present, as is the case with the raw olive oils; then oxidation takes place on them first and results obviously in a decrease or an increase of the acid value. The results naturally depend on the relative proportion of aldehydes, ketones and acids present, and probably on the intensity and the length of the treatment. The author believes that more work is needed along this line in connection with the study of changes occurring in the various rancidity tests of the oils.

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Abstracts

Oils and Fats

Edited by
M. M. PISKUR and SARAH HICKS

Fatty acid processing. C. J. Marsel (New York Univ.) and H. D. Allen. *Chem. Eng. 54,* No. 6, 104-8 (1947).

Respiration of cottonseed. M. L. Karon and A. M. Altschul (U. S. Dept. Agr., New Orleans, La.). *Plant Physiol. 21,* 506-21 (1946). The pattern of respiration was determined for 17 lots of cottonseed with moisture contents ranging from 10-17%. The respiratory quotient of resting cottonseed was found to be unity. The average RI of cottonseed is an exponential function of the moisture content of the seed. The RI of flaxseed samples as calculated from the data of Larmour is very similar to that of the Coker's and Oklahoma Triumph varieties of cottonseed. Comparison of respiration, free fatty acid formation, and changes in the spectrum of the seed oil during the storage of cottonseed. L. Kyame and A. M. Altschul. *Ibid.* 550-61. Samples of cottonseed that were used in the respiration investigations reported in the above abstracts were analyzed for free fatty acid content, and the lipolysis-rate constant, k, was determined for each of the samples. k could be converted into a linear function of the moisture content of the seed. The pattern of lipolysis of immature seeds was shown to be different from that for normal in that the rate of formation of free fatty acids decreased with length of storage. Respiration and lipolysis equally reflect the vigor of cottonseeds and is a fact of practical importance in commercial storage. Effect of inhibitors on the respiration and storage of cottonseed. A. M. Altschul, M. L. Karon, L. Kyame, and C. M. Hall. *Ibid.* 573-87. Treatment of mature cottonseed with NH_3 inhibited respiration and lipolysis and reduced the light absorption of the extracted oil at 360 $m\mu$. Similar treatment of immature cottonseed inhibited respiration, but stimulated lipolysis, and light absorption of the extracted oil at 560 $m\mu$ was increased. The vapors of Nacconol NR and of 2′-Me-1-maleanil inhibited lipolysis in cottonseed under conditions where there was a stimulation of respiration. Fungicides and germicides such as Emulsol 607M, Emulsol 607, and butylmaleimide had no effect on the lipolysis rate of stored cottonseed; the last 2 substances stimulated respiration. Evidence has been presented to demonstrate that most of the deterioration which occurs in stored cottonseed is due to the action of enzymes in the seeds rather than to microbial activity. (*Chem. Abs. 41,* 1286-7).

Influence of lecithin and cholesterol on the diffusibility of fat acids dissolved in bile salt solution. G. Quagliariello and D. Foscolo (Univ. Naples). *Boll. soc. ital. biol. sper. 19,* 37-8 (1944). The rate of diffusion through a cellophane membrane of oleic acid dispersed in a solution of Na glycocholate was not increased by addition of lecithin, cholesterol, or bile to the mixture. (*Chem. Abs. 41,* 1257.)

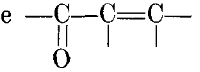
Synthetic fats. P. N. Williams. *Chemistry & Industry 1947,* 251-5. The subject is reviewed under the titles: re-esterification, synthetic fats, oxidation of hydrocarbons to fatty acids, synthetic fatty acid manufacture at Witten, manufacture of fat from synthetic acids, and economic aspects.

Suitability of synthetic fat from coal for human consumption. K. Thomas and G. Weitzel (Univ. Leipzig Germany). *Deut. med. Wochschr. 71,* 18-21 (1946). By catalytic oxidation of paraffin from the Fischer-Tropsch synthesis a mixture of fat acids was obtained. The acids with 10-20 C atoms in the chain were esterified with glycerol, refined, and deodorized. The resulting fat is an odorless and tasteless white product; in appearance and consistency it is similar to lard. The fat is split by lipase in about the same way as natural fat and, at an intake of not more than 150 g. per day per person, almost completely reabsorbed. Clinical experiments however, indicated an impaired compatibility at an intake above 100 g. per day. The existence of acid slags in the body after the consumption of synthetic fat has been reported by F. who considered them as unessential. Th. and W. state that the quantities in which these acids appear in the urine approximate those which are given for therapeutic purposes, and that they do not cause an acute or chronical acidosis; however, the influence on the action of the kidney must be considered. It appears that the branched chains in the original Fischer-Tropsch paraffin are the cause of objectionable features of a synthetic fat, while normal paraffins give better products. The importance of using a biologically unobjectionable glycerol is also stressed because some synthetic glycerols were found to be very harmful to the liver. It is concluded that synthetic fats of suitable composition and free from isomono- and dicarboxylic acids may prove to be harmless, but the costs of their production make them impractical at the present time. (*Chem. Abs. 41,* 1342.)

