☆ ☆ ☆ ABSTRACTS ☆ ☆ ☆

Oils and Fats

Edited by
M. M. PISKUR and MARIANNE KEATING

REPORT ON FAT IN FISH MEAL. M. E. Stansby (Fish and Wildlife Service, Seattle, Washington). *J. Assoc. Off. Agr. Chemist 31,* 606-10(1948). In spite of the fact that the acetone extraction method does not give ideal and complete extraction of fat from old meals and precision is not all that could be expected, the results by this method are so far superior to those obtained by ethyl ether extraction that it is felt the acetone method should be adopted tentatively, pending improvements which may require a considerable number of years to be attained. Accordingly, the following recommendations are made: That the acetone extraction procedure proposed be made tentative. That study be continued to improve the precision of the acetone extraction procedure. That studies be continued on the use of other solvents or mixtures of solvents which might eventually lead to a better procedure than is possible by the use of acetone.

CHROMATOGRAPHY AND ITS APPLICATION TO THE STUDY OF FATTY OILS. F. Appell. *Chim. & Industrie 60,* 36-40(1948). A review.

THE FORMATION AND PRESERVATION OF ANTIOXIDANTS BY SPECIAL METHODS OF PROCESSING IN THE PREPARATION OF DRIED MILK. G. R. Greenbank and P. A. Wright (U.S.D.A.). *J. Dairy Sci. 31,* 698-9 (1948). The data indicate that heating deaerated milk preserves the substances which protect the fat more than the same heat treatment in contact with air.

AN X-RAY AND THERMAL EXAMINATION OF THE GLYCERIDES. PART IX. THE POLYMORPHISM OF SIMPLE TRIGLYCERIDES. C. E. Clarkson and T. Malkin (The Univ., Bristol). *J. Chem. Soc. 1948,* 985-7. M.p. and X-ray data are given for the β'-form of simple triglycerides, which thus exist in 4 solid modifications and exhibit the same type of polymorphism as the mixed triglycerides. The suggestion of Lutton and Longenecker and Daubert, that the concept of the glassy (vitreous) state of triglycerides should be eliminated, is shown to be untenable.

X-RAY INVESTIGATION OF THE STRUCTURE OF TRANSPARENT OIL-WATER DISPERSE SYSTEMS. I. J. H. Schulman and D. P. Riley (Univ. Cambridge, England). *J. Colloid Sci. 3,* 383-405(1948). The spacing of X-ray diffraction bands were studied for systems of oil, water, and soap which had been titrated to transparency and fluidity by the addition of certain aliphatic or alicyclic alcohols. These systems were non-birefringent. Two systems were investigated in some detail; one, in which the oil was the continuous phase (electrically nonconducting), and the other, in which the aqueous solution was the continuous phase (electrically strongly conducting). It was shown that, with soap solutions of less than 27% in the water phase, the spacings of the X-ray bands gave strong support to the concept that the structure consisted of close-packed uniform water spheres in oil or close-packed uniform oil spheres in water. Each droplet is considered to be stabilized by a mixed monolayer of the soap-alcohol molecules. By changing the soap-alcohol concentration, the diameters of the spheres were varied from approximately 100 Å to 550 Å, at which dimensions a strong Tyndall effect was observed. By changing the oil-water ratio, the spacings of the X-ray bands suggested that the distance between the spheres of oil or water was being varied.

THE EFFECT OF A MANNITOL OF BEEF FAT ON THE WHIPPING QUALITIES, BODY, AND TEXTURE OF ICE CREAM. R. Naden, J. J. Sheuring, and P. H. Tracy (Univ. Illinois). *J. Dairy Sci. 31,* 704(1948). The mannitol derivative of beef fat (MBF) used in this study was arbitrarily selected, as preliminary studies have shown that it had a satisfactory effect upon the physical properties of ice cream. The addition of MBF improved the whipping of mixes containing more than 6% milk fat. MBF had practically no effect upon the viscosities of ice cream mixes. The use of 0.2% MBF, when used in combination with commonly used stabilizers, improved the whipping qualities of ice cream mixes. Dehydration of mixes retarded the beneficial effects of MBF. Shrinkage of ice creams containing MBF exceeded control samples in all cases. MBF improved the whipping qualities of ice cream made from neutralized cream, butter, or frozen cream. Aging of the mixes was found to be less necessary when MBF was used. MBF decreased the whipping time of unhomogenized mixes.

