achieve still lower reflectances, ranging from 82 to 14. Thus it will be seen that for very light soiling, 1 or 2 percentage units, the drop in reflectance is roughly proportional to the amount of soil, but that as soiling becomes heavier, more and more soil is required per unit of brightness loss. If a standard soiled cloth has a reflectance of 24%—and this is not unusually low—and its reflectance is raised to 64% after washing, its percentage brightness increase is $\frac{64-24}{84-24}$ .100 or 67%.

However the per cent soil removal is 100 — 170/6820 or 97.5%. So the difference between good washing performance and poor performance often depends on the effectiveness with which the last stubborn traces of soil are removed.

Conclusions

A great deal remains to be done in the way of studying the soils which are encountered commonly and in determining the methods by which they attach to fabric fibers and other bases. Such studies are fundamental to the development of a true science of detergency. At present it would be incorrect to say that detergency is on a scientific basis in the same sense as, say oil refining or soap manufacture.

There is a considerable amount of basic knowledge as to the general mechanisms by which soils are attached and by which they can be detached. Unfortunately there has been very little study of the ways in which these mechanisms operate, of which ones predominate, and of the specific factors involved in the attachment of individual representative soil types to particular fabric types. Such studies would be of the greatest possible value in developing a true science of detergency.

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ABSTRACTS . . . . . Don Whyte, Editor

• Oils and Fats

M. M. Piskur, Abstractor

CRYSTAL STRUCTURE OF SILVER SALTS OF FATTY ACIDS. V. Vand, A. Aitken, and R. K. Campbell (Lever Bros. & Unilever Ltd., Port Sunlight, Cheshire). *Acta Cryst. 2,* 398-403(1949). Seven silver salts of even-numbered *n*-fatty acids were investigated by X-rays at 20 and 78°. Their unit cells which were determined from powder photographs proved to be triclinic with 2 molecules of silversalt per unit cell. Changes of the unit-cell dimensions with temperatures have been observed. A packing of the molecules in the unit cell was suggested.

AMIDES OF SATURATED ALIPHATIC ACIDS. AN X-RAY DIFFRACTION STUDY. D. H. Wurz and N. E. Sharples. *Anal. Chem. 21,* 1446-8(1949). X-ray diffraction data for the amides of the saturated aliphatic acids (C_1 to C_{14}) are presented. Isostructuralism among the even members and also among the odd members of the series above C_8 is shown.

STUDY ON THE EVOLUTION OF THE PEROXIDES FORMED DURING THE OXIDATION OF FATS. M. Loury and M. T. Mellier. *Oleagineux 4,* 665-8(1949). The methyl esters of the liquid fractions of palm oil absorbed more than twice as much oxygen from an atmosphere of pure oxygen than from air. The changes in peroxide value on autoxidation at 40, 80, and 105° are tabulated and plotted.

RELATIONS BETWEEN THE OXIDATION OF UNSATURATED GLYCERIDES AND THEIR ABSORPTION IN THE ULTRAVIOLET. A. Chevallier, S. Manuel, and C. Burg. *Arch. sci. physiol. 2,* 329-59, 358-60(1948). A 1% solution of guinea-pig subcutaneous fat (I) in petroleum ether has a relatively level absorption spectrum from 3000 to 2600 Å. and a steadily rising optical density down to 2300 Å. The absorption at 2400 Å. increases linearly with time of exposure to light, but if oxygen is excluded, the absorption change is negligible. This effect is not shown by the unsaponifiable matter of the fat. Triolein (II) kept in the dark shows a rise in absorption for 48 hours, then a descent until 96 hours elapses, followed by a leveling off. (The possibility of contamination with esters of linoleic acid was not excluded.) The onset of the rise can be delayed 96 hours by restricting the access of the II to air. This effect is less manifest with lightly oxidized II. Oxidation of II produces a product with a strong ultraviolet absorption, and this in turn decomposes into a product with less absorption. (*Chem. Abs. 43,* 9091-2.)

