# ABSTRACTS

## Oils and Fats

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

**Russian soy-bean oil.** S. Yusnkevich. *Fettchem. Umschau.* 40, 197-200 (1933).—An extensive table shows the consts. and compns. of 13 carefully prepd. soy-bean oils from all parts of the Soviet Union, mostly of the Kruschula type of soy-bean between 41° and 53° N. Latitude and from 36° to 132° E. Longitude. The oils show a fairly const. linoleic acid content of 50%, but the northern country produces oils with a greater percentage of linolenic and a lesser percentage of oleic acid, while southern latitudes produce oil with small amts. of linolenic acid and larger amts. of oleic acid. In general the consts. agree with published values, except that some of the northern samples exceed the values for I no., hexabromide no. and thiocyanate no. Limits are: satd. acids 11.22-20.55, oleic acid 18-33-32.62, linoleic acid 41-90-56-27, linolenic acid ($\alpha$ — $\beta$) 0.46-12.49, $\alpha$ linolenic acid 0.0-3.71%.

P. Escher.

**Hardening Fats Without Hydrogen.** Dr. J. Davidsohn. *Amer. Essential Oil Record,* Vol. 24, No. 6, page 220, June, 1933.—The capillary activity and detergent power of soaps prepared from hardened fish oils are very poor. This is mainly due to the presence of high percentages of solid higher fatty acids as behenic or erucic. It has also been shown that the absorbability of soap on various surfaces increases in ascending order of the homologous series.

High capillary activities are observed in the region of C12-C18 soaps and that the activity decreases greatly with the soaps above C-18. The detergent activity of soap runs generally parallel with capillary activity and is very high when the surface tension is lowest. The optimum concentration of soap for the detergent effect is generally 0.2 to 0.5%, which is also that used in common laundry practice.

The mechanism of detergent action of soap may be pictured as follows: Soap, principally owing to its high wetting and absorptive properties and electric peptizing power, was formed both on the fabric of finely peptized dirt particles and absorbed films. Fabric-dirt plus soap equals fabric-soap plus dirt-soap.

**Dry cleaning and textile scouring.** *The Industrial Chemist,* Vol. IX, No. 107, page 448, December, 1933.—Benzene, which was introduced as a dry cleaning agent in the middle of the nineteenth century, as well as petroleum benzene, which came into vogue rather later, are both being rapidly superseded by non-inflammable solvents. Apart from the fact that the chlorhydrocarbons are more powerful solvents than the petroleum of aromatic solvents, and as such are capable of dissolving many substances other than those of a greasy nature, their greatest advantage over such dry cleaning agents as petroleum or white spirit is that arising from their non-inflammability, in both liquid and vapor states. The risk of fire when white spirit is used must either enter at least during the drying-out phase, whereas the chlorhydrocarbons could actually act as fire extinguishers. Further, careful measurements before and after cleaning have confirmed that normal garments do not shrink, nor is the tensile strength of natural and artificial textiles (including acetate silks) impaired by dry cleaning with trichlorethylene. The high volatility of this solvent, combined with its purity as at present manufactured, ensures its complete and easy removal from articles being cleaned, and the absence of any after-smell.

It might be mentioned, in connection with the dry cleaning of silks, that "Celanese" has been found to be unimpaired even after 36 hours' immersion in trichlorethylene. Dry cleaning plants are now obtainable which are especially designed for use in this solvent.

**Oleic acid soaps.** *Perfumery and Essential Oil Record,* Vol. 25, No. 1, page 30, January, 1934.—The fact that oleic acid is capable of existing in a variety of forms, known chemically as "isomers" is, of course, well known, and reference has been made in these columns from time to time to the important part played by the so-called iso-oleic acids, which are formed in the hydrogenation of oil and the distillation of oleine, in determining the properties of these products. In addition to these artificially produced isomeric oleic acids, there are also one or two which occur naturally, among these being petroselic or petroselenic acid, which was found by Tsujimoto to be the chief fatty acid of nigaki oil, the oil obtained from Picrasma quassioides. Mikumo ("Journ. Soc. Chem. Ind.," Japan, 1933, 632B.) has recently examined this acid as a soap-making material, in comparison with ordinary oleic acid and elaidic acid. The petroselic acid used for the experiments at 29.7-30.2°C., and had a neutralization value of 199 and iodine value of 87.8. The viscosities of fresh aqueous solutions of sodium petroselate and oleate at 70°C. for concentrations of 0.1 to 1.0 percent are practically the same. The surface tensions of the petrose late solutions at 20°, 45° and 60°C. are smaller than those of the oleate, but greater than those of the elaidate. Tested with titanium oxide sodium petroselate has greater suspending power than the oleate, the maximum being obtained in each case with a 0.25 percent solution. It is concluded that petroselic acid yields a soap, if anything, rather better than sodium oleate in detergent properties.

