and Rutgers that the amount of glycerol taken for analysis up to 0.8 gram is without effect upon apparent glycerol content. There appears to be a distinct increase in glycerol percentage with increase in the size of sample taken, up to the prescribed limit, so the effect of concentration cannot be neglected. Formula 30, 3A and absolute ethyl alcohols were tried with about equal success. Isopropanol appears to be unsuitable due to the insufficient solubility of NaOH in this solvent. The accuracy of glycerin analyses upon refined oils appears to be enhanced by an increase in the water content of the reaction mixture.

Since the Bertram Method was published in June of this year and was not available in this country until July, it is obvious that such tests as have been made are only preliminary and justify no final opinion of its value as an analytical method for glycerin. The consensus of opinion of your committee seems to favor further work with this method which has such advantages of speed and ease of operation as commend it to the consideration of every chemist engaged in glycerin analysis.

The Glycerin Analysis Committee has had under consideration for several years the Methods of Crude Glycerin Analysis recommended by the International Committee. Our efforts to improve the absolute accuracy of the acetin method have been unsuccessful. Since these methods are in universal use commercially and have stood the test of over a quarter century, your committee has no hesitation in recommending their adoption as tentative methods of the American Oil Chemists' Society. These methods are to be found in the Journal of Industrial and Engineering Chemistry, Vol. 3, pp. 682-86 (Sept. 1911).

A. O. C. S. GLYCERIN
ANALYSIS COMMITTEE
(1938-1939)
Ralph W. Bailey,
H. C. Bennett,
W. H. Burkhart,
J. E. Doherty,
W. J. Reese,
M. L. Sheely,
B. S. Van Zile,
C. C. Zeigler,
J. T. R. Andrews
(Chairman)

---

(1) Bullenheimer — Ber. 31, 1453 (1898).
(2) Bertram & Rutgers — Rec. trav. chim. 57, 681-87 (1938).
(3) Shaefer — I. & E. C., Anal. Ed. 9, 449 (1937).

ABSTRACTS

Oils and Fats

Edited by
M. M. PISKUR and RUTH LINDAHL

PROCESSING OF PARAFFIN CARBONIC ACIDS IN THE SOAP INDUSTRY. Cl. Bauschinger. *Fette u. Seifen 45,* 629-30 (1938).

THE COMPOSITION OF A FAT ACID MIXTURE OBTAINED BY THE OXIDATION OF SYNTHETIC PARAFFIN. E. Jantzen, W. Rheinheimer and W. Asche. *Fette u. Seifen 45,* 613-5 (1938). The fatty acids were prepd. from Fischer-Tropsch paraffin. The characteristics were: solidification point 26.2°C, color yellow, sapon. no. 247.25, acid no. 244.2, I no. 4.86, OH no. 3.7, oxy acid non-detectable, unsapon. .29%. The compn. calcd. from Me-ester fraction technic was: $C_8H_{16}O_2$ — 0.2, $C_9H_{18}O_2$ — 1.6, $C_{10}H_{20}O_2$ — 4.1, $C_{11}H_{22}O_2$ — 8.0, $C_{12}H_{24}O_2$ — 11.9, $C_{13}H_{26}O_2$ — 13.50, $C_{14}H_{28}O_2$ — 14.30, $C_{15}H_{30}O_2$ — 14.8, $C_{16}H_{32}O_2$ — 10.9, $C_{17}H_{34}O_2$ — 7.50 and over C_{17} — 13.20%.

THE CARBONYL NUMBER IN FAT ANALYSES. W. Leithe. *Fette u. Siefen 45* 615-6 (1938). Carbonyl groups occur in oiticica oil and synthetic fat acids that are prepd. by oxidation of paraffins. Method for light colored samples: A 0.5-2 g. sample is heated for 2-3 mins. with 20 cc. hydroxylamine soln. (4 g. hydroxylamin-HCl, 80 cc. water, 800 cc. 95% alc. are dissolved and 600 cc. N/2 alc-KOH are added and the soln. filtered). Methyl orange is added and the soln. is titrated with N/2 HCl. A blank detn. is made on 20 cc. of hydroxylamine soln. CO-No. =

$$\frac{(\text{cc N/2 HCl for blank-cc. N/2 HCl for sample})\ 28.1}{\text{wt. of sample}}$$

With highly colored samples the coloring matter is extd. with ether after the heat treatment; the ether ext. is washed with water; the water returned to the flask and titration and calcns. are made as described above. With pure compds. the results were close to the calcd. value. Oiticica oils gave CO-nos. between 105-115.

