal of all unsaturated glycerides by permanganate-acetone oxidation) or physically (by crystallization); and b) that the amount of a simple triglyceride (e.g., trisaturated, triolein, trilinolein, etc.) in a seed fat, as determined by the crystallization procedure, is related in a perfectly regular manner to the proportion of the acid concerned in the total fatty acids, irrespective of the nature of the acid concerned (saturated or unsaturated). A simple mixture of trisaturated and triunsaturated glycerides can readily be separated quantitatively by correct application of the crystallization technique.

Frozen desserts as a market for soybean oil. E. M. Deck (Mrs. Tucker's Foods, Inc.). *Soybean Digest* 13, No. 11, 38-40 (1953). The present markets for soybean oil are reviewed. Mellorine (a frozen dessert containing vegetable fats instead of butter fat) offers a large potential market for soybean oil. A typical formula for mellorine is given. The need for legal standards of identity is emphasized and data are presented, based on production in states where mellorine is marketed, to show that increased sales of mellorine will not hurt the market for ice cream.

Outlook for edible uses of soybean oil. G. M. Gibson (Kraft Foods Co.). *Soybean Digest* **13**, No. 11, 59-60, 67(1953). Review, emphasizing the potential market for edible grades of soybean oil and its relationship to markets for cottonseed oil and lard.

The isolation of lauric acid from butter fat. R. P. Hansen and N. J. Cooke (Fats Research Lab., Wellington, New Zealand). *J. Sci. Food Agric.* **4**, 351-2(1953). Although lauric acid has generally been assumed to be a minor constituent, it has not previously been isolated from buter. It was isolated by repeated fractionation of the methyl esters and subsequent recrystallization of free fatty acids from light petroleum, methanol, ether and acetone. Identity of the lauric acid was established by x-ray diffraction measurement, melting point (44.0° C.), saponification equivalent (200.4), combustion analysis. The anilide melted at 76.8°C. and a complex with S-benzylthiuronium chloride melted at 132.2°C. All melting points were determined in closed capillaries and are uncorrected.

Rapid determination of glycerol by the potassium periodate method. L. Hartman (Fats Research Lab., Wellington, New Zealand). *J. Applied Chem.* **3**, 308-11(1953). A study of modifications of existing methods leads to the conclusion that potassium dimesoperiodate is the most satisfactory form of the oxidizing agent. The reagent is prepared by dissolving 46 g. of potassium periodate in 800 ml. of H_2O containing 240 ml. of N potassium hydroxide (carbonate-free) and the solution is made up to 1000 ml. (0.2 M). It is stable for several months. A sample equivalent to 0.4 g. of glycerol is diluted to about 75 ml. with H_2O and 25 ml. of 0.5 N sulphuric acid and 50 ml. of 0.2 M $K_4I_2O_9$ reagent are added from burettes. After 5 minutes, 10 ml. of (1:1) propylene glycol is added and the mixture is titrated with 0.1 N sodium hydroxide with bromcresol purple as the indicator. The blank established for the $K_4I_2O_9$ reagent is deducted and the amount of glycerol is calculated as usual.

Margarine and soybean oil markets. S. F. Riepma. *Soybean Digest* **13**, No. 11, 36-7(1953). Brief review of markets for edible soybean oil and of the possible effects of governmental control of cotton planting and butter prices. The subsidy program for butter can succeed only by driving margarine out of the market.

High capacity expeller pressing of cotton seed. J. W. Dunning, A. P. Holly, D. K. Bredeson (V. D. Anderson Co., Cleveland, Ohio). *Oil Mill Gaz.* **50**(3), 13-15(1953). Data on high capacity continuous pressing (50 tons cotton seed/day/machine) show that low residual oil contents (4%) may be obtained by proper operation of seed preparation equipment.

PATENTS

Astatic material. S. A. Simon and A. H. Drelich (Chicopee Manufacturing Corp.). *U. S. 2,649,143.* An antistatic coating for seat covers made of non-cellulosic synthetic long-chain polymers is prepared from long chain fatty acid esters of poly-oxy-alkylene ethers of long chain fatty acid esters of aliphatic polyhydroxy alcohols or their polymeric ethers. The coating is incapable of generating, including or accumulating objectionable electrostatic charges and cannot be removed by washing with H_2O.

Continuous buttermaking process and apparatus. W. Wilsmann (Westfalia Separator, A. G., Oelde, Germany). *U. S. 2,649,377.* Description of the apparatus and method for adding butter-treating additives at the end of the press off-cylinder so they may be kneaded with the butter corn to yield a fine textured butter.

Refining wool fat. H. J. Passino and J. M. Meyers (M. W. Kellogg Co.). *U. S. 2,649,466.* Wool fat is mixed with sufficient alkali to form soaps of the free fatty acids. The mass is extracted under pressure with a solvent whose critical temperature is not above 450°F. The temperature of extraction is above the temperature of maximum solubility of the fat and not less than 100°F. below the critical temperature of the solvent. The soaps and insoluble portion of the fat are rejected. Refined wool fat is recovered from the extract.

Process of dehydration of fatty materials. C. Greenfield. *U. S. 2,651,647.* An oil is added to a fat-containing mass in sufficient quantity to yield a liquid mixture having a ratio of total fat to non-fat solids of 2:1. The mixture is heated under subatmospheric pressures until water has been removed. Fats are separated from the residual mixture of dehydrated solids and fats.

Stabilization of lipoidal substances. H. S. Olcott and T. W. Campbell (United States of America, Sec'y of Agr.). *U. S. 2,652,332.* Carotene-containing substances are stabilized by the addition of 2-amino-3-hydroxy-benzoic acid or its esters.

Preparation of saturated fatty acids of improved color and color stability. D. E. Terry and D. T. Warner (General Mills, Inc.). *U. S. 2,652,414.* A process for the production of purified saturated fatty acids consists in adding 1-3% by weight of conc. sulfuric acid to the crude acid, heating the mixture to 150-175°C. for 2-6 hours, washing to remove sulfuric acid, and distilling purified fatty acids from the residue.