**Soap-making fatty acids.** *Perfumery and Essential Oil Record,* Vol. 25, No. 1, page 31, January, 1934.—We referred last October to the importance of the Twitchell process of fat-splitting, both in America and on the Continent. This process has been very fully investigated in Japan by Nishizawa and Tominaya ("Journ. Soc. Chem. Ind.," Japan, 1933, 681), who have prepared Twitchell's reagents from naphthalene, benzol, or phenol, and compared their fat-splitting qualities in the presence of hydrochloric sulphuric and oxalic acids. The benzol reagent is found to have the lowest hydrolytic power, the naphthalene reagent being the strongest when the amount of added acid is small, but for larger amounts of acid, the phenol reagent is the strongest. Sodium sulphate and sodium chloride both retard hydrolysis, the sulphate more so than the chloride. The presence of glycerol is also harmful of hydrolysis. It is concluded that when purified, the phenol and naphthalene reagents are superior in hydrolytic activity to the Pfeilring reagent, which is prepared by sulphonation of castor oil and naphthalene.

**Disinfectant toilet soap.** *Oil, Paint and Drug Reporter,* Vol. 125, No. 6, page 10, February 5, 1934.—A disinfectant toilet soap, said to have fourteen times the disinfectant value of ordinary carbolic soap, contains the oil of a tree known as Melaleuca alternifolia, common to New South Wales. This oil contains from 50 to 60% of terpenes, of which cymene is said to be chiefly responsible for its high germicidal value. It has been employed for some time in surgery, in the form of a saponaceous 35% solution.

**A new saponification process.** *The Oil and Colour Trades Journal,* Vol. LXXXV, No. 1839, page 112, January 12, 1934.—Soap manufacturers are well aware of the trouble caused by steam, and in the case of saponification by carbonate, by carbon di-oxide in the soap boiling room. The vapors with the entrained fatty acids, etc., induce corrosion, and lead to costly replacements. Further, any carbon dioxide is totally lost. As the result of studies made on a large scale in Russia, and described by R. Heublum ("Les Matieres Grasses," 1933, p. 1019), these difficulties can be overcome by the use of covered boilers fitted with exhaust tubes. Such a practice is contrary to the views held by most soap technologists, but has been used in Russian factories at Moscow, Rostock and Krasnodar, etc. Wood lids 4-5 cms. thick, were fitted to soap pans holding 30-40 tons. The center of the lid carried an exhaust pipe 40-50 cms., at the bottom of which was a conical baffle protruding a little into the pan. The upper end of the exhaust was carried above the roof. To avoid excessive cooling of the soap charge during the night, the outlet pipe could be closed just above the lid by means of a valve. The lids were fitted also with suitable vents for feed pipes for charging in the raw materials, and a large opening for solids. A small hole was provided for observation purposes and taking samples. During working the entire vapor was effectively removed, and the humidity of the pan room was reduced to a minimum. The use of the lids also resulted in a shortening of the time required for saponification by 1½ hours, which, of course, represents an economy in steam.

As a blanket of water vapor remains over the soap mass, the formation of surface crusts is avoided. In addition to these advantages, any carbon dioxide in the exhaust can be led if necessary into glycerine liquors for the removal of lime therein.

The plan just described has been in operation since 1929 at Krasnodar, where there are six soap boilers each holding 130 tons, and since 1930 at Moscow, where there are six boilers each of 200 tons capacity.

COURTESY CHEMICAL ABSTRACTS.