Linseed oil for human consumption. A. Schar. *Mitt. Lebensm. Hyg. 37,* 363-78 (1946). Pure linseed oil is not suited for edible purposes because of its varnish-like odor and its instability during storing. A mixture containing 20% linseed oil keeps for a sufficiently long time, is not objectionable in taste or odor, and is biologically satisfactory. Pure hydrogenated linseed oil ("Leinschmalz") cannot be used for human consumption. However, a mixture of 20% hydrogenated linseed oil and 80% other fats can be considered as a valuable fat substitute. During 1944/45, 6,000 tons of linseed were imported to Switzerland, processed into hydrogenated linseed oil, and used as a component in edible fat mixtures. (*Chem. Abs. 41,* 2505.)

CATALYTIC HYDROGENATION. V. INDEX OF SELECTIVITY. A. A. Balandin. *J. Gen. Chem.* (U.S.S.R.) *16,* 557-70 (1946). A theoretical discussion of the meaning of selectivity index in hydrogenation of mixtures which determines the yield of each component at a given degree of hydrogenation. The rules of Lebedev-Vavon are, essentially, a way to state the selectivity principle. The latter, again, is simply a different manner of stating the difference of free energy between the components of the mixture and their reaction products in the course of hydrogenation. (*Chem. Abs. 41,* 1146.)

FLAVONES AND FLAVONE DERIVATIVES AS ANTIOXIDANTS. G. A. Richardson, M. S. El-Rafey, and M. L. Long (Coll. Agr., Davis, Calif.). *J. Dairy Sci. 30,* 397-413 (1947). Flavones, as illustrated by quercitin, quercitrin, and rutin, have been shown to be effective antioxidants for milk fat and lard. The flavonene glycoside hesperidin appears to have little or no antioxidant values; its chalcone is active. It is suggested that the



$-\underset{\underset{O}{\|}}{C}-\underset{|}{C}=\underset{|}{C}-$

group in the pyrone ring or in the open chalcone is responsible for the antioxidant activity.

PEROXIDATION IN RELATION TO OLEFINIC STRUCTURE. E. H. Farmer (British Rubber Producers Research Assoc., Welwyn Garden City, Herts, Eng.). *Trans. Faraday Soc. 42,* 228-36 (1946). A survey is presented of the structure and breakdown behavior of various distinctive types of organic peroxides which are capable of existence. All peroxides of nonaromatic conjugated dienes and polyenes so far examined are known to be produced by addition of O at the terminals of the diene systems. Artificially formed peroxides of conjugated olefinic compounds, monomeric and polymeric, show high thermal stability, but they undergo so incompletely chemical reduction and catalytic hydrogenation that there is no satisfactory abstract method known for their analytical determination. It seems likely that the path pursued in the breakdown of peroxide groups is often independent of the way in which the released "active" O is expended in olefinic attack, but otherwise the peroxide breakdown would be effected by direct interaction of peroxide groups with olefinic centers. Any successful 1,2-linking of O which may occur would seem to be of transient character, and in so far as it occurs probably undergoes ring-scission followed by scission of the C-chain. (*Chem. Abs. 41,* 2385-6.)

THE PRESENCE OF ESSENTIAL FATTY ACIDS IN RATS AND THEIR YOUNG KEPT ON A RAT-FREE DIET DURING PREGNANCY. K. Bernhard and H. Bodur. *Helv. Chim. Acta 29,* 1782-8 (1946). Rats kept on a fat-free diet during pregnancy give birth to young with typical symptoms of deficiency of essential fatty acids. Both mother and the young contained less total fatty acids when on the fat-free diet than did normal controls. The acids were in each case separated into solid and liquid fractions. Mother animals in the controls and on the fat-free diet contained *cis, cis*-9,12-linoleic acid (I), identified as the tetrabromide, m. 114°, by bromination of the liquid fat acid fraction. The controls had more I than the animals kept on the fat-free diet. While the presence of I could be demonstrated in the normal young, the young from deficient mothers contained no I. Thus the unsaturated fat-acid-deficient mothers did not transmit I to their offspring when maintained on a fat-free diet. (*Chem. Abs. 41,* 2784.)