Method of obtaining carotene from palm oil. P. Blaizot (Institut de Recherches pour les Huiles de Palme et Oleigineux). *U. S. 2,652,433.* The oil is separated into a solid fraction and a liquid carotene-rich fraction. The latter is alcoholized with a low molecular weight alcohol and then saponified with strong alkali under reduced pressure. Carotenes are extracted from residual soaps with an organic solvent.

Continuous extraction of oil from vegetable materials. R. H. Westgaard (United States of America, Sec'y of Agr.). *U. S. 2,653,957.* In a continuous process, oils are extracted from vegetable seeds or nut meats by hot alcohol. The extract is cooled to temperatures not above 20°C. and the oil and solid which separate are removed. The alcohol is freed of impurities by a brief treatment with alkali and is used for extraction of more material.

• Biology and Nutrition

F. A. Kummerow, Abstractor

Study of metabolism of lipides of the frog with the aid of carbon.^{14} Honoré Anciaux (Univ. Ghent, Belgium). *Verhandel. Koninkl. Vlaam. Akad. Wetenschap. Belg., Kl. Wetenschap.* **14**(37), 5-46(1952). $CH_3C^{14}O_2H$ was prepared from $BaC^{14}O_3$ through the Grignard reaction and injected into frogs which were sacrificed 10 to 360 min. after the injection. Radioactivity was determined in the total lipides, fatty acids, and cholesterol isolated from liver and muscle. In frogs, as in mammals, acetate is the precursor of fatty acids and cholesterol. Fatty acids in the liver and muscle of the frog have a much shorter half life than that reported for mammals. Two radioactive maxima (and probably a third) were found during the six-hour period of the experiment. 34 references. (*Chem. Abs.* **47**, 8274)

Colorimetric determination of vitamin E (tocopherol) of the serum. Robert Beckmann (Univ. Münster, Germany). *Intern. Z. Vitaminforsch.* **24**, 393-403(1953). The normal value is 1200-2000%, with a mean error of ± 7%. 62 references. (*Chem. Abs.* **47**, 8162)

Is the duration of hepatic steatosis related to composition of fat in the diet? U. Bononi (Univ. Siena). *Boll. soc. ital. biol. sper.* **28**, 1332-3(1952). Rats were fed lard or olive oil with and without cholesterol. Steatosis was induced by short inhalation of CCl_4. Reabsorption of the fat was more rapid in animals fed lard, slower in those fed oil, especially when combined with cholesterol. Duration of steatosis seemed related to the saturation index of the fat fed. (*Chem. Abs.* **47**, 7613-4)

Absorption of nitrogen and amino acids from soybean meal as affected by heat treatment or supplementation with aureomycin and methionine. R. W. Carroll, G. W. Hensley, C. L. Sittler, E. L. Wilcox, and W. R. Graham, Jr. (Quaker Oats Co. Research Labs., Chicago, Ill.). *Arch. Biochem. Biophys.* **45**, 260-9 (1953). Proper heat treatment of soybean meal resulted in improved absorption of nitrogen and amino acids from the small intestine of rats. The degree of improvement in absorption of lysine, leucine, and methionine was similar to that for nitrogen absorption while improvement in cystine absorption was much higher. The relation of this finding to the problem of poor utilization of raw soybean meal was discussed. The addition of aureomycin to either raw or heated meal resulted in improved absorption of each of the four amino acids during passage through the small intestine. Methionine additions had no effect on the amount or site of nitrogen absorption from these rations.

Methods of investigating the composition of fatty materials. Their importance to nutrition and technology. Pedro Cattáneo (Univ. Buenos Aires). *Actas y trabajos congr. sudamer. quim., 5° Congr.* (Lima, Peru) 1, 154-79(1951). A review on analytical methods, with tabulated analyses and 53 references. (*Chem. Abs.* **47**, 8391)

The application of countercurrent methods to the fractionation of lipide material from human placenta. P. G. Cole, G. H. Lathe, and C. R. J. Ruthven. *Biochem. J.* **55**, 17-23(1953).

The lipides of mature human placenta have been fractionated by countercurrent distribution in CCl_4-MeOH-H_2O systems. Glutamic acid, ethanolamine, choline and serine occurred in several fractions. The N and P contents indicate the presence of lipides of high P and low N content instead of the usual phospholipides.

Electrophoresis of serum lipoproteins on filter paper. Angelo Fasoli (Univ. Med. Clinic, Milan). *Acta Med. Scand.* **145**, 233-5(1953). Paper electrophoretic patterns, stained with Sudan III, are useful in showing the effect of eating fatty meals, injection of heparin, and of various diseases on the lipide and lipoprotein content of blood serum. (*Chem. Abs.* **47**, 7638-9)

The influence of preheated cod-liver oil in the diet on the growth of young rats. II. Experiments with normal cod-liver oil. H. J. Kleinobbink and E. H. Groot (Univ. Amsterdam). *Voeding* **14**, 240-7(1953). Young rats were fed on a diet consisting of ground rice (72), casein (5), dried brewers' yeast (5), salt mixture (3), and fat (15%). If the fat is given in the form of peanut oil, supplemented with sufficient carotene and calciferol, the growth is better than with normal cod-liver oil (peroxide no. less than 24). The difference is highly significant. Oral administration of 2.5 mg. of tocopherol acetate/rat/week had no effect. Only high amounts (30-140 mg.) resulted in better growth. If the cod-liver oil is preheated for 3 hrs. at 230° in a CO_2 atmosphere and used as fat source, the growth is very poor, even with sufficient vitamins A and D. Compared with normal cod-liver oil the decrease in growth is also highly significant. (*Chem. Abs.* **47**, 7615)

