Summary

A method for the determination of free gossypol in cottonseed materials is described. The method consists of extraction of gossypol with a measured volume of 70% aqueous acetone on a shaker for one hour, filtration, and colorimetric analysis for gossypol in an aliquot of the filtrate by means of the reaction between gossypol and *p*-anisidine.

The conditions for complete extraction of gossypol from various types of cottonseed materials have been investigated, the stability of gossypol in aqueous acetone has been demonstrated, and data are presented on recovery of gossypol added to cottonseed materials. The method has been compared with the method of Smith (2).

Acknowledgment

The authors are indebted to Robert T. O'Connor and Elsie T. Field for the spectrophotometric measurements and to Catherine M. Hall for the sample of gossypurpurin.

The authors also wish to acknowledge with thanks the encouragement and suggestions of T. H. Hopper.

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ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR

Better way to bleach vegetable oils. J. V. Hightower. *Chem. Eng. 56,* 102-4(1949). Continuous vacuum process equipment is described. Tables compare amount of absorbent needed, removal of soap, oil stability during bleaching, and change in fatty acid content during bleaching with atmospheric and vacuum bleaching.

Another oleo? Farm bloc eyes falling fat and oil prices, probes synthetic detergents growth. *Chem. & Inds. 65,* 342-3(1949). There is a 400-million-lb. oversupply of tallow and grease.

Solubility and specific rotation of *l*-ascorbyl palmitate and *l*-ascorbyl laurate. D. Swern. *J. Am. Chem. Soc. 71,* 3256(1949).

Fat hydrolysis. V. Mills and H. K. McClain. *Ind. Eng. Chem. 41,* 1982-85(1949). Data are presented on the reaction of tallow and coconut oil with water, in the temperature range used in continuous fat splitting. The maximum amount of splitting which can occur is determined by the glycerol concentration in the aqueous phase. This value is not affected by changes in temperature. In the range 90-100% completeness, the unsplit fat contains more glycerol than the original fat, an indication of the presence of a large amount of monoglyceride. The percentage of glycerol in the unsplit fat is constant, which is strong evidence that the reaction proceeds stepwise.

Report on vitamin A. Further comparison of the spectrophotometric and antimony trichloride methods for vitamin A in margarine. J. B. Wilkie. *J. Assoc. Official Agr. Chemists 32,* 455-9(1949).

Analysis of mixtures of organic acids by extraction. K. R. Tsai (National Amoy Univ., Amoy, China), and Y. Fu. *Analytical Chem. 21,* 818-21 (1949). The extraction method for the analysis of fatty acid mixtures has been critically studied. The effects of dissociation and association of the acids and of the ratios of the volume of extractant to that of the aqueous solution on the accuracy of analysis have been expressed in the form of equations. In the case of ternary mixtures better results are obtained by the back-extraction of the organic layer with water or dilute aqueous solution than by the extraction of the aqueous solution repeatedly with organic solvent. The method has been successfully applied to the analysis of binary mixtures of acetic, propionic, and butyric acids, and to the ternary mixtures of the above acids either in the absence or in the presence of formic acid.

Acrolein formation from fats. K. Taufel and U. Freimuth. *Z. Lebensm.-Untersuch. u. -Forsch 89,* 121-51(1949). When fat was heated with $KHSO_4$ the acrolein evolved from both free and bound glycerol. With elaeostearic acid and tung oil which has been altered in light (oxidized) the glycerol radical is unimportant as the source of acrolein. That is during oxidation, unsatd. fatty acids are affected in some unknown manner so that they yield acrolein on heating. A parallel between this mechanism and that of conjugation does seem possible.

Heme-catalyzed reactions of organic peroxides. J. Glavind and S. Hartmann. *Acta Physiol. Scandinavica 16,* Supplement 53, 26-7(1948). If a few drops of peroxidized oils are added to a solution of benzidene in alcohol containing heme a weak bluish color, which soon fades, is seen. However, if the water is substituted by an organic solvent (acetone) the addition of organic peroxides gives a very strong reaction in the course of a few minutes.

A histochemical method for the demonstration of peroxides. H. Grandos, J. Glavind, S. Hartmann, and H. Dam. *Acta. Physiol. Scandinavica 16,* Supplement 53, 28-9(1948). This is a staining technic for adipose tissue such as bacon. The section is stained with a solution made from 20 mg. hemin, 5 cc. pyridine, and 10 cc. glacial acetic acid, mixed with a solution of 500 mg. leuco-base of 2,6-dichlorophenolindophenol dissolved in 50 cc. absolute alcohol and 120 cc. of distilled water.

