kernels, and 48.5, 4.91, and 93.1, respectively, for Runner kernels.

From a statistical consideration of the data obtained, it seems probable that two-thirds of all graded samples of Spanish and Runner peanut kernels will have oil contents between 48.9 and 52.3 percent and nitrogen contents between 4.64 and 5.14 percent on the moisture-free basis. Similarly, two-thirds of all graded samples of Virginia peanut kernels should have oil contents between 46.4 and 50.4 percent and nitrogen contents between 4.46 and 5.08 percent.

**Acknowledgment**

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REFERENCES

(1) G. S. Fraps; Texas Agr. Exp. Sta. Bull. 222, Dec. 1917.

(2) B. B. Higgins, K. T. Holley, T. H. Pickett, and C. D. Wheeler; Georgia Experiment Station Bull. 213, June 1941.

# Report of the Oil Characteristics Committee

AS most of the common oils and fats have already received our attention and been proposed as "recommended standards" we find that from now on it is going to be a slow and difficult task to obtain sufficient data to add to our list more of other oils.

With some possible exceptions therefore most of our future work will be carried on in setting up the composition and characteristics of various oils as informative data, rather than as recommended standards.

Meantime this committee has under revision three of the standards that were proposed some time ago but returned to us because of objections to some of the values set up therein. They are on neatsfoot oil, lard and beef tallow.

Chinese vegetable tallow, Patua palm oil, Babassu palm kernel oil ,and Tall oil have been written up by the chairman, but as yet the report has not reached the stage of submission to the committee. I, therefore, regret that there is nothing definite for us to report as a committee at this time.

M. F. LAURO, *Chairman.*

# Abstracts

## Oils and Fats

**Edited by**
**M. M. PISKUR and SARAH HICKS**

THE COMPONENT ACIDS OF VARIOUS VEGETABLE FATS. T. P. Hilditch *et al. J. Soc. Chem. Industry 63,* 112-4 (1944).

THE FATTY ACIDS AND GLYCERIDES OF SOLID SEED FATS. XII. LOPHIRA ALATA KERNEL FAT (NIAM FAT). T. P. Hilditch and M. L. Meara. *J. Soc. Chem. Industry 63,* 114-5 (1944).

POSITION OF FATS AND OILS IN THE WAR AND POST-WAR. R. M. Walsh. *Soybean Dig. 4,* No. 8, 14 (1944).

THE BUTYROMETRIC DETERMINATION OF FAT IN BUTTER. A. Schloemer. *Deut. Molkerei-Ztg. 63,* 420-1 (1942). "Butyrometric" detns. gave results which were 1% and more lower than results with the Roese-Gottlieb method, and with a new method developed by S. S. recommends the construction of a new type of test bottle whereby the passage between the reaction chamber and the neck is made to slope more, and whereby the unit of the scale is narrowed to create zones in which fat values in different ranges can be read. Standardization is accomplished with butter and not with fat. (*Chem. Abs.*)

THE BUTYROMETRIC FAT DETERMINATION IN BUTTER. G. Roeder. *Molkerei-Ztg. 56,* 536-7 (1942). R. found that with increasing d. (1.50-1.60) of the $H_2SO_4$ used there is a decrease in the fat-value reading (81.3-80.2%). On account of the high % of fat in butter, fluctuations of readings are unavoidable; moreover the d. of butterfat fluctuates between 0.883 and 0.891. (*Chem. Abs.*)

AN IODINE NUMBER METHOD FOR TALL OIL. R. G. Rowe *et al. Ind. Eng. Chem., Anal. Ed. 16,* 371-4 (1944). The use of pyridine sulfate dibromide in conjunction with mercuric acetate catalyst as a Br addn. reagent is suggested for the I no. detn. of tall oil and similar highly unsatd. conjugated compds. Data are presented showing the effects of absorption time and excess reagent. Evidence is given that the undesired secondary reaction of substitution does not occur. I nos. of 8 different com. samples of crude tall oil ranged from 237-287. This method of I no. detn. has the possibility of general application.

STABILITY OF WIJS SOLUTION FOR IODINE NO. DETERMINATIONS. F. A. Norris and R. J. Buswell. *Ind. Eng. Chem., Anal. Ed. 16,* 417 (1944). Over a total period of 505 days, the Wijs soln. did not change sufficiently to cause a measurable difference in the I no. of the substrate. No measurable differences were found when the reagent was taken from bottles that had been previously opened. These facts indicate the validity of storing the soln. a year or more, if

storage is in small bottles which are opened as needed.

