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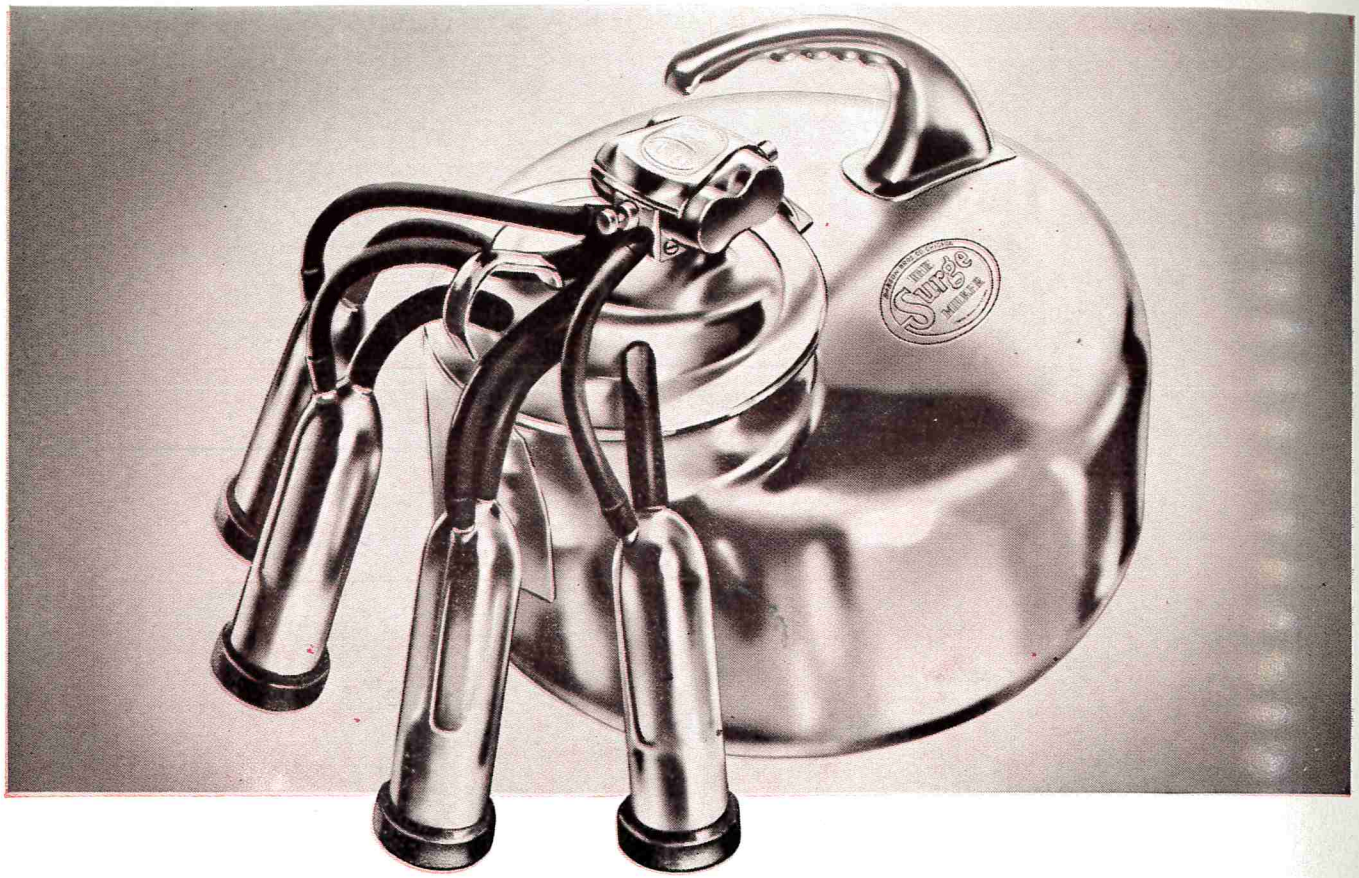
MAY, 1955

Journal of

MILK and FOOD TECHNOLOGY

Official Publication

International Association of Milk and Food Sanitarians, Inc.



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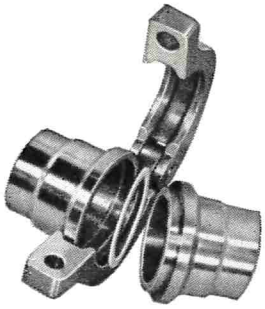

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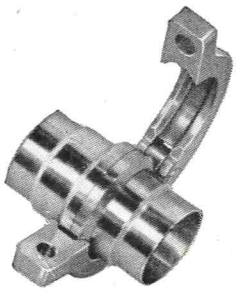

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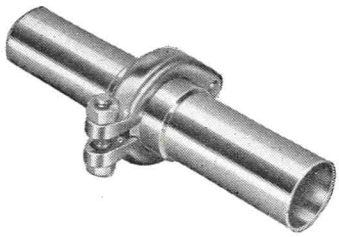

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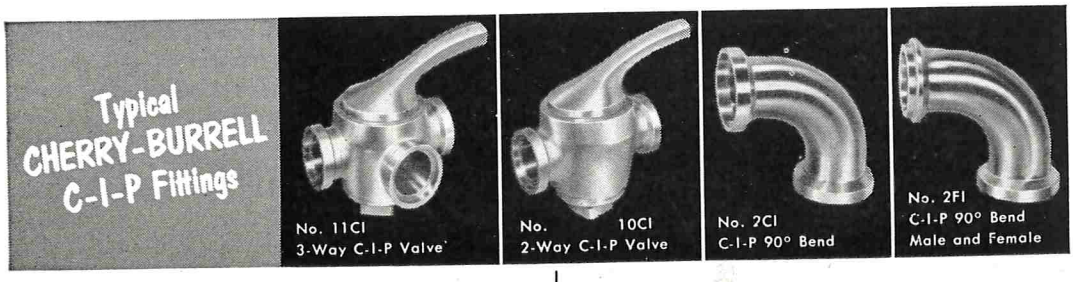