The anti-oxidant properties of nordihydroguaiaretic acid in cream. V. N. Krukovsky, D. A. Theokas, and F. A. Whiting. *J. Dairy Sci. 32,* 695-M2 (1949). Abstracts of papers presented at the 44th annual meeting of the American Dairy Science Association. NDGA was added at the rate of 0.005% of the bulk fat to milk prior to pasteurization at 82.2°C. for 30 minutes and separation. The stability of fat was determined in cream held up to 30 d. at 0-1°C. following its storage for 15-247 d. at sub-zero temperatures, using the re-emulsification test. NDGA anti-oxidant was effective both in preventing the oxidized flavors in cream and in the stabilization of fat and the fat-soluble vitamins during storage for 247 + 30 d.

SEPARATION OF FATTY ACIDS BY DISPLACEMENT CHROMATOGRAPHY AND ITS APPLICATION TO ANALYSIS OF BUTTER FAT. R. T. Holman and L. Hagdahl. *J. Dairy Sci. 32,* 700-M24(1949). Using the displacement development technic and the absorption analysis apparatus of Tiselius, fatty acids from C_1-C_{22} have been separated. By using fatty acids as displacers and by choosing suitable solvent conditions, homologues of 1 carbon atom difference can be separated and measured. Unsaturated acids can be separated from saturated acids.

THE SEPARATION OF ISOLINOLEIC ACID FROM HYDROGENATED OIL BY CHROMATOGRAPHIC METHODS. H. W. Lemon. *Can. J. Res. 27B,* 605-9(1949). When linseed oil or other oils containing linolenic acid are hydrogenated, an isomeric linoleic acid (isolinoleic acid) is formed. Its concentration increases to a maximum, then decreases as hydrogenation proceeds. In view of the possible relationship of this acid to "flavor reversion," its separation in pure form has been investigated. Concentrates of isolinoleic acid or its Me ester were obtained from partially hydrogenated linseed oil by crystallizing a large proportion of the more saturated acids or Me esters from a solvent at low temperatures. Further fractionation of such concentrates by chromatographic methods was investigated. Silica gel was found to be better for the purpose than either activated alumina or activated carbon. Me isolinoleate was adsorbed more firmly on the silica gel than the less unsaturated esters, which were eluted by means of large volumes of hexane. Subsequent elution with chloroform removed the Me isolinoleate.

THE SIGNIFICANCE OF AN ABSORPTION BAND AT 968 CM.$^{-1}$ IN THE INFRARED SPECTRUM OF METHYL ISOLINOLEATE. H. W. Lemon and C. K. Cross. *Can. J. Res. 27B,* 610-15(1949). The infrared absorption spectrum of Me isolinoleate, separated from the Me esters of hydrogenated linseed oil fatty acids, has a well defined absorption band with maximum absorption at about 968 cm.$^{-1}$ As an identical band was found in the spectra of fatty acids or esters after isomerization with selenium, it is attributed to the presence of double bonds with a *trans*-configuration. It was found that the same band was present in the spectra of samples taken during hydrogenation of oils, and that its intensity increased to a maximum, then decreased as hydrogenation proceeded. It is concluded that hydrogenation is accompanied by a *cis*-to-*trans* change in some of the double bonds of the fatty acids, and that Me isolinoleate has at least one double bond with a *trans*-configuration.

SOME OBSERVATIONS ON FAT FRACTIONS FROM BUTTER OIL. A. T. Mussett, S. Patton, and C. D. Dahle. *J. Dairy Sci. 32,* 700-M25(1949). Liquid and solid fat fractions were obtained by hydraulic separation of fresh butter oil using a Carver laboratory press. Separation at 70°F. gave approximately 30% solid and 70% liquid; at 50°F., 80% solid and 20% liquid; at 32°F., 90% solid and 10% liquid. The acid and I numbers at the 70 and 50°F. solid fractions were significantly lower than those of the corresponding liquids. The keeping qualities of the solid fats, as determined by organoleptic tests, were much superior to those of the liquid samples. A preliminary trial, using the 70°F. solid fraction as the sole source of fat in dry whole milk, has produced a product with improved flavor. The high melting fractions showed constitute a suitable form in which to store fat for ice cream.