DETERMINATION OF THE CARBONYL NUMBER WITH SPECIAL CONSIDERATIONS TO ITS APPLICATION IN THE FAT FIELD. H. P. Kaufmann, S. Funke, and F. Y. Lin. *Fette u. Seifen 45,* 616-20 (1938). CO-no. can aid in the detn. of addns. of oiticica oils to other drying oils, detn. of ketonic constituents of essential oils, and detn. of licanic acid in oiticica oil. Together with other characteristics one can detn. the percentage compn. of a mixt. contg. licanic, eleostearic, linolenic, linoleic, oleic and satd. acids.

DETECTION OF HORSE FAT IN MIXTURES OF PORK, BEEF AND MUTTON FAT. Bruno Paschke. *Z. Untersuch. Lebensm. 76,* 476-8 (1938). Adulteration of fats with horse fat cannot be detected by the official methods. The author proposes a new method which depends on the amt. of linolenic acid present. The hexabromides found in fats were horse fat 41.2, pork fat 2.8, beef fat 3.0 and mutton fat 3.3 mg./g. The figures for the last three contg. 30% horse fat are 8 to 11. The addn. of 30% horse fat to pork, beef or mutton fat can be detected by detg. hexabromide no.

THE DETERMINATION OF THE UNSAPONIFIABLES. J. Grossfeld and K. Höll. *Z. Untersuch. Lebensm. 76,* 478-82 (1938). Methods for detn. of unsapond. matter in oils were investigated. By the usual methods 100% of added paraffins and about 27% of added cholesterol were separated. In order to increase the efficiency of cholesterol separation a new method is proposed. Briefly, after the sapon. with alcoholic-KOH the mixt. is dissolved in a fixed amt. of petroleum ether and the soap is removed by extn. with water. An aliquoted portion of the petroleum ether is evapd. in a tared container, dried and weighed. In tests, this method yielded detn. of 78% of the cholesterins and 100% of the paraffins.

THE OXIDATION PRODUCTS OF THE UNSATURATED ACIDS OF LINSEED OIL. L. C. A. Nunn and I. Smedley-

Maclean. *Biochem. J. 32,* 1974-81 (1938). Linseed oil was investigated by the alkaline permanganate method of Rollett. The yields of tetrahydroxy-acids from the linoleic acid present in the mixed linseed oil acids were only 28-32%; yields of 52-54% were obtained when pure linoleic acid was similarly oxidized. The yields of hexahydroxy-acids calcd. on the linolenic acid present in the mixed acids were 40-52%. Evidence of the existence of the γ-lactone of dihydroxy-(3:4)-decanedicarboxylic acid has been obtained.

Destruction of vitamin A by rancid fats. E. J. Lease, J. G. Lease, J. Weber and H. Steenbock. *J. Nutr. 16,* 571-83 (1938). Rancid fats were found to destroy pure carotene and vitamin A or precursors thereof as contained in halibut liver oil, egg yolk, or alfalfa. Ozonized fats and palmitic peroxide also destroyed vitamin A. Heating of rancid fats lowered both their capacity to destroy vitamin A and their peroxide value. The addition of ascorbic acid, hydroquinone, gallic acid and ethyl gallate to rancid fats as antioxidants did not prevent the destruction of vitamin A. Vitamin A was not destroyed when given to rats on an empty stomach even though they were being maintained on a ration rich in rancid fat.