BIOCHEMISTRY OF THE SPHINGOLIPIDES. I. PREPARATION OF SPHINGOLIPIDES FROM BEEF BRAIN AND SPINAL CORD. H. E. Carter (Univ. Ill., Urbana), W. J. Haines, W. E. Ledyard, and W. P. Norris. *J. Biol. Chem. 169,* 77-82 (1947). By the procedure adopted 100 lb. of fresh beef brain yielded 1300-1600 g. of a crude sphingomyelin-cerebroside mixture; 100 lb. of beef spinal cord gave 220-2500 g. The latter material is more satisfactory for the preparation of sphingosine. Cerebroside and sphingomyelin analysis are reported for the lipide fractions from 100 lb. of spinal cord. It is proposed to designate those lipides derived from sphingosine as sphingolipides.

ESTIMATION OF THE PHOSPHOLIPIDES IN HUMAN BLOOD. M. H. Hack (Univ. Illinois, Coll. Med., Chicago). *J. Biol. Chem. 169,* 137-43 (1947). Sphingomyelin is not affected by treatment with Na alcoholate or by KOH under conditions that will produce hydrolysis of glyceryl ester phosphatide. This resistance of springomyelin to mild alkaline hydrolysis has been used in its purification and assay. The present work demonstrates that the choline of lecithin is quantitatively liberated under the conditions of alkaline hydrolysis which permits assay of sphingomyelin. Extension of the latter method to include the present finding permits the estimation of lecithin and cephalin. The extended method has been applied to the analysis of blood phospholipides.

ESSENTIAL FATTY ACIDS AND INFANTILE ECZEMA. Editorial. *J. Am. Med. Assoc. 134,* 606 (1947). The authors' conclusion appears warranted that supplementary fat, such as lard or certain vegetable oils rich in unsaturated fatty acids, is definitely beneficial in the majority of cases of eczema, particularly in infants. However, they wisely emphasize that such therapy is not a complete substitute for good general and local therapy but should be regarded as a valuable adjunct to the accepted modes of treatment.

DETERMINATION OF MELTING POINTS IN HUMAN FATS. K. Schmidt-Nielsen (Lab. Zoo-physiol., Copenhagen). *Acta Physiol. Scand. 12,* 110-22 (1946). The difficulties inherent in the determination of the m.p. of human fat are pointed out. Usually when a sample of human fat for m.p. determination is solidified at 0°, separation of heterogeneous crystals causes large errors in the observations. To prevent this the fat should be rapidly cooled to extremely low temperature (—70°) whereby a microcrystalline mass is produced which makes possible relatively exact observations of the clear point. (*Chem. Abs. 41,* 1270.)

MELTING POINTS OF HUMAN FATS AS RELATED TO THEIR LOCATION IN THE BODY. K. Schmidt-Nielsen (Lab. Zoophysiology, Copenhagen). *Acta Physiol. Scand. 12,* 123-9 (1946). The melting point of visceral fat is 30-35°, but of fat from more peripheral organs it is lower. The melting point of fat from the feet is often 0-10° (in 11 out of 15 persons the values were below 10°) which probably is accounted for by the low temperature of the extremities. An interesting case is reported of a man who as a stoker on a steamer was exposed daily to a high temperature. The fat melting points determined for this person were all extremely high. (*Chem. Abs. 41,* 1304.)

The use of C^{13} and C^{14} in studying metabolism in animals. D. W. Wilson (Univ. Pennsylvania, Philadelphia). *Science 105,* 637 (1947). Some experiments involving the use of the carbon isotopes C^{13} and C^{14} in aiding to unravel details of fat and uric acid metabolism, are discussed. The theory of β-oxidation of long-chain fatty acids with recombination to the 2 C units to form acetoacetic acid (in liver) is believed to be proved. Acetate and acetoacetate, products of fat metabolism, were found to be oxidized via the tricarboxylic acid cycle by which carbohydrates are oxidized. Isotopic lactate, when fed to a phlorhizinized rat, caused a great increase in excretion of glucose although it contributed only a small part of its isotope. Ten per cent of the isotope of the lactate was found in the ketone bodies. Lactate had been changed to ketone bodies without first becoming fat. The author has shown how both fat and carbohydrate material can enter the metabolic pathways of each other.

