Battery of mayonnaise mixers in the Hellman Company plant in Long Island City, New York

Cooperative Research And the Mayonnaise Association

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THE mayonnaise industry appears comparatively young, particularly when compared with the soap, oil and shortening industries, but in its span of existence has shown a degree of growth and progress remarkable in many respects. As with many other industries, the need for a trade association in the mayonnaise field early became evident, and in the latter part of 1926 the Mayonnaise Products Manufacturers' Association was officially organized. The name has since been shortened to Mayonnaise Manufacturers' Association, and the group is commonly referred to merely as the "Mayonnaise Association."

Those instrumental in organizing this association had the vision and foresight to appreciate the importance of scientific research in the mayonnaise field, and, as a result, a Research Committee and also a Committee on Standards were among those appointed early in 1927. The Standards and Research Committees were combined into one at a later date, notably after the principal work of the Standards Committee had been completed—that of formulating an acceptable Standard for Mayonnaise.

In this connection, a short review of the Mayonnaise Standard may be of interest. Viewing the rapid growth of the mayonnaise industry, the Department of Agriculture considered it advisable that a definition and standard for mayonnaise be formulated, and so indicated to mayonnaise manufacturers. In an effort to adopt a Standard which most nearly suited the requirements of the industry, the Mayonnaise Association, acting through the medium of its Standards Committee, spent a great deal of time in drafting a tentative Mayonnaise Standard, which was duly approved by the Mayonnaise Association. The Federal Definition and Standard, as originally issued in November, 1928, and later modified in November, 1929, was essentially that recommended by the Mayonnaise Association with some minor changes and omissions, which it is hardly of interest to discuss at this point. The principal point to note

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is that the present Standard specifies a minimum combined oil and egg percentage of 78 per cent, and a minimum oil content of 50 per cent. This one instance will serve to call attention to the important part which vegetable oils play in mayonnaise manufacture.

The personnel of the Standards and Research Committee of the Mayonnaise Association is drawn from the ranks of the active members, who comprise the mayonnaise manufacturers, and those of associate members, who comprise the manufacturers of oil, spices, containers, closures, eggs, salt, equipment, etc. The committee is also fortunate in being able to number among its members representatives of several outstanding research organizations. The committee members are, for the most part, chemists or technologists, many of whom are specialists in their particular fields, and the association considers itself fortunate to have the interest and services of technologists representing practically every industry associated with the manufacture of mayonnaise and its allied products.

The committee has grown from an original membership of four in 1927 to a present membership of seventeen. Accordingly, the proper functioning of a committee of this size requires some consideration, particularly in view of the very wide diversification of interests coming within the scope of the committee. In order to secure efficient and co-ordinated functioning the sub-committee system has been used. Each sub-committee is headed by a chairman directly responsible for the interests covered by his particular sub-committee. This form of committee organization is not new, but its application in the present instance will doubtless be of interest.

There is first a sub-committee on Publicity, the function of which is to convey to the membership of the association and the trade in general an adequate conception of the work of the committee; to show the importance of research in the mayonnaise industry; to foster the publication of technical articles dealing with mayonnaise and its manufacture; and to combat unethical or doubtful statements of a technical character relating to the mayonnaise industry.

There is a sub-committee on Standards, as considerable likelihood exists of the Mayonnaise Standard being modified from time to time to suit the needs of a growing industry. It is the purpose of this sub-committee to keep the members of the association advised of any proposed changes in the Federal or State Mayonnaise Regulations, and to recommend any changes or modifications which it is deemed advisable to make in existing standards.