PATENTS

PURIFICATION OF OLEIC ACID. C. G. Goebel (Emery Inds., Inc.). *U. S. 2,482,760.* Oleic acid containing polyunsaturated acids is refined by subjecting it to polymerizing conditions and then distilling pure oleic acid from the polymerized polyunsaturated acids.

FATTY ACIDS AND GLYCERINE FROM FATS. W. M. Leaders (Swift & Co.). *U. S. 2,489,713.* A process for the manufacture of fatty acids and glycerine from fats comprises splitting the fat in the presence of water into a mixture of glycerine and fatty acids of

higher and lower melting points, utilizing the sensible heat in the product of the fat splitting to remove water from the mixture, commingling the resulting mixture with an inert and volatile organic solvent having a preferential solubility for the lower melting point fatty acids and glycerine at low temperatures, cooling the resulting solution to crystallize a higher melting point fatty acid fraction, and separating the crystals from the solution of solvent, lower melting fatty acids, and glycerine.

DDT IN PETROLEUM SOLVENT. J. C. Hillyer (Phillips Petroleum Co.). *U. S. 2,490,437.* An insecticide solution comprises DDT, a mixture of lanolin and dimerized mixed C_{18} fatty acids, and a petroleum solvent.

HIGH TEMPERATURE LUBRICANT. T. G. Roehner and G. W. Murray (Socony-Vacuum Oil Co.). *U. S. 2,487,376-9.* A lubricating grease composition is prepared from a fatty material, alkali metal hydroxides or alkaline earth metal hydroxides, a water-dispersible polyvinyl alcohol, and the balance, mineral oil. Other resins, gelatine, and gums are also used.

EXTREME PRESSURE LUBRICANTS. A. J. Morway (Standard Oil Development Co.). *U. S. 2,487,260.* A composition consists essentially of acetylene black, high modulus black, lead oleate, oil solution of polymer for imparting tackiness, sulfurized fatty oil, and refined mineral oil of lubricating grade.

HIGH TEMPERATURE GREASE. Reuben A. Swenson (Standard Oil Co.). *U. S. 2,487,080-081.* A high temperature grease comprises an alkali metal soap of long chain fatty acids, an alkali metal soap of a preferentially oil-soluble sulfonic acid, and a hydrocarbon oil.

LUBRICANT. A. J. Revukas (Tidewater Associated Oil Co.). *U. S. 2,486,493.* A mineral oil composition comprises a mineral oil having dissolved therein a polymerized ester of the acrylic acid series and an oil soluble fatty ester of a phosphorus acid.

LUBRICATING COMPOSITION. P. R. Van Ess (Shell Development Co.). *U. S. 2,487,840.* A lubricating oil composition of matter comprises a major amount of an oleaginous material and a minor amount of a stable non-corrosive product of the group of a sulfur-containing and a metal salt of sulfur-containing reaction product.

• Biology and Nutrition

M. M. Piskur, Abstractor

ISOLATION OF α-MONOPALMITIN FROM HOG PANCREAS. M. E. Jones, *et al. J. Biol. Chem. 181,* 755-60(1949). A white, waxy, crystalline substance isolated in high yield from alcohol extracts of fresh hog pancreas has been identified as α-monopalmitin by a variety of chemical and physical tests. The total α-monoglyceride content of hog pancreas was estimated by a periodic acid assay procedure to be 1.7-1.9% of the fresh tissue weight. In contrast, the α-monoglyceride content of brain, adrenal, and liver was found to be 0.11% or less.

DETERMINATION OF VITAMIN A IN WHALE LIVER OILS BY ACTIVATED GLYCEROL DICHLOROHYDRIN. O. R. Braekkan (Univ. Oslo, Norway). *Anal. Chem. 21,* 1530-1(1949). This reagent provides a valid method for the determination of vitamin A in whale liver oils. Kitol and some closely related compounds do not interfere with the reaction.

