been helpful to the author and it therefore appears advisable that such visits be extended if possible to all collaborators, since the accepted averages of the Society are based on the collaborators as a whole.

It is recommended that the Society take some action in further standardizing a method embracing the points discussed above, as well as any others which may have a tendency to affect results.

Abstracts

Oils and Fats

Edited by
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STEARIC ACID, RED OIL, AND GLYCERINE. A CHEM. AND MET. FLOW SHEET. *Chem. Met. Eng. 50,* No. 9, 132-5 (1943).

METHODS OF SPLITTING FATS AND OILS WITH REFERENCE TO THEIR EFFICIENCY. Kurt Lindner. *Fette u. Seifen 49,* 862-8 (1942). A review.

THE REACTION OF TETRANITROMETHANE WITH FAT ACIDS AND FATS. Hans Paul Kaufmann. *Ber. 75B,* 1201-14 (1942). Tetranitromethane (I) reacts with unsatd. fats and fat acids in $CHCl_3$ or CCl_4 soln. to yield a yellow to a dark red color depending on the amt. of unsatn. When read with a Pulfrich photometer the intensity of the color rose with the I no. of the test sample. I nos. detd. by this method checked within 5 of those detd. bromometrically. One per cent of I was a good elaidinization catalyst when tried on oleic acid, erucic acid, and olive oil. Elaidinization takes place on standing 1-2 days. On long standing linoleic and linolenic acids with 10% I yield a mass that is difficultly sol. in CCl_4 or $CHCl_3$. Marine liver and chaulmoogra oils polymerize to a gel under these conditions. A cod liver oil with 10% I increased in viscosity (20°) from 86-681 centipoise in 168 hrs. The use of I for oxidizing compds. to det. structure after analysis of the products was demonstrated with results on elaidic acid, erucic acid and stilbene. For the oxidation 1 part of the sample was reflux with about ⅔ part of I and ½ to ⅚ part of CCl_4 for several hrs. There are 21 references. This report also includes the work of collaborators Bao Wei King and Lan-Sun Huang. *(Chem. Abs.)*

COMPARISON OF THE IODOMETRIC AND ALKALIMETRIC ACID DETERMINATION FOR MARGARINE. H. Schmalfuss and U. Stadie. *Fette u. Seifen 49,* 779-80 (1942). The alkali method is simple and faster.

CHANGES IN THE OIL DURING GERMINATION OF LINSEEDS. Karl Schmalfuss. *Fette u. Seifen 49,* 773-4 (1942). Results of analyses on 0, 3d, 6th, and 9th days of germination at 20° were: fat based on original amt. present 100, 75.9, 51.8 and 28.7, fat I. no. 172, 172, 164.6 and 154.8, (SCN) no. 106.9, 110.9, 109.4, 100.3, solid satd. acids 8.9, 9.4, 10.3, and 10.8%, oleic acid 106.4, 85.4, 63.8 and 29.4%, linoleic acid 42.9, 33.2, 27.1, 36.3, linolenic acid 32.3, 37.4, 36.6 and 26.6. The Ivanow postulations that the highly unsatd. acids are first attacked was distinctly evident.

VITAMIN A AND LIVER FAT. H. W. Sachs. *Arch. Path. Anal.* (Virchows) *309,* 712-25 (1942). The vitamin A (1) content of the liver was detd. by its fluorescence in ultraviolet light. It is increased whenever its fat content is normally increased whereas in fatty degenerative processes I is diminished. Fatty infiltration of the reticulo-endothelial cells is a normal process. Examn. with ultraviolet light reveals that the central peribiliary fatty infilitrations consists of pigment lipide of lipofuscin. *(Chem. Abs.)*

DESPITE ITS USE IN EXPLOSIVES THERE ARE NEW USES OF GLYCERINE IN CONFECTIONERY. G. Leffingwell and M. A. Lesser. *Manufg. Confectioner 23,* No. 9, 15-7 (1943).

EDIBLE FATS AND OILS. TWO CHEMICAL CHARACTERISTICS. G. E. Vail and R. Hilton. *J. Home Econ. 35,* 43-46 (1943). The smoking temp. in this study ranged from a high of 245° C. to a low of 190° C. for the 17 vegetable fats and oils from 234° C. to 174° C. for the 8 animal fats. The 2 combination vegetable and animal fats smoked at 209° C. and 170° C. There was an av. drop of 2.2° C. in the decompn. points when the fats were heated in a 6-in. frying pan. The fuchsin bisulfite test for aldehydes resulted in still lower smoking pts. averaging 24.6° C. lower than those obtained when the visual method was used. The percentages of free fatty acids before and after heating showed a wide range. The percentage of free fatty acids, as oleic, in fats tended to be inversely proportional to the smoking point.