The effect of fat level of the diet on general nutrition. III. Weight loss, mortality and recovery in young adult rats maintained on restricted calories. B. T. Scheer, J. F. Codie, and H. J. Deuel (Univ. So. California, School Med., Los Angeles). *J. Nutr. 33,* 641-8 (1947). When young adult rats are subjected to severe caloric restriction on diets varying in fat content, weight loss is less rapid, and mortality is less, on diets containing liberal amounts of fat than on a fat-free diet. During recovery from the period of caloric restriction, weight loss is more rapidly regained, and reproductive capacity is superior on diets containing fat. Reproductive capacity is still subnormal 4-6 weeks after transfer to *ad lib.* feeding, a time when body weight and physical capacity have returned to normal. The significance of the results of the present series of experiments is briefly discussed in relation to the role of fat in metabolism.

Absence of a macrocytic anemia in dogs fed choline or choline plus fat. M. F. Clarkson and C. H. Best (Univ. Toronto, Canada). *Science 105,* 622-3 (1947). The results permit the authors to state quite definitely that, under the conditions of the experiment, the addition to stock diets of the amounts of choline or choline plus fat recommended by Davis does not produce in dogs any trace of a macrocytic anemia. It is apparent, therefore, that the acceptance of Davis' general conclusions cannot be justified and that further work is necessary to determine the explanation of his findings.

Antibiotin activity of imidazolidone aliphatic acids. K. Dittmer (Univ. Colorado, Boulder), and V. DuVigneaud. *J. Biol. Chem. 169,* 63-70 (1947). A series of 4 imidazolidone aliphatic acids has been found to be antibiotins for *Saccharomyces cerevisiae,* Fleischmann strain 139, and *Lactobacillus casei.* Imidazolidonecaproic acid was the most potent of this series, while imidazolidonevaleric acid was the least active. As the side chain was lengthened from caproic acid to heptanoic and octanoic acids, the antibiotin activity decreased. The antibiotin activity was counteracted in every case by the addition of biotin.

Studies on deterioration of vitamin A in fish livers and liver oils. I. Loss of vitamin A and stability in grayfish livers in storage. F. B. Sanford, D. Miyauchi, and G. I. Jones (Fishery Tech. Lab., Seattle). *Com. Fisheries Rev. 9,* No. 2, 11-15 (1947). Ground grayfish liver samples stored from 4-7 weeks under 3 different conditions: room temperature, in ice, and in frozen storage were tested at varying intervals. Results of these tests showed no significant change in the vitamin A potency. However, with increase in temperature of storage, the free fatty acid content tends to rise, and the vitamin A stability rapidly decreases.

Continuous process for aluminum greases. H. G. Moulton, M. Sutton, and H. W. Bevarly. *Inst. Spokesman 10,* No. 9, 4-5, 7-9, 11-12 (1946). A flow sheet is shown and plant data are presented on the continuous manufacture of Al-soap grease at the rate of 1,500-2,000 lb./hr. An oil-and-soap slurry is made under about 22-26 in. of vacuum, the slurry is pumped at approximately 1,500 lb./hr. through a heating Votator to dissolve the soap, through a cooling Votator to cool the grease, and then, into insulated tanks, holding about 5,500 lb. each, where the grease is gelled isothermally. The uniformly gelled grease is pumped through a worker to break down the false set of the grease to a constant temperature. Since the grease is uniform in consistency in the gel tanks, intermixing is not necessary. (*Chem. Abs. 41,* 2563.)

PATENTS

Processing material of animal origin. W. Krüger. *Ger. 710,777 Cl. 53g.* Waste animal material is rendered in benzine; thus 100 parts of material yielded meat meal 28.8, and fat 12.6%. The meat meal contained protein 62.7 and fat 4.3%.

Rendering apparatus. Karl Niessen. *Ger. 728,592 Cl. 23a.* The apparatus comprises a holding tank and a renderer between which are attached toothed milling devices.

Refining fats and oils. W. Ekhard. *Ger. 714,119 Cl. 23a.* The fats and oils are treated with microorganisms of the class Saccharomyces and/or acid formers as *Lactobacillus delbruckii, L. leichmanii, L. bulgaricus,* and *Streptococcus thermophilus,* some nutritive media are added, the mixture is fermented while aerating, and the oil is separated.