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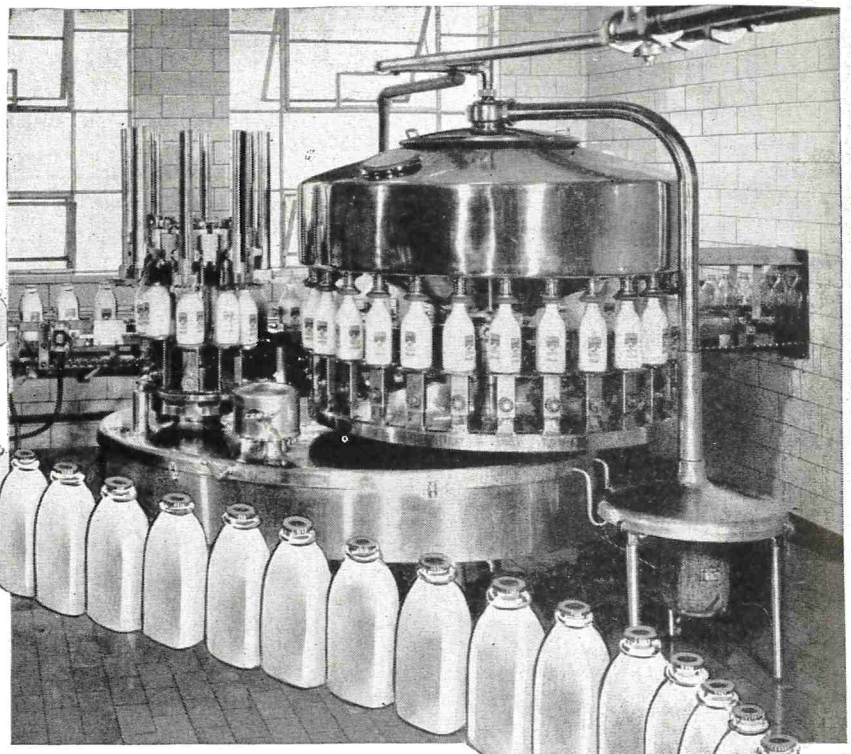

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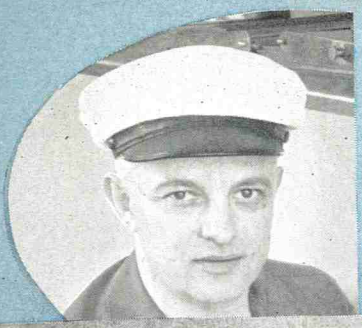

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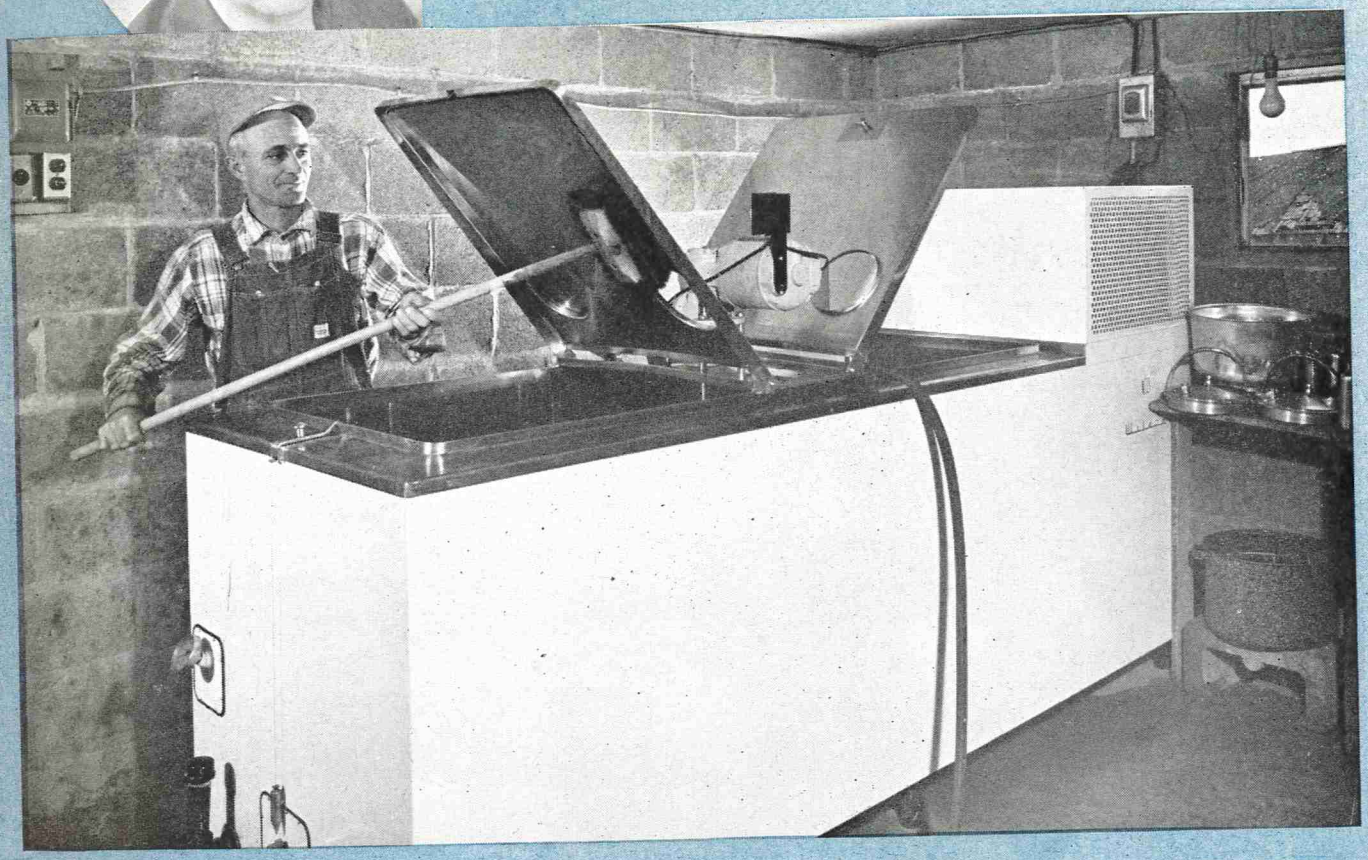
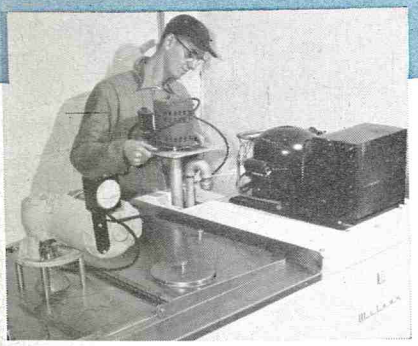


One of Model Dairy's producers is Oather Hill, Frankfort, Ohio, shown here cleaning his 250-gal. Wilson. Says Mr. Hill: "I like my Wilson Bulk Cooler because it does a *fast* cooling job . . . is easy to clean!"