RELATIONSHIP BETWEEN UNSATURATION AND THE ULTRAVIOLET ABSORPTION SPECTRA OF VARIOUS FATS AND FATTY ACIDS. R. H. Barnes, I. I. Rusoff, E. S. Miller and G. O. Burr. *Ind. Eng. Chem., Anal. Ed. 16,* 385-6 (1944). The spectral absorption of several unsatd. fatty acids and natural fats have been measured from 2500 to 2100 A. Data are presented that show a definite relationship between the degree of unsatn. and extinction coeffs. at 2100 A. From the compn. of natural fats it is possible to predict the extent of absorption at this wave length.

VISCOSITIES AND DENSITIES OF HYDROGENATED COTTONSEED OILS. H. Wakeham and F. C. Magne. *Ind. Eng. Chem. 36,* 568-70 (1944). The data and graphs contain melting range, solidification range, *n*, sp. gr. and viscosities of oils ranging between I nos. 6 and 112.

EXPERIMENTS ON THE USE OF ANTIOXIDANTS IN DRY, EDIBLE FATS. C. H. Lea. *J. Soc. Chem. Industry 63,* 107-12 (1944). Of a no. of antioxidants tested in butterfat at 100° and 37° pyrogallol, quinol, 1:5-dihydroxynaphthalene, pyrogallol-acetone condensation product, gallic acid and its esters, pyrocatechol and hematoxylin proved most powerful. Proline, protocatechuic acid, tannic acid, guaiacum resin, a concentrate of natural mixed tocopherols, 6-hydroxy-2:2:5:7:8-pentamethylchroman and several other substances showed definite but weaker activity. There was usually fairly good agreement between the relative potencies of inhibitors as observed at the 2 temps., though the degree of protection afforded by a given concn. of a particular substance appeared to be greater at 37° than at 100°. The lower esters of gallic acid proved most satisfactory in affording marked protection against oxidation without causing discoloration or imparting foreign flavor. In butterfat exposed to air at 37°, 0.005% of Et gallate considerably retarded the development of tallowiness and loss of carotene. In lard, under similar conditions, 0.01% of Et gallate was very effective in delaying the onset of tallowiness while the same proportion of inhibitor in refined and deodorized cottonseed, arachis and palm oils at 25° had some effect in retarding oxidation as measured by the peroxide value and, in less degree, deterioration in flavor as indicated by a tasting panel.

RANCIDITY — ITS CAUSES, CURES AND PREVENTION. C. H. Castell. *Food in Can.* 12-6 (Nov. 1943). Storage temps. of 32° to 45° F., which retards the activity of many types of spoilage organisms, have much less influence on the fat-splitters. Freezing inactivates them but does not destroy them. Pure, refined fats and oils will not support microbial growth. A humid atm. and very little nitrogenous material—often obtained in sufficient quantities from dirty containers—will enable certain types of molds and bacteria to grow in these foods. Most lipolytic action on fats is accompanied by decompn. of other ingredients of the food as well as oxidation of the glycerol and fatty acids. For this reason a large variety of putrid rancid flavors are produced by fat-splitting bacteria.

SOLUBILITIES OF HIGH MOLECULAR WEIGHT, SYMMETRICAL, NORMAL, ALIPHATIC, TERTIARY AMINES. A. W. Ralston, C. W. Hoerr and P. L. DuBrow. *J. Org. Chem. 9,* 259-66 (1944). The solubilities of trioctylamine, tridodecylamine and trioctadecylamine have been detd. in benzene, cyclohexane, tetrachloromethane, trichloromethane, Et ether, Et acetate, Bu acetate, acetone, 2-butanone, methanol, 95% ethanol, isopropanol and *n*-butanol.

SOLUBILITIES OF HIGH MOLECULAR WEIGHT, NORMAL, ALIPHATIC, PRIMARY, ALCOHOLS. C. W. Hoerr, H. J. Harwood and A. W. Ralston. *J. Org. Chem. 9,* 267-80 (1944). The solubilities of 1-decanol, 1-dodecanol, 1-tetradecanol, 1-hexadecanol and 1-octadecanol have been detd. in benzene, cyclohexane, tetrachloromethane, trichloromethane, Et ether, Et acetate, Bu acetate, acetone, 2-butanone, methanol, 95% ethanol, isopropanol, *n*-butanol, nitroethane and acetonitrile.