VITAMIN A ALCOHOL STABILITY AND ABSORPTION. INFLUENCE OF ANTIOXIDANTS. C. J. Kern, Thomas Antoshkiw, and M. R. Maiese. *Ind. & Eng. Chem. 41,* 2849-53(1949). The unsaponified fraction of fish liver oil diluted in cottonseed oil was tested for vitamin A stability in the presence of various antioxidants. Four per cent lecithin and 2% tocopherol proved the most effective (among those tested) for protecting the vitamin A. With this combination of antioxidants the vitamin A stability was superior to that found in distilled natural esters at 60° in oxygen and air but inferior at 30° in oxygen. The added lecithin enhances the absorption of vitamin A in humans and the tocopherols exert a sparing action on vitamin A. Thus, these antioxidants increase the physiological availability of vitamin A and protect it from oxidative destruction.

DETERMINATION OF NORDIHYDROGUAIARETIC ACID IN THE LEAF OF LARREA DIVARICATA (CREOSOTE BUSH). P. C. Duisberg, L. B. Shires, and C. W. Botkin. *Anal. Chem. 21,* 1393-6(1949). Nordihydroguaiaretic acid reacts with ammonium molybdate to yield an orange colored complex.

THE USE OF YEAST FOR PREVENTION OF MOLD FORMATION ON BUTTER. V. Bogdanov and A. Maksimova. *Molochnaya Prom. 10,* No. 3, 21-3(1949). Addition of 10 ml. of yeast cell suspension to 1 l. butter compound (either before or after the souring operation) serves to prevent mold formation in the product for over 1.5 months. (*Chem. Abs. 43,* 9282.)

CONVERSION OF OCTANOIC ACID TO RAT LIVER GLYCOGEN STUDIED WITH C^{14}, C^{13}—LABELED OCTANOATE. V. Lorber, *et al. J. Biol. Chem. 181,* 475-9(1949). Sodium octanoate ($CH_3 \cdot C^{14}H_2 \cdot (CH_2)_5 \cdot C^{13}OONa$) together with glucose was administered to fasted rats. The distribution of isotopes in the resulting liver glycogen was found to be consistent with the metabolism of the octanoate by a β-oxidation which gives rise to 2-carbon fragments. The 2 isotopes entered the respiratory CO_2 at identical rates, but relatively more C^{13} than C^{14} appeared in the liver glycogen. The possible significance of this finding was discussed.

INJURIES OF THE NERVOUS SYSTEM AFTER THE FEEDING OF SYNTHETIC FATS TO ANIMALS. G. Schaltenbrand and J. Schorn. *Deut. Z. Nervenheilk. 159,* 408-16 (1948). Various fats, synthesized from coal, were fed to rats at a level of 57 or 64% of the total dietary calories. Toxic symptoms ensued with most of the fats, being particularly severe with a synthetic oil containing largely 9, 10 and 11 carbon fat acids. The same diet with 60% of the calories as coconut or peanut oil produced no symptoms. On a diet containing triglycerides made from 10 and 11 carbon fat acids, 25 rats developed a shaggy coat and severe spastic paresis of the legs within 4-6 days. Areas of softening in the spinal cord and medulla, and meningeal bleeding were found on autopsy. When the synthetic fat was removed from the diet, the symptoms gradually regressed toward normal. A similar toxic effect of synthetic fats was observed in monkeys. (*Chem. Abs. 43,* 9195.)

THE EFFECT OF HIGH-FAT DIET IN ALLOXAN DIABETIC RATS. J. Bornstein and J. F. Nelson. *Med. J. Aus-*

tralia I, 121-6(1949). A diet rich in fat ameliorated alloxan diabetes in rats. Diabetic rats are able to utilize fat and convert it to glycogen, regardless of the severity of the diabetes (produced by alloxan). (*Chem. Abs. 43,* 9234.)