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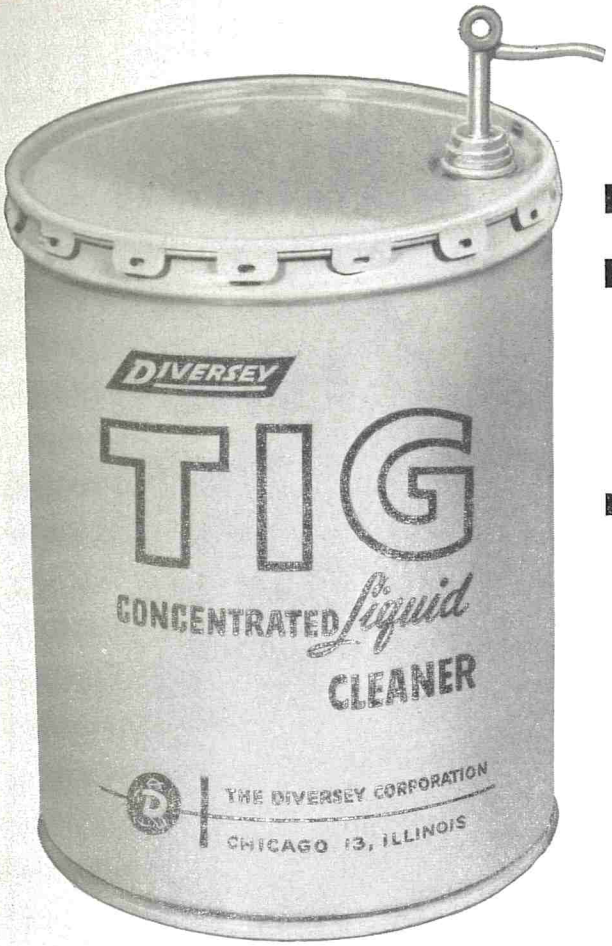

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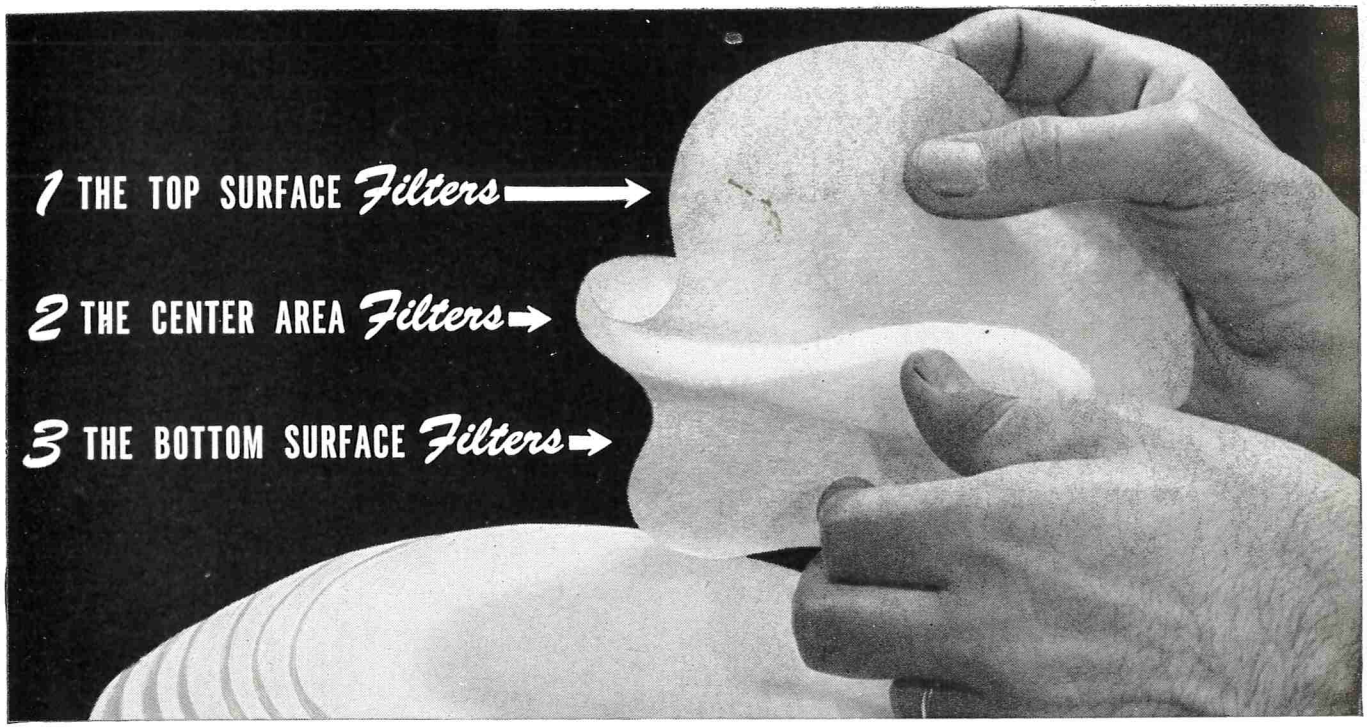

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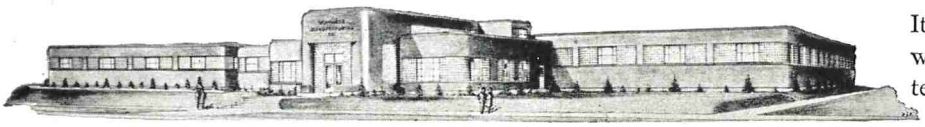

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PROBLEMS AND POTENTIALITIES OF THE NATIONAL CONFERENCE ON INTERSTATE MILK SHIPMENTS[1]

DR. K. G. WECKEL
Department of Dairy and Food Industries
University of Wisconsin, Madison, Wisconsin

It is necessary to look backward as well as forward in understanding the purpose of this Conference. The basic objective of the Conference is to facilitate interstate shipments of milk, through mutual understanding and confidence in sanitary requirements. States are sovereign powers. Each is constitutionally charged with a moral obligation to serve *all* its citizens in matters of common good, more especially in our case, public health. The moral obligation connotes also the service be efficiently performed. This Conference is a means of bringing delegated officials of the sovereign states together to discuss a specific mutual problem. It is a voluntary Conference. It is designed to meet the needs of those states where interstate shipments of milk is desired and necessary. It is a Conference whereby states can transfer milk supplies by agreement.

This Conference already has established a working agreement of methods facilitating interstate shipments of milk. The agreement has been used advantageously by a significant number of states. It is particularly designed for the mutual needs of voluntary participating states and communities. Such mutual agreement should not and need not be misaligned nor deprecated by non-participants.

The National Conference on Interstate Milk Shipments was conceived in response to a developing need. In the meeting of the Conference of State and Territorial Health Officers in April 1943, it was requested that the Surgeon General of the Public Health Service do what he might to facilitate interstate shipments of milk. Subsequently, and in stages, and solely through mutual exploration of the problem, this Conference came into being. The difficulty of interstate movements of milk, one of the nation's most important components of food supply, has been the subject of discussion and study for many years. There have been a number of factors that have high lighted a need in facilitating movement of milk from area to area. The interposition and demands of a war caused a terrific expansion in milk production as well as in milk processing facilities. The necessity of procuring and translocating over extended periods large supplies of milk and milk products made very clear the need for improved methods of evaluating its quality on an interstate basis. The postwar period has been accompanied by changes of direct concern to the dairy industry, and to matters in public health. These may be listed as follows: (a) There has been a great shift in population growth rate. It is becoming clear that currently the rate of increase in population is greater than that of total food produced. It would appear that this may be true for a long period of time. Plenty can shortly become poverty, in food. Agriculture already is under forced draft treatment of machinery, fertilizer, and insecticide. (b) There has been a shift in population intensity in many areas. (c) Modern concepts in nutrition requires food from various sources; few areas today are self-sufficient in terms of nutrition requirements and must rely on trans-shipped supplies. (d) Legislative stock piling and pricing not only of milk fat and dry milk solids-not-fat, but other foodstuffs as well, has affected industry economy in various ways; the ramifications in terms of public health are numerous. (e) There has been a constant and significant extension of soil conservation practices coupled with extension of dairy production and processing facilities. Areas formerly deficit in milk have become areas

[1]Presented at the NATIONAL CONFERENCE ON INTERSTATE MILK SHIPMENTS March 29 and 30, 1955, Memphis, Tennessee.