COMPONENT FATTY ACIDS OF EARLY AND MATURE HUMAN MILK FAT. A. R. Baldwin and H. E. Longenecker. *J. Biol. Chem. 154,* 255-65 (1944). Total fat, phospholipid, and complete fatty acid analyses of composites of fats of human colostrum of the 1st and 2nd days, human colostrum of the 3rd day and mature human milk were detd. The percentage of total fat increases and the phospholipid decreases as the lactation period progresses. The amt. of low mol. wt. fatty acids is very small as compared to cow's milk fat analyzed in an identical manner. There is a relatively large amt. of $C_{20}$ and $C_{22}$ acids in the colostral fats, and these acids decrease while the $C_{12}$ and $C_{14}$ acids increase as the postpartum period lengthens.

THE ACTION OF CEREAL FATS AND FREE FAT ACIDS ON THE BAKING CAPACITY OF FLOUR WITH SPECIAL REFERENCE TO STORAGE. H. Kühl. *Mehl u. Brot 41,* 297-8 (1941). By addn. of fat the gluten was weakened, lost its elasticity; by addn. of fat acids it was made firmer; with a small amt. of fat acid there was an increase in elasticity. The same properties were manifested by stored flour. Larger amts. on the other hand impaired the quality of the gluten. (*Chem. Abs.*)

ESSENTIAL FATTY ACIDS AND LIPOTROPIC ACTION OF INOSITOL. J. M. R. Beveridge. *Science 99,* 539-40 (1944).

STUDIES ON THE SOURCE OF SERUM PHOSPHATASE. THE NATURE OF THE INCREASED SERUM PHOSPHATASE IN RATS AFTER FAT FEEDING. B. S. Gould. *Arch. Biochem. 4,* 175-81 (1944). Prolonged feeding of fat to rats results in an increase in the serum phosphatase to extremely high levels. The increase in serum phosphatase after feeding and the decrease after fasting are due to a quant. alteration in the enzyme rather than to the action of an inhibiting or activating agent. The increased serum phosphatase does not appear to be of bone or kidney origin but may be of intestinal origin.

THE RELATION OF THE DIET TO COMPOSITION OF TISSUE PHOSPHOLIPIDS. IV. ACTION OF CHOLINE AND CHOLINE PRECURSORS IN WEANLING RATS. W. H. Fishman and C. Artom. *J. Biol. Chem. 154,* 109-15 (1944). When weanling rats are placed on an exptl. diet, values for lecithins are found to be lower than normal and a fat infiltration occurs in the liver. These changes are prevented to a considerable extent by the administration of choline. The relative ability of various suggested choline precursors to substitute for choline in these effects has been studied. The substances tested were ethanolamine, *dl*-methionine, *dl*-serine and glycine and some of their combinations. With none of them could the action of choline be duplicated although ethanolamine, alone or together with methionine, was effective to a certain extent. V. THE

ACTION OF CHOLINE, VITAMINS, AMINO ACIDS AND THEIR COMBINATIONS IN TWO-MONTH-OLD RATS. *Ibid.* 117-27. In rats 2 to 3 months old maintained on an exptl. diet, the supplementation after 7 days with choline, either alone or in combination with various substances (vitamins B, E, K, amino acids and other nitrogenous compds.), did not reverse the changes in liver phospholipids induced by the unsupplemented diet. On the other hand, when choline supplementation was initiated immediately, values for liver lecithins were found which were significantly higher than in the corresponding controls, although lower than normal.

## PATENTS

VEGETABLE OIL REFINING. P. D. Boone. *U. S. 2,351,184.* In a continuous process for refining a vegetable oil contg. gums in which a sufficiently high temp. of the aq. oil mixt. is employed to coagulate the gums, there are the steps of mixing an aq. liquid with the oil to secure a mixt. having a degree of acidity substantially of the pH numerical values 3-5, cooling the advancing stream and decreasing the agitation of the liquid and then submitting the mixt. to a centrifugal sepn. in order to continuously sep. purified oil from the aq. medium.

DEODORIZED OIL. R. H. Neal (Best Foods, Inc.). *U. S. 2,351,832.* A method for deodorizing an alkali refined fatty oil comprises passing dry steam through the oil while maintained at a temp. within the range of about 250 to 350° under an abs. pressure of less than 20 mm. of Hg to remove about 30 to 60% of the unsaponifiable matter in the oil.

TREATING FATTY ACIDS. A. H. Zeigler, D. V. Stingley and J. M. Kiefer (Armour and Co.). *U. S. 2,351,249.* This is a system of fractionating fat acids by crystn. followed by distn.

