A. O. C. S. Commentary

YOUR INDUSTRY--*a Look to the Future*

THE outlook for the future of the fat and oil industry can be somber or bright depending upon the point of view of the observer. From a strictly economic standpoint, the picture does not look too reassuring. Production of domestic fats and oils continues to exceed domestic requirements and probably will continue to do so for the balance of this as well as the next crop year. Price levels with the exception of butterfat have dropped from 15% to 30% below those prevailing a year ago. Only substantial government purchases through the C.C.C. and exports paid for by E.C.A. funds have prevented prices from slumping still further. Acreage control, price supports, and other political manipulations continue to be the order of the day. How long exports can be maintained by E.C.A. funds and how long domestic price levels can be supported by government subsidy are matters of conjecture.

Clearly, if the future of the industry is to be profitable, some approach to its problems other than the purely political must be found. It is here that the technologist plays a most important role, and it is here that the future outlook assumes a more pleasant aspect. Technological advances have contributed tremendously to the development of the industry in modern times. Hydrogenation which was virtually unknown 50 years ago now dominates modern industrial practice. As examples of what has been accomplished by research in more recent years, one may cite the great strides which have been made in fatty acid technology. Continuous fat splitting has been developed to a successful commercial application and now provides a cheap process for supplying mixed fatty acids and glycerine.

By combining solvent crystallization and fractional distillation, it is possible to obtain a number of fatty acids in relatively pure form. These pure fatty acids open the door to almost unlimited possibilities for new products. They may be re-esterified with glycerine to form new fatty products tailor-made for specific uses. The commoner, naturally occurring fatty acids possess the unique property of a straight chain carbon to carbon linkage whereas compounds of petroleum origin almost invariably possess branch chain configurations. This makes possible the synthesis of myriads of compounds, many with unique properties which either cannot be produced from petroleum at all or which can be made only with difficulty. Aliphatic nitriles, amines, ketones, etc., now being produced in commercial quantities, are examples of this new synthetic chemistry.

Protective coatings have been greatly improved in recent years, largely as a result of improvements in oil technology. Exterior paints, with better weathering properties, improved non-yellowing white interior paints, and "flat" enamels are a few examples of the progress made of late. Considerable progress has been recently reported in the patent literature on "rearranged" fats whereby fatty acids are rearranged on the glycerol molecule to produce improved fats for specific purposes. In some processes it is possible to substitute certain fatty acids for less desirable acids and remove the latter entirely from the system.

MANY improvements have been made on edible shortenings within the last two decades. Hydrogenation techniques have been improved to the extent that a number of new shortening products, possessed of special properties making them suitable for specific uses, have appeared. Animal fats have been utilized to a greater and more successful degree than ever before. Margarine oils with properties more closely simulating the texture characteristics of butter, have been evolved by means of modified hydrogenation techniques. Advances in bleaching, deodorizing, chilling, and packaging have all contributed to the improvements found in modern shortenings and margarines. Each improvement has been followed by increased usage. While much progress has been made, the surface has hardly been scratched. There is room for better shortenings, margarines, and household fats. There is need for still better paints, enamels, and varnishes.

Studies should be made on ways of improving soap. Means of producing improved synthetic detergents using domestic fats and fatty acids should be investigated. It should not be overlooked that synthetics do not necessarily provide the perfect detergent. In many cases these products clean wool but do an inferior job on cottons. In some other cleaning applications, also, soap effects the better result. Undoubtedly, it can be made still better with further study.

The need for research in fatty materials has been recognized by various governmental agencies. Under the Research and Marketing Act research has been proposed covering the field of fat and oil technology. The Oilseeds and Peanut Advisory Committee, in reviewing active and proposed work in the broad fields of utilization, gave consideration to the decline in demand for fats and oils and the resulting need for increased research on the products. It expressed concern over the increase in the use of synthetic detergents in the place of soap made from natural fats and oils and the use of chemical emulsifiers as a substitute for shortening and lard in the baking industry. Among the numerous subjects recommended for study was "the level of fat requirements that is best for man." Another proposed subject for investigation was greater utilization of fats, oils, and nuts through improved household uses.

While it is gratifying to see government agencies expressing greater interest in research and appropriating additional funds for the purpose, industry by no means should slacken its own research efforts. Private enterprise can profit greatly from research and must stand ready and willing to assume its share of the burden. Fortunately there seems to be no indication that private enterprise will hesitate to put its shoulder to the wheel in the matter of supporting technical research and development. The future progress of the industry is largely in the hands of the technologist. He has not failed in the past, and we may be sure that, if adequately supported, he will lead the industry to newer and greater heights in the future.

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