NOTICE TO MEMBERS OF IAMFS

Please, notice letter by H. L. Templeton, Chairman, Membership Committee, on page XIII, please, fill out questionaire (page XIV) promptly and mail as directed.

FORTY-SECOND ANNUAL MEETING

HOTEL BON AIR — AUGUSTA, GEORGIA, OCTOBER 4 - 6, 1955

with assets of milk. Areas formerly importing milk, today export milk. Coincidentally, few state areas exist in the country today that cannot, or do not, export milk or milk products across state lines. (f) Modern government, and the services of government, are costly. Increasing requirements for tax money simply highlights the problem of costs of food. Food cost is directly a matter of public health. Availability of food is related to its cost. With ever increasing percentages of non-food producers, for the many, food cost is of paramount concern.

Other developments have had their impact on the means by which the basic food supply, milk, can be trans-shipped from one area to another. Among these may be cited: (a) A decision of the Supreme Court denying a community the right arbitrarily to delimit its supply of milk to a geographically delimited area. (b) The development and establishment of 3A sanitary standards for design of dairy equipment. (c) Critical surveillance of various agencies on matters relating to interstate shipments of milk, particularly relating to food costs and public health. The Committee on Administrative Practice of The American Public Health Association has requested study of this problem by its Committee on Interstate Acceptance of Milk at various times during the past 10 years. This Committee only recently recommended principles in conformity with those of this Conference. The National Research Council and The United States Department of Agriculture sponsored a study on Sanitary Milk Control and Its Relationship to the Sanitary, Nutritive and Other Qualities of Milk of eight major cities. The study indicated need for only a limited number of basic requirements to insure a wholesome milk supply, and cited the conditions of greatest importance in rating evaluations.

This Conference began in response to a need; a need for simplification of the mechanics for transstate movement of milk. The tools by which milk could be evaluated for movement were available. The *problem* of the Conference *was, and is,* efficiency in the use of the tools for mutual needs.

During, and shortly following the war period, multiplicity of survey and inspection of milk supplies was common. Surveys have indicated that prior to development of the National Conference plan, it was not uncommon to find certain producing areas and processing plants subject to as many as twenty-five different community and state evaluations. This is equivalent to an inspection every two weeks. Frequently, there existed diametrically different interpretations of basic concepts of sanitation, and public health, in the making of these evaluations. Obviously, there existed confusion, at cost. Multiple evaluation cannot be done without cost to someone, ultimately to the consumer. More recent surveys (since the Conference has been in operation) have indicated the extent of multiple inspections to be greatly reduced, and more uniform interpretation of public health concepts achieved.

The immediate objectives of this Conference are several fold; (a) to provide a forum for mutual understanding and resolving the problems of interstate movement of milk supplies, (b) to enable a meeting of person as well as mind of those mutually interested in and dealing with interstate movement of milk supplies, (c) to reduce the work load of health and regulatory officers of mutually participating states in the job of procuring and the cost of evaluating the quality of milk supplies, (d) to facilitate immediate procurement of qualified milk supplies, and (e) to have at hand current evaluations of milk supplies available for trans-shipment.

It is proper to re-evaluate the benefits of this conference. They are several:

1. Every citizen in this country can and does have access to high quality milk at any time and place.

2. It enables more economical and efficient use of public health personnel and assigned monies for supervision of public health. It is interesting to note that in a survey among state groups participating in the Conference Agreement, reduction in expenditure of funds and time of personnel was invariably cited as a real fact.

3. It allows for improvement in the quality of dairy products other than bottled fluid milk. Municipalities can expand the basic sanitation program into related products, and into geographically located areas otherwise not provided with good milk.

4. It helps maintain supplies of milk of desired quality for potential periods of undetermined shortages. It is as important to public health to *maintain* a source of quality milk as it is to *utilize* it.

Although this Conference has been in operation several years, to the mutual advantage of its participants, there exist a number of problems that need attention. These are as follows:

1. There is need for better understanding and use by participants in the specific mechanics by which shipments of milk are certified, identified, and reported. This is basically important to the Conference in that the agreement should be uniformly followed.

2. Prevalence of disease in dairy cattle is a major public health and food supply problem. There is need for improved understanding of the aspects of disease prevalence, its measurement, and of its control. There is need of interstate understanding of control programs of and by veterinarians.

3. There is need for better understanding of the objectives of the Conference. Experience has shown that participants to the Conference can use its procedure in principle even though there exist apparent differences in prevailing standards. The agreement stipulates the use of a standard of evaluation *or its equivalent.* Actual participants to the agreement have had no hardship in this understanding.

4. As in all methods of appraisal, there is need for better uniformity in methods of rating evaluation. The U. S. Public Health Service was requested to make, upon call, evaluation ratings to minimize the variances potential in human interpretation. Continued effort in this direction can be expected to be very beneficial. It is important to note that the publishing of the ratings of milk supplies is fundamental to the continued use of the Conference agreements, and which all participants should support.

5. The manner of conducting this Conference is of great economic, as well as public health import. It

is necessary, therefore, that any decisions or conclusions, especially those involving mechanics in the use of the Agreement be based on thorough and exhaustive study, rather than on hasty improvised examination.

6. There is great need for extended understanding by health officers, sanitarians, the dairy industry, and by the public, in the objectives and activities of this Conference. This can be achieved only by full use of the educational facilities available to us.

Unfortunately, the concept of the interstate agreement has not been as thoroughly adopted in the intrastate area as it has been in the inter-state area. This is currently a major problem of this Conference. A Conference on Intra-State Milk Shipments has been organized in Wisconsin to help facilitate movement of milk from community to community within the state. The principles of the Interstate Conference Agreements are adaptable and definitely useful for local state work.

While the problems of the Conference are many, the objective, *"Better and more milk for all the people,"* is a worthy one.

REPORT OF COMMITTEE ON APPLIED LABORATORY METHODS—1954[1]

This year, in place of reviewing the literature on all phases of interest to the membership, it was decided to select a small number of topics and attempt to deal with them more intensively. It was intended that more attention be devoted to chemistry and food than in the past, but in this the Committee were only partially successful. A Sub-Committee was set up to deal with each of four topics; the reports of each Sub-Committee follow.

