

Research Needed

WANTED: Additional research technicians, marketing economists, and progressive manufacturers who can develop new markets for hundreds of millions of pounds annually of inedible tallow and grease during the next few years.

This imaginary ad says nothing about salaries. But anybody who can find an answer to this complex marketing problem can be sure of a large reward. There is a major problem here however. Marketing specialists in the U. S. Department of Agriculture feel that present abundant supplies of inedible fats, and indications of still larger production, present a challenge to the ingenuity of research and marketing personnel unequalled by any other agricultural product.



George L. Prichard

The problem is not new. The Congress, in 1949, earmarked funds for research directed toward the expansion of marketing outlets for these products. The Fats and Oils Branch, Production and Marketing Administration, is now winding up a marketing research study made along these lines under the Agricultural Marketing Act of 1946. One report in this study, indicating that the most promising outlet for the commodities is in the industrial chemical field, has been published. Another report is in process of publication, covering possibilities of expanded use in synthetic detergents and through improvement in emulsifiers.

While this study has served a useful purpose, it and the outlook picture for these products point up the need for still further research on new market outlets where the prospective supplies of the commodities should encourage their use as raw materials.

Inedible tallow and grease, like molasses and certain other farm by-products in the past, might be described as victims of technological progress. Not only have their supplies been increased by greater output of the products from which they are derived, but methods for extracting them from the basic product have been tremendously improved. Then too this has occurred during a period when their historic markets were being taken over by synthetic materials.

About 15 to 20% of total domestic production of fats and oil is accounted for by inedible tallow and grease. National production of these inedible fats jumped from an annual average of 1.3 billion pounds in 1938-42 to approximately 2.3 billion pounds in 1952—an increase of 77%. The increase in livestock production and slaughter over the period only partly accounts for the gain in inedible fats production. Spectacular growth of the rendering industry itself has played an important part. The number of rendering plants have increased, and technological improvements in rendering methods have added considerable to annual production.

Historically the major domestic use of inedible tallow and grease is soap-making. This market has steadily declined since World War II. In 1951 the amount of these inedible fats used in soap-making was lower than at any time since 1940. There is little doubt that the meteoric rise of synthetic detergents has displaced several hundred million pounds of inedible tallow and grease in the soap industry. About 1,200 million pounds of synthetic detergents were produced and sold in 1951, more than 35% of all detergents sold that year. It has been estimated that by 1960 synthetic detergents will take about 50% of the domestic detergent market, displacing additional tallow and grease from the soap industry.

Another large outlet for inedible fats was in glycerin, which is obtained as a by-product from soap and fatty acid production. As this market expanded with the expansion of the chemical fabricating industries, synthetic glycerin appeared and took an increasing share. It is estimated that present synthetic production is about 20% of total glycerin production. The synthetic is able to compete with the natural product in practically all uses except food products and food wrappings.

A sizeable outlet for inedible tallow and grease has recently been found in the export market. Net exports of the products rose from about 10 million pounds in 1946 to over 500 million pounds in each of the last three years. Preliminary reports indicate exports of over 700 million pounds in 1952. The foreign market looks promising for the immediate future although there is a possibility that competition from synthetic detergents abroad will increase during the next several years.

The Fats and Oils Branch study of possible new market outlets (Marketing of Nondrying Industrial Fats and Oils as Affected by Processing Methods) showed that unstable prices have been a major deterrent to extensive development of fats and oils derivatives. The chemical industry has been reluctant to plan research for new products and markets based on fats and oils because more reliable economic evaluations could be made for the same work based on materials more stable in price. The present and indicated supply picture for tallow and grease should remove this price instability factor however.

For some time tallow and grease prices have been at about the same level as during the depression period of the early '30's. In fact, on the basis of current dollar value, today's prices are lower than then. A successful program for the development of new markets should lift prices from these "depression" lows and stabilize them at levels which would permit production at a profit but still encourage their use as raw materials for new and improved products.

As pointed out previously, it was found that probably the most fertile field for research for new products appears to be in the chemical industry, where one of the principal raw materials is fatty acids from animal fats and vegetable oil foots. Supply of the latter is limited to refining losses, which continuously are being reduced by improvements; therefore, unless there is an increase in vegetable oil production, any great expansion in the fatty acid industry would have to result from the use of animal fat.

Any research program directed toward the discovery of new uses for fatty acids should be coordinated to include work on all the major acids found in tallow and grease. Fatty acids are looked upon as a basic raw material for a host of products. (These and products made from modified fatty acids are discussed in the report cited above.) Commercial development of comparatively pure fatty acids and fatty acid derivatives has led to new product uses and expanded existing uses, but the volume of this research does not appear sufficient to maintain a healthy economy in the tallow and grease industry.

Examples of coordinated efforts in research are the recent actions of the Pacific Coast Renderers Association, which, recognizing the need for new outlets for tallow and grease, has contracted for laboratory investigations directed to this end, and the National Renderers Association, which has recently appropriated a considerable sum of money to expand these efforts. Cooperative effort by industry along these lines would eliminate duplication of efforts by individual firms and make the results available to the entire industry.

Synthetic detergents present a limited field of use for tallow and grease. A great deal of research has been devoted to this use, but even if the total production of synthetic detergents were based on animal fats, only about one-third as much fat would be required as would be required to produce an equal amount of soap.

There will be no easy solution to the problem of finding profitable outlets for increasingly heavy supplies of inedible tallow and grease. But a solution can—and will be—found through the combined efforts of all concerned.

GEORGE L. PRICHARD

Surveys Chemistry Scholarships

More than a thousand college scholarships and fellowships were made available to deserving students during the past year by chemical and related companies, according to a survey just completed by the Manufacturing Chemists' Association Inc. The grants ranged in value from \$300 to \$5,000 a year. Although comparable figures are not available, this represents a substantial increase over previous years, the Association said. It predicted a further increase for the year 1953-54.

The MCA survey showed a total of 34 companies providing 1,036 scholarships and fellowships having an annual value of \$1,618,000. This does not include funds given to educational institutions in the form of grants-in-aid or to support research.