The influence of hydrogenation and oxidation of fats upon their rate of absorption. M. H. Irwin, J. Weber, H. Steenbock and T. M. Godfrey. *Amer. J. Physiol. 124,* 300-803 (1938). The rate of absorption of fat was found to decrease as the melting point increased above body temp. Variations in m.p. below body temp. had no effect upon the rate of absorption. The rate of absorption of a hydrogenated fat was found to vary inversely with the degree of oxidation.

Tocopherols, vitamin E constituents and inhibitols of fat, their preparation and detection. H. Fiedler. *Fette u. Seifen 45,* 638-40 (1938). A review.

PATENTS

Process of obtaining vitamin-containing oils. F. H. Young and H. D. Robinson (to Abbott Labs.). U. S. 2,136,481. Fish livers are treated with alkali in amt. sufficient to liberate oil but insufficient to cause saponification; and the vitamin contg. oil is separated.

Modifying natural fats, oils and waxes. W. R. Eipper (to Indus. Chemical Res. Co. U. S. 2,137,667. A synthetic non-blooming chocolate contains an ester comprising hexa-hydric alc. derived from one of the saccharides completely esterified in mol. proportions with the fatty acid constituents of natural chocolate.

Hydrolysis of fats and oils. M. H. Ittner (Colgate-Palmolive-Peet Co.). U. S. 2,139,589. Fat is countercurrently flowed with water at 200° C. and 200 to 250 lbs. pressure. The amt. of water used is sufficient to that required for hydrolysis, that dissolved in fatty material and that required to wash out and remove the glycerine from the fatty material as aq. glycerin.

Method of reclaiming catalytic material. M. Raney. U. S. 2,139,602. Spent catalyst is ignited to destroy oil and oxidize the Ni; this is then mixed with borax, glass flux and Al powder in a crucible; a little Mg powder is added to serve as a fuse and the mixt. is ignited. Ni-Al alloy settles to the bottom while silica and borax glass can be removed from the top as the slag. The Ni-Al alloy yields active Ni catalyst on treatment with caustic.

Distilling and cracking of oils and fats. E. G. M. R. Lege. Brit. 485,123. Distn. is at 250 to 600° C. in presence of alkali salts. The distillate is similar to petroleum oil.

Compositions of matter. C. E. Linebarger and C. E. Linebarger, Jr. (to Chaslyn Co.). U. S. 2,133,300. Chaslyn balls, tablets, discs, etc., for hydrometric units which when placed in liquid will sink or swim according as the densities of the units are greater or less than that of the liquid under tests are prepd. by mixing hydrogenated castor oil and chlorinated naphthalene.

ABSTRACTS

Soaps

Edited by M. L. SHEELY

Naphthenic acid soaps. Herman Levinson and Arthur Menich. *Soap 14,* 12, 24 (1938). It is a well known fact that soaps in general possess little or no disinfectant value. The slight reduction in bacterial count which results from washing with stearate soaps for example, is chiefly traceable to the mechano-detergent property of the soap.

Naphthenic acid per se and its alkali soaps are distinguished by definite bactericidal and germicidal efficacy. This activity has been know for some thirty years. The relative potency of the naphthenic acid as compared with its alkali soaps, is difficult to define as the free acid seems more toxic on some bacteria than the soap, while the contrary condition may prevail with some other organisms. As Spalwing has demonstrated Staphylococci Aurea will be destroyed by a 1 per cent naphthenic acid emulsion in less than 30 minutes, which compares favorably with a 3 per cent phenol solution. The alkali naphthenates are of somewhat lower effect upon this particular germ but will prove even superior to the unreacted acid in the case of Coli Communis.

Pan charge and physical properties. Archibald Rayner. Soap, Perfumery & Cosmetics, *11,* 12,1086 (1938). Variation in the hardness of soaps may give rise to difficulties in stamping and cutting. A machine has been constructed for the purpose of measuring the hardness of soaps from individual fats. Soaps tested and hardness found were as follows:

Coconut	20	lbs.
Palm-kernel	15	lbs.
Tallow	3	lbs.
Olive oil foots	3	lbs.
Palm	5	lbs.
Peanut	1¼	lbs.
Cottonseed	1¾	lbs.
Hardened Whale oil	7	lbs.
Soya bean	1¼	lbs.