INDUSTRIAL APPLICATIONS OF MONOGLYCERIDES. B. Latteur. *Oleagineux 3,* 297-304(1948). L. reviews properties, method of manufacture, and uses.

TRANSESTERIFICATION OF LINSEED OIL, WITH RAPE, SUNFLOWER, AND POURGHERE SEED OILS. G. Reutenauer and J. P. Sisley. *Oleagineux 3,* 305-9(1948). Transesterification was by heating 6-10 hours at 100-250° in the presence of Ca naphthenate. Influence of temperature, catalyst, airation etc. are tabulated.

EXPERIMENTAL STUDIES ON THE INTRAVENOUS INJECTION OF A FAT EMULSION INTO DOGS. H. C. Meng and S. Freeman (Chicago, Ill.). *J. Lab. & Clin. Med. 33,* 689-707(1948). Stable, fine fat emulsions were prepared using "Span 20" (0.5%), "Asolectin" (0.4%) and Na cholate (0.1%) as emulsifying agents homogenized with refined butter oil (10%) by means of a high-pressure "Viscolizer." Fat emulsions (in 5 dogs) and emulsifying agents alone (in 3 dogs) caused no fall in blood pressure. In the same animals, urine and bile secretions were increased. The daily intravenous infusion of emulsifying agents to dogs for 4 weeks failed to reveal toxic effects. Histologic examinations of the livers and kidneys of dogs infused with the emulsifying agents showed normal structures. Of 2 fat infused dogs, one showed essentially normal lungs, liver, and kidney, while the other showed fat granules in the liver cells.

THE DEPOSITION OF TRIENOIC FATTY ACIDS IN THE FATS OF THE PIG AND THE RAT. B. W. Beadle, O. H. M. Wilder, and H. R. Kraybill (Univ. Chicago, Ill.). *J. Biol. Chem. 175,* 221-29(1948). Samples of "yellow" hog fat have been encountered occasionally which contain unusually large amounts of trienoic fatty acids. The amounts, calculated as linolenic acid, were found by spectrophotometric analysis to be as much as 11.4% of the fatty acids present. When linseed oil containing 45.78% linolenic acid was fed to rats at a level of about 14.5% of the ration by the incorporation of ground flaxseed, the amount of trienoic acids in the depot fat was found to be from 24.73-27.59% of the fatty acids present. This was about 4 times the amount found in the ration. The evidence indicates that "yellow" fat in swine may result from the feeding of flaxseed.

THE UTILIZATION OF CARBON DIOXIDE BY THE MATURE RAT IN THE FORMATION OF FATTY ACIDS. J. Schubert (Argonne Natl. Lab., Chicago, Ill.). *Science 108*, 286(1948). The data that (a) a very small fraction in the carbon of administered CO_2 is incorporated in the saturated fatty acids and, to a lesser extent, in the unsaturated fatty acids; and (b) the C^{14} content of the carboxyl carbon atoms of the saturated and total fatty acids is approximately twice as high as the average of all the C atoms in the respective fatty acids. It is of interest to note that the specific activities of the C^{14} in the glycerol portions of the fat molecules were about 10 times greater than those of the corresponding mixed fatty acids. Similar results were found by Rittenberg and Bloch following the administration to rats and mice of acetic acid labeled at the carboxyl C atom with C^{13}. They suggested that the C^{13} was present at alternate C atoms of the fatty acid chain, i.e. on the odd-numbered C atoms.

THE DISTRIBUTION OF ACID-SOLUBLE PHOSPHATES IN THE FATTY LIVER. A. H. Ennor and L. A. Stocken (Univ. Oxford). *Biochem. J. 42*, 549-57(1948). The change in the distribution of acid-soluble phosphates in the fatty livers of guinea pigs treated with carbon tetrachloride has been investigated. In such livers there is an increase in the total acid-soluble organic phosphates. This increase is considered as primarily due to increases in adenosine polyphosphates and phosphocreatine, and in general runs parallel to the fat content. Acyl phosphates have not been detected in liver extracts. The results are interpreted in the light of modern work on fatty acid oxidation.