THE STEAM DISTILLATION OF STALE-FLAVOR COMPONENT FROM STALE BUTTEROIL. R. McL. Whitney, K. Paulson, and P. H. Tracy. *J. Dairy Sci. 32,* 701-M26 (1949). A procedure was developed which was successful in distilling the stale-flavor component along with other volatile components from stale butter-oil.

DETERMINATION OF COTTONSEED OIL ON TIN PLATE. J. G. Donelson and R. A. Neish. *Anal. Chem. 21,* 1102-4(1949). A method is described for the determination of small amounts of cottonseed oil on tin plate. The tray of a hydrophil balance is modified to permit the complete vertical immersion of samples of tin plate in the water filling the tray. The oil film of the tin plate is transferred to the water surface by repeatedly dipping the sample into the water. The amount of oil thus transferred is then measured by the usual surface balance technic.

USE OF REPLICATIONS IN DEEP-FAT FRYING EXPERIMENTS. A. Overman and J. C. R. Li. *Food Res. 14,* 278-82(1949). Different portions of the same fat do not behave alike in a deep-fat frying test. Since one portion is not representative of the whole, repeated observations on but one portion cannot be considered replications in comprising different fats. The experiment must be replicated by using more than one portion of each of the fats being studied. In testing the significance of differences among a number of fats, the correct experimental error will be the variation among different portions of the same fat.

USE OF MILK FAT FRACTIONS IN BAKED PRODUCTS. L. M. Morse and E. L. Jack. Food Res. *14,* 320-4 (1949). The use of 2 milk fat fractions, precipitated from solvent at —20°C. and —53°C., as shortening agents in baked products has been studied. It was found that the —20°C. fraction resulted in a satisfactory cake, whether prepared by conventional or quick method, if 5% of an emulsifier (Tween 61) was added to the fat. It was also necessary to use 37.5% more milk than in the standard recipe. The —53°C. fraction is less satisfactory as a shortening agent for cake, in spite of the addition of emulsifier to it. The —20° precipitate cannot be used for pastry if the conventional ice water method is used. However, it does make an excellent hot water pastry. The —53° precipitate makes an acceptable pastry if chilled to 7.8°C., to make plastic enough to use in the conventional method. The emulsifier was not found to have any effect on quality of pastry produced with these milk fat fractions. In brief experiments with cookies, it was observed that both fractions, if carefully manipulated, result in acceptable products, with one exception: Refrigerator cookies are impractical with these fractions because the physical state of the fats at the temperatures used does not permit adequate manipulation of the cookies.

STEAM BLANCHING OF FRESH ROUGH RICE CURBS SPOILAGE BY FATTY ACIDS. BY INHIBITING LIPASE ACTIVITY, FORMATION OF ACIDS IS RETARDED. THEN OIL IS easily recovered. R. L. Roberts, G. R. Van Atta, *et al.*, (Western Reg. Res. Lab., Bur. of Agri. & Ind. Chem., Agri. Res. Admn., USDA, Albany, Calif.). *Food Inds. 21,* No. 8, 45 (1949).

Potato chips vs. hot-weather spoilage. J. H. Mitchell (So. Res. Inst., Birmingham, Ala.). *Food Inds. 21,* No. 8, 55-58(1949). Testing of potato chips fried in vegetable oils showed that coconut and peanut oils are most stable under storage conditions. One hydrogenated oil was superior to other shortenings used in high temperature prolonged frying.

The oxidation of monoethenoid fatty acids and esters. Union of gaseous oxygen with elaidic acid, and methyl and *n*-propyl elaidate. J. H. Skellon and M. N. Thruston (Acton Tech. College, W.3, Chelsea Polytechnic, S.W.3). *J. Chem. Soc.*, 1626-30 (1949). Dimerization occurs at high temperatures (120°) on prolonged oxidation, but at lower temperatures elaidic acid and its simple esters behave during controlled oxidations in much the same way as oleic acid. The results of the autoxidations at various temperatures up to 120° are illustrated graphically, and the nature of the curves shows that peroxide formation and subsequent decomposition are a characteristic feature of these autoxidations. The composition of the products depends to a considerable extent on the conditions. The presence of terminal alkyl groups apparently favors the entry of oxygen into the monoethenoid molecule.