THE EFFECT OF CERTAIN DIETARY INGREDIENTS OF THE KEEPING QUALITY OF BODY FAT. R. H. Barnes, W. O. Lundberg, H. T. Hanson, and G. O. Burr. *J. Biol. Chem. 149,* 313-22 (1943). The natural stability of body fat from rats receiving a normal diet can be increased but this increase has been found to be relatively small and it is probably due to changes in both glyceride composition and antioxidant content brought about by alterations in the diet. Dietary supplements of lettuce, avenex, rice bran, yeast, casein, hydroquinone, mixed tocopherols, or wheat germ oil do not increase the keeping time of body fat which already possesses a normal stability. The keeping time of body fat of the rat is markedly reduced by the continued ingestion of a diet which is free of vitamin E and other sources of fat-soluble antioxidants. It is proposed that, in the rat, antioxidants of the body fat are derived solely from the diet. The ingestion of certain antioxidant substances such as yeast and hydroquinone does not restore the normal stability to body fat from vitamin E-deficient rats, but *a*-tocopherol effects such a restoration. Pro-oxidants of rancid fat are not stored in the fat depots, but if such fat is ingested throughout the growing period of a rat, body fat stability is reduced, presumably owing to destruction of the dietary antioxidants. Naturally occurring antioxidants in the fat depots do not require frequent replenishment from the diet, but are stored for relatively long periods.

NUTRITIVE VALUE OF BUTTERFAT. *Nutrition Revs. 1,* 358-61 (1943).

DIGESTIBILITY OF CERTAIN HIGHER SATURATED FATTY ACIDS AND TRIGLYCERIDES. R. Hoagland and G. G. Snider. *J. Nutrition 26,* 219-25 (1943). Expts. were conducted with mature male rats to det. the digestibility of pure stearic, palmitic, myristic and lauric

acids and of the corresponding triglycerides. Each fatty acid was mixed in the proportions of 5, 10, 15, and 25% with pure olive oil, and each triglyceride was mixed in the proportions of 5 and 10%. The fat mixt. constituted 5% of the diet. The following results were obtained: Stearic acid was poorly absorbed at each level of intake, the approx. digestive coeffs. ranging from 9.4 to 21%. Palmitic acid was utilized somewhat more efficiently than stearic acid, the approx. digestive coeffs. ranging from 23.8 to 39.6%. Myristic and lauric acids were practically 100% digestible when the fat mixts. contained 5, 10, and 15% of either acid, but the digestibility was somewhat lower when the mixt. contained 25% of acid. Tristearin was very poorly utilized, the approx. digestive coeffs. being 6 and 8% when the fat mixts. contained 5 and 10% of the triglyceride. Tripalmitin was more digestible than tristearin, the approx. digestive coeffs. being 84 and 82% when the fat mixts. contained 5 and 10% of the triglyceride. Trimyristin and trilaurin were very thoroughly absorbed.

A COMPARISON OF THE DIGESTIBILITY OF MEALS PREPARED WITH ANIMAL VERSUS HYDROGENATED VEGETABLE COOKING FATS. C. S. Smith. *Ohio State Med. J. 39,* 425-8 (1943). In this study on 80 men and women, animal fat (lard) used in the prepn. of meals appeared to be over 4 times (14 to 3) as likely to cause gastric or intestinal symptoms of an objective nature as hydrogenated vegetable oil. *(Chem. Abs.)*

THE INFLUENCE OF DIETARY FAT OF VARYING UNSATURATION ON THE COMPONENT ACIDS OF COW MILK FATS. T. P. Hilditch and H. Jasperson. *Biochem. J. 37,* 238-43 (1943). Cows have been fed on a basal diet and on a basal diet supplemented by (a) groundnut oil, (b) groundnut oil hydrogenated to about the same i.v. as a soft butterfat, (c) groundnut oil hydrogenated to i.v. 17, and (d) palm-kernel oil, also of i.v. 17. The milk fats from the five groups have been analysed by esterfractionation and the proportions of their component acids determined. Ingestion of the more completely hydrogenated groundnut oil of i.v. 17 gave milk fat almost identical with the control milk fat except for slightly increased proportions of oleic and stearic acids. This is consistent with the likelihood that this fat, about 50% of which was completely saturated tristearin or acyldistearins melting at 65-70° or above, would be relatively unassimilable, and that those glycerides which passed into the blood stream would be exclusively mono-oleo- (or iso-oleo-) glycerides, among which oleo- (or iso-oleo-) distearin would be prominent. There is no evidence in this work that any desaturation of stearo-glycerides occurs during the transformation of hydrogenated groundnut oil to glycerides in the milk of the cow.