Chemical composition of some fractions of lipides of diphtheria bacteria. E. M. Gubarev, E. K. Lubenets, and Yu. V. Galaev (Med. Inst., Rostov-on-Don). *Biokhimiya* **18**, 37-46(1953). The acetone-soluble lipide fraction E has been studied. E consisted of a large amount of free fatty acids and a small amount of a neutral fat (wax). Fraction E did not contain carbohydrates, glycerol, sterols, Ca, and P. The free fatty acids consisted of $C_{26}H_{52}O_2$, $C_{24}H_{48}O_2$, $C_{16}H_{32}O_2$, and $C_{22}H_{42}O_2$. The neutral fat (wax) contained the acids $C_{25}H_{48}O_2$, $C_{35}H_{66}O_2$, and $C_{23}H_{44}O_2$, combined with the alcohol $C_{23}H_{45}OH$. The benzene extract of the diphtheria bacteria also yielded a fraction G which consisted of a carbohydrate trehalose in combination with hydroxy fatty acids. Fraction A was a substance that had been extracted from the diphtheria bacteria; and consisted of an unidentified carbohydrate combined with the fatty acids $C_{38}H_{76}O_2$, $C_{21}H_{42}O_2$ or $C_{20}H_{40}O_2$, $C_{19}H_{38}O_2$, and $C_{21}H_{40}O_2$. The first, m. 70.4, had previously not been observed in any bacterial lipide. (*Chem. Abs.* **47**, 7593-4)

The effects of aureomycin and methionine supplements fed to rats receiving soybean meals. G .W. Hensley, R. W. Carroll, E. L. Wilcox, and W. R. Graham, Jr. (Quaker Oats Co. Research Labs., Chicago, Ill.). *Arch. Biochem. Biophys.* **45**, 270-4 (1953). The addition of either aureomycin or methionine to soybean meal rations improved the growth of rats. Aureomycin improved ration utilization more with unheated than with heated soybean meal.

Essential hyperlipemia. Claude R. Joyner (U. S. Naval Hosp., Oakland, Calif.). *Ann. Internal Med.* **38**, 759-77(1953). A diet low in fat and cholesterol is beneficial in these conditions. 44 references. (*Chem. Abs.* **47**, 7617).

Determination of saturated and unsaturated higher fatty acids in fecal fat. J. H. van de Kamer (Central Inst. Nutrition Research, Utrecht, Holland). *Scand. J. Clin. & Lab. Invest.* **5**, 30-6(1953). The determination of the fatty acids in feces is based on their titration in a purified petroleum ether extract of the feces, followed by the determination of the Br-binding capacity of the soaps formed. For details of the procedure cf. (*Chem. Abs.* **47**, 7572-3)

The determination of the chemical constitution of the lipides of algae with the aid of the adsorption method (research on Chlorella, Scenedesmus, and Nitzschia). Hans Kathen (Univ. Göttingen, Germany). *Arch. Mikrobiol.* **14**, 602-34(1950). Because of the small amounts of lipides available a special procedure was developed which involved distribution chromatography and differential elution. Adsorbants used were sucrose and Al_2O_3. Eluants used were CCl_4, benzene, ether, ether-MeOH (19:1), and MeOH. The fats from the 3 algae contained: triglycerides 50-80, lipochromes (chlorophyl and carotenoids) 14-39, sterols (free and esterified) 3-4, ether-soluble phosphatides 0.5-0.9, and hydrocarbons 0.5-4.0%. Free fatty acids were not preformed. The fatty acids contained as units in the d triglycerides were essentially those of the C_{18} group, both saturated and unsaturated, as oleic, linoleic, and linolenic acids. The structure of the triglycerides is discussed. The following values are reported for the *Chlorella* oil: sapon. no. 190, I no. 93-168, thiocyanogen no. 64-94, phosphatides < 1, free sterols 0.3, sterol esters 0.3, and unsapon. (without lipochromes) $< 0.8\%$. The lipides from the algae were similar in composition to the fats from heterotrophic microörganisms or to the seed fats of the higher plants. (*Chem. Abs.* **47**, 7605)

Fatty livers and lipotropic substances. K. Lang (Univ. Mainz, Germany). *Die Medizinische* **1953**, 489-92. A discussion.

Unsaturated fatty acid metabolism in Neurospora. Joseph Lein, Theresa A. Puglisi, and Patricia S. Lein (Syracuse Univ., Syracuse, N. Y.). *Arch. Biochem. Biophys.* **45**, 434-42(1953). Five independent occurrences of *Neurospora* mutants requiring unsaturated fatty acids were found. Four of these were allelic and grew in the presence of either oleic, linoleic, or linolenic acid. The remaining mutant which was not allelic was partially blocked in the conversion of linoleic to linolenic acid. Biotin, aspartic acid, or pyridoxine did not affect the requirement for unsaturated fatty acids in these mutants. The mutants tested did not respond to arachidonic acid. The results are interpreted as indicating that the unsaturated fatty acids are synthesized through a route distinct from that of the saturated fatty acids and that they are synthesized in the order of oleic to linoleic to linolenic acid.

Thyroprotein and fat in laying diets. Robert J. Lillie, J. R. Sizemore, J. L. Milligan, and H. R. Bird (U. S. Dept. of Agr., Beltsville, Md.). *Poultry Sci.* **31**, 1037-42(1952). In diets containing choline, dienestrol diacetate, and vitamin B_{12}, thyroprotein, fed for 22 months, did not improve egg production and did cause weight loss and loss in feed efficiency. Inclusion of 8% of lard in the diet resulted in an increase in body weight and feed efficiency. (*Chem. Abs.* **47**, 7612)

A modification of Schönheimer and Sperry method for the determination of cholesterol in blood serum. Elisabeth Mertens and Claus Albers (Marienkrankenhaus, Hamburg, Germany). *Klin. Wochschr.* **31**, 477-8(1953). For the determination of total cholesterol 5 ml. of filtrate is saponified with 0.5 ml. 5% MeONa for 2 hrs. at 40°. (*Chem. Abs.* **47**, 8162)

Sex hormones and lipide metabolism. I. Effect of administration of estrogen in partially hepatectomized rats. T. Montini and S. Pontremoli. *Boll. soc. ital. biol. sper.* **26**, 1324-5(1950). Hepatectomized rats treated with the Na salt of 4,4'-dihydroxy-α,β-diethylstilbenedisulfonic acid show no marked fatty deposition in the liver compared with those which are only hepatectomized. (*Chem. Abs.* **47**, 7618)