The effect of dietary oleic and palmitic acids on the composition and turnover rates of liver phospholipins. I. G. Campbell, J. Olley, and M. Blewett. *Biochem. J. 45,* 105-12(1949). Low-protein high-fat diets containing pure oleic and palmitic acids were fed to rats. Analyses were made of carcass and liver lipids, and liver phospholipins. P^{32} was employed in the measurement of phospholipin turnover rates. The metabolism of large amounts of dietary palmitic acid is accompanied by simultaneous release of large amounts of depot fat. Metabolism of oleic acid does not impose a similar demand on the fat depots. Feeding palmitic acid reduces the amount of total liver phospholipin per unit of body weight as compared with animals fed oleic acid or stock diet.

Preliminary observations of the effects of ladino pasture and hay feeding on tocopherol content of the fat and stability of milk. V. N. Krukovsky, J. K. Loosli, and D. A. Theokas. *J. Dairy Sci. 32,* 700-M22(1949). Feeding ladino pasture resulted in tocopherol levels of the fat considerably higher than were found when ladino hay was included in the ration, but not as high as when the cows were transferred to birdsfoot pasture. Milk of poor keeping quality resulted during the ladino feeding (both pasture and hay), whereas the transfer of the cows from ladino to birdsfoot pasture resulted in an appreciable stabilization of milk, even in the presence of added Cu. The transfer of the cows from birdsfoot pasture to hay feeding in the barn resulted in the decrease in the tocopherol content of the fat and greater susceptibility of milk to oxidized flavors depending upon the kind and quality of hay fed.

Cottonseed oils in purified and skim milk diets for calves. R. N. Jarvis and R. K. Waugh (North Carolina Agr. Exper. Sta., Raleigh). *J. Dairy Sci. 32,* 665-9(1949). Calves did not grow so well when fed purified diets as when receiving whole milk. Although growing relatively poorly, the calves appeared normal when fed the purified diet containing 3.5% hydrogenated cottonseed oil. They grew very poorly on such a diet containing 3.5% nonhydrogenated refined cottonseed oil and diet in a few weeks. Calves which received the purified diets developed fatty livers whether the oil was hydrogenated or not. Since the calves receiving hydrogenated cottonseed oil with reconstituted non-fat milk solids had normal liver lipide values, it is apparent that the purified diet was concerned in the production of fatty livers. The calves which received the hydrogenated cottonseed oil had lower blood plasma fat values than calves which received butterfat.

Diurnal variations in concentrations of fat in blood plasma of calves fed various types of oils. H. B. Barker and N. L. Jacobson. *J. Dairy Sci. 32,* 709-P14(1949). The test diets used in ascertaining the diurnal changes of the fat levels in the blood plasma were reconstituted milks containing 3% of one of the following oils: crude soybean, hydrogenated soybean, and butter. The results from 12 such trials, involving 6 different calves on each oil revealed no marked differences in the form of curves; all increased to a maximum level during the first 6 hours and subsequently receded to the initial level by the 12th hour.

Soap

Edited by
LENORE PETCHAFT

Fatty acids and liquid soaps. R. A. Behrmann (Emery Industries, Inc., Cincinnati, Ohio). *Soap Sanit. Chemicals 25,* No. 9, 40-2, 98, 147, 149(1949). The influence or various physical properties of fatty acids on their solubilities, and thus their effect in the preparation of liquid soaps are reviewed.

Soap as a bactericidal agent. E. G. Livkina. *Zhur. Mikrobiol., Epidemiol. Immunobiol. 1947,* No. 10, 26-8. Soap seemed fairly effective against gonococci and hemolytic streptococci but less effective against staphylococci and dysenteric microbes. (*Chem. Abs. 43,* 7126.)

Use of wetting, detergent, and emulsifying agents in parasitology. J. Dufrenoy and M. Langeron. *Ann. parasitol. 23,* 222-73(1948). A review covering classification, mode of action, effects on cysts, viruses and bacteriophages, bacteria and molds, toxicity, pharmacology, inactivation, and use in solubilizing pigments and in staining techniques. 140 references. (*Chem. Abs. 43,* 6699.)

