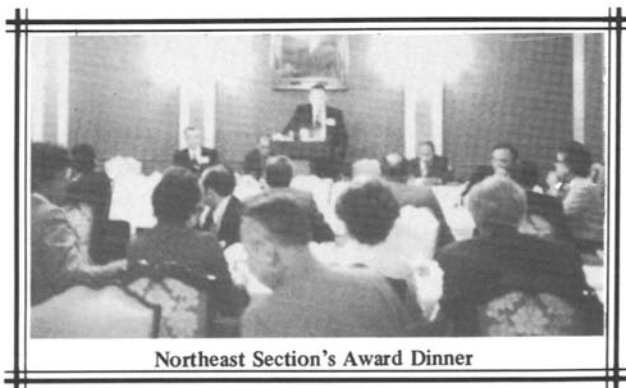
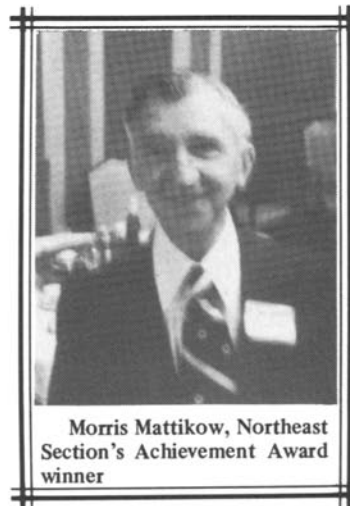


Mattikow receives Northeast Section's Achievement Award



Northeast Section's Award Dinner



Morris Mattikow, Northeast
Section's Achievement Award
winner

Morris Mattikow, consultant to the oil and fat processing industries and former director of research and chief chemist of Refining Unincorporated, was presented the Northeast Section's Achievement Award at the Section's Award Meeting in September.

Mattikow, a nationally known expert in the processing and refining of oils and fats, is the author of many patents and research papers in this area. One of his earliest studies led to a continuous refining method using a combination of soda ash and caustic for the refining of cottonseed oil which affected substantial savings in refining loss over the method previously in use.

In his presentation titled "Processes for Fatty Oils," he was concerned with the refining of fatty oils, emphasizing the role of the minor constituents in the crude oils. He pointed out, in these days of high prices for crude and refined oils, a great opportunity for dollar savings lies in the lowering of refining losses and costs. Oils and fats of commerce are mixtures of mixed triglycerides, glyceryl esters of fatty acids, mostly of C_{16} and C_{18} mol wt, and 0.3-3.0% of minor constituents. These minor constituents, together with the free fatty acids, must be removed to produce the refined oils of commerce. Chemically, the minor constituents are composed of phosphatides (0.5-2.75%) and unsaponifiables (0.5-1.5%) comprising sterols (0.14-1.4%), sterol glycosides (0.0-0.3%), tocopherols (0.1-0.2%), and hydrocarbons (0.2%).

Practically all of the emulsion problems and difficulties in the refining of crude oils can be attributed to the presence of gums which are mainly phosphatides and which occur in higher concentrations in solvent extracted oils. Currently, ca. 10.5 billion lb solvent extracted crude soy oil are produced in the U.S. With such large amounts of oil being produced, the dollar savings for even a modest decrease of 1/2% in refining loss becomes attractive.

Mattikow discussed current technology for degumming and refining of soy and other oils and included several methods for the removal of nonhydratable phosphatides

(Lipoid B). In determining refining loss of such oils as nondegummed crude soy and cottonseed oil, either the Wesson Loss Method or the Chromatograph Loss Method is used. The former is an alkali refining procedure, while the latter is a chromatographic process using activated alumina which invariably yields higher loss values in analyzing crude oils. For degummed soy and cottonseed oils, the results by either method are comparable.

The present day concern over pollution of the air, streams, and land has materially increased the problems associated with the usual refining methods. Techniques, such as stream refining and ammonium hydroxide refining, are being considered as relatively nonpolluting processes.

He reviewed the presence of trace components, such as metals, phytosterols (campesterol, stigmasterol, and β -sitosterols), and sterols in refined oil and the modern methods of trace analysis to detect their presence. Of particular interest, was his statement that cholesterol has been detected at the level of 1 mg/100 g in palm, coconut, and palm kernel oils and cocoa butter. While admiring the elegance of the analytical techniques in trace analysis, he cautioned that one must consider the practical implications of the findings.

A similar consideration must be given to the ultimate goal of refining of oils. If the purpose is to remove "impurities" and leave only triglycerides, is this really desirable in a food oil? Some "impurities," such as tocopherols and other substances, may be desirable in the diet.

On the question of how much an oil should be refined as to retained phosphorous content, Mattikow, in contrast to others, recommended a retained phosphorous content of ca. 0.5 ppm or less in the refined oil.

Mattikow was introduced by Robert Casparian, Carver Greenfield Corp., chairman of the Award Meeting. The program was under the direction of H.P. Gormley, Hoffmann La Roche, Inc., president of the Northeast Section.