THE EFFECTS OF LYSOLECITHIN ON THE GROWTH OF LACTOBACILLUS CASEI IN RELATION TO BIOTIN, PANTOTHENIC ACID, AND FAT-SOLUBLE MATERIALS WITH BIOTIN ACTIVITY. W. Trager (The Rockefeller Inst., Princeton, N. J.). *J. Bact. 56*, 195-9(1948). The growth of *Lactobacillus casei* could be completely prevented by the addition of low concentrations of lysolecithin to a medium which was complete except that it contained biotin in suboptimal amounts. With biotin concentrations up to 1 mμg per tube, the amount of lysolecithin required to give complete inhibition varied directly with the concentration of biotin. If oleic acid or a fat-soluble biotin-active material from plasma was used in place of biotin, lysolecithin at concentrations up to 10 times those found inhibitory with biotin had only a small growth-stimulating effect. In a medium containing excess biotin but suboptimal concentrations of pantothenic acid, growth of the organism was inhibited by appropriate concentrations of lysolecithin. Here again, if the biotin was replaced by an adequate concentration of oleic acid or the fat-soluble material from plasma, lysolecithin had a slight stimulatory effect rather than an inhibitory one.

THE CHEMICAL NATURE OF FAT-SOLUBLE MATERIALS WITH BIOTIN ACTIVITY IN HUMAN PLASMA. ADDITIONAL STUDIES ON LIPIDE STIMULATION OF MICROBIAL GROWTH. A. E. Axelrod, M. Mitz, and K. Hofmann (Univ. Pittsburgh, Pa.). *J. Biol. Chem. 175*, 265-74(1948). The biotin-like activity for *Lactobacillus arabinosus* of the fat-soluble fraction of human plasma is explainable in terms of its content of known fatty acids. Pronounced synergistic growth effects between various fatty acids have been demonstrated in *Lactobacillus arabinosus*. The response of various microorganisms to a variety of lipides has been determined. Preliminary studies of the effects of structural modifications of the oleic acid molecule upon its biological activity have been conducted.

PATENTS

PROCESS OF EXTRACTION FROM VEGETABLE MATERIALS. A. C. Beckel, P. A. Belter, and A. K. Smith (United States of America). *U. S. 2,445,931.* The process deals with extracting vegetable oils with a lower alcohol, specifically EtOH, and the refining of the alcohol by cooling to a temperature sufficiently low to cause not only the oil to separate from the alcohol, but also a solid waxy product.

APPARATUS FOR SOLVENT EXTRACTION. C. F. Dinley (Detroit Rex Products Co.). *U. S. 2,447,845.*

PROCESS FOR PRODUCING NON-BREAK OIL. J. L. Jakobsen (General Mills, Inc.). *U. S. 2,448,434.* Process of producing a Gardner non-break oil comprises adding an aqueous solution of a halogenated low aliphatic acid to a vegetable oil containing break constituents and separating the aqueous phase from the oil, the quantity of halogenated low aliphatic acid being a small proportion of the oil.

GLYCERIDE OXIDATION INHIBITED BY 5-PENTADECYL RESORCINOL. H. M. Barnes (General Foods Corp.). *U. S. 2,448,207.*

OXIDATION OF HYDROXY FATTY ACIDS TO KETO ACIDS. D. Price and F. J. Sprules (Nopco Chem. Co.). *U. S. 2,446,849.* The process comprises reacting a saturated secondary hydroxylated fatty acid with a hexavalent chromium compound in the presence of an oxidation-resistant mineral acid and in the presence of sufficient water to insure maintenance of an aqueous phase separate from the fatty material. The process allows efficient production of keto acids with reduction or elimination of the acetic acid used in the common procedure.

EMULSIFIABLE OILS. R. A. Kaberg and J. S. Harris (Monsanto Chem. Co.). *U. S. 2,447,475.* A self-dispersing insecticide spray concentrate for forming stable oil-in-water emulsions comprising an aromatic oil; a biological toxicant; from 3-10% by weight of an oil-soluble organic surface-active agent of sulfonates and sulfates and having a Draves wetting time of less than 10.5 seconds in an aqueous solution consisting of 0.5% by weight of surface-active agent; and from 3-10% by weight of the condensation product of 1 mole of a C_4-C_{18}-alkyl-substituted hydroxy compound of the benzene series and from 8-25 moles of ethylene oxide.

NITRILE-PRODUCING METHOD. R. H. Potts (Armour and Co.). *U. S. 2,448,275.* In the nitrile-producing process are the steps of maintaining 2 ammonia-fatty-acid reaction zones passing fatty acids into the first zone, heating to a liquid phase reaction temperature, contacting with ammonia vapors evolved from the second zone, passing high boiling fatty acid residue from first zone to second zone, contacting the same with ammonia vapors, and withdrawing the stripped high boiling residue as pitch from the second zone.