COLIFORM STANDARDS FOR PASTEURIZED MILK AND MILK PRODUCTS

In reviewing possible subjects for investigation by the Applied Laboratory Methods Committee, it was recognized that the problem of coliform organisms in dairy products might be considered as one of the Sub-committee topics. As a result, a Subcommittee for the investigation of Coliform Standards for Pasteurized Milk and Milk Products was appointed with the following Committee members: C. K. JOHNS, W. K. MOSELEY, J. C. OLSON, J. C. MCCAFFREY, G. W. SHADWICK and F. W. BARBER, *Chairman.*

It was realized that a study of coliform standards could not be accomplished in one year. Hence, it was felt that the activities of the Subcommittee should be extended at least for a two or three year period. During the first year we have attempted a general survey of coliform standards for pasteurized milk and milk products. Rather than conducting a nation wide survey at this time, we have concentrated first on the areas represented by the various Subcommittee members who were asked to supply the following information:

1. What are the coliform standards for various dairy products in your area?

2. In your experience how well do the various dairy products meet these coliform standards in your area?

3. Are there any specific problems which deserve special consideration?

It was suggested that for the present we consider milk, cream, chocolate milk, buttermilk, cottage cheese, and ice cream. There may be other dairy products with which many have had some experience and which might be included in our report. Perhaps the best approach to the problem would be to consider the frequency that various products do not conform with any coliform standard. Any information concerning the reason for nonconformance would undoubtedly prove of interest.

To date, information has been received from three Provinces of Canada, the states of Illinois, Indiana, Massachusetts, North Carolina, New York and New York City. Similar information is being obtained from six New England States and seven cities. Results are not available at this writing. In addition, the National Research Council Bulletins No. 121 and 250 covering Sanitary Milk and Ice Cream Legislation in the United States and Sanitary Milk Control and Its Relation to the Sanitary, Nutritive, and Other Qualities of Milk, respectively, were reviewed very carefully for mention of coliform standards. Our progress is of a preliminary nature and can be summarized in Table 1.

The National Research Council survey shows that only eight of the forty-eight states and fifteen of the eighty-four cities have coliform standards for milk. For ice cream only one state and two cities indicated coliform standards. In most instances the coliform standards were 10 per ml.

A summary of the comments received indicated that the greatest difficulty in coliform tests occurs with products of low volume such as cream. Here the problem appears to be an increase in count with the holding of the product a number of days. Some investigators believe that a standard of 10 per ml. is too lenient, especially if the presence of organisms in a pasteurized product means post-pasteurization contamination. Others indicated the occurrence of atypical colonies on certain media and with certain products. Along this line a report is being presented at this year's Annual Meeting on the occurrences of false positive coliform tests with fruit ice cream. The suggestion was made that some consideration should be given to a review of the numerous liquid and solid media now allowed in Standard Methods toward making these procedures more practical.

Tentative plans for next year's work by the Committee include the following:

1. Further extensive survey of coliform standards and compliances based on the questionnaire used for the New England area this year.

2. Review of the significance of coliform tests as based on the results of this survey.

3. Review of recommended Standard Methods media and methods for the coliform test.

[1]Presented at the Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Atlantic City, New Jersey, October 21-23, 1954.

TABLE 1—COLIFORM STANDARDS AND COMPLIANCE FOR VARIOUS DAIRY PRODUCTS IN DIFFERENT AREAS

Area	Standard	Approx. per cent compliance
Illinois	10/ml	90 (cream line milk) 89 (homogenized milk) 80 (chocolate milk) 75 (cream)
Massachusetts	3/ml	98 (Town of Brookline)
North Carolina	<10/ml (milk) <34/ml (ice cream)	75 - 85 75 - 85
New York City	2/ml (May-Oct.) 0.3/ml (Nov.-Apr.)	85.6 (milk) 74.7 (chocolate milk) 79.9 (cream) 72.0 (buttermilk) 76.6 (sour cream)
Canada —		
Province of Quebec	50/100 ml.	87 (milk)
Province of Ontario	<1/ml	73.9 (cream line milk) 69.9 (Homogenized milk) 61.1 (chocolate milk) 53.1 (cream)
Province of Saskatchewan	3/ml	

DETECTION OF ADDED WATER IN MILK

On the basis of recently published data (1, 2, 3) the average freezing point of milk as used in the Hortvet Cryoscopic method would appear to be in need of revision. But, it should be pointed out that in two of these studies (1, 3) the data are all from market milks. These figures could be interpreted as indicating that small amounts of water were added to all milk in certain communities either intentionally or incidental to washing and sterilizing of equipment. Likewise, in the other study (2), the data need to be further scrutinized since it represents the average freezing point of milk from individual cows. As Lythgoe (4) has pointed out, probably separate standards should be established for individual cow, small herd and market milk; *i.e.*, if the sample from an individual cow shows a freezing point as high as −0.525° C. the presence of added water is suspected, while a sample with the same freezing point from a herd of several cows (at least eight) contains added water without any reasonable doubt. Commercially pasteurized milk, which can usually be assumed to be from a herd of at least 40 cows, should not freeze at higher than −0.540° C.

Hortvet (5) in his original paper reported finding an average freezing point of −0.548° C., which is also the value arrived at by Lythgoe in his analysis of 321 samples. This figure of −0.548° C. seems to represent the most probable average freezing point of milk. However, there are those who would place the average much higher than this, arguing that the feeding habits of dairy cattle have changed sufficiently in the last 30 years to have affected the freezing point of milk. Likewise, it is argued that the present average of 0.550° C. is unreliable since it is not Hortvet's figure but that obtained by Winters before the method was standardized. In addition, processing methods have changed since most of the data were collected and it is also not known what effect the breed of the animal, the period of lactation, the season of the year, the geographical area, etc., have on the freezing point. However, in a report of a subcommittee (6) of the Scientific Advisory Committee of the Department of Health for Scotland, that subcommittee has stated that they are satisfied that no hereditary or environmental factors will cause the freezing point depression of genuine milk to a figure less than 0.530° C. and they have fixed this value as the minimum freezing point depression of genuine milk, thereby allowing a 5 per cent tolerance if the mean value is assumed to be 0.550° C. They are also satisfied that the freezing point method can be satisfactorily applied to heat treated milk such as pasteurized and sterilized milks, as such heating produces an insignificant alteration in the freezing point depression. They have further recommended that all reports of the freezing point test should be accompanied by a statement of the acidity of the sample at the time of testing. If the acidity substantially exceeds 0.18 per cent, a reliable indication of the original freezing point depression can be obtained by application of a correction factor. The development of acidity tends to increase the freezing point depression, and thus to mask the presence of added water.