Refining fats and oils. Otto Brücke (Metallgesellschaft A.-G.). *Ger. 723,436, Cl. 23a.* Steam deodorization and removal of free acid and other volatile material are accomplished in a multiple of stages using progressively lower treating temperature as the charge progresses through the stages.

Separating fatty acids. L. D. Myers and V. J. Muckerheide (Emery Industries, Inc.). *U. S. 2,421,-157.* In a fat acid crystallization from solvent process, the formation of crystals allowing better filtration is obtained by blowing air through the cooled solvent solution during crystallization.

Separation of unsaponifiable from saponifiable material. H. Pardun (Noblee & Thörl G.m.b.H.). *Ger. 721,454 Cl. 23d.* Apparatus and method are described for recovery by distillation of the fatty acids synthesized from paraffins by oxidation.

Chlorinating of fatty acids. A. Hendschel and P. Heisel (I. G. Farbenind. A.-G.). *Ger. 709,582 Cl. 12o.* Synthetic fatty acids are chlorinated in water medium in the presence of salts of O_2 containing acids.

Water soluble sulfured fats. C. Pfestorf. *Ger. 709,815 Cl. 12o.* Fatty oils are sulfured at 250° and the product is then reacted with alkali sulfide. The product is used in the tanning industry for treating hides and skins.

Clear stable lecithin solution. H. Christlieb (C. H. Boehringer Sohn). *Ger. 708,805 Cl. 2c.* A clear stable lecithin-lactic acid emulsion is obtained by emulsifying soybean lecithin in a 90% lactic acid solution. The product is used for bakery purposes.

Manufacture of esters of 12-ketostearic acid. E. I. duPont de Nemours Co. *Brit. 566,495.* This invention relates to the manufacture of 12-ketostearic acid derivatives by catalytically isomerizing ricinoleic compounds.

Oily, fatty, or waxy products. H. Hopff and W. Rapp (I. G. Farbenind. A.-G.). *Ger. 718,172 Cl. 12o.* These are esterification products of butane-1,2,3,4-tetracarbonic acid anhydride with fatty alcohols.

Cutting oil base. L. D. Myers and V. J. Muckerheide (Emery Industries, Inc.). *U. S. 2,421,158-9.* The products contain rosin soap, a monoglyceride of a fat acid, K oleate and some water.

Drying Oils

Edited by **HOWARD M. TEETER**

Cameline oil. Its use in paints. M. Carrière (Faculté Sci., Marseille). *Peintures, pigments, vernis 23,* 39-43 (1947). The seed of cameline (*Camelina sativa* Crantz, var. Glabrata), or "false flaxseed," yields 33-39% cameline oil. When raw cameline oil and polymerized cameline oil were made into paints and compared with linseed oil and polymerized linseed oil in identical formulations, the cameline oil paints dried more slowly than the paints from linseed oil. However, cameline oil is considered a substitute for linseed oil. Complete data on physical and chemical properties, including behavior on blowing and heat-bodying, are presented. (*Chem. Abs. 41,* 3636.)

Drying of vegetable oils. Some colloidal aspects of the process. P. Slansky (British Paints, Ltd.). *Paint 17,* 144-148 (1947). The drying of an oil is considered to progress through 2 stages: (1) purely chemical oxidation and subsequent reactions due to oxidation; and (2) the colloidal process which consists of gelation of the oxidized triglycerides. After a certain amount of oxidation, it is suggested that a typical colloidal system exists. It contains at least 2 phases, the continuous phase consisting of unchanged oil and the disperse phase consisting of oxidized oil containing probably a range of polymers formed as a result of the oxidation. At a certain concentration the more complex system coagulates and both phases then form a solid elastic gel (linoxyn). Experimental data in support of this mechanism are presented.

PATENTS

Process of producing tall oil drying oils. F. C. Martin. *U. S. 2,421,842.* Tall oil is esterified with a polyhydric alcohol in the presence of a silicious catalyst.

Vulcanized fatty oil emulsions. P. Stamberger. *U. S. 2,422,049.* Esters of fatty acids having more than one double bond in the chain, or esters of hydroxylated fatty acids, are vulcanized with S at 120-200°. Vulcanization is continued until a drop of the heated mixture solidifies appreciably when added to a 25% aqueous ammonia solution. Heating is then discontinued and an aqueous emulsion is formed before further solidification occurs. Appreciable solidification then takes place in the emulsion.