Emulsifier. B. B. Schaeffer (U. S. A.). *U. S. 2,448,626.* The products are: alkylol amine salts of hydroxystearic acid; an alkylol amine salt of monohydroxystearic acid; an alkylol amine salt of dihydroxystearic acid; an alkylol amine salt of trihydroxystearic acid; a saturated hydroxy tertiary butyl ammonium salt of a saturated hydroxy higher fatty acid; a hydroxy tertiary butyl ammonium hydroxystearate; trihydroxy tertiary butyl ammonium 9,10-dihydroxystearate; a monohydroxy tertiary butyl ammonium 12-hydroxystearate; a dihydroxy tertiary butyl ammonium 9,10,12-trihydroxystearate.

Ethylene polymer compositions. W. B. Happoldt and A. Stockfleth (E. I. du Pont de Nemours & Co.). *U. S. 2,448,799.* The plastic composition consists of polythene a microcrystalline hydrocarbon wax, and 0.1%-10.0% of a metal salt of a fatty acid.

Novel greases. F. J. Licata (Nopco Chem. Co.). *U. S. 2,448,720.* The lubricating grease comprises mineral oil, aluminum stearate, and barium stearate, the quantity of the barium soap being only a fraction of that of the aluminum soap.

Aluminum soap greases. F. J. Licat (Nopco Chem. Co.). *U. S. 2,448,721.* The lubricating grease comprises mineral oil, 2-20% aluminum stearate and 0.1%-5.0% of a heavy metal soap (Fe, Co, Ni, zinc, and Cu soaps of higher fatty acids) the quantity of heavy metal soap being only a fraction of that of the aluminum stearate.

Drying Oils

Edited by
ROBERT E. BEAL

Tomato seed oil. G. Winter and W. Nunn (Munitions Supply Lab., Maribyrnong, Victoria). *Australia, Dept. Munitions, Paint Notes 3,* 43-6(1948). The oil expressed from tomato seeds (25%), d_{20}^{20} 0.923, n_D^{20} 1.4735, acid no. 8.0, saponification no. 198, I no. (Wijs) 120.5, did not dry tack-free even with driers but could satisfactorily replace up to 50% of the linseed oil in paint and dried well in alkyd resins. The component acids contained 23.8% oleic, 56.5 linoleic, and 1.8 linolenic acids. (*Chem. Abs. 42,* 5685.)

Dehydrated castor oil. I. Chemical and physical properties of priming and finishing paints prepared from dehydrated castor oil. R. Dooper and E. J. Hermann. *Central Inst. Materiaal Onderzoek Afdel. Verf, Circ. No. 47,* 19 pp.(1948). Of 13 samples of the oil examined those with lower hydroxyl numbers, lower acid numbers, or higher viscosities had the lowest set-to-touch time, but only those with low hydroxyl numbers produced good through-drying and lack of stickiness. Films from good dehydrated castor oil dried more quickly than linseed or bodied linseed oil and showed better through-drying, but remained more sticky. (*Chem. Abs. 42,* 5237.)

Fish oils for protective coatings. M. K. Schwitzer. *Paint Manuf. 18,* 159-65, 168(1948). The preparation of boiled, blown, and polymerized oils from modern high grade fish oils, and their respective merits are discussed. (*Chem. Abs. 42,* 5238.)

Conjugated linkages in the carbon chain and their role in the surface coating industry. Part 3—Conjugated drying oils. F. Armitage and J. A. Cottrell. *Paint Technol. 13,* 307-8, 311(1948). The properties and uses of various natural and prepared conjugated oils are reviewed. Part 4—Production of artificially conjugated oils and fatty acids. *Ibid.* 353-6. Alkali isomerization of fatty acids, neutral isomerization of glyceride oils, and isomerization by dehydration of castor oil or of blown oils give products not entirely comparable to the natural conjugated oils. The cause of the differences has not been determined but the treated oils must be regarded as new raw materials to insure their use to the best advantage. Ultraviolet absorption spectra furnishes the only reliable method for estimating degree of conjugation although the maleic anhydride reaction may yield valuable information about conjugated products if used in conjunction with other measurements.

