saturated fatty acids than when the latter are present only in relatively small amounts.

It was observed that where the mixtures contained large amounts of saturated acids, as in the case of cottonseed and hydrogenated cottonseed oils, the fractional crystallization of arachidic acid from a mixture of other solid fatty acids is affected by the amount and type of acids present. Holde and coworkers (10) have shown that the solid acids of peanut oil are composed of palmitic, stearic, arachidic, behenic, lignoceric and possibly cerotic acids and it is obvious that a variety of solid solutions and eutectics will result during the crystallization of such a complex and variable mixture of acids. The usual difficulties of fractional crystallization are certainly not lessened when the ratio of one or more of the components is greatly changed in either direction. In the present work it has been observed that where the yield of solid acids is low, as in the cases of mixtures of peanut oil with soybean oil, and of peanut oil with olive oil, the results are closer to the theoretical than in the case where the yield of solid acids is high.

Substantially similar results were recently reported by Pritzker and Jungkunz (12) who critically examined the methods for the determination of peanut oil in mixtures with other oils, fats and soaps. They concluded that ". . . satisfactory results were obtained by none of the methods." Pointing out the impossibility of obtaining even a reasonably pure "arachidic acid fraction" by one crystallization from 90 percent alcohol when appreciable quantities of other solid fatty acids were present, they suggested making repeated crystallizations from 90 percent alcohol until the acids obtained melted above 72°.

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Determination of Glycerol by the Pyridine-Acetylation Method

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In a comparatively recent paper Shaefer has described the determination of glycol in dilute solution by the removal of water or other low boiling solvent by distillation after addition of pyridine, and subsequent acetylation of the residue. (1) As Shaefer points out in his paper he was interested mainly in the determination of glycol. Using glycerol two preliminary experiments indicated that glycerol acetylated to the extent of 97.8 and 96.6%. On the basis of 6 runs on glycol the reaction was found to proceed to the extent of 97.9% and use of the latter factor is recommended in the determination of glycol.

During the past several years the present writers have run well over one hundred glycerol determinations by this method and have found it to be unusually practical and reliable. Possibly the most important single feature of the method and one which was perhaps insufficiently emphasized in the original paper, is the fact that it permits checking the dichromate method on dilute glycerol solutions (soaps, sweetwaters, soap lyes, etc.) by acetylation, a procedure which was formerly practical only on concentrated glycerol samples.

Before accepting the method for use in this laboratory a number of check runs were made to determine the accuracy of the procedure. A sample of C.P. glycerol assaying 98.83% glycerol on the basis of specific gravity determination and 98.26% glycerol by dichromate oxidation was determined ten times by the pyridine-acetylation method. The average glycerol value was 98.10 ± 0.11%. It is apparent that the pyridine acetylation method checks dichromate oxidation very closely and the new method therefore becomes extremely valuable as a means of checking oxidation values on dilute solutions of glycerol by acetylation.

Assuming the specific gravity determination to be the most accurate method of determining glycerol strength the factor representing the extent to which acetylation takes place when determining glycerol by the pyridine-acetylation method should be 0.993 and it is recommended that the latter value be employed in calculating analytical results when using this method.

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