The serum phospholipide-cholesterol ratio as a test for coronary atherosclerosis. Lester M. Morrison, E. Wolfson, and P. Berlin (Los Angeles Co. Gen. Hosp., Los Angeles, Calif.). *J. Lab. Clin. Med.* **39**, 550-5(1952). Most of the normal subjects and those suffering from other chronic diseases had a serum phospholipide-cholesterol ratio of more than one while most of those with proven coronary thrombosis had a ratio of less than one. (*Chem. Abs.* **47**, 8237-8)

Studies on the biosynthesis of cholesterol. V. C^{14}-cholesterol in the egg yolk and in the laying hen. Erwin Schwenk and Cyril F. Baker (Worchester Foundation for Exptl. Biol., Shrewsbury, Mass.). *Arch. Biochem. Biophys.* **45**, 341-8(1953). In hens, subcutaneous or intraperitoneal injection or injection into the crop gland of C^{14}-acetate labeled in the carboxyl group results in formation of C^{14}-cholesterol and another substance having a higher count than the C^{14}-cholesterol.

Essential fatty acids and their relation to pyridoxine. H. M. Sinclair (Univ. Oxford, England). *Biochem. Soc. Symposia* No. **9**, 80-99(1952). A review and discussion with 73 references. (*Chem. Abs.* **47**, 7615)

The lactation of non-milking breeds of ewes compared with the lactation of cows. Albert Ulrich (Univ. Göttingen, Germany). *Milchwissenschaft* **8**, 96-8, 130-2(1953). Tests on the milk of 35 Leine sheep showed that changes in composition during the course of a lactation period paralleled similar changes in cow milk. Correlation coefficients for sheep milk and cow milk, resp., were: fat:protein, 0.370, 0.40; fat:lactose, −0.588, 0.80; protein:lactose, −0.752, −0.15. Average and extreme values for the milk of the 35 ewes were, (%): fat 6.51, 5.65-9.11; protein, 5.88, 4.82-6.77; lactose, 4.97, 4.65-5.53. (*Chem. Abs.* **47**, 7622)

The bacteriostatic effects of extracts of chicken duodenum on certain micro-organisms. II. Preparation and properties of concentrates. J. Barrett and N. J. Berridge (University of Reading). *J. Sci. Food Agric.* **4**, 396-400(1953). Chromatographic fractionation and analysis of concentrates prepared from chicken duodenum yielded bacteriostatic preparations having the properties of unsaturated fatty acids. The most active fractions had a bacteriostatic power roughly equal to that of linoleic acid. Although the pure compound has not yet been isolated, the equivalent weight, iodine values and bromine derivatives of the most active fraction indicate that the bacteriostat may be a dienoic acid containing 22-24 carbon atoms. The inactivation of some concentrates by solvents under alkaline conditions distinguished them sharply from solutions of pure linoleic acid.

Absorption of cholesterol-4-C^{14} in rats fed mixed soybean sterols and β-sitosterol. H. H. Hernandez, D. W. Peterson, I. L. Chaikoff, and W. G. Dauben (Univ. California). *Proc. Soc. Exp. Biol. Med.* **83**, 498-99(1953). The hypercholesteremia and atherosclerosis observed in the cholesterol-fed chicken can be prevented by the addition of soybean sterols to the diet. Experiments with C^{14} labeled cholesterol established that plant sterols interfere with the absorption of cholesterol in the rat.

PATENTS

Spray dried vitamin A and D emulsion. J. C. Wallenmeyer, F. G. McDonald, and R. L. Henry (Mead Johnson & Co.). *U. S. 2,650,895.* A fat soluble vitamin containing powder is obtained by spray drying an emulsion prepared by dispersing droplets of a fatty dispersion of vitamins A and D in an aqueous solution of dextrins, sugars, and vegetable gums.

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• Drying Oils

Raymond Paschke, Abstractor

Rubber-base paints. Anon. *Consumer Reports* **18**, 380(1953). Eight widely sold brands were tested and compared with 2 high quality oil-base paints. Four of the brands were superior or equal to the oil-base paints in over-all quality.

Sunflower seed. Anon. *Paint Oil & Colour J.* **124**, 482(1953). A survey of world production since 1935.

Paint materials in Canada. Eric L. Barry. *Paint Oil & Colour J.* **124**, 423(1953). A survey.

Styrene and polystyrene. V. G. Bashford and S. D. Eagleton. *Chemistry and Industry Symposium Issue* (August 10), S38 (1953). A history with 69 references.

Autoxidative reactions: their chemistry, mechanism and catalysis by metal salts. C. E. H. Bawn. *Oil Colour Chemists' Assoc. J.* **36**, 443(1953). An extensive discussion with 43 references. Lecture I covers oxidations in liquid systems including primary products, general kinetics, and the influence of structure. Lecture II covers metal catalysis and lecture III the secondary processes of autoxidation.

Factors that influence the adherence of paint films. II. E. G. Bobalek. *Finish* **10**, 39-40(1953). For part I see *Chem. Abstr.* **47**, 7791. The spreading characteristics of paints are controlled to a great extent by the choice of solvents. There is the problem of maintaining the wetting or adhesion of the film for the substrate after the solvent has vaporized. The use of nonvolatile, adhesion-promoting additives may be required. These adhesive properties can be lost during aging of the paint in storage. Proper curing of thermosetting resin coatings is most important. Certain pigments have adhesive properties while others have not. A suitable choice of pigments must therefore be made to obtain max. adherence. Certain paint application methods give greater penetration of the paint film resulting in better adherence. Precise control of film thickness is of prime importance since thinner films are generally more adherent. (*Chem. Abs.* **47**, 8386)

The use of silicones in the paint industry. D. Cannegieter. *Verfkroniek* **26**, 112-17(1953). A review. See *Chem. Abstr.* **47**, 8387.