Australian tung oil. A. R. Penfold. *J. Oil & Colour Chemists' Assoc. 31,* 299-303(1948). The oil exceeds Australian standard specifications in all tests and is reported to be of excellent quality. It is believed that the introduction of mechanical harvesters and the establishment of local decorticators would stimulate the lagging production. Cold expressed oils prepared in the laboratory often solidified within 36 hours even in the dark. In several instances fatty substances (m.p. 39°C.) were separated which rapidly polymerized to rubber-like solids when purification was attempted.

Tall oil. D. H. Wheeler. *Paint, Oil, Chem. Rev. 111,* No. 18, 24-8(1948). The oil contains about equal amounts of fatty acids and rosin acids and 5-10% of potentially useful unsaponifiable matter. The average fatty acid composition is 48% linoleic (11% conjugated), 45% oleic, and 7% saturated acids. The purified fatty acids are used in the manufacture of alkyd resins.

PATENTS

Determination of degree of unsaturation of drying oils. I. V. Khvostov and A. M. Lubman. *U.S.S.R. 67,121.* To determine the degree of saturation of a drying oil or unsaturated acid treat a weighed sample with a solution of phthalic acid peroxide in ethyl acetate and determine the decrease in active O_2. (*Chem. Abs. 42,* 5241.)

Wrinkle finish. J. F. Sokolofsky and H. G. Berger (Socony-Vacuum Oil Co.). *U. S. 2,441,105.* Varnishes containing oiticica oil are bodied at room temperature by adding 0.2% BF_3. The usual driers and solvent are added to form wrinkle finishes. (*Chem. Abs. 42,* 5241.)

Drying oil substitute. A. Ya. Drinberg and V. K. Tsyskovskii. *U.S.S.R. 67,261.* To prepare drying oils from metal soaps of petroleum oxidation products, the free acids are first neutralized with an inert metal oxide, such as ZnO or litharge, and the complex esters are saponified with lime or other active metal oxide. (*Chem. Abs. 42,* 5241.)

Drying oil substitute. V. K. Tsyskovskii. *U.S.S.R. 67,122.* Kerosene is oxidized by air at 150-70° in the presence of Mn naphthenate. The oxidation product is allowed to settle out in the cold and is used for the preparation of a drying oil by heating or blowing with air in the presence of Co or Mn carboxylate, and dissolving in a suitable solvent. (*Chem. Abs. 42,* 5241.)

DRYING OILS. V. S. Varlamov and Z. I. Bodyazhina. *U.S.S.R. 67,272.* Semidrying or nondrying oils are polymerized either directly or after isomerization at 280°, then treated with superheated steam in the presence of ZnO, CaO, MnO_2, or PbO. (*Chem. Abs. 42,* 5240).

SYNTHETIC DRYING OILS FROM A DITHIOL AND DIVINYLACETYLENE. C. M. Langkammerer (E. I. du Pont de Nemours and Co.). *U. S. 2,448,987.* A film-forming, air-drying polymeric thio ether is prepared by reacting approximately equimolar proportions of a dithiol and divinylacetylene in the presence of an alkali metal hydroxide catalyst and a catalyst- reactants cosolvent. The reaction is carried out at 60-105° until the reactants are essentially combined and the product has a viscosity of one poise at 25°.

COMPOSITION CONTAINING TALL OIL RESINS. W. J. Rice. *U. S. 2,448,621.* Tall oil and 4-15% lime are heated at 420-525°F. to form a resinous material suitable for liquid coating compositions.

Soap

Edited by
LENORE PETCHAFT

WETTING AGENTS AND AUXILIARY PRODUCTS. J. B. Speakman (Leeds Univ. Eng.). *Chemistry & Industry 1948,* 456-60. A review with 16 references. (*Chem. Abs. 42,* 7070.)

DETERMINATION OF THE INDUSTRIAL VALUE OF DETERGENTS. J. P. Sisley. *Am. Dyestuff Reptr. 37,* 635-42 (1948). Review article describing different methods of determining detergent power. Included are determination of surface tension by the drop method; capillary tube method and method of "tearing away"; wetting power by the Erban method and the Ristenpart method. Other tests reviewed are the Herbig test and Servo-Schopper test. 31 references.