Soaps

Edited by **LENORE PETCHAFT**

The influence of soap hydrolysis on detergent action. K. Tomlinson (Lankro Chemicals, Ltd., Salters Lane, Manchester, Eng.). *J. Soc. Dyers Colourists 63,* 107-9 (1947). A minimum of detergent power of soap solution exists at a concentration corresponding approximately to that of maximum soap hydrolysis. This minimum can be removed by adding substances which suppress soap hydrolysis. An explanation of the low detergent power of dilute soap solutions is given and the effect of adding Na_2CO_3 is discussed. (*Chem. Abs. 41,* 3984.)

Nonionic detergents as association colloids giving long x-ray spacings in aqueous solution. James W. McBain and Sullivan S. Marsden, Jr. (Stanford University, California). *J. Chem. Phys. 15,* 211-12 (1947). Soaps and other ionic detergents in solution diffract x-rays, so as to demonstrate the presence of lamellar micelles. The nonionic detergents *p*-isooctylphenoxynonethoxyethanol, diethylene glycol monolaurate, and glycerol monolaurate in aqueous solution also exhibit similar long spacings. The spacings are 40-150 Å., decreasing as the concentration of the detergent increases. (*Chem. Abs. 41,* 3344.)

Dodecyl sodium sulfate. Arne Brunzell. *Svensk. Farm. Tid. 51,* 101-6 (1947). Dodecyl sodium sulfate is determined by titration of the acid liberated by acid hydrolysis. In the presence of Na_2SO_4, Kling and Puschel's method for separation by means of benzidine is used. Soap is detected in dodecyl Na sulfate by adding to the aqueous solution a few drops of HCl (turbidity appears if soap is present). A red color produced by treatment with Ac_2O or concentrated H_2SO_4 indicates saponin. The Gutzeit test is used for As. To detect Pb the ash from a 0.2-g. sample is heated with NH_4OAc and NH_4OH, filtered, and the filtrate treated with Na_2S. (*Chem. Abs. 41,* 3641.)

The washing process. Walter Kling, Elisabeth Langer, and Ingeborg Haussner. *Melliand Textilber 26,* 12-14, 56-9 (1945). The microscopic study of the washing phenomenon was continued with Na oleate, Na dodecyl sulfate, a Na alkane sulfonate ($C_{13}H_{27}SO_3Na$), an 9-octadecnyl polyethyleneglycol ether [$C_{18}H_{35}(OCH_2CH_2)_{11}OH$], and dodecylpyridinium bromide. Anion-active washing agents of various constitutions show only differences in the velocity of dirt removal. With cation-active products the primary replacement of the oil from the fiber surface is similar to that of anion-active washing agents. However, with progressive action there occurs a reabsorption of the dirt by the fiber, which depends on time and the absolute and relative concentrations of the washing agent. (*Chem. Abs. 41,* 3972.)

Synthetic detergents and odors. Lawrence H. Flett, Gilbert C. Toone (Allied Chem. & Dye Corp.) and Earl L. Booth (Larkin Products, Inc.). *Am. Perfumer 49,* 612-3, 615-617 (1947). Tests have shown that Nacconol NRSF has a general deodorizing action on perfumery compounds, domestic odors and personal odors. The extent of this deodorizing action varies with the many types odorous chemicals. While this deodorizing action introduces problems in perfuming, it is an advantage in those cleaning operations where it is desired to remove and prevent odors. If traces of odorous substances are not completely washed away during the cleaning operation, small residues of the synthetic detergent which are likewise left will aid in reducing the odor.

QUANTITATIVE ANALYSIS OF IGEPON T. D. A. Shiraeff (General Dyestuff Corp.). *Am. Dyestuff Reptr. 36,* 313-4 (1947). A method is described for analysis of surface active agents containing sulfonic acid, specifically Igepon T. Igepon T is quantitatively precipitated from strongly acid solutions by benzidine hydrochloride. The precipitated benzidine salt of Igepon T is easily filterable and is easily washed with water free from mineral acid. This salt is separated from soap by washing with petroleum ether. The benzidine salt of Igepon is fairly soluble in an alcohol-water mixture. This solution can be titrated with NaOH or evaporated and the residue dried. Exact procedure, calculation and analysis of commercial brands are included.