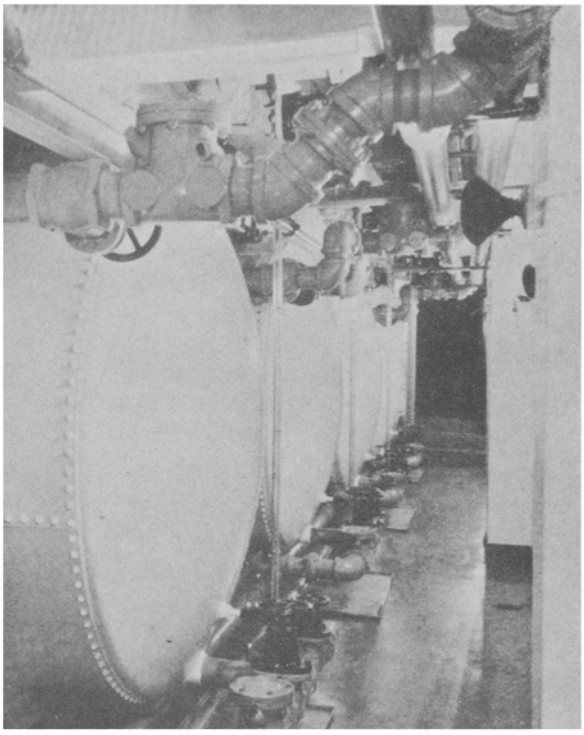
The question of uniform methods of analysis and examination is important to any technical body, and there is, therefore, a sub-committee on Official Methods of Analysis, whose function it is to take the initiative in the formulation, compilation and adoption of standard and uniform methods of testing and examination of mayonnaise and the raw materials used in its manufacture. This sub-committee is advised to collaborate with appropriate committees or referees of the Association of Official Agricultural Chemists, the American Oil Chemists' Society and such other technical organizations as are interested in mayonnaise and its raw materials. This sub-committee has been engaged for the past two years in drafting such methods of analysis and examination, and it is gratifying to note that a great deal of progress has been made on this matter. There are, of course a considerable number of methods used by other technical organizations which are applicable in their entirety to the examination and

Ready for the consumer. Example of the modern food package

analysis of raw materials entering into mayonnaise manufacture, but for such determinations as freezing resistance, effects of trucking, keeping properties, consistency and stability of mayonnaise, special methods have had to be developed and put to practical test.

During the past two years, the committee has carried out some research on the various oils used in mayonnaise manufacture, particularly with reference to the freezing resistance which such oils impart to mayonnaise in which they are used. This work was extended to include some studies on the factors influencing the rancidification of the oils and the resultant degree of off-flavor imparted to the mayonnaise, and it is hoped that these results will be available for publication in the near future. This line of activity was sponsored by the sub-committee on Oil Research.

For the past several years, the matter of the best materials of construction available for mayonnaise manufacturing equipment has been a subject of considerable interest to the committee, and, a rather comprehensive study is being carried out on various metals and alloys through the generous co-operation of the research organization of a large metal and alloy manufacturing firm. In the first portion of this work, it is planned to determine which metals or alloys are the most resistant to corrosion induced by contact with mayonnaise, its allied products and certain raw materials. In the second portion of the investigation, it is planned to determine what effect is exerted on the flavor and keeping qualities of mayonnaise in which varying amounts of different metal compounds are present. Attention has been directed to the effects of metal contamination in possibly catalyzing or accelerating the development of rancidity in mayonnaise oils, and the advisability of reducing such contamination to a minimum has been pointed out. Therefore, it can be seen that the problem is not only of interest from the mechanical standpoint of preventing corrosion of the equipment, but is also one involving possible changes which may take place within the mayonnaise itself, as a result of intimate contact with an undesirable metal or alloy. This work comes under the jurisdiction of the sub-committee on Metal Corrosion Tests.