PERFORMANCE TESTING OF DISHWASHING DETERGENTS. Dr. Samuel Machlis and Edwin B. Michaels (York Research Corp., Stamford, Conn.). *Soap Sanit. Chemicals 24,* No. 9, 42-4(1948). The use of glass wicking as a test material in the evaluation of dishwashing detergents is described. This material, which is similar in nature to glasses and dishes, may be readily soiled with grease or protein-carbohydrate soils, washed in the Launder-Ometer and results read with a Reflectometer. This method of obtaining accurate and reproducible results in evaluating dishwashing detergents thereby duplicates techniques used in the textile industry for testing textile detergents.

REACTION OF SODIUM CARBONATE ON THE CALCIUM SOAPS DURING LAUNDERING. Paul Angelaret. *Teintex 13,* 239-45(1948). Tests prove that Na_2CO_3 (1) will not remove Ca oleate from fabrics, and (2) will not prevent soap losses in laundering with hard water. (*Chem. Abs. 42,* 7070.)

THE DETERMINATION OF SURFACE-ACTIVE AGENTS IN SOLUTIONS. T. Barr, J. Oliver, and W. V. Stubbings. *J. Soc. Chem. Ind.* (London) *67,* 45-8(1948). The determination of anion (I) and cation (II) active agents uses partition end points based on the solubility in organic solvents of complexes formed between I and methylene blue, and between II and bromophenol blue (III). The end point is more readily determined by using (III). Optimum pH range is 4-8. Electrolytes do not affect results. Thus, about 0.4 g. of Na oleyl sulfate is accurately weighed into 400 ml. distilled H_2O at 50-60°. Na_2CO_3 solution is added until the solution is alkaline to Brilliant yellow paper. The solution is cooled to 20°, diluted to 1-l., and mixed. 25 ml. is pipetted into a glass-stoppered bottle, and 100 ml. H_2O, 50 ml. $CHCl_3$, and 5 drops indicator (0.04% III in 20% aqueous alcohol) are added. The solution is titrated with 0.001 M cetyltrimethyl-ammonium bromide solution (IV) with shaking after each addition. About 1 minute is allowed between additions, which are made in 0.1-ml. increments at the approach of the end point, which is the first indication of blue color in the $CHCl_3$. Solution IV is then used to titrate unknown solutions in the same manner. Impurities, as Na sulfonate in Na sulfate, cause errors, but the results compare with known analytical methods. (*Chem. Abs. 42,* 7070.)

PROPERTIES OF CERTAIN SULFONATES AND SULFONIC SOAPS DERIVED FROM PETROLEUM. Stanislow Pilat and Wlodzimierz Kisielow (Higher Polytech. School, Gliwice, Poland). *Przeglad Chem. 5,* 56-63(1947). A comparative study of the surface activity of petroleum sulfonates and aromatic or naphthenic sulfonate sodium salts. The sulfonates were prepared by Strecker's method of chlorination of petroleum and reaction with anhydrous Na_2SO_3. Surface tension depends on the type of the carbon ring, varying in the order cyclopentane>cyclohexane>benzene. Ring substitution with alkyl groups increases surface tension, but branched groups are more effective. 28 references. (*Chem. Abs. 42,* 5653.)

INTERMOLECULAR FORCES IN SOAP CRYSTALS. V. Vand and J. H. de Boer (Lever Bros. & Unilever Ltd., Port Sunlight, Eng.). *Koninkl. Nederland, Akad. Wetenschap., Proc. 50,* 991-1002(1947) (in English). In a series of homologous long-chain compounds such as paraffins or soaps, the cross sections S of the hydrocarbon chains vary with the chain length, so that the side spacings and the shorter edges of the unit cells are not constant. Theoretical potential energy curves are derived for hydrocarbons, and as a result of the additivity of the van der Waals forces, the equilibrium distances should decrease with increasing chain length. From published values of the dimensions of the unit cell, S_x and Q are calculated for the orthorhombic form. $S = S_x + Q/N$, where S_x is the cross section per molecule of an infinite chain, Q is a constant, and N is the number of C atoms in the chain. Within experimental error, both S_x and Q are the same for odd and even N, and have the values 18.08 ± 0.08 and 0.78 ± 2.40, respectively (in square kX units). Q is positive and significantly different from zero, and the contraction is real. With Na and Ag soaps, the strong ionic forces compress the molecules, and the potential-energy curve for such a pair would have a minimum at a far lower energy and at a smaller distance than for hydrocarbon molecules. Potential-energy curves for such pairs of chains show that although the van der Waals are smaller than the ionic forces, their effect on the equilibrium distance is enough to cause a dilation of the lattice as the chain length increases. Calculated values of S for Ag and -Na soaps show the predicted increase. The A form of K soaps of up to 12 C atoms has been shown to consist of alternating rows of molecules whose axes are inclined to one another. For these soaps, S does not increase with increasing chain length. The B form, found for K soaps of 12 or more C atoms, shows the same effect as the Na and Ag soaps. (*Chem. Abs. 42,* 6198.)

