ABSTRACTS

Oils and Fats

Edited by
W. F. BOLLENS and R. E. KISTLER

Thiocyanogen number. William J. Wiley and Augustus H. Gill. *Ind. Eng. Chem., Anal.* Ed. 6, 298 (1934).—It is recommended that the detn. of the thiocyanogen no. be made with a 0.4-g. sample and 50 c.c. of thiocyanogen soln. because the accuracy of the detn. with ½ these amts. is much less than that of the I no. when 25 c.c. of soln. and 0.2 g. are used.
E. SCHERUBEL.

Silica black as a nickel carrier in oil hydrogenation. Loring R. Williams and C. A. Jacobson. *Ind. Eng. Chem.* 26, 800-2 (1934).—The fine grade of silica black is 6.4% more efficient than diatomite as a support for Ni in a 5-hr. hydrogenation of cottonseed oil at atm. pressure. With both catalyst supports of the same fineness, and contg. about the same amt. of Ni, the silica black support holds about 30% more Ni in the reduced form, in line with Sabatier's theory that it is the reduced form of Ni which is the active catalyst. Hydrogenated oils filter faster and clearer from the silica black support than from diatomite. E. M. SYMMES.

Examination of refining losses. E. I. Better and J. Sinskin. *Allgem. Oel-u. Fett-Ztg.* 31, 193-6 (1934).—Working with peanut oil- and other soapstock, B. and S. could not confirm Wittka's findings (*C. A.* 27, 1534) that prolonged heating of a soapstock with acid should increase the free acids up to 6.7%. They did find, however, some free acids in the unsaponified matter of soapstock, by the Spitz and Hönig method; they attribute these free acids to the hydrolytic action of the soap in the original soapstock upon its neutral oil, forming mono- or diglycerides. When these free acids are subtracted from the total acids found by the usual titration of the acidified and boiled soapstock, the discrepancies between lab. tests and actual factory losses largely disappear. P. ESCHER.

Theoretical problems in the production of vegetable oils. A. M. Goldovskii. *Trudui NIRMMI,* No. 1, 64 pp. (1933).—The theoretical aspect of producing max. yields of good oil from seeds are discussed in the light of the colloidal structure of oil-seed protoplasm. Oil-droplet size ranges from 0.3 to 0.4 in soy beans to 2.0-2.5 in castor beans. Chem. combination between fats and proteins in seeds is improbable, but adsorption compds. may influence oil yields. Prolonged dry storage causes colloidal changes in seeds which also affect oil sepn. Protoplasm structure is sensitive to *p*H changes, as shown by data for flax seed, soy beans, black and white mustard seed and sunflower seed. Microscopic examn. and other evidences show enormous surface energy in crushed seeds (seed meal), with such a capacity for H_2O absorption that competition for water is an influential factor in sepg. the oil from the meal. The displacement of oil by water is intimately connected with surface activity in the meal and with the response of intracellular contents to H_2O in whole cells. The principal heat treatments for oil seeds (roasting and thermal denaturing of proteins) must also be duly considered in com. production of seed oils. The color changes in roasted seed meal are external evidence of structural and chem. changes which affect both yield and quality of oil. The usual roasting practice is compared with the Ilin and the Skionin methods; the latter provides the first means for reconciling inconsistencies between H_2O absorption and sound practice in heat treatment. The use of steam for thermal denaturing of seed proteins is discussed in detail, in comparison with dry-heat methods. The dual effect of steam (moisture and heat) is the major factor in its use for denaturing.
JULIAN F. SMITH.

Tallow substitute from vegetable oils. M. S. Patel and B. S. Kanvinde. Bombay Presidency Dept. Industries, *Bull.* 8, 8 pp. (1934).—A substitute for tallow, suitable for *sizing textiles,* was prepd. from a mixt. of peanut oil 80, cocoanut oil 15 and castor oil 5%. The mixt. was purified by removing the free fatty acids by neutralization and drying the alkali-free washed oil *in vacuo.* The purified mixt. was hydrogenated, with finely divided Ni as catalyst, until the product had a m. p. of about 50°. The characteristics of the material thus obtained were: I value 38.9, sapon. value 195.7, m. p. 49.5°, mixed fatty acids 91.7%, neutralization value of mixed fatty acids 198.9, m. p. of mixed fatty acids 49.5° and I value of mixed fatty acids 41.0; the product was white, homogeneous granular and odorless. The characteristics were very similar to those of animal tallow. Data are given on the compns. of various vegetable tallows marketed in India. K. D. JACOB.