PHASE BOUNDARIES IN CONCENTRATED SYSTEMS OF SODIUM OLEATE AND WATER. Robert D. Vold (University of Southern California, Los Angeles, Calif.). *J. of Phys. & Colloid Chem. 51,* 797-815 (1947). Twenty-nine binary systems of Na oleate and water were studied in closed cells in a differential calorimeter. From the curves so obtained, values of transition temperatures and heats of transition were deduced. The application of the method of differential calorimetry to binary systems is discussed in detail. Results obtained indicate the existence of transitions at about 28°, 66°, 89°, and 112° C. in more concentrated Na oleate systems, which occur at substantially constant temperature independent of composition. The first and last of these appear to be due to phase changes similar to melting of a pure substance, while the middle two seem to mark the beginning and end of some transition occurring over a range of temperature. Changes in the phase nature of the system appear to occur at 74.5 and 89% Na oleate at 28° C., at 83.5 and 79% at 66° C., at 98 and 79% at 89° C., and at 99 and 87.5% at 112° C. Incidental data are also included showing the transition temperatures of a number of preparations of anhydrous Na oleate from various standard samples of oleic acid.

PATENTS

MIXING SOAP WITH SILICIC ACID GEL. N. V. J. H. Wigleven. *Dutch 56,339.* To get a thorough mixture, the soap (practically without free alkali) is mixed with a silicic acid sol that shows no acid reaction when gelatinized and causes the mixture to gelatinize. Salts may be added and the mass kneaded. E.g., soap is boiled from soybean-oil acids 75, palm-oil acids 25, Na carbonate lye 28, K carbonate lye 24, water 80 kg. At 70° there is added to the liquid soap 230 l. silicic acid sol, obtained from 115 l. water-glass solution (1 vol. 38° Bé to 2 vols. water) and 115 l. dilute HCl (1 vol. 38% to 29 vols. H_2O). The temperature is maintained during mixing, and 1.5-2% soda (calculated on the whole batch) is added. The mixture is kneaded after cooling. (*Chem. Abs. 41,* 3985.)

CAPILLARY-ACTIVE SUBSTANCES DERIVED FROM HIGH-MOLECULAR ESTERS FROM A BORON OR PHOSPHORUS ACID. N. V. Chemische Fabriek Servo and M. D. Rozenbroek. *Dutch 56,089.* Starting materials are acids derived of B or P. They are esterified with a higher alcohol or with a partial ether of a higher alcohol and a lower polyhydric alcohol or with a partial ester of a higher fatty acid and a lower polyhydric alcohol. In an ester as just mentioned one or more of the free hydroxyl groups of the inorganic acid are coupled with an aliphatic hydroxysulfonic acid or aminosulfonic acid. E.g., 1 molecule oleic acid monoglyceride is esterified with 1 molecule H_3PO_4. The intermediate product was caused to react with 2 molecules taurine for 8 hours at 110-120° and the final product neutralized. (*Chem. Abs. 41,* 3986.)

SOAP REPLACEMENT. M. Perlmuter. *British 585,675.* Detergent solution used to replace soap consists of 1000 g. distilled water, 30 g. Na_2CO_3, 15 g. ethyl alcohol (absolute) and 2 g. glycerol. This solution is claimed to be harmless to the skin, the glycerol removing any harshness caused by the sodium bicarbonate. A few drops are sufficient for a cleansing.

SULFONATED AMINE DETERGENTS. Soc. pour l'ind. chim. a Bale. *Brit. 582,092.* Foaming and detergent agents are prepared by treating a naphthylamine disulfonic acid or a salt at a raised temperature and in the presence of an acid-binding agent, with an aralkyl chloride containing at least 8 carbon atoms. The aliphatically-bound chlorine atom is that of a single chloromethyl group bound to the aryl nucleus.

DETERGENT PASTE. Jonas Kamlet (Boyle-Midway, Inc.). *U. S. 2,421,703.* Detergent paste containing Na_3PO_4 which has high pH and excellent buffering and emulsifying properties, a sulfonated and sulfated detergent, and an emulsifying agent consisting of a fatty acid salt.

ALKYL-SUBSTITUTED AROMATIC SULFONATES. Howard F. Reeves, Jr. (Wyandotte Chemicals Corp.). *U. S. 2,422,926.* Sulfonated detergents are prepared by chlorinating wax, condensing with aromatic hydrocarbon and sulfonating.