INVESTIGATION OF THE FATTY ACIDS OF SUMMER BUTTER. II. A. Kentie. *Netherlands Milk & Dairy J. 3,* 182-99(1949). The methyl esters of the fatty acids of summer butter were carefully fractionated and after conversion into glyceride esters, the different fractions were administered to various groups of rats in growth tests. The assumption was made, that the growth promoting factor was an unsaturated substance, containing 18 C-atoms, which after Twitchell lead salt separation was found in the so-called saturated fatty acid fraction. The only known fatty acid which satisfies the above mentioned conditions is vaccenic acid. A fraction consisting chiefly of vaccenic acid was isolated from butter fat. This fraction showed growth promoting properties. Partially hydrogenated China wood oil, containing a high concentration of vaccenic acid, also showed growth promoting properties. Almost pure vaccenic acid showed no growth promoting properties.

A STUDY OF THE ABSORPTION OF FAT AND CAROTENE FROM THE GASTROINTESTINAL TRACT. D. W. Molander. *Yale J. Biol. Med. 21,* 201-10(1949). Absorption from the gastrointestinal tract (I) of corn oil or an emulsion of mineral oil containing carotene in human serum with a particle size of 0.5 μ was demonstrated. The fatty acids of corn oil are not efficient carriers of carotene from I into the tissues but carry carotene to the liver. These facts support the view that a large proportion of corn oil is absorbed from I without hydrolysis and in the form of small droplets. (*Chem. Abs. 43,* 9211.)

NUTRITIVE CHARACTERISTICS OF RANCID FAT. R. H. Barnes, M. Clausen, I. I. Rusoff, H. T. Hanson, M. E. Swendseid, and G. O. Burr. *Arch. sci. physiol. 2,* 313-26, 326-8(1948). Weanling rats grew more rapidly on diets containing 5% yeast (I) than on similar diets containing equivalent amounts of pure B-vitamins. This effect was due, at least in part, to rancidification of the fat in the latter diet, and was not abolished by administering the B-vitamins (except choline which caused local irritation) by subcutaneous injection of the rats on the diet without I. Addition of highly rancid lard or butterfat to a diet free of I resulted in a decrease in growth, but addition of highly rancid lard to a diet containing I did not. Rats on the diet containing highly rancid lard showed low erythrocyte and leucocyte counts and low hemoglobin and liver vitamin A values. The last effect was prevented by feeding of cod-liver oil which did not, however, prevent the growth effect. Less marked changes occurred on the rancid butter diet. Addition of protein, corn oil, wheat-germ oil or extra folic acid, biotin, inositol, and *p*-aminobenzoic acid did not reverse the effect of rancid fat on an I-free diet; addition of liver extract or 0.5% succinylsulfathiazole did. The presence of highly rancid fat destroys some unknown factor which is produced within the intestine. (*Chem. Abs. 43,* 9180.)

THE GROWTH AND THE FOOD AND WATER CONSUMPTION OF THE RESTING OR EXERCISING ALBINO RAT ON DIETS CONTAINING VARIOUS AMOUNTS OF FAT AND LOW IN VITAMIN B_1. A. B. L. Beznak, M. Beznak, and I. Hajdu. *Hung. Acta Physiol. 1,* 35-51(1947). The experimental period consisted of (1) the pre-exercise inactivity, (2) exercise, including forced running of the rats in a large revolving drum at the rate of 1 km. per hour from 1 hour on the first day to 5 hours on the 13th day and continuing thus to the 28th day, (3) the post-exercise inactivity period. During (1) growth of animals ceased on a diet containing 3% fat, and above this value the growth was proportional to the fat content of diet. During (2) with 3% fat in the diet, the rats began to grow again; with 8% fat, growth was slower; and with higher fat, weight was lost in proportion to the fat content of diets. During the second section of (2) all animals grew at increased rates that were inversely proportional to the fat contents of the diet. During (3) all animals grew at an even greater rate with no correlation to fat content of the diet. The disturbances of growth are attributed to an inadequate supply of vitamin B_1, which caused an insufficient synthesis of fatty acids from carbohydrate. (*Chem. Abs. 43,* 9184.)