Further information was supplied by Aschaffenburg and Veinoglou (7) who conclude, (a) that during the spring when there is a supply of ample amounts of young grass, the freezing point depression will decrease slightly, (b) that the relationship between the freezing point depression of morning and evening milk is linked with the changes in the temperature of the environment to which the cows are exposed (If the cows are in a cold environment at night the freezing point depression of the morning milk will be lower than that of the evening milk and vice versa), (c) that a small but significant difference in the freezing point depression was observed between breeds, and (d) that the American procedure is too stringent under the conditions prevailing in England. No evidence was found of any influence of age or state of lacation of a cow on the freezing point depression. Likewise, no relation could be detected between milk yield, and only low positive correlation between the solids-not-fat content of milk, and its freezing point depression.

Attention should also be called to a recent review of the literature on the detection of added water in milk (J. Dairy Res. *21*: 138, 1954). This review suggests that Lythgoe's conclusions are open to question "as the assumption of a normal Gaussian distribution for freezing point values does not hold". Among other methods covered in this review for detecting added water are (a) refractometry of milk after ultrafiltration, (b) surface tension measurements, (c) viscosity and (d) buffering power of the milk.

A publication by Sieverding *et al.* (9) also contains interesting in-

formation concerning watering of milk in Connecticut and underlines the need for further reliable data to establish more firmly the true freezing point of milk.

Because of these conflicting points of view and uncertainties regarding the effect of hereditary and environmental factors on the freezing point depression, associate referee Theodore Dubin of the A.O.A.C. with the assistance of A. H. Robertson and others, is planning an extensive collaborative study over the next two to three years with an effort to examine all the variables in the cryoscopic method. In the A.O.A.C collaborative study the use of a semi-automatic cryoscope will be urged. That is, the sample will be stirred and the thermometer tapped by mechanical means as recommended by Shipe *et al.*(2). In the latter report (2) the authors also refer to a mechanical refrigeration unit constructed by them. Another unit described in detail by Knowles(10) is constructed by the simple conversion of a water cooler of the type using a 5 gallon jug as a source of water supply.

In the field, the plant, or the busy laboratory, the need is frequently felt for a rapid screening test for detecting added water. These methods also deserve consideration, since time may frequently be a factor in determining whether any analysis is made.

A. H. Robertson and F. J. Kokoski (11) have recently published a nomogram for calculating the solids-not-fat in milk when the lactometer reading and the fat content are known, and a table based upon whether the calculated solids-not-fat percentage falls beyond a limiting range of values for determining whether a sample has one chance out of two of being adulterated, two chances out of three of being adulterated, or three chances out of four of being adulterated.

A report by Vandiviere, Brooks and Sunkes (12) has proposed the use of the juice refractometer as a rapid screen for excess water in milk. According to the authors, as many as 400 samples have been screened in a day using the juice refractometer and approximately 50 per cent or more have been eliminated from cryoscopic examination. In comparison it is suggested that only about 35 samples could be run on the cryoscope in a day.

With the juice refractometer the authors use a modified acetic serum method. However, limited trials have indicated that the modified method does not give results different from the usual acetic serum method used with the immersion refractometer. The juice refractometer is calibrated in terms of the International Scale of Refractive Indices of Sucrose at 20° C. Therefore, 40 on the Zeiss immersion refractometer is equivalent to 6.66 per cent solids on the juice refractometer, which according to the present official method of A.O.A.C. indicates no added water. Using the juice refractometer the above authors found their data indicated added water by the cryoscope on anything below a refractometer reading of 7.0, which is above the present official screening point and indicates that it needs to be revised upwards. Using the juice refractometer, 7.55 per cent solids or above indicated no added water.

Others (13, 14) have also suggested that the refractometer reading should be raised. But it has been pointed out that while raising the lower limit will tend to correct the possibility of extensive watering of high butterfat and total solids milk, if raised sufficiently to have practical applications, low solids milk would be subject to condemnation as watered when it is normal milk in every respect. Therefore the cryoscope is still recommended to check the serum method whenever added water is indicated.

The juice refractometer sells for about 200 dollars; however, a new hand refractometer for the determination of blood serum proteins sells for only 85 dollars and should also be suitable. The low cost and simple operation of such an instrument makes possible the field determination of watered milk by almost anyone.

The inclusion of the juice refractometer in the collaborative studies being conducted by the A.O.A.C. on the detection of water in milk by the cryoscopic method is under consideration. Three laboratories have already indicated their willingness to participate in this study using the juice refractometer, but because of the limited time available for the comprehensive survey the A.O.A.C. has planned they may be unable to venture into making this additional determination.

Another interesting method for determining water in milk is covered by a Japanese patent (15). In this method a filter paper is immersed in a solution of congo red, dried, cut into rectangular size and a solution of tartaric acid or citric acid containing NaCl is dropped at the center of the paper. After drying, a drop of milk to be tested is placed at the center of the paper and the length of the colored portion gives the water content of the milk. This method appears interesting and most promising as a field test; however, it has been impossible to obtain a copy of the patent or sufficient details on the preparation of the paper in order to make possible the trial of this method.

A new simple freezing method (16) utilizes a stream of chilled air from a Ranque-Hilsch vortex tube for freezing the specimen and a thermistor probebridge assembly for indicating the endpoint. *AgI* is used to initiate ice crystal formation as its crystal form is epitaxial to ice and the solubility too low to influence the results. One of the large instrument manufacturers is now listing this instrument in their latest bulletin.

The Chairman of this Subcommittee wishes to acknowledge the assistance of Dr. L. A. Black, Dr. A. H. Robertson, and the Committee members who contributed information needed for this report.

Members of this Sub-Committee were W. K. MOSELEY, W. S. MUELLER and G. W. SHADWICK, with EARL F. MCFARREN, *Chairman*.

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BULK MILK DISPENSERS[1]

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DEVELOPMENT

The dispensing of milk in bulk has passed through many stages of development, mostly bad. There is not much that can be said in favor of the old time milk pump nor of the practice of dipping milk from cans into customers' containers especially in over-crowded grocery stores. A major effort to stop this practice in New York City resulted in the creation of the modern approved milk dispenser. When during the depression of the early 1930's Dr. Shirley Wynn, then Commissioner of Health of New York City, decided it was necessary for the protection of the public health to substitute bottled milk for bulk milk, there was strenuous consumer resistance due to an anticipated increase in the price of milk. Apparently for the purpose of establishing the health need for this safeguard as well as for the investigation of possible cheaper methods of eliminating the sanitary hazards, he appointed a Milk Commission of distinquished people of which the late Dr. Simon Flexner was scientific chairman.

The commission's report entitled "Is Loose Milk a Health Hazard?" was published late in 1931. The commission recommended the prohitition of the then current practice of selling loose or dipped milk in consumers' containers and also the practice of dispensing loose milk by means of cans and dippers or pitchers to consumers in restaurants. However, recognizing the economic need for low priced milk, the commission established a general specification covering the type of device it felt could be approved for use in dispensing milk from twenty or forty quart milk cans, washed, sterilized, filled and sealed at an approved milk plant and including no part with which milk came in contact that remained in the public eating or drinking establishment where the milk was dispensed.

