ABSTRACTS

Theory and practice of steam deodorisation of Saponifiable Oils. W. Brash, M.SC., A.R.C.S. (Lond.), A.I.C. **Journal of the Society of Chemical Industry,** March 26, 1926.

This is a carefully written article, going into the mathematics of a distillation of the volatile substances which give oils and fats their special flavors. Formulas are given showing the amount of steam required, pressures, temperatures, volumes, etc. Equations are worked out for the size of apparatus and almost every imaginable detail connected with the operation. The author states that the amount of odoriferous matter varies in different oils; it is undoubtedly low, and in the amount of one-tenth to five-tenths per cent. It gives the following summary of this paper which is too long to abstract:

(1) The pressure of the steam entering the deodoriser is approximately half the pressure of the steam supply.

(2) The temperature of the entering steam is given by the equation $T_1 = 0.87T_0$, and T_1 should be equal to T_2.

(3) The relative dimensions of the apparatus and the form of the outlet pipe may be calculated from the equations given in the paper.

(4) The concentration of the volatile matter at any moment is given by $X = ae - Kkt$.

(5) To shorten the time of deodorisation the most important factors are low pressure in the deodoriser, and high temperature of the oil.

Fat from spent (hydrogenation) catalyst. C. Stiepel. **Seifensieder-Ztg.,** 1925, **52,** 967-968; **Chem. Zentr.,** 1926, I., 1486. Considerable quantities (up to 1.8 per cent) of a brownish viscous fatty mass were obtained when catalyst residues were saponified to recover the fat in them. The product thus obtained consisted of oxidised fatty acids with a low iodine value and high saponification value. As no such compounds were obtained in the raw materials of the process, they must have been formed in the hydrogenation process. According to Normann, oxygen present in the hydrogen used could have this effect.

Composition of Olive Oil. K. Taufel and J. G. Sarria. **Anal. Fis. Quim.,** 1926, **24,** 25-40. The following data were obtained for a Spanish olive oil; $d^{15.5}$ 0-914, oleorefractometer reading at 25° 61-9 acid value, 0-62, saponif. value 192-6, iodine value (Winkler's method) 82-7, Reichert-Meissl value 0.13, Hehner value 95. m.p. of fatty acids 28.2°. It contained stearic acid 2.27 per cent, palmitic acid 7.55 per cent, oleic acid 83.94, linoleic acid 0.51 per cent, glycerol (calc.) 4.44 per cent, and unsaponifiable matter 0.79 per cent. Triolein and a-palmitodiolein were isolated. Arachidic acid was absent.

Analysis of Soya-Bean Oil. H. Pfahler. **Chem. Unschau,** 1926, **33,** 65-70. A freshly prepared sample of soya-bean oil was found to have the following composition: linolenic acid 1.9 per cent, linoleic acid 29.2 per cent, isolinoleic acid (including a little isolinolenic acid) 24.3 per cent, oleic acid 30.8 per cent, stearic acid 7.0 per cent, palmitic acid 2.35 per cent, glyceryl residue (as C_3H_2) 3.88 per cent, and unsaponifiable matter 0.5 per cent. These numbers do not differ much from those of Baughman and Jamieson (B., 1923, 149 A), and yield a theoretical iodine value of 130, which is in close agreement with the value 132.4 obtained experimentally. To prepare linoleic acid the mixed fatty acids were brominated and the tetrabromide was separated and converted into the methyl ester of linoleic acid. The acid liberated from the ester had iodine value 172.4 (theoretical 181.4). This linoleic acid was again brominated; the resulting tetrabromide (m.p. 113°) corresponded to only 33 per cent of the original linoleic acid. It appears that in debrominating the bromide isomerisation of the acid takes place so that what is re-brominated is a mixture of isomeric linoleic acids leading to a solid bromide and to a liquid one.

Bromometric examination of fats. H. P. Kaufmann. **Z. Unters. Lebensm.,** 1926, **51,** 3-14; of B., 1925, 302. The activity of bromine in solution in various solvents is discussed and a 0.1 N-solution in absolute methyl alcohol saturated with wodium bromide is recommended for the determination of the iodine value of fats. Such a solution, probably due to the formation of sodium tribromide, is very stable and loses only 1 per cent of its active bromine in 56 days. It is almost odourless and can be measured with a pipette without danger. The determination is simply and quickly performed with an accuracy comparing favorably with the Hanus method.

Rapid method of determining the iodine value with iodine and alcohol. W. Austen. **Pharm. Zentr.,** 1926, **67,** 209-210. In carrying out the method of Margosches, Hinner, and Friedmann (B., 1924, 639) it is of importance that 200 cc. of water be added to the fat solution, and that the minimum time of contact be 6 mon. Observing these precautions, lard, beef tallow, and linseed oil gave iodine values of 58, 35.5, and 172.8 against the Hubl values of 58, 36.4, and 173.4 respectively.

New value for milk-fat. J. Kuhlmann and J. Grossfeld. **Z. Unters. Lebensm.,** 1926, **51,** 31-42. The "Butyric acid value" is a modification of the Reichert-Meissl value and is a measure of the water-soluble volatile fatty acids of lower molecular weight than caprylic acid (coconut oil fatty acids). 5 g. of fat are saponified with 3 c.c. of potassium hydroxide solution (75 per cent) and 10 c.c. of glycerol, and the soap solution is diluted with 100 c.c. of water at 100°. The mixture is cooled to 20° and 50 c.c. of dilute sulphuric acid (2.5 per cent), 15 g. of anhydrous sodium sulphate, 10 c.c. of coconut oil soap solution (100 g. of coconut oil saponified with 100 g. of glycerol and 40 c.c. of 75 per cent potassium hydroxide solution and the solution diluted to 1 litre with water), and about 0.1 g. of kieselguhr, are added. After shaking for 10 min, the liquid is filtered and 125 c.c. of the filtrate are diluted with 50 c.c. of water and distilled with the usual precautions. The first 110 c.c. of the distillate, which contain about 96 per cent of the total butyric acid, are directly titrated with 0.1 N-alkali and from the result is subtracted that given by a blank without fat. The difference multiplied by 1.4, is the butyric acid value. The value for coconut-oil is 0.9 and for butter-fat 20, this latter being directly proportional to the Reichert-Meissl value. By the application of small corrections for coconut oil, the amount of milk-fat in admixture with other fats can be calculated from the butyric acid value and the saponification value to within an accuracy of 1 per cent.