THE FORMATION OF PHOSPHOLIPID BY THE HEPATECTOMIZED DOG AS MEASURED WITH RADIOACTIVE PHOSPHORUS. 1. THE SITE OF FORMATION OF PLASMA PHORPHOLIPIDS. M. C. Fishler, C. Entenman, M. Laurence Montgomery, and I. L. Chaikoff. *J. Biol. Chem. 150,* 47-55 (1943). The role of the liver in the formation of plasma phospholipids was investigated. Inorganic P^{32} was injected into normal and hepatectomized dogs and its recovery as phospholipid P^{32} compared in these animals. Plasma phospholipids are formed mainly in the liver. Excision of the liver reduced the recovery of phospholipid P^{32} of the plasma to very small quantities. The recovery of phospholipid P^{32} in kidney and small intestine was not reduced by excision of the liver. Apparently phospholipids synthesized by these two tissues are not readily available to the plasma.

ANTI-ACRODYNIC POTENCY OF SEED OILS. D. S. Anthony, F. W. Quackenbush, A. Ihde, and H. Steenbock. *J. Nutrition 26,* 303-8 (1943). Twenty-four seed oils of known linoleic and linolenic acid content were assayed for their potency in the cure of rat acrodynia. The anti-acrodynic potency of the oils was found to be in direct proportion to their linoleic acid content unless they contained considerable amts. of linolenic acid. When linolenic acid was present the curative effect of the oils was greatly reduced. Isolated data on marine oils suggest that other lipids besides linolenic acid also produce this effect. When linolenic acid was present only in minor proportions, a daily dose equiv. to 12 mg. of linoleic acid cured the acrodynia; 4 mg. was not curative.

THE ROLE OF CERTAIN UNSATURATED FAT ACIDS IN THE MAINTENANCE OF THE SKIN OF THE WAR WORKER. J. Bodman and E. Felix. *Med. Press & Circ. 105,* 331-5 (1943). Insufficient unsatd. acids in the wartime diet, as well as the strain arising from unaccustomed types of work, may be a frequent cause of industrial dermatitis. In almost all of 67 cases, the skin condition was improved or cured by treatment with an ointment rich in unsatd. acids. *(Chem. Abs.)*

PATENTS

METHOD OF TREATING TALL OIL. A. F. Oliver and R. C. Palmer (Newport Industries, Inc.). *U. S. 2,330,792.* A method of stabilizing tall oil includes filtering the tall oil through an adsorbent material, neutralizing with an alkali from 8-18% of the acidity of said tall oil and heat-treating said tall oil under non-decomposing conditions at between 260° and 300° C. for from 8-10 hrs.

CUTTING OIL. C. E. Crawford. *U. S. 2,328,620.* A cutting oil contg. at normal atm. temp. from about 0.2-2% S dissolved in a mixt. contg. a distillate of a fatty oil in amt. several times the wt. of the S and the balance of light mineral oil.

DISTILLATION OF FATTY OILS. C. E. Crawford. *U. S. 2,328,621.* In the treatment of fatty oil the steps comprise mixing therewith petrol. wax, having a melting p. of at least 120° F. in amt. substantially to inhibit polymerization during the heating hereinafter referred to, and then separating a substantial proportion of the oil in the form of liq. distillate satd. in chem. nature by heating at from 400 to 850° F.

CORE OIL AND CORE. C. E. Crawford. *U. S. 2,328,622.* A core oil containing a naphthenic ext. together with a drying or semi-drying oil as a plasticizer diluted to low viscosity with a petrol. solvent and including a drying accelerator soluble therein.

PROCESS FOR RENDERING TEXTILE MATERIALS WATER REPELLENT. A. Doser, O. Bayer, and K. Hintzmann. (General Aniline & Film Corporation). *U. S. 2,328,431.* Process for rendering textile material water repellent comprises impregnating the material with an emulsion being buffered with soda at a pH of 3.8-4.2 and containing paraffin, wax, a small quantity of a fatty acid, Zr. oxychloride and a condensation product of oleyl alc. and of several mol. quantities of ethylene oxide serving as emulsifying agent, thereupon rinsing the material with hot water, therefrom as far as possible, and finally drying the material at elevated temperature.