Aerosol coating compositions. R. C. Downing and F. S. Palmer. *Paint Varnish Production* **43**, No. 9, 23(1953). A discussion including development of aerosol market; formulation of paints; effect and compatibility of propellants; pressure and consistency relationships; and factors affecting consistency and pressure.

The protection of metals by paints. J. F. H. van Eijnsbergen. *Verfkroniek* **26**, 64-7(1953). An address. (*Chem. Abs.* **47**, 8385)

A survey of paint drying and baking procedures. Edward Engel. *Org. Finishing* **14**, No. 8, 22(1953).

Outlook for soybean oil in industrial fields. D. K. Farstad. *Soybean Digest* **13**, No. 11, 54(1953). In 1952 73 million pounds of soybean oil was used in paints and varnishes. Another 60 million pounds went into alkyd resins. The use of alkyd resins in trade sales paints developed since 1949 and is important in future increased consumption of soybean oil. An important factor tending to increase use of paint products is the "do it yourself" idea. The outlook for industrial consumption of soybean oil is very good.

The effect of solvents on linoxyn films. I. Graham. *Oil Colour Chemists' Assoc. J.* **36**, 500(1953). Data are presented on the rate of diffusion of various solvents into dried oleo-resinous varnish films and of the equilibrium swelling produced by solvents on dried linseed stand oil films. The effects of solvents on the physical properties of dried varnish films are discussed, and effects of age and temperature on brittleness is shown by experimental data.

Experimental study of blistering paints on wood. C. Y. Hopkins and B. C. Smart. *Am. Paint J.* **38**, No. 1, 72(1953). Part I. This paper deals only with blistering caused by moisture, the most important factor. A temperature differential is required. Apparatus and procedure is described in detail. The method showed good reproducibility. Many samples blistered within 24 hours. Systems not blistering within 14 days were practically immune even after much longer exposure. Fresh blisters always contained water. Linseed oil house paints blistered most readily but if allowed to age for one month blistering was retarded.

The prevention of skinning. P. P. Hopt. *Paint Manuf.* **23**, 266 (1953). As antiskinning agents, the hydroquinones inactivate any oxidizing agents present and are not sufficiently volatile. The phenolic compounds turn brown upon oxidization. The oximes are preferable. Butyraldoxime and its isomer methyl ethyl ketoxime fulfill most requirements.

Some data on oil-reactive phenol resins. C. P. A. Kappelmeier. *Verfkronick* **26**, 23(1953). A review. (*Chem. Abs.* **47**, 8388)

Aluminum paints. A. Kruger. *Paint, Oil and Colour J.* **124**, 322(1953). The preparation of weatherproof and storable aluminum paints in alcohol-soluble media. Translated from *Farbe und Lacke* **59**, No. 2(1953).

Interior architectural finishes. J. MacGuffie. *Am. Paint J.* **37**, No. 52, 76(1953). Lecture X in the Third Ten-Year Practical Paint Course. Lecture covers pigments, vehicles, enamels, semigloss paints and many types of flat paints. A question and answer section is included.

Evaluation of adhesion of organic coatings by ultracentrifugal and other methods—Part I. A. M. Malloy, N. S. Soller, and A. G. Roberts. *Paint Oil Chem. Rev.* **116**, No. 18, 14(1953). A detailed description is given of the design and operation of a new instrument, the University of Cincinnati Ultracentrifugal Adhesion Tester. Adhesion data obtained by four methods are reported for a number of organic coating materials on steel and aluminum.

Corrosion prevention by paints. J. O. E. Mayne, *Org. Finishing* **14**, No. 8, 24(1953). Condensed from an article in the spring 1953 issue of *Bulletin of the Institute of Metal Finishing*, London, England.

The chemical constitution and potential uses of Canadian tall oils. R. V. V. Nicholls. *Chemistry in Can.* **5**, No. 6, 122(1953). A comprehensive discussion. Six Canadian tall oils are examined in detail. In the unsaponifiable fraction (25% of whole oil) were found 40% sterols, 15% straight chain alcohols (C_{20} to C_{24}) and 12% of unsaturated, cyclic, optically active alcohols (C_{14} to C_{26}). The 35,000 tons of Canadian tall oil produced annually is now burned as fuel.

The use of varnishes containing indene resins. A. Poggi Polini. *Pitture e vernici* **9**, 167-70(1953). If resins are made with pure indene, the products are colorless, but in the presence of impurities as polyindene, polycoumarone, cyclopentadiene, isoolefins, etc., the products are more or less colored. The presence of polycoumarone decreases the resistance to cracking. The addn. of indene resins to glycero-phthalic resins increases the speed of drying. (*Chem. Abs.* **47**, 9029)

Use of polyols in synthetic resins. Harold Rose. *Paint Varnish Production* **43**, No. 9, 35(1953). A discussion.

Hot spraying. J. A. Sanches. *Industrial Finishing* **29**, No. 11, 52(1953). A short discussion of some problems and applications.

Paint industry forum—"What are the comparative properties of alkyds vs. latex type flat finishes?" H. J. Singer, E. C. Scholl, and A. Driscoll. *Paint Ind. Mag.* **68**, No. 8, 21(1953). Three opinions by three authors.

Research on the oxidation of fatty acids and esters. J. H. Skellon. *Paint Manuf.* **23**, 268(1953). A short discussion of recent work on catalytic oxidation of monoethenoid fatty acids and their higher esters.

Pyrolysis and naval stores. A. J. Sofianopoulos. *J. Chem. Educ.* 30, 306-10(1953). Historical review of resinous products. 48 references. (*Chem. Abs.* 47, 9029)

New developments in paints for exterior wood surfaces. W. G. Vannoy. *Am. Paint J.* 37, No. 51, 62 (1953). Lecture IX in the Third Ten-Year Practical Paint Course. Discussion includes primers, low zinc oxide or leaded zinc oxide-calcium carbonate paints, stain and blister resistant paints, and mildew inhibitors.