Penetration of sintered metals by solutions of surface-active agents. A. J. Finks and N. J. Petito (Material Laboratory, New York Naval Shipyard, Brooklyn, N. Y.). *Anal. Chem. 21,* 1101-2(1949). A method was devised to give an indication of the comparative wetting and penetrating qualities of surface-active agents. A definite volume (30 ml.) of surface-active agent solution is added to the most porous of a series of five stainless steel filtering crucibles with porous, sintered, stainless steel filter elements of varying porosities. A record is made of the time in seconds required to deliver the first drop and the first milliliter of solution. Based on the time for delivery under each category, a rating is given, and the comparative wetting and penetration of each surface-active agent studied are evaluated. The same method could be applied for Cu, bronze, medium steel, glass, canvas, cloth, and other textile materials. This technique could also be used in research on metal cleaning or lubrication problems.

THE SOLUBILIZATION OF DYESTUFFS WITH SURFACE ACTIVE AGENTS. Leonard J. Armstrong (Armour & Co., Chicago, Ill.). *Am. Dyestuff Reptr. 38,* 728-32 (1949). It has been shown that surface active agents serve as true solubilizing agents for a number of the dyestuffs in current dyeing usage. The absolute effect observed appears to be greater for the more insoluble dyes. Micelle formation is evidently necessary to account for this phenomenon and, consequently, beyond the critical point increased detergent concentration results in greater solubilization. Salts function to lower the critical concentration of detergent required for micelle formation and, hence, for appreciable solubilization.

SKIN COMPATIBILITY OF NEW SYNTHETIC RESIN FILLERS IN SOAPS. W. Schneider. *Deut. med. Wochschr. 74,* 741-5(1949). The effect on human skin of soaps made with low-titer fatty acids or Na sulfonates and a urea-CH_2O polymer (I) filler was examined by patch testing and continued use. No significant difference was observed between the action of soaps filled with I and other soaps. Cases of dermatitis observed were due to the fatty acids used and not to I. (*Chem. Abs. 43,* 7197.)

ALKYL ESTERS AS INTERMEDIARIES IN SOAP MAKING. A COMPARISON OF DIRECT AND INDIRECT METHODS WITH RELATION TO THE REPRODUCTION AND MAINTENANCE OF A DESIRED FATTY ACID COMPOSITION. *Acta Polytechn. Chemistry Including Metallurgy Series 1,* No. 11 (1949). The influence of the component fatty acids on the properties of soaps are discussed. The soap processes are discussed especially considering the possibility to reproduce and maintain a desired fatty acid composition. Processing fats into soaps using alkyl esters as intermediates is dealt with in detail. Experimental results from the different stages of the methyl ester process are reviewed. Methanolysis of the fats and recovering the glycerine, with fractionation of methyl esters and saponification of the same by methods, which directly result in millable soaps, is a soap process that will meet the requirements here stated.

CHARACTERIZATION OF HEAVY METAL SOAPS BY X-RAY DIFFRACTION. R. D. Vold and G. S. Hattiangdi (University of Southern California, Los Angeles, Calif.). *Ind. Eng. Chem. 41,* 2311-20 (1949). X-ray diffraction patterns were obtained on 25 heavy metal soaps at room temperature after air drying, oven drying, and cooling slowly from elevated temperatures. These data have potential value in elucidating the behavior of greases, surface coatings, and other products made from these soaps by solution or mechanical incorporation of oils. It is also possible, to a certain extent, to identify which of several metal soaps is present from the appearance of the x-ray diffraction pattern. In all of the soaps examined, the metal ions are arranged in parallel planes separated by a distance somewhat less than twice that of the fatty acid radical. Soaps of Zn, Mg, Li, and Al give patterns different from one another and from the remaining soaps. Ca, Sr, and Ba soaps give patterns similar to one another, more so for Sr and Ba than for Ca. Cd and Hg soaps are similar to one another, more so for Sr and Ba than for Ca. Cd and Hg soaps are similar to one another, and probably lead stearate should be classified with them. Mn soaps do not crystallize well enough to classify the patterns. Fe, Co, and Ni soaps occur in a noncrystalline state, best described as pseudo-glassy. Differences between palmitates and stearates of the same metal appear to be minor.