SOLUBILIZATION OF DIMETHYLAMINOBENZENE IN SOLUTIONS OF DETERGENTS. I. THE EFFECT OF TEMPERATURE ON THE SOLUBILIZATION AND UPON THE CRITICAL CONCENTRATION. I. M. Kolthoff and W. Stricks. *J. Phys. & Colloid Chem. 52,* 915-41(1948). Solubility of a dye occurs when the detergent concentration reaches a critical value. Above this value, the solubility of the dye is proportional to the detergent concentration. The critical concentration is independent of temperature between 30° and 50°. With fatty acid soaps, the critical concentration decreases rapidly with increasing carbon number of the fatty acid. Solubilizing power of different detergents increases with increasing temperature. (*Chem. Abs. 42,* 7070.)

OLEATE SYSTEMS CONTAINING POTASSIUM CHLORIDE IN WHICH THE POTASSIUM CHLORIDE CONCENTRATION IS STILL TOO LOW FOR COACERVATION. I. THE VISCOSITY-POTASSIUM CHLORIDE CURVE. H. G. Bungenberg de Jong and G. W. H. M. van Alphen (Univ. of Leiden, Netherlands). *Proc. Koninkl. Nederland. Akad. Wetenschap. 50,* 849-57(1947). (In English). By use of an Ostwald viscometer the effect of KCl on dilute aqueous solutions of Na oleate (I) was investigated at 25° in a preliminary manner. Over the concentration range of 0.057 to 1.36% I the viscosity curve, as a function of increasing concentration of KCl, rises to a maximum, then decreases sharply before coacervation occurs. For all these concentrations of I coacervation occurs at about the same concentration of KCl (9 ml. 3.8 N KCl/20 ml.). The ascending branch of the curve contains a point of reflection, at which a "thread-pulling" property is first exhibited. Both the maximum and the inflection point are depressed by increasing the temperature (36, 49°). The systems are very sensitive to contamination. (*Chem. Abs. 42,* 6609.)

CRITICAL EFFECT OF TEMPERATURE ON THE ABSORPTION OF WATER BY SOLUTIONS OF ETHANOLAMINE OLEATE IN BENZENE. R. C. Pink (Queen's Univ. Belfast, Ireland). *Trans. Faraday Soc. 42B,* 170-3(1946). The amount of water absorbed by benzene solutions of ethanolamine oleate increases greatly above a critical temperature of 50°. This change is due to a change in state of the micelle. Above the critical temperature liquefaction of the soap occurs, permitting expansion of the swollen micelles to droplets of visible dimensions. (*Chem. Abs. 42,* 6610.)

THE OSMOTIC ACTIVITY AND CONDUCTIVITY OF AQUEOUS SOLUTIONS OF SOME TYPICAL COLLOIDAL ELECTROLYTES. Ann Cushman, A. P. Brady, and J. W. McBain (Stanford U., Calif.). *J. Colloid Sci. 3,* 425-36 (1948). The osmostic coefficients of aqueous solutions of different anionic and cationic colloidal electrolytes have been measured by freezing point depression. Conductivities were also measured. The relative lowering of conductivity with increasing concentration is less than that of osmotic coefficient. Addition of dimethyl phthalate, a substance insoluble in oil and water but solubilized by soap solutions, appears slightly to decrease colloid formation as reflected in osmotic coefficient and equivalent.

MIXED MONOLAYERS. I. ADSORBED FILMS AT AIR-WATER SURFACES. Eric Hutchinson (Stanford Univ., Calif.). *J. Colloid Sci. 3,* 413-24(1948). Measurements have been made of the surface tensions of solutions containing octyl alcohol and sodium dodecyl sulfate.

CORRECTION

Annual Review of Literature on Fats, Oils and Soap. M. M. Piskur (April 1948).

Page 129, right hand column, line 5-6: change *Manuf. Chemist* 28 to *Manuf. Chemist* 18.

Page 133, left hand column, line 14: change *Nor. 70,291-2* to *Nor. 70,292.*