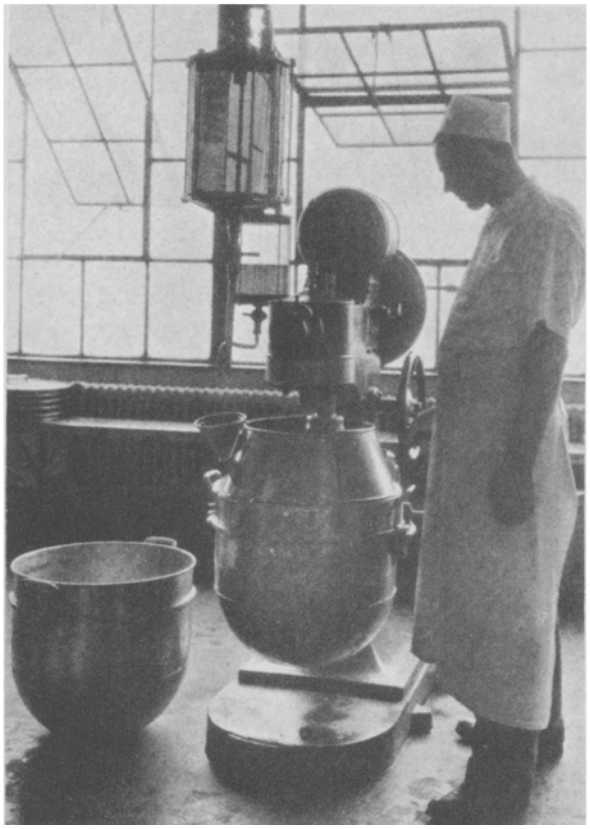


Gleaming white and spotlessly clean. Oil storage tanks of the Hellman Co.

Mayonnaise Standard Development

Many well-established analytical methods are applicable to the analysis of raw materials used in mayonnaise manufacture, but, for such determinations as freezing resistance, effects of trucking, keeping properties, consistency and stability, special methods have had to be developed and put to practical test.

No technical body, particularly one such as the Standards and Research Committee, entering as it does a number of technical fields, can function properly without a complete and comprehensive knowledge of the past and current literature. Almost since its inception, the Standards and Research Committee has had a sub-committee on Bibliography, whose function it is to report references of the current and past literature regarding mayonnaise and its raw materials. A list of the references is prepared semi-annually and distributed to the members of the Mayonnaise Association. This phase of the committee's activities has been



Close-up of modern mixer

particularly important in connection with the work being done by the Research Fellowship, and the amount of pertinent material disclosed by the continuous efforts of this sub-committee is truly surprising.

In addition to the sub-committees mentioned above, which are those at present operative, there have been, in the past, numerous sub-committees for special purposes, the existence of each having been discontinued as its specific duties have been completed. For example, it had been considered highly desirable to acquaint the consuming public with the nature of commercial mayonnaise, its general composition, methods of manufacture and importance in the diet. A sub-committee was organized to prepare and edit a technical pamphlet on mayonnaise. The services of qualified authorities on each of the raw materials used in mayonnaise manufacture were enlisted for the writing of various portions of this pamphlet, and the material was then compiled and edited by the sub-committee in charge. This pamphlet was published in 1930, and approximately 25,000 copies were distributed, particularly to domestic science teachers, club leaders, dietitians, and home economists. The reaction which this pamphlet stimulated was very gratifying to those responsible for its publication, and served to confirm the fact that there is a widespread interest in the nature of mayonnaise, its manufacture, and its place among present-day food products.