DIFFERENTIAL THERMAL ANALYSIS OF METAL SOAPS. G. S. Hattiangdi, M. J. Vold, and R. D. Vold (University of Southern California, Los Angeles, Calif.). *Ind. Eng. Chem. 41,* 2320-4(1949). Transition temperatures and approximate heats of transition, based on differential heating curves, are reported for stearates and palmitates of Mg, Ca, Sr, Ba, Zn, Cd, Hg^{++}, Mn, Fe^{+++}, Co, and Ni, and for Pb, Li, and Al (mono) stearate. The extent to which these are reversed on cooling is correlated with the x-ray diffraction patterns at room temperature before and after thermal treatment. Most of these soaps exhibit a complex sequence of transitions with the formation of mesomorphic or liquid crystalline phases prior to actual melting. Stearates and palmitates of the same metal show similar sets of transitions, but the soaps of even chemically similar metals are individual in behavior. Any broad generalizations about the behavior of metal soaps in the "plastic state" are shown to have only limited applicability.

ORGANIZED STRUCTURE IN SOAP SOLUTIONS. G. S. Hartley. *Nature 163,* 767-8(1949). The characteristic long spacing in soap solutions is explained in the spherical micellar hypothesis as a regular distance between geometrically similar groups of diffracting atoms. The constancy of spacing is a result of coulombric packing, the micelles being highly mutually repulsive resulting in a pattern such that the shortest distance of separation, d, is as great as possible. (*Chem. Abs. 43,* 6843.)

PATENTS

SOAP SUBSTITUTE. A. Wander A-G. *Swiss 226,570.* Colloidal alumina hydrate was mixed with powdered soapwort roots and Na naphthalenesulfonate; a colored dye may be added if desired, and the powdered mixture was sifted. Hydrated alumina in a stirring apparatus was treated with enough water to transform it into a gel; NaOAc and perfume were added, stirred, and the powdered mixture prepared above was gradually added in small portions and stirred until a hard homogeneous mass resulted that can be packed and sold. The soap substitute works smoothly on the skin and does not cause irritation or have a drying effect. (*Chem. Abs. 43,* 6844.)

METHOD OF PRODUCING A FREE-FLOWING GRANULAR NON-SOAP DETERGENT. Bradford C. Hafford and James S. Parson (Food Machinery and Chemical Corp.). *U. S. 2,480,730.* The preparation of a free-flowing homogeneous granular detergent is by heating an alkyl sulfate with a non-hydrated alkali metal polyphosphate, solidifying the mixture, reducing it to granular form and binding the phosphate to the detergent.

OIL SOLUBLE METAL SOAPS OF WAX ACIDS. William E. Forney (Cities Service Oil Company). *U. S. 2,480,564.* The preparation of an oil soluble soap of wax acids is by treating a naphtha solution of hydroxy-acid-free petroleum wax with ammonia to convert the organic acid-ester constituents to ammonium salts, reacting such salts in naphtha solution with magnesium compounds to form magnesium soaps.

Dustless detergent products. Stanley Joseph Holuba (Colgate-Palmolive-Peet Co.). *U. S. 2,480,-579.* A dustless, high-density, non-tacky detergent product is produced by spraying the surfaces of synthetic detergent particles with an aqueous solution of a water-soluble alkali metal phosphate or silicate.

Sulfonated detergent and its method of preparation. Allen H. Lewis (California Research Corporation). *U. S. 2,477,383.* A sulfonated synthetic detergent is prepared from new sulfonated phenyl-substituted alkanes containing from 12 to 15 carbon atoms having a retulated optical density (R-factor).

Drying Oils

Edited by
ROBERT E. BEAL

Tall oil. D. H. Wheeler. *Western Paint Rev. 34,* No. 11, 28A, 30A, 38A(1948).

Tall oil as a raw material in the fat industry. M. Démarcq. *Oleagineux 4,* Nos. 8 and 9, 479-84 (1949). The use of tall oil in paints and other products is reviewed.

Chemurgic survey of desert flora in the American southwest. R. R. Cruse. *Econ. Botany 3,* 111-31(1949). A discussion of the drying oil from *Garcia nutans* is included.

Dehydrated castor oils and ricinenic oils. J. Scheiber. *Farbe u. Lack 55,* 147-51(1949). Esterification of glycerol with dehydrated ricinoleic acid gives an oil containing 70% conjugated (ricinenic) acid compared to 30% conjugation obtained by the dehydration of castor oil. Dehydrated castor oils may be evaluated by using the test for chinawood oil with $SnCl_4$ and $CHCl_3$, together with a determination of the speed of gelation and the percentage of ether insolubles formed. (*Chem. Abs. 43,* 6431.)