Surface-active properties of polydiene varnish. I. L. Zabolotnyi and A. G. Chistyakova *Kolloid Zhur* 15, 195-7(1953). Some unsatd. by-products of the manufacture of synthetic rubber can be used instead of linseed oil. The interfacial tension between H_2O and C_6H_6 solns. of these by-products, before and after polymerization, was similar to that between H_2O and linseed-oil varnish in C_6H_6. (*Chem. Abs.* 47, 9028)

Isomerized oils. G. Balbi. *Olearia* 7, 125-131(1953). The processes for the alkaline and catalytic isomerization of drying oils are reviewed. The characteristics, features, defects and analysis of commercial isomerized oils are discussed. The defects characteristic of such oils appear to have been eliminated in a new isomerized linseed oil made in Germany.

Experiments on the synthesis of drying oils. K. Wekua and J. Bergmann. *Farbe und Lack* 59, 267-271, 311-316 (1953). Substances with properties of drying oils were synthesized by chlorinating methyl stearate, glyceryl tristearate and stearic acid in the presence of ultra-violet light until the chlorine content of the resulting product amounted to 30-50% and then splitting out the halogen either as Cl_2 or HCl. Zinc dust and methanol, ethanol or propanol were used most to split out the halogen while aluminum and iron powder also were used in conjunction with these alcohols. Other solvents used were dioxane, benzene and petroleum ether. To split out HCl, water and potassium hydroxide or other bases such as barium hydroxide and calcium hydroxide were used. Products with chlorine contents of 8-20% and codine numbers of 40-165 were obtained. The drying properties of the synthetic oils were tested and compared with those of commercial drying oils.

PATENTS

Terpene-phenol reaction product for use in drying oil. L. M. Geiger (to Neville Co.). *U. S. 2,596,235.* An alc.-sol., oil-reactive product is obtained by reaction of phenol with a natural cyclic terpene. PhOH is heated with a natural cyclic terpene such as turpentine, dipentene, or α-pinene in the presence of condensation catalysts such as moist Superfiltrol or BF_3-Et_2O complex, to produce a cryst. product believed to be 1,8-bis(p-hydroxyphenyl)-methane, m. 98. When the reaction product is cooked with 8.6% by wt. of a drying oil, such as linseed, oiticica, tung, sunflower, or dehydrated castor oil, film properties of the oil are improved. (*Chem. Abs.* 47, 8390)

Unsaturated fatty acid esters of polyvinyl alcohols. G. L. Schertz (to Hercules-Powder Co.). *U. S. 2,601,561.* Useful for paints, varnishes, and wood sealers. (*Chem. Abs.* 47, 9030)

Water-dispersible alkyd. R. P. Arndt (to Pittsburgh Plate Glass Co.). *U. S. 2,634,245.* The reaction of a polyethylene glycol mixture 10-30% with an alkyd resin (30-60% oil modified) 70-90% at 200-300° for ½ to 5 hours results in an air-curing resin which is water dispersible without the use of dispersing agents. (*Chem. Abs.* 47, 9030).

Epoxy resin-polycarboxylic acid-dicyandiamide reaction products. G. H. Ott (to Ciba, Ltd.). *U. S. 2,637,715.* Product has excellent baking properties (*Chem. Abs.* 47, 9031)

Tall oil-polyamino aldehyde reaction product. A. F. Schmutzler (to American Cyanamid Co.). *U. S. 2,640,814.* Tall oil, or the addn. product of tall oil and an α,β-unsatd. polycarboxylic acid, is condensed with a suitable polyamino compd. and the resulting amido compd. then condensed with an aldehyde. Thus, crude tall oil 170, dicyandiamide 23.2, and naphtha 170 parts were refluxed for 20 hrs. at 132-5° with azeotropic distn. of H_2O. The mixt. was cooled to 95°, 40.7 parts 37% aq. HCHO added, and the temp. held at 85-90° for 1 hr. and then at 132-43° for 2 hrs. with azeotropic distn. of H_2O. The products so obtained, suitably compounded, are useful as drying-oil resins. (*Chem. Abs.* 47, 8391)

Glyceryl maleate varnish for waterproof sandpaper. C. W. Foss and H. W. Buell (to Carborundum Co.). *U. S. 2,642,349.*

Curing glycidyl polyethers with N,N-dialkyl-1,3-propanediamines. H. A. Newey and E. C. Shokal (to Shell Development Co.). *U. S. 2,642,412.* The products are useful as surface coatings, adhesives and insulating materials.

Process for producing hydrocarbon drying oils. Herman S. Bloch. *U. S. 2,644,847.* A process for improving a hydrocarbon drying oil by heating with an amount of a conjunct polymerization catalyst less than the theoretical amount required to form catalyst hydrocarbon complexes. For details see *Paint Varnish Production* 43, No. 9, 71 (1953).

Copolymers of vinyl phenols with drying oils. E. M. Edwards and S. E. Bradshaw (to British Resin Products Limited). *U. S. 2,647,876.*

Plastic tall oil rosin fraction. Don E. Floyd (to General Mills, Inc.). *U. S. 2,647,888.* A rosin composition comprising the rosin acid fraction of tall oil containing at least 60% rosin acid, the remainder being composed essentially of fatty acids and a small amount of unsaponifiable material esterified with a monomeric polyhydric alcohol having more than two hydroxyl groups, the esterified polyhydric alcohol having at least one hydroxyl group esterified by the rosin acid fraction, and at least one free hydroxyl group.

Medium oil alkyd-resin surface-coating materials and processes for preparing the same. Frank R. Spencer (to American Cyanamid Co.). *U. S. 2,648,642.* A composition of matter comprising a compatible blend of about 10-50 parts of an aminoplast resin selected from a group consisting of melamine-aldehyde resins and urea-aldehyde resins, about 90-50 parts of an alkyd resin modified with 26-50% by weight of a material selected from the group consisting of semi-drying glyceride oils, non-drying glyceride oils and the fatty acids derived therefrom and 0.5% to 10% by weight of a modifier comprising a polymeric alkyl ester of an alpha, beta unsaturated carboxylic acid.

Unsymmetrical diphenylol methanes. H. L. Bender, A. G. Farnham, and J. W. Guyer (to Union Carbide & Carbon Corp.). *British 672,820.* Used to prepare resins for tung oil varnishes.