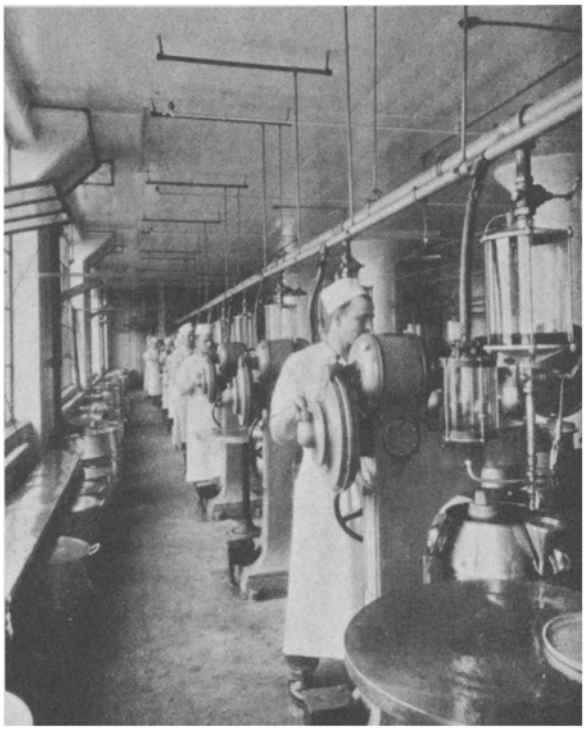
The need of a full-time research organization, having proper laboratory facilities and scientific guidance to study certain fundamental technical problems relative to mayonnaise has been appreciated for some time. The Standards and Research Committee, notwithstanding the rather comprehensive scope of its activities, is not in a position, either collectively or on the part of its individual members, to carry on research of a sufficiently extensive character to meet the needs of the industry and, successively, for several years prior to 1930, had urged the establishment of a Research Fellowship on mayonnaise. In August, 1930, the Standards and Research Committee experienced the satisfaction of seeing this recommendation put into effect in the form of a Co-operative Research Fellowship in the Food Research Division, Bureau of Chemistry and Soils, U. S. Dept. of Agriculture, in Washington, D. C. The Mayonnaise Association is keenly aware of the advantages of such an arrangement, and, although the Research Fellowship has been in actual operation scarcely a year, the results have been most gratifying. The Research Fellowship was fortunate in securing Dr. Lowell B. Kilgore, whose qualifications for this type of work have been aptly demonstrated in many instances. Dr. Kilgore has already had the privilege of presenting a paper to this Society, and, therefore, his work needs little introduction.

Metals and Mayonnaise

The problem of metal contamination of mayonnaise is of interest not only from the standpoint of preventing corrosion of equipment, but is also one involving possible changes within the mayonnaise itself, as the result of intimate contact with an undesirable metal or alloy.

In addition to a considerable number of problems upon which work was planned, Dr. Kilgore has uncovered a surprising number of additional problems of extensive scientific interest, which are also of practical application from the standpoint of the mayonnaise manufacturer. In fact, the extent of these problems was such that it was decided during the past summer to engage an assistant to Dr. Kilgore in this valuable and extensive work. This associate, Mr. Wheeler, although actively engaged for little over three months, has been successful in clearing up some controversial matters of long standing, and it is to be hoped that the continuance of Mr. Wheeler's work as Dr. Kilgore's associate may be made possible.

From a technical standpoint, mayonnaise seems to afford an ideal subject for research and scientific investigation. First, it is a colloid of peculiar and interesting properties and,



Mechanical features insure uniformity of product

as such, enters a highly specialized field. Second, high vegetable oil content makes rancidity problems of prime importance. Third, its protein content leads into most interesting fields of investigation. Fourth, there are problems in mayonnaise manufacture, and particularly in its associated products, spreads and relishes, which must be studied from a microbiological standpoint. Fifth, due to the condimental character of mayonnaise, spice chemistry occupies an important place in mayonnaise research. In each of these separate phases, there are subdivisions and branches of scientific interest and practical importance, and, at the present time, it appears that there will be no dearth of problems in the field of scientific investigation of mayonnaise and its allied products, for many years to come.