Autoxidation of oxygen-active acids. XI. The O_4-stage of the oxidation of linoleic and linolenic acid esters. W. Triebs. *Chem. Ber. 81,* 472-7(1948). Methyl linoleate was oxidized 260 hours at 22° with the absorption of 3 atoms of O per mole of ester and a compound, $C_{19}H_{34}O_6$, was separated from the product. The compound, after hydrogenation to zero peroxide content, analyzed $C_{19}H_{34}O_5$, indicating that two O molecules saturated the double bonds by addition and two O molecules were present as peroxide, one being eliminated by hydrogenation. Similar autoxidation of methyl linolenate again produced $C_{19}H_{32}O_6$ which hydrogenated to $C_{19}H_{34}O_5$ at zero peroxide and in this case the third double bond was not oxidized but was saturated during hydrogenation. (*Chem. Abs. 43,* 5366.)

Bodying of drying oils at temperatures above 300°. Continuous bodying. Simultaneous dehydration and bodying of castor oil in continuous operation. M. Meyer. *Congr. tech. intern. ind. peintures inds. assoc. 1,* 417-20(1947). The rate of bodying of linseed oil at several temperatures between 320° and 380° (25-30 mm. pressure) was investigated. The rate increased rapidly with increase in temperature and at 370° gelation occurred in a few minutes. A method for continuous bodying at 375°-380° gave an oil of 2.3 poise viscosity with an acid number of 5. Castor oil was dehydrated and bodied at 355° by the same method to a viscosity of 10 poises and an acid number of 10. (*Chem. Abs. 43,* 5970.)

Comparison of linseed oils prepared by hot and cold pressing. F. E. Riep. *Congr. tech. intern. ind. peintures inds. assoc. 1,* 442-4(1947). Hot-pressed oil dries more slowly than cold-pressed oil and gives a break at 300°. After a period of settling the two oils show little difference. Paints from each oil had equal resistance to weathering. (*Chem. Abs. 43,* 5970.)

Fatty acid amides. II. Amides as derivatives for the identification of some long-chain unsaturated fatty acids. D. Swern, J. M. Stutzman, and E. J. Roe (Eastern Regional Research Laboratory, Philadelphia, Pa.). *J. Am. Chem. Soc. 71,* 3017-9(1949). Unsubstituted amides of oleic, elaidic, and 10-hendecenoic acids and the N-(2-hydroxyethyl)-amides and N-(*n*-dodecyl)-amides of oleic, elaidic, 10-hendecenoic, linoleic, and ricinoleic acids were prepared and characterized. No *cis-trans* isomerization was found to occur during preparation. The N-(*n*-dodecyl)-amide of linoleic acid was quite stable compared to the N-(2-hydroxyethyl)-amide which rapidly became viscous under a N_2 atmosphere.

PATENTS

Treatment of drying oils. H. G. Berger, G. S. Crandall, and J. F. Socolofsky (Socony-Vacuum Oil Co., New York, N. Y.). *U. S. 2,478,451.* A drying oil containing less than 0.2% of a Friedel-Crafts type polymerization catalyst is polymerized to a Z-6 body (Gardner) at about 300°F. and a small quantity of an aromatic monocyclic amine is added to arrest polymerization before gelation occurs.

Mixed esters of polyhydric alcohols with mercaptocarboxylic and drying oil acids. C. W. Mortenson (E. I. duPont de Nemours & Co., Wilmington, Del.). *U. S. 2,476,891.* A polyhydric alcohol is completely esterified with a mixture of mercaptocarboxylic and drying oil acids.

Polyolefinic hydrocarbons. W. W. Johnstone (Universal Oil Products Co., Chicago, Illinois). *U. S. 2,470,894.* A hydrocarbon charge, preferably containing long-chain cyclic or highly branched-chain hydrocarbons, is treated with HF at —20° to 150° and the HF phase separated and distilled at less than 100 mm. pressure to recover a hydrocarbon drying oil. (*Chem. Abs. 43,* 5789.)

Oxidation of olefinic higher fatty acids. A. Turk. *U. S. 2,469,059.* Drying or semi-drying oils or their acids are hydroxylated in the α position to a double bond by treatment with at least 0.5 moles of SeO_2 per mole of fatty acid at temperatures below 111°. (*Chem. Abs. 43,* 5792.)