THE NUTRITION OF VARIANTS OF *Lactobacillus bifidus.* R. M. Tomarelli, R. F. Norris, and P. Gyorgy. *J. Biol. Chem. 181,* 879-88(1949). Anaerobic bifid lactobacilli isolated from the stools of breast-fed infants gradually changed upon subsequent subculture to rod-like aerobes. These variants of *Lactobacillus bifidus* could be grown on a semisynthetic medium containing an enzymatic digest of casein if the medium were supplemented with human or cow's milk. Human milk contained a concentration of the growth factor 5 times greater than that of cow's milk. The growth factor of milk was found to be associated with the unsaturated fatty acid fraction. Unsaturated fatty acids, such as oleic, linoleic, and vaccenic, and related compounds also exhibited growth stimulation. The growth activity of whole milk was greatly increased by pancreatic digestion, and after digestion human milk and cow's milk were of equal activity. High concentrations of digested cow's milk, but not of human milk, were found to inhibit bacterial growth.

ON THE MECHANISM OF ENZYME ACTION. XL. THE INTERACTION OF SOLANIONE, RIBOFLAVIN, AND NICOTINIC ACID IN THE CARBOHYDRATE-FAT CONVERSION BY CERTAIN FUSARIA. F. F. Nord, J. V. Fiore, G. Kreitman, and S. Weiss (Fordham Univ., N. Y.). *Arch. Biochem. 23,* 480-94(1949). Riboflavin and nicotinic acid, when added to *F. lini* Bolley and pigmented and unpigmented *F. lycopersici,* affect their fat formation in varying ways, *i.e.,* they increase the desaturation of fats produced by *F. lini* Bolley, exert no effect on the fat of pigmented *F. lycopersici,* and have a varying effect on the fat of unpigmented Flyco depending on the amount of pigment produced. The observed changes in iodine absorption values in the fats of *F. lini* Bolley (grown with added R and NA) are due to an alteration of the amount of sterol and linoleic acid content; those in the fats of unpigmented *F. lycopersici* involve a change in sterol and linolenic acid content.

ANTAGONISM BETWEEN UNSATURATED FAT ACIDS AND OTHER SURFACE-ACTIVE AGENTS ON GRAM-POSITIVE BACTERIA. E. Kodicek. *Bull. soc. chim. biol. 30,* 946-60 (1948). Review with bibliography. (*Chem. Abs. 43,* 5822.)

• Waxes

E. H. McMullen, Abstractor

SUGAR CANE WAX: ITS EXTRACTION, DEASHING, AND BLEACHING. A. Shearer. *Intern. Sugar J. 51,* 196-8 (1949). The mud press-cake is dried to approximately 18% moisture and coarsely ground. Extraction is effected at the b.p. of the solvent or at not less than 80°. Shell solvents X2 and X3 and benzene are recommended. Deashing is effected by boiling the wax with sufficient HCl to give a sharp separation of wax and water layers. The wax can be fractionated directly from solvent X3 by the addition of acetone, or by fractional crystallization of alcohol (97% by volume or higher). The wax is bleached with 7.5 to 12% $KClO_3$ in H_2SO_4 solution (7-14%). (*Chem. Abs. 43,* 7730.)

EXTRACTABLE WAXES FROM AMERICAN LIGNITES. W. H. Ode (Bureau of Mines, Pittsburgh, Pa.) and W. A. Selvig. *Ind. & Eng. Chem. 42,* 131-5(1950). Benzene and benzene-alcohol extractions of several American lignites showed Arkansas and California lignites gave higher yields of Montan wax than those from Montana, North Dakota, Texas, and Washington. The benzene extracts more closely resembled commercial Montan wax than the mixed solvent extracts, although the resin content was greater than that of the Riebeck brand of wax from Germany. Properties of the extracts are listed.