Printing varnish for porcelain-enameled ware, glass, and porcelain. Yasuhiko Ohshima. *Japan 3356 ('52).* Highly viscous, boiled linseed oil (20 kg.) was mixed with 2 kg. of $AlPO_4$ powder, 1 kg. of which was mixed with 1 kg. of pigment.

Esters of mannitol and linoleic acid as drying oil. S. Maruta *Japan 3763 ('52).* A mixt. of 10 g. mannitol, 92 g. linoleic acid, and 1 g. K_2CO_3 was heated on an oil bath for 5 hrs. at 240° in the presence of N, the product washed with dil. NaOH and satd. NaCl to give 94 g. of an ester, acid no. 0.3, I no. 171, hydroxyl no. 0, n^{25} 1.485. The ester dries 3 times as fast as linseed oil. (*Chem. Abs.* 47, 8390)

Condensations of silanols. S. Irigai (to Tokyo Shibaura Electric Co.). *Japan 3898 ('52).* Water-resistant and electro-insulating varnish. (*Chem. Abs.* 47, 9032)

• Waxes

R. L. Broadhead, Abstractor

Organic protective coatings for metal cans. S. L. Flugge (Continental Can Co., Chicago). *Paint Varnish Production* 43, No. 6, 23-8, 79 (1953). The requirements for the various coatings are outlined. Oleoresinous, phenolic, vinyl, and wax-type finishes are discussed. Methods of application and baking cycles are reviewed. Future advances in can linings may come from the new synthetic resins. (*Chem. Abs.* 47, 8389)

Impregnations with microparaffin. F. Ohl. Seifen-Ole-Fette-Wachse 79, 473-475(1953). The general and commercial qualities of microparaffin currently available in Germany and their applications for impregnating materials especially paper and fiber boards are described. Particular attention is given to the use of these waxes in conjunction with synthetic substances both in the solid and emulsified form.

PATENTS

Belt dressing. Emil H. Knuth (to Diamond Alkali Co.). *U. S. 2,640,366*, June 2, 1953. Power and V-belts are coated for improved traction and preservation with a mixt. of chlorinated paraffin wax (contg. 65-75% of chemically combined Cl) and a small amt. of neat's-foot or castor oil. The mixt. is heated to 110-20°, agitated, and homogenized. It may be used as a viscous liquid or as a stick in a compn. coatg. more paraffin wax. (*Chem. Abs.* 47, 8291)

Corrosion inhibitors for oil wells and refinery pipe lines. John W. Nelson (to Sinclair Oil and Gas Co.). *U. S. 2,640,809*, June 2, 1953. Corrosion of pipe lines carrying crude oil is inhibited by introducing 0.2-2 pints of a carboxy acid, obtained by controlled oxidation of microcryst. wax, per 1,000 barrels of crude oil or brine.

Refining and bleaching sugar-cane wax. Harold H. Hatt, Peter H. A. Strasser, Wm. J. Troyahn (to Commonwealth Scientific and Industrial Research Organization). *U. S. 2,640,841,* June 2, 1953. Sugar-cane wax is first demineralized with dil. HCl then distd. under vacuum until the desired proportion of distillate has been removed. The residual wax is then bleached by CrO_3 in H_2SO_4 soln. to give pale brown to white hard waxes with acid nos. up to 180. (*Chem. Abs.* **47**, 8394)

Wax coating for preventing corrosion of metals. Herschel G. Smith, Troy L. Cantrell, and Earl E. Fisher (to Gulf Oil Corp.). *U. S. 2,641,551,* June 9, 1953. A coating consisting of asphalt, microcryst, wax, and a small amt. of a primary fatty amine salt of 3-methylbutyl 2-ethylhexyl phosphoric acid is used to protect Fe, ferrous alloys, and other metals from atm. corrosion. From 0 to 25% of fillers, such as Al, mica, graphite, TiO_2 and other paint pigments and 0-10% resinous plasticizers, such as coumarone-indene resin and hydrogenated rosin may also be added to the coating formulation. About 44-60% of the coating is made up of volatile naphtha-base solvents. (*Chem. Abs.* **47**, 7999)

Water-repellent treatment for fibrous materials. Stephen F. Urban and Warren B. Blumenthal (to National Lead Co.). *U. S. 2,641,558,* June 9, 1953. After using $(NH_4)_2\text{-}ZrO(CO_3)_2$ in a water-repellent compn. in combination with a water-sol. soap and waxes, subsequent treatment of cotton fabrics, paper, or cardboard in an aq. soln. of basic zirconyl chloride ($Zr_2O_3Cl_2\text{-}6H_2O$), $AlCl_3$, $SnCl_2$, or $FeSO_4$, and drying, fixes the repellent to last much longer than without treatment. Fabrics may be washed 8-10 times and dry-cleaned 6 times without loss of repellency. (*Chem. Abs.* **47**, 8386)

Floor polish. Karl Olbrich & Co., Material- und Farbwaren. *Austrian 175,325,* June 25, 1953. A floor polish in powd. form is made by spraying wax contg., e.g., oil of balsam turpentine as a softener. Preferred compn. is ceresine 20, paraffin 8, hard wax 6, pine oil 20, and oil of balsam turpentine 20 parts by wt. (*Chem. Abs.* **47**, 8392)

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• Detergents

Lenore Petchaft, Abstractor

Detergent compounds—their composition and behavior. Lawrence R. Flett and Lester F. Hoyt (Allied Chem. & Dye Corp., New York, N. Y.). *Sewage and Ind. Wastes* **25**, 245-54(1953). Because of their chemical and physical nature surface-active agents are adsorbed on sewage solids and removed along with these solids by settling. They can, therefore, it is said, have only a minor effect on sewage-treatment processes. In the discussion, exception is made to this conclusion for it is pointed out that (1) desorption could occur, thereby releasing the detergents, and (2) even if the organic detergent per se does not have an effect on sewage-treatment processes, the phosphate incorporated in the ordinary household detergents could be in sufficient concentration to influence treatment processes. (*Chem. Abs.* **47**, 8296)