Influence of storage of soy beans on the yield and speed of extraction of oil and phosphatides. G. Bredemann and H. Kummer. *Fettchem. Umschau* 41, 81-5 (1934).—A series of benzine extns. of soy bean oil with variations in the storage time of the beans, their H_2O content and the duration of extn. yielded the following results: Benzine extn. of air-dried ground bean meal decreases the amt. of phosphatides with increasing drying time and with elevation of temp. Storage in a moist and warm hothouse increased the yield of pure oil and decreased the phosphatides; with storage in a cooler, the yield of pure oil and of phosphatides increased slightly. Increasing moisture content in the goods increased the yield, especially of the phosphatides. It is assumed that the free oil within the cell dissolves the free phosphatides which are readily extd., but that an addnl. amt. of oil and of phosphatides is present in a more or less combined form, which dissolves only on prolonged extn. P. ESCHER.

The use of kerosene in the determination of free acids in oils and fats. F. Wittka. *Allgem. Oel-u. Fett-Ztg.* 31, 197-8 (1934).—The detn. of free acids in neutral alc. yields satisfactory results for factory control, but for more accurate detns. the addn. of Et_2O to the alc. soln. is necessary. On account of the high cost of the latter in India, W. adds kerosene in place of Et_2O and obtains accurate results. P. ESCHER.

The Iljin process for steaming linseed before pressing. R. Heublyum. *Fettchem. Umschau* 41, 53-7 (1934).—H. gives directions for the proper degree of crushing the seed, the temp. and the amt. of steam required for properly moistening the crushed seed so as to liberate the oil and obtain the greatest possbile vol. in the first pressing. Analytical data regarding percentage of oil and H_2O in the seed are given for the various stages during the process. P. ESCHER.

The Brazilian babassu palm and the babassu-kernel oil. R. Lüde. *Fettchem. Umschau* 41, 51-3 (1934).—The 6-10 m. high babassu palms form forests along the Amazon River; there are 400 million trees in Picuhy state, producing fruit throughout the year. Each fruit bundle, sometimes 2 m. long, carries 200-600 nuts with a total wt. of 80-200 g. when dry. A pericarp surrounds the hard shell, inside of which are 2-6 finger-like kernels, contg. fat 67-9, H_2O 5-13, N-free ext. 13-14, crude fiber 3-6, ash 1-2 and protein 2-7%. The fat is better than cocoanut oil, contains little free fatty acid and is of light color. The refined and bleached oil has a cocoanut oil flavor which disappears on deodorizing; hydrogenation increases its consistency. The consts. are d_{15} 0.924, sapon. no. 249, I no. 16–16.6, viscosity (°E, 50°) = 10, $n^{40}D$ 1.450, m. p. 26°, solidifying p. 22°. The press cake is good fodder and contains H_2O 9-10, crude protein 20-3, fat 4-16, N-free ext. 38-42, crude fiber 15-18 and ash 4-6%. P. ESCHER.

Investigations concerning the value of various methods for determining fatty acids. O. Hagen. *Seifensieder-Ztg.* 61, 397-9 (1934).—The Et_2O-extn. method furnishes the highest and most reliable results. Krüger's wax-cake method (*Chem.-Ztg.* 1906, 123) is rapid (2-3 hrs.), but the results lie 0.8% below the ether method. The volumetric method with Lüring's fatty acid buret may be 2.1% lower than the ether method, as a result of the soly. of some acids in hot H_2O or of a temp. variation during buret reading. P. ESCHER.

Comparative study by fractional crystallization of the fatty acids of lard, of horse fat and of low-titer tallow. G. Wolff. *Chimie & industrie* Special No., 885-8 (April, 1934).—Fractional crystn. of the acids from cold aq. EtOH solns. affords a simple and convenient method for the approx. sepn. of solid and liquid fatty acids, which may be useful for differentiating between fats having very similar characteristics. In carrying out such crystns. it is extremely important to avoid all traces of Ca soaps. A. PAPINEAU-COUTURE.

Action of ultra-violet rays on vegetable oils. Luigi Francesconi and Leonardo Pinoncelli. *Ann. chim. applicata* 24, 242-6 (1934).—Olive oil, peanut, sesame, and colza oils are not affected by ultra-violet light (Wood light) in the presence of inert gases such as CO_2. However, they are oxidized in the presence of air, as proven by: increase in density, decrease in I no., from the oxidation of the double bonds, and decolorization of the oils; the fluorescence also changes from yellow to deep blue. A. W. CONTIERI.

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