THE SYNTHETIC WAXES. Leo Ivanovszky. *Oil Colour Trades J. 116,* 315-16, 318, 320, 322(1949). Wax is defined as: "specific group of organic and as a rule opaque thermoplastics" which melt between about 50 and 90° (exceptionally up to about 200°) to liquids of relatively low viscosity, do not exhibit thread-spinning phenomena, do form pastes or gels, and possess—as a rule—illuminant and permanent gloss-producing properties. Waxes are classified, replicas of natural waxes discussed, also saponification, characteristics, and constants. The more important synthetic and chemically modified waxes of commerce and allied products are listed. (*Chem. Abs. 43,* 7724.)

SEPARATION OF GAS-OIL AND WAX FRACTIONS OF PETROLEUM BY ADSORPTION. Beveridge J. Mair, A. J. Sweetman, F. D. Rossini (National Bureau of Standards, Washington, D. C. (*Ind. & Eng. Chem. 41,* 2224-31(1949). A procedure for the fractionation of the gas-oil and the wax fractions of petroleum by adsorption on silica gel is given. In a single-pass operation the gas-oil fraction can be separated into three portions—a mixture of paraffins and cycloparaffins, mononuclear aromatics, and polynuclear aromatics. The aromatic-free wax fraction can be separated into two portions—paraffins and cycloparaffins.

EFFECT OF OIL ON PLASTIC PROPERTIES OF PETROLEUM WAXES. W. L. Nelson and L. D. Stewart (Univ. of Tulsa, Tulsa, Okla.). *Ind. & Eng. Chem. 41,* 2231-38 (1949). Thirty blends of technical white oil with three typical waxes (paraffin and two microcrystalline tankbottom waxes) were examined with respect to melting point, penetration, crystallinity index, plastic point, ductility, tensile strength, compressive strength, and flexibility. Test methods for each of the above properties are described.

OXIDATION OF PARAFFINS. H. V. Euler and H. Hasselquist. *Arkiv Kemi, Mineral Geol. 26A,* No. 23, 8 pp.(1949) (in German). The oxidation of paraffin hydrocarbons with both air and HNO_3 is reviewed. Detailed procedures are given for separating the products resulting from air oxidation of paraffins in the presence of $KMnO_4$ or vanadate catalysts. (*Chem. Abs. 43,* 7428.)

EXAMINATION OF WAX SUSPENSIONS BY TURBIDIMETRIC METHODS. M. E. Bolton (Petrolite Corporation, Ltd., New York) and A. W. Marshall. *Soap Sanit. Chemicals 25,* No. 9, 129-33, 141-3(1949). A simple visual turbidimeter, is suitable for measuring particle size in studying dry bright polishes. The maximum gloss for oxidized petroleum wax emulsions results from the minimum particle size obtainable with a given wax. The gloss is reduced when an excess of emulsifying agent is used, and very excessive amounts harm stability of the finished emulsion. Optimum particle size for the best gloss is in the range 0.06-0.75 μ. average particle diameter. Gloss of oxidized wax polishes can be improved up to 300% by the addition of hard, glossy inert materials as long as the ability of the wax to form the optimum particle size is not impaired. (*Chem. Abs. 43,* 9491.)

REFRACTIVE INDEX MEASUREMENTS AT AND ABOVE THE MELTING POINT OF SOLIDS, GUMS, RESINS, AND WAXES. J. Dobran, M. M. Acker, and H. A. Frediani. *J. Am. Pharm. Assoc. 38,* 495-7(1949). The melting point and refractive index at the melting point for many of the gums, waxes, and resins normally used in the pharmaceutical laboratory have been determined and are listed as a means of ready identification. (*Chem. Abs. 43,* 9363.)