From the viewpoint of the oil industry, considerations regarding the size of the mayonnaise industry are worthy of note. Several years ago, the Bureau of Foreign and Domestic Commerce made a survey of the mayonnaise industry, which, at the request of Mayonnaise Association, has been continued by the Department of Commerce. It is, of course, impossible to cover all the mayonnaise manufacturing concerns in surveys of this kind, but, in a report presented at the October, 1930, meeting of the Mayonnaise Manufacturers' Association, Mr. C. E. Birgfeld of the Foodstuffs Division of the Department of Commerce estimated that the survey in 1929 covered about 70 per cent by value of the total production of mayonnaise and allied products. This survey showed that in 1929 approximately 15,000,000 gal. or about 117,000,000 pounds of mayonnaise, salad dressing and sandwich spread were produced. Considering that this did not completely cover the entire industry, a conservative estimate of the total volume for 1929 would be 170,000,000 pounds. Likewise, in view of the increases which have taken place in mayonnaise production in past years, a conservative estimate for 1930 would seem to be about 200,000,000 pounds of mayonnaise and allied products, while the total production of these products for 1931 should reach 240,000,000 pounds. Of this amount, about two-thirds is mayonnaise, with an average oil content of 70 per cent by weight, and one-third salad dressings, sandwich spreads, etc., with an average oil content of 40 per cent by weight. It is, therefore, evident that something like 140,000,000 pounds of oil will be the total consumption by the mayonnaise industry during 1931. If in error, these figures undoubtedly err on the conservative side, but the total is of sufficient magnitude to amply illustrate the

interdependence of the oil and mayonnaise industries.

As. Dr. Kilgore capably pointed out in his paper presented at the spring meeting of the American Oil Chemists' Society, any research dealing with mayonnaise can not proceed very far before finding itself directly concerned with research on vegetable oils. This field in itself is one that has been, and is being, subjected to intensive investigation, which fact, of course, needs no reiteration before the members of this group. Probably more than in any other technical organization can the members of this society fully appreciate the magnitude of the problems confronting the Mayonnaise Research Fellowship. In undertaking this work, those advocating and sponsoring the fellowship were under no delusions as to this state of affairs, and, in fact, the results to date of the activities of the Research Fellowship even exceed in extent the anticipation of the most optimistic proponents of the Research Fellowship plan. It is, therefore, with no spirit of discouragement that these observations are made, but it is with the hope that those members of the vegetable oil industry concerned with the manufacture and refining of oils used in the manufacture of mayonnaise will appreciate and properly evaluate the interdependence of the two industries, as previously mentioned, and that some form of coöperative effort can be formulated which will result in continued and possibly accelerated research activities on oils as related to mayonnaise manufacture, and thereby assist in promoting the welfare and prosperity of both the oil and mayonnaise industries.

Mayonnaise and Edible Oils

That the total consumption of refined edible oils by the mayonnaise industry during 1931 has been more than 140,000,000 pounds of oil, amply illustrates the interdependence of the oil refining and mayonnaise industries.

Census of Manufactures

The Census Bureau is now mailing its 1931 Census of Manufactures questionnaires to all manufacturers, with an urgent request that they be filled out and returned promptly. The 1931 questionnaire is considerably smaller than the one used for the 1929 canvass. This is due to the fact that the 1931 census is one of the regular biennial series and does not fall within the decennial series (as did the census for 1929, when the questionnaires were expanded considerably).

The major items covered by the 1931 questionnaires are only four in number, namely:

Wage earners employed, by months.
Wages paid.
Cost of materials, fuel and purchased energy.
Products by quantity and value.

Thirty-six per cent less of soaps, perfume materials, perfumes, bath salts, and cosmetics were brought into the United States in 1931 than in 1930. Castile and toilet soaps dropped almost a third, to $630,808; dutiable perfume material imports shrank close to one-half, to $701,801.

U. S. Imports of Tung Oil

December receipts of tung oil amounted to 7,355,788 pounds, valued at $353,970, which brought the total for the year 1931 up to 79,311,155 pounds, valued at $4,425,922, contrasted with 815,100 pounds, valued at $60,385 for December, 1930, and 126,322,599 pounds, valued at $12,487,353 for the year 1930.

Circular number 198 of the United States Department of Agriculture describes fully the United States Food and Drug Administration Methods of Testing Antiseptics and Disinfectants.

Hearings before the Federal Trade Commission in its investigation of the cottonseed industry were resumed at Washington on Wednesday, February 10th, when Christie Benet, general counsel of the National Cottonseed Products Association, appeared to make known the position of the Association as to whether or not it will introduce testimony or offer data supplementing the Commission's presentation of evidence.