ABSTRACTS

Soaps

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Soap Industry in 1933. *Perfumery and Essential Oil Record,* Vol. 24, No. 12, page 434, December 30, 1933.—A novel method of producing toilet soaps (British Patent 380,820) has been introduced in the U. S. plants of Lever Brothers. The process consists in substituting for the ordinary milling operation, the repeated passage of the soap in a plastic condition through a series of wire gauze screens under comparatively high pressure and by this method of homogenizing soap, all danger of gritty soap due to over-dried particles is obviated, and a uniform product assured.

For toilet soaps water rollers are now most generally employed for cooling the soap, and a further development of this principle has been the introduction of film drying on heated rollers.

Several investigations on the subject of soap "builders" have been published, all indicating the superiority of sodium metasilicate over most other soap builders. Practical laundry tests carried out by O. M. Morgan in Canada have shown that a concentration of .008% caustic soda in conjunction with soap gives even better detergent results than sodium metasilicate. A new compound of sodium tri-phosphate and soap has been patented by Frost and Grasselli Chemical Company (U. S. Patent 1,885,905), and the Mellon Institute of Industrial Research has recently published a report on the use of a new phosphate in laundering which has the property of converting lime soap into active soda soap.

This year has seen an attempt to introduce a new standard for the sale of household soaps, brands having been placed on the market stamped "72% A. S.," the "A. S." representing anhydrous soap.

White toilet soaps are still popular and processes have appeared for the treatment of rosin with such substances as oxalic acid, or boric acid, or borax at high temperatures in order to obtain a product which when added to soap will not discolor it on aging.

To keep a liquid soap from gelatinizing, Schaeffer has patented (German Patent 560,984) addition to the soap of a mixture of turkey red oil, liquid paraffin and terpineol, and the Deutsche Hydrierwerke A. G. has patented for the preparation of liquid soaps (British Patent 382,516) the use of the lower fatty acids of the oleic series which may be obtained from sperm oil by fractional distillation.

New Cleansing Agents. *Soap,* Vol. IX, No. 12, page 61, December, 1933.—The patent literature shows that experimental work on the production of new cleansing, emulsifying and wetting agents, which are not soaps, is still being carried out on extensive scale by chemical companies, particularly in Germany. Further attention is being paid to naphthenic acid, a by-product of petroleum refining, which is being used as the starting point in making many of these soap substitutes. Thus, the I. G. Farbenindustrie A. G., Frankfurt-am-Main, has patented a process in German Patent No. 581,955 for the manufacture of cleansing agents and the like from amides of naphthenic acids as well as higher fatty acids and the resinic acids by reaction with aldehydes and aromatic hydrocarbons and further processing to render the products soluble in water.

Thus, for example, 55 parts of lauryl amide are mixed with 50 parts of formaldehyde (30 per cent), 0.5 part of potassium hydroxide solution (50 per cent concentration) and 300 parts of water. The mixture is agitated for half an hour at a temperature of 60 degrees C. It is agitated for another hour after the addition of 50 parts of phenol and 10 parts of concentrated solution of hydrochloric acid. The viscous oil, obtained from this treatment, is an excellent emulsifier. It is mixed with 200 parts of sulfuric acid (monohydrate) at a temperature of 60 to 70° C., and after sulfonated mixture has been agitated for several hours, it is mixed with 200 parts of ice and slowly heated with agitation to a temperature of 70° C. After agitation is stopped, the sulfonate formed quickly separates in the state of a viscous oil over an aqueous solution of sulfuric acid. The latter is removed and the oily sulfuric acid is dissolved in water, neutralized and evaporated. A product is finally obtained which possesses high detergent powers both in hard and soft water and is resistant to the action of hot acids and alkalies.

Alkalinity of Soap and Stability. *The Oil and Color Trades Journal,* Vol. LXXXIV, No. 1837, page 1727, December 29, 1933.—A writer in "Seifen. Zeit." (1933, p. 473) says that during the storage of soap chips intended for toilet soap manufacture there is considerable decrease in free alkali present due to absorption of CO_2. The removal of caustic alkali gives the soap a tendency to darken in color and turn rancid. A very good idea as to the keeping qualities of the soap can be obtained by determining the free alkali during early weeks of storing the chips or dried soap. Should this show a big decline, it is probable that the batch will have poor keeping properties. Although entire reliance cannot be placed on alkali adjustment to prevent rancidity, the author suggests that if the fitted soap contains about 0.10 per cent free alkali, by the time it is in its final manufactured form, this will drop to 0.02 per cent and with this amount present the chances are that its keeping properties over a long period will be good.