COMPOSITION CONTAINING ANTIOXIDANT. S. Shappirio. *U. S. 2,352,229.* Compds. formed by chemically combining fat acids and betaine are used as antioxidants.

RECOVERY OF FATTY SUBSTANCES BY FROTH FLOTATION. R. B. Booth and A. M. Webb (Chemical Construction Corp.). *U. S. 2,352,365.* Wool washing liquors are treated with acid to liberate the grease and then the liquors are treated with a petr. distillate to concentrate the grease by froth formation.

METHOD OF TREATING CASTOR AND SIMILAR OILS. H. S. Miller (Air Reduction Co., Inc.). *U. S. 2,351,444.* The method of increasing the I value of non-drying vegetable oils having at least 1 OH group and at least 1 unsatd. C linkage comprises heating the oil with a catalyst consisting of a gel composed of silica and an oxide of 1 of a group of elements consisting of Al and Th.

COATING COMPOSITION AND AZO PIGMENT DYESTUFF. G. M. O'Neal (Sherwin-Williams Co.). *U. S. 2,350,520-6.* The azo pigments for printing inks, paints, enamels, etc. are incorporated into the coating material with water insol. soaps of rosin and fat acids.

EMULSION. A. L. Wilson (Carbide and Carbon Chemicals Corp.). *U. S. 2,349,326.* A self-lustering aq. wax compn. which forms a substantially soap-free coating comprises a wax-in-water emulsion having therein the loose-bond reaction product of morpholine and a high mol. wt. fat acid as the emulsifying agent.

PROCESS FOR THE SEPARATION OF THE CONSTITUENTS OF TALL OIL. F. H. Gayer and C. E. Fawkes (Continental Research Corp.). *U. S. 2,348,971.* The process of sepg. tall oil fatty acid esters and resin acid soaps comprises adding thereto a neutral water sol. salt of an alkali metal, adjusting the aq. content to provide a resin acid concn. of from about 30 to about 5% and a salt concn. of from about 0.1 to about 0.4 *N*, satg. the mixt. with a hydrocarbon solvent, and solvent extg. the fatty acid esters from the resin acid soaps.

POLYMERIZATION PROCESS. J. H. Percy and J. Ross (Colgate-Palmolive-Peet Co.). *U. S. 2,341,239.* This invention relates to the prepn. of polycarboxylic acids and their derivs. and more particularly it relates to the prepn. of relatively pure polycarboxylic acids and relatively pure, more stable monocarboxylic acids from soaps of unsatd. aliphatic monocarboxylic acids.

GREASE. E. W. Adams, L. C. Brunstrum and G. W. Flint (Standard Oil Co.). *U. S. 2,341,134.* A stable, substantially anhyd. stabilizer-free Ca soap grease characterized by its resistance to sepn. and breakdown, contg. petroleum oil, soda soap and a Ca soap of hydrogenated fish oil fatty acid pitch.

COMPOSITION FOR LUBRICATING AND SOFTENING TEXTILE FIBERS. M. J. Kelley and E. A. Robinson (National Oil Products Co.). *U. S. 2,340,881.* The compn. of matter comprises an amide which is the condensation product of a hydroxy-alkylated polyamine with a glyceride contg. only substantially satd. non-hydroxylated fatty radicals.

LUBRICATING OIL. S. Musher (Musher Foundation, Inc.). *U. S. 2,339,796-8.* Soybean oil or lecithin and certain aromatic org. compds. are added to lubricating oils to decrease sludge formation and protect metals from corrosion.

# Abstracts

## Soaps

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PROS AND CONS OF TALL OIL IN SOAP. Andreas Treffler. *Soap 20,* No. 6, 29-30, 63, (1944). The refined tall oils on the market today contain about 50 per cent fatty acids, oleic and linoleic, 40 per cent rosin acids, abietic acids and other acids with a molecule above $C_{18}$, 10 per cent sterols such as phytosterol (about 30 carbon atoms), higher alcohols and other oxidized substances. The water solubility of soaps made from fatty acid molecules above $C_{18}$ decreases with the increase in carbon atoms in the chain, and the affinity for water-insoluble mineral oils, metallic soaps and hydrocarbons increase correspondingly. The addition of rosin to soap increases its affinity toward oil and unsaponifiable matter. The determination of the detergent value of rosin acid soaps by the water hardness titration tests and actual wash testing have proven that at least two-thirds of the fatty acid content should be a high grade fat of the $C_{18}$ series, and only one-third should consist of rosin acids. The detergent value of such formulas