Foaming of detergents and textile auxiliaries. Improved apparatus for determination of foaming properties and its performance. Ernst Gotte. *Melliand Textilber.* **32**, 210-12(1951). The construction and mode of action of a fully automatic apparatus for measuring foam production, based on mechanically operated reciprocating sieves, are described, and the results obtained with solutions of pure Na alkylsulfates are discussed. The rate of formation and disappearance and the volume of froth have been determined, and it is shown that the volume increases linearly with the log of the concentration and that the froth is most stable at the critical concentration for micelle formation. (*Chem. Abs.* **47**, 6681)

Action of detergents in sewage treatment—a study by industry. W. R. Gowdy (Procter & Gamble, Cincinnati, Ohio). *Sewage and Ind. Wastes* **25**, 255-61(1953). Attempts to produce frothing in a mechanically activated sludge plant by addition of commercial detergent in concentrations as high as 250 p.p.m. failed as long as the aeration-mixture solids were kept at a normal 800 p.p.m. When solids were lowered to 200 p.p.m. frothing occurred whether or not detergents were added. Conclusion: frothing was caused by an agent formed in the aeration process rather than by added detergents. (*Chem. Abs.* **47**, 8296)

Germicides for soap. William Innes (Robert Haldane, Ltd., Paisley, Scotland). *Soap, Sanit. Chemicals* **29**, No. 9, 42-5 (1953). Recent papers covering the use of D.C.M.X. and hexachlorophene are reviewed. A competent soap germicide should kill organisms on the skin, should be retained on the skin for a period of time and should be non-irritating to the skin and non-toxic. Based on the papers discussed it can be concluded that the results of *in vitro* tests must not be taken as giving an accurate indication of the efficacy of any germicide for incorporation in soap. The true measure must be made by practical hand-washing trials. Any germicide chosen for use in soap must possess control over a wide range of both Gram positive and Gram negative organisms. Analysis of figures published on both germicides show both to be effective soap germicides.

Retention of laundering compounds on the human skin. G. Hopf and J. Burmeister (Allgem. Krankenhaus Heidberg, Hamburg, Ger.). *Fette u. Seifen.* **55**, 178-80(1953). The retention of laundering compounds (I) on textiles and human skin was investigated by using radioactive Na stearate, Na laurate, Na oleate, Na linolenate, Na alkylsulfonate, Na alkarylsulfonate, and Na alkylsulfate. Textiles made from animal fibers retain more I than do textiles made from plant or synthetic fibers. Vinegar rinses are more effective in removing I than H_2O rinses. On human skin, approximately 0.1 mg. soap/sq. cm. remains after washing and rinsing. (*Chem. Abs.* **47**, 9036)

The determination of the types of surface-active compounds with special reference to synthetic detergents. C. Kortland and H. F. Dammers (Koninkl. Shell Lab., Amsterdam). *Chem. Weekblad.* **49**, 341-8(1953). The identification of surface-active agents present in detergents is discussed. A mixture containing various types of surface-active compounds is analyzed. (*Chem. Abs.* **47**, 9035)

Effect of detergents on sewage microorganisms. Raymond Manganelli and Edwin S. Crosby (Rutgers Univ., New Brunswick, N. J.). *Sewage and Ind. Wastes* **25**, 262-76(1953). (1) Slime growths and biological treatment processes established by autochthonous sewage microorganisms are influenced by the presence of synthetic detergents in sewage. (2) Low concentrations of anionic and nonionic detergents stimulate slime growths; cationic detergents retard it. (3) Anionic and cationic detergents decrease oxidizing, purifying and nitrifying capacities of activated sludge and cause a general deterioration of its physical and biological properties. (4) Nonionic detergents produce no detrimental effect on activated sludge or its properties. (5) Interaction between anionic and cationic detergents reduces the inhibiting action of these detergents on oxidation by activated sludge organisms. (6) Anionic and cationic detergents have a marked detrimental effect on stalked and free-swimming protozoan present in activated sludge. Nacconol, Ceepryn and Tween 80 were the detergents used in these tests. (*Chem. Abs.* **47**, 8296)

Influence of organic detergents on metal corrosion. T. K. Ross. *Metal Treatment and Drop Forging* **20**, 183-7(1953). Properties of anionic, cationic and nonionic detergents are reviewed. Corrosion in the presence of a detergent takes the form of (1) wetting, (2) reaction with the metal, (3) absorption on the metal, (4) breakdown of absorbed film, (5) reaction of absorbed film with metal, and (6) action of detergent upon corrosion products. Typical examples of the various types of detergent action in corrosion are reviewed. (*Chem. Abs.* **47**, 9035)

Clarification of soap stock with hydrogen peroxide. I. Ya Samarin, and G. L. Gurevich (Gorki Fat Combine). *Masloboino Zhirovaya Prom.* **18**, No. 4, 25(1953). The soap-stock from a cottonseed-oil refinery is saponified, grained, washed with water, mixed with 10-15% solution of H_2O_2 (3-8% of 30% H_2O_2 per ton) with a mechanical blender or an air jet, and settled for 1.0-1.5 hours. The lye underneath the clarified soap is withdrawn, and the soap is washed and transferred to a main kettle for a final processing. Household soap containing 30-40% clarified soap is light in color, and cannot be distinguished from the soaps made entirely of a light fat. (*Chem. Abs.* **47**, 8393)

Spray drying of detergents. Albert Sharphouse (Ultra Chemical Works, Inc., Paterson, N. J.). *Soap, Sanit. Chemicals* **29**, No. 9, 85, 87(1953). Drying of detergents may be accomplished with either con-current or counter-current air flow, but the air flow should be non-turbulent and parallel to the fall of the product. The conditions of the type of spray drying are closely related to the physical form of the finished product. The following factors influence the density: inlet air temperature, nozzle size, spraying pressure and exhaust air temperature. High inlet and outlet air temperatures produce low gravity products. Generally the higher the spraying pressure, the heavier and finer the dried product will be.