PATENTS

RESIN-WAX COMPOSITION. Daniel Schoenholz and Leon Kresser (Foster D. Snell, Inc.). *U. S. 2,482,070.* A composition particularly useful in providing bright drying water dispersion waxes comprises an emulsion of a wax, e.g. carnauba or mixtures of carnauba with ouricury or candelilla; a salt of the complex or adjunct of maleic anhydride with the abietate of a polyhydric alcohol, e.g. an amine salt of the combination of maleic anhydride with glyceryl abietate; and an emlusifying agent, e.g. a water-soluble fatty soap, dissolved in the water, the wax and the salt being soluble in each other and present in the emulsion as the dispersed phase, the salt being 20 to 75% of the salt and wax. (*Chem. Abs. 43,* 9495.)

ESTERS OF KETONE-FORMALDEHYDE CONDENSATION PRODUCTS. Harold Wittcoff (General Mills, Inc.). *U. S. 2,480,347.* Polyhydroxy condensation products of formaldehyde with ketones (cf. *U. S. 2,462,031*) are totally or partially esterified with mixed fatty acids to furnish drying oils, plasticizers, waxes, or surface-active agents. (*Chem. Abs. 43,* 9527.)

• Drying Oils

Robert E. Beal, Abstractor

SOYBEAN AND RUBBERSEED OILS. L. A. Jordan. *Paint Technol. 12,* 287 (1947). Soybean oil can be made into satisfactory alkyds and can be blended with drying oils to improve non-yellowing properties, flow, and brushability of paints. Rubberseed oil has drying properties intermediate between linseed and soybean oils and should give a higher yield of

drying oil fraction by solvent-segregation (furfural) than soybean oil does. (*Chem. Abs. 43,* 7718.)

UTILIZATION OF ERUCIC ACID OILS. A. Zuckerman and N. H. Grace. *Can. Chem. Process Inds. 33,* 588-93, 607(1949). Slight processing changes could lead to increased adaptability of erucic acid oils from rapeseed in paints and other products. (*Chem. Abs. 43,* 7240.)

RUMANIAN GRAPESEED OIL. G. Alexa and C. Simionescu. *Bull. inst. polytech. Jassy 3,* No. 2, 296-300 (819-23) (1948). The oil is a superior semi-drying oil which polymerizes readily and dries rapidly to an elastic film. It improves the elasticity of linseed oil films. By heating with 0.2% Ce or Co, greater change in refractive index, density, acid number, and I number occurred than with several other oils tested. (*Chem. Abs. 43,* 7241.)

PATENTS

PROCESS OF SEPARATING THE CONSTITUENTS OF TALL OIL AND SIMILAR MIXTURES. G. E. Taylor, J. S. Metcalf, and L. L. Branscomb (Monsanto Chemical Co.). *U. S. 2,487,000.* Tall oil is selectively esterified with a 1-5 carbon monohydric aliphatic alcohol and then fractionally distilled to recover an ester fraction, an intermediate fraction comprising abietic acid and a small proportion of alkyl esters, and a final pitch fraction. Abietic acid is crystallized from the intermediate fraction and heated at 250-350° to recover a resin and a distillate fraction.

DEHYDROCHLORINATION OF CHLORINATED FATTY ACIDS AND ESTERS. G. R. Van Atta and W. C. Dietrich (Secy. of Agr., U. S.). *U. S. 2,466,340.* Fatty acids of 8-20 C atoms with increased unsaturation may be prepared by vapor-phase dehydrochlorination at 220-300° and 2-5 mm., of chlorinated fatty acids with various metal or metal oxide catalysts. (*Chem. Abs. 43,* 7502.)

TREATMENT OF FELT AND PRODUCTS OBTAINED THEREBY. Dunlop Rubber Co. Ltd., J. Rogerson, and F. W. Warren. *Brit. 572,747.* A drying oil is heated in the presence of a drier and the product is emulsified with water. A sheet of felted fibers impregnated with the emulsion, pressed, and dried to allow the oil to oxidize forms a product suitable for a floor covering and for footwear soles. (*Chem. Abs. 43,* 7720.)