Effect of Hardened Fish Oil in Soap. *The Oil and Color Trades Journal,* Vol. LXXXIV, No. 1837, page 1727, December 29, 1933.—As hardened Japanese fish oil is becoming an important addition to the range of soap-making oils and fats, Dr. G. Knigge ("Seifen. Zeitung," 1933, page 255) has studied the effect of its presence in soaps on lathering properties. Pure experimental hardened fish oil-rosin-coconut oil-tallow and groundnut oil fatty acids soap were prepared containing 10 per cent, 20 per cent and 30 per cent of the hardened fish oil. Lathering properties at 20° C. and 50° C. were determined in Stiepel and Dorner bottles, using solutions containing 0.3 gm. per 100 c.c of fatty acids. It is shown that at 20° C. lathering properties decrease with increase in the content of hardened fish oil. At 50° C., however, a soap containing 20 per cent of hardened fish oil (on total fat charge) has greater lathering properties than soaps containing either 10 per cent or 30 per cent. Laundry soaps, usually employed at relatively high temperature, could therefore contain 20 per cent of hardened fish oil, while for other purposes 10 per cent would be permissible.

Homogenizing Emulsions. *The Oil and Color Trades Journal,* Vol. LXXXIV, No. 1837, page 1731, December 29, 1933.—Parkes ("J. C. S.," 1933, p. 1458) finds that if a 90 per cent "emulsion" of benzene in soap solution (in which the globules of oil are non-uniform in size) is passed through a homogenizer, an entirely new emulsion is formed. The emulsion delivered to the machine was broken up into clots and gave an excess of benzene. The former united together to give an emulsion containing 72 per cent by volume of the disperse phase, which was of uniform particle diameter. This is in agreement with Ostwald's phase-volume theory, and contrary to a suggestion by Bancroft ("J. Physical Chem.," 1912, p. 179). To increase the oil content of such an emulsion was a very difficult matter.

Cod Liver Oil Soap (Sodium Morrhuate). *The Perfumery and Essential Oil Record,* Vol. 24, No. 11, page 398, November, 1933.—The total fatty acids from cod liver oil are known commercially as morrhuic acid, and as long ago as 1919 Sir Leonard Rogers drew attention to the value of the sodium salts of these acids, termed *sodium morrhuate,* in the treatment of tuberculosis, the compound being believed to act on the coating of acid-fast bacteria. Subsequently sodium morrhuate was also recommended for the treatment of leprosy, and at the present time its use has been extended to cases of varicosity, solutions of the soap being marketed in ampoules at concentrations of 5 and 10 per cent.

It is necessary in the preparation of the morrhuate to separate both the unsaponifiable matter and the glycerin liberated by saponification, and at the time of its introduction, the unsaponifiable matter, amounting in a good cod liver oil 0.9 to 1.3 per cent, was a practically worthless by-product. Since then, however, the value of this unsaponifiable matter as a source of vitamin-A has become well recognized, and many firms are engaged in separating it from the cod liver oil soaps on the commercial scale for the production of vitamin-A concentrates, so that the positions have become reversed, and the soap is now the by-product in the preparation of the unsaponifiable matter.

Various processes have been patented for the purpose, involving the production of barium, calcium, potassium and sodium soaps, and the pharmaceutical preparation, sodium morrhuate, may be readily obtained from any of these by first treating the soap with sufficient mineral acid to decompose it, thoroughly washing the liberated fatty acids with distilled water, and then exactly neutralizing the fatty acids with the calculated quantity of alcoholic hydroxide and evaporating off the alcohol. It is, of course, very important, in view of its use for injection that the product should be perfectly neutral, and also that it should be completely sterilized before sealing up the ampoules.

The great advance that has been made during the last few years in our knowledge of vitamin A and its chemistry were very evident in a discussion at this month's meeting of the Society of Public Analysts on "The Chemical Tests for Vitamins," when the usefulness of the determination of "blue value" by the antimony chloride test, was amply demonstrated. In the examination of cod liver oils for vitamin-A content it appears that the test must be carried out after saponification of the oil, as substances are present in the oil which interfere with the production of the blue color, but these are removed by hydrolysis.