



# FATS AND PROTEINS RESEARCH FOUNDATION, INC.

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"THE DIRECTOR'S DIGEST"

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## HIGHLIGHTS FROM MEETING OF THE AMERICAN OIL CHEMISTS' SOCIETY

This meeting, held October 2-5, 1966 in Philadelphia, was very well attended by scientists from industry, government and universities. More than 100 technical papers were given over a three day period at three concurrent sessions. The following resume of some of the reports given will be of interest.

### 1. Odor and Flavor

Several papers on the physiology of odor and flavor detection and methods for measuring odor and flavor emphasized the complexity of the subject and the difficulties involved in developing objective measurements for this important characteristic of fats and oils. Since highly purified fats are very bland, we are really concerned with the compounds that impart distinctive or undesirable odors to fats of various types. Through the use of very modern sophisticated equipment it has been possible to identify some of these compounds. For example, Dr. S. S. Chang and his Associates at Rutgers University have found that the distinctive odor of reverted soybean oil is due to the presence of an organic compound, 2-pentyl furan, which apparently is formed by the autoxidation of linoleic acid. Since linoleic acid is present in almost all vegetable and animal fats it is somewhat difficult to understand why the typical "reverted" flavor develops only in soybean oil.

### 2. Fat-Derived Detergents

Scientists at the Eastern Regional Research Laboratory, USDA, reported on their continuing studies of fat-derived detergents. These include alcohol sulfates, salts of alpha-sulfo acids and their esters, and soap. Built detergents containing tallow alcohol sulfates along with the alpha-sulfo esters had excellent solubility, foaming and detergent properties.

T. F. Rutledge and his Associates, Atlas Chemical Industries, reported that a new surfactant prepared from butadiene, urea and sulfuric acid (BUS) disperses hard water soap scum very effectively. Soap-BUS blends can be used for repeated washings of cloth without significant deposition of soap scum on the cloth, thus overcoming the major disadvantage of soap as a laundry detergent.

Drs. Osipow and Rosenblatt, Foster D. Snell, Inc., described their new micro-emulsion process for preparing sucrose-fatty acid esters. In this process, propylene glycol is used as the dispersing agent for the reaction. The authors believe that this new process will lead to greater commercialization of sucrose esters since it avoids two major problems of the original process: (1) recovery of the expensive dimethylformamide, the solvent used and (2) the need for reducing the content of a toxic solvent in the product to permissible levels.

3. New Fat-Derived Chemicals for Industrial Use

Researchers from the Eastern Regional Laboratory, USDA, described methods for the production of non-volatile branched chain fatty acid esters that show promise as high temperature lubricants. Thermal decomposition temperatures were higher and hydrolysis rates much slower than was the case for commercial dicarboxylic acid esters used as controls.

Dr. W. J. Sheppard, Battelle Memorial Institute, described the promising tests made with trichlorosilanated tallow (TCST) as a waterproofing agent for concrete. There was a great deal of interest in this report as evidenced by the large number of questions to Dr. Sheppard following his presentation. (You will recall that this development arose from research supported by FPRF at Battelle.)

It should be emphasized that all the research findings reported above show the technical feasibility of producing useful industrial compounds from fats. The commercialization of these findings depends primarily on the economics of production and distribution. To compete with existing products the fat-derived materials must either be cheaper or give superior performance or both. This in no way detracts from the real value of the research since it is the function of research to furnish information that will enable us to continue in business when it is no longer possible to compete with only our existing products and processes.