• Detergents

Lenore Petchaft, Abstractor

DETERMINATION OF SURFACE-ACTIVE MATERIALS IN DILUTE SOLUTIONS. P. W. O. Wijga. *Chem. Weekblad. 45,* 477-80(1949). Some known methods from the literature are described for determining the content of synthetic surface-active substances in dilute solutions. A new method is given for determining fatty acid soap and synthetic products in mixtures. To 10 cc. of a solution containing about 20 mg. anion-active substance are added 25 cc. $CHCl_3$, 10 drops Potamine Fast Red 8BNL solution (3g./l.) and distilled water to 75 cc. The surface layer turns carmine red, while the $CHCl_3$ layer remains colorless. With a fatty acid soap 5 cc. 0.1 N NaOH is added, while, for neutral or alkaline substances, this is not needed. The titration is made with a cation-active material, such as 0.005 N Lissolamine A or Fixanol C, and the end point is reached with the first orange-red coloration of the $CHCl_3$ layer. A surface-active substance for this titration must contain at least 11 C atoms. (*Chem. Abs. 43,* 8791.)

DOUBLE REFRACTION OF SOAP SOLS. Heinrich Thiele. *Kolloid Z. 112,* 73-9(1949). Soap sols show a sign inversion of the streaming double refraction. This inversion is reversible. The sign of double refraction under streaming conditions depends on the H-ion concentration in the dispersion medium. Dissociation of the COOH groups of the fatty acids is depressed by H ions and increased by OH ions. With greater dissociation and concentration of charged COOH groups heteropolar ion formation predominates, and the soap molecules arrange themselves in the form of rods. At lower COOH group concentrations the homopolar secondary valence structure of the paraffin chains predominates, and the fatty acid molecules arrange themselves side by side as in platelets. The various micelles have different optical properties. The soap sols are isotropic at the inversion point which is the true neutral point of the soap. Changing the micellar structure of soaps, as well as of Na palmitate and Na stearate, results in simultaneous changes in the viscosity, turbidity, fiber and film formation, gel formation, and foaming properties of the soap solutions. (*Chem. Abs. 43,* 8793.)

PATENTS

STABILIZED DETERGENT. Bruce Strain (Procter and Gamble Co.). *U. S. 2,486,922.* A mixture of alkyl sulfates or sulfonates, sodium tripolyphosphate, and sodium carbonate (to maintain proper pH) was spray dried and then heat dried to produce a heavy duty detergent with improved solubility, greater freedom from dust, and the same efficiency as the corresponding mechanical mixture.

HEAVY DUTY, HARD WATER DETERGENT. David R. Byerly (Procter and Gamble Co.). *U. S. 2,486,921.* A detergent composed of alkyl sulfates and sulfonates and sodium tripolyphosphates is suitable for use in hard water without curd deposition.

ORGANIC DETERGENT BUILDER. John David Malkemus (Colgate-Palmolive-Peet Co.). *U. S. 2,491,992.* Detersive and foaming properties of anionic detergents such as monoglyceride sulphates are improved by addition of a cationic agent such as a derivative of N,N′-diethanol piperazine.

SOAP POWDER CONSTITUTION. M. L. Hilaire. *British 625,686.* The addition of trisodium phosphate to a castor oil soap, when effected during or after the saponification process, increases considerably the lathering qualities of the soap, particularly in sea-water.

GERMICIDAL SOAP. William S. Gump (Givaudan Corp.). *U. S. 2,487,799.* An efficient germicidal soap prepared by the addition of a 2,2′-dihydroxy halogenated diphenyl such as 2,2′-dihydroxy-5,5′-dibromodiphenyl.

A METHOD TO IMPROVE THE APPEARANCE OF SOAP FLAKES. Thomas Penny (Lever Brothers Co.). *U. S. 2,490,098.* A continuous process for the production of glossy finish soap flakes carried out by passing the flakes through a steaming zone and then a drying zone to prevent them from sticking.