The commission appointed a committee composed of Dr. Paul B. Brooks, then Deputy Commissioner of Health of New York State and the late Leslie C. Frank, then in charge of the milk program for the Public Health Service, whose responsibility it was to determine whether or not the devices submitted as meeting this specification actually complied therewith and could be approved for use.

Many strange devices submitted mostly by back yard inventors were examined by the commission with great patience. There were some who thought that the specifications never could be met but gradually a small number of dispensers was approved and of these several were produced and marketed.

The specification was incorporated later with minor modifications in the Milk Ordinance and Code and in the Ordinance and Code Regulating Eating and Drinking Establishments both recommended by the United States Public Health Service.

First accepted dispensers

After securing approval of the Board of Health of New York City in 1937 of two devices, only one of which was placed in production, a number of popular restaurants turned to the use of approved bulk milk dispensers. Some difficulties were experienced, as with all new mechanical devices, but they have been quite successfully used since then. Of other acceptable devices two are in production and in use there.

DESCRIPTION OF STUDIES

Viewing the civilian experience with interest but exercising the customary caution in protecting the health of our men in the armed forces, the Armed Forces Epidemiological Board contracted several years ago with the University of Michigan to conduct a research study designed to compare the relative safety of milk dispensed from approved dispensers with other methods of dispensing. With permission reference is herein made to the results of that study.

Mr. Tiedeman is a past president of this ASSOCIATION and was Chairman of its Committee on Milk Equipment Standards when the 3-A program was established. He has had many years of experience in health work in the milk and food fields. Currently he is Resident Lecturer in Environmental Health in the School of Public Health at the University of Michigan and Executive Director of the National Sanitation Foundation Testing Laboratory.

Objective

The objective was to determine whether in routine day to day group feeding there were any unsatisfactory changes in bacterial content or any public health hazards involved in the use of the so-called approved types of milk dispensers as compared with other commonly used methods of dispensing milk. Close observation was made of the whole milk-handling process with the thought that some dangers might exist which might not be reflected in the bacteriological results and, also, that some potential hazards might be observed which could easily be eliminated.

Procedure

The method of approach used was to compare by bacteriological technics the quality of fresh, whole, pasteurized, homogenized milk sampled at the common source, namely an average milk plant, with such milk as it was served from dispensers of various types and, also, with that served in individual one-half pint glass bottles and paper containers mechanically filled and capped.

[1]Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Atlantic City, New Jersey, October 21-23, 1954.

Through the courtesy of the manager of residence halls at the University of Michigan, arrangements were made to have milk, purchased under contract from a local pasteurizing plant, served in different desired manners in various residence halls for men and for women throughout the second semester of the school year, 1952-1953. Due to delays, sampling covered only a period of thirteen weeks or a full three months. Milk in paper and glass half-pint containers was obtained from a University-operated cafeteria and snack bar.

Devices tested

The dispensers examined were the Thomas-Terry, Norris, and Monitor. Two different types of milk pumps were included. Also, for the purpose of the test, milk was served from large aluminum pitchers at one of the employees' cafeterias. For comparison, in addition to the use of these devices, milk was served in one-half pint glass milk bottles and in one-half pint paper containers.

Milk pumps

The two milk pumps, designated as "A" and "B", included in the tests were different models of the same manufacturer. Both were of the better type which could be disassembled for cleaning with the aid of special tools. These are shown in Figures 1 and 2. Such pumps are subject to the criticism that the can must be open to insert them and there are many parts to be disassembled, washed, disinfected, stored and reassembled at the places of use where the facilities for such operations are generally inadequate. Also the pumps leave a considerable amount of milk in the cans. Although the differences in construction between the two pumps are not great, it would appear that pump "B" is the more easily cleanable of the two.

Dispensers

The three bulk milk dispensers included in this test are those commonly marketed as meeting the requirements for bulk milk dispensers given in section ten of the Public Health Service Milk Ordinance and Code, 1953. These general requirements are:

(a) "It shall comply with the general requirements of item 10r on construction and repair of equipment.

(b) "No surface with which milk or milk products come into contact shall, while in use, be accessible to manual contact, droplet infection dust, or flies, but the delivery orifice may be exempted from this requirement.

(c) "All parts of the dispensing device with which milk comes in contact, including any measuring device, shall be thoroughly cleaned and subjected to bactericidal treatment at the milk plant and not at the retail vendor's establishment.

(d) "The dispensing device shall be filled at the milk plant and shall be sealed with two seals in such manner as to make it impossible to withdraw any part of its contents without breaking one seal, and impossible to introduce any substance without breaking the other. The use of an embossed seal identifying the milk plant is desirable, so that the refilling and resealing of the container by any person outside of the milk plant can be readily detected.

(e) "It shall mix the milk and cream thoroughly and automatically with each dispensing operation. This requirement may be waived in the case of milk or milk products which remain homogenous without mixing." "Caution: Experience has indicated that careful cleaning and bactericidal treatment and proper storage and refrigeration of filled cans are necessary in order to prevent contamination of the milk and excessive bacteria counts."

The devices used were those which happened to be available for testing at the time. Other manufacturers were invited to submit dispensers for testing but failed to do so. Those used were marketed under the names of Terry-Thomas, Norris, and Monitor. They are not

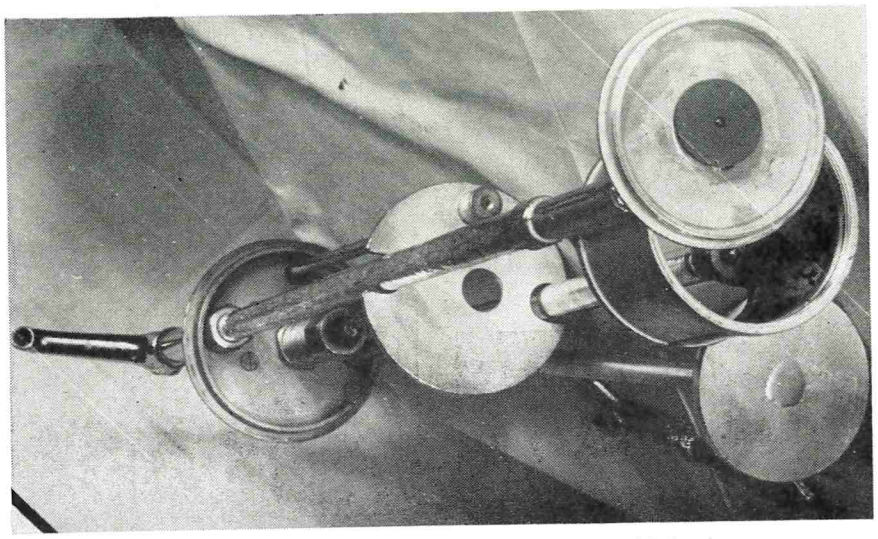

Figure 1. Milk pump A, partially disassembled.

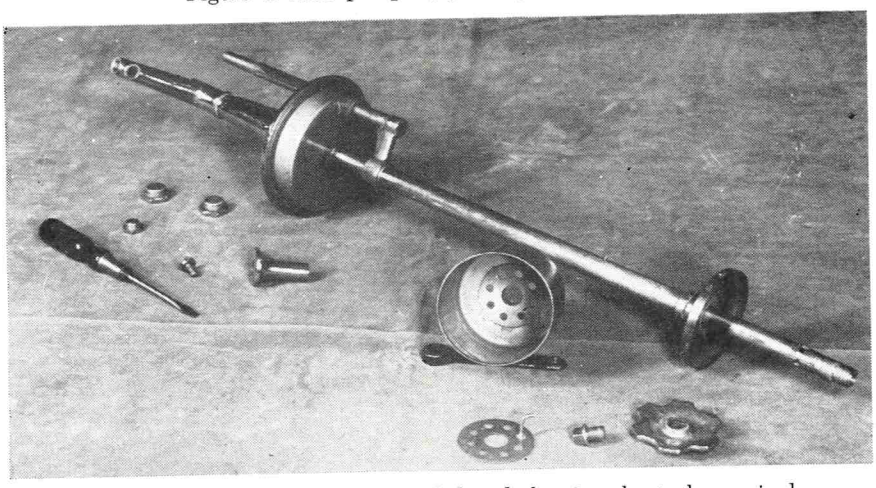

Figure 2. Milk Pump B, disassembled and showing the tools required.

identified in the tables of results but simply designated as dispensers "C", "D", and "E".

These dispensers were quite similar insofar as the refrigerated cabinets are concerned. The differences in outlet tubes are shown in Figures 3, 4, and 5. The new and improved type of outlet later developed by Norris and now in production is shown in Figure 6.

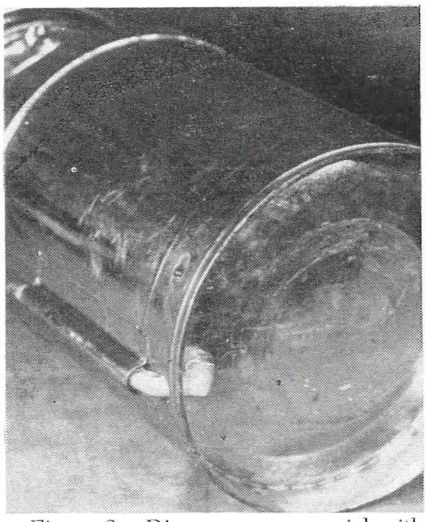

Figure 3. Dispenser can, special with single service white rubber discharge tube.

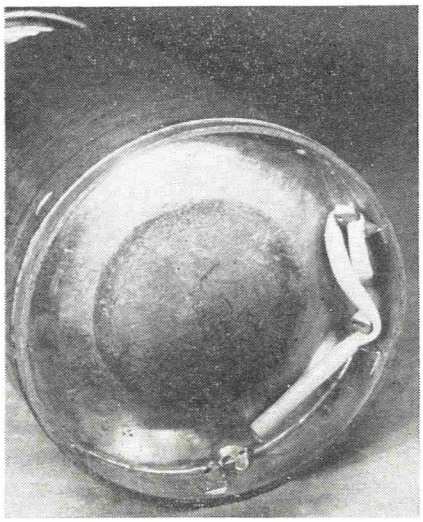

Figure 4. Dispenser Can, with attached single service white rubber tube.

Pitchers

The milk pitchers used were of aluminum and somewhat battered but are believed to be representative of pitchers that are likely to be used for this purpose.

Glass bottles

The milk in glass bottles was in standard one-half pint units with plug type caps. The bottles were washed at the plant in a standard soaker type bottle washer which normally gave satisfactorily washed and disinfected bottles as used in the everyday milk plant operation.

Paper containers

The paper containers were paraffin coated, factory made of the type supplied by the American Can Company, which were filled mechanically at the milk plant.

Plant supplying milk

All milk used in the experiment was supplied by a milk plant processing about 20,000 quarts of milk daily. It is part of a national chain of dairies maintaining its own system of laboratory control. The building is old and somewhat crowded. The equipment meets modern standards but has been in use for a number of years. The pasteurization process involves holding milk at 143° F. for thirty minutes or more. Compared with other milk plants throughout the nation this plant would be rated perhaps a little above average from the standpoint of equipment and efficiency of operation.

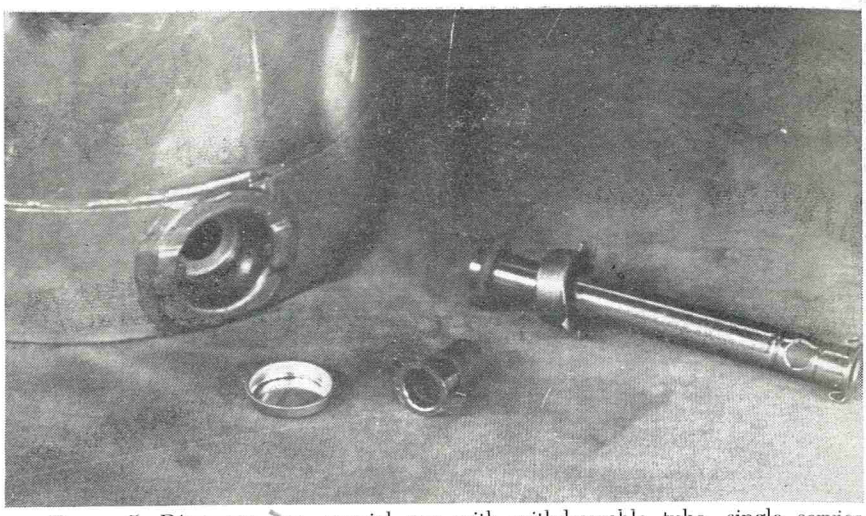

Figure 5. Dispenser can, special can with withdrawable tube, single service valve and cover.

Figure 6. Improved outlet to milk can. Outlet tube is coiled in well and sealed with single service metal cover.

Handling of milk cans

The bulk milk cans used for supplying milk for the various dispensers were washed and disinfected in a mechanical can washer used solely for this purpose. Farmers milk cans were washed in a separate can washer used exclusively for that purpose.

This plant had been accustomed to handling milk in five gallon cans for use in dispensers having rubber tube outlets. For the Monitor dispenser it was necessary to instruct their operator in how to remove and wash the collapsable stainless steel milk tube, how to insert the single service rubber valve and gasket while reassembling the can and tube, and how to heat treat the assembled can before filling.

Filling cans

In filling all cans the traditional and common type of pipe line can filler was used. This consisted of a piece of stainless steel tubing, inserted through a tee in the pipe line, which was lowered into each can to be filled and was removed dripping with milk before being placed into the next can to be filled (see Figure 7).

Personnel and sampling

An experienced sanitarian who, at the time, was taking graduate work in public health was employed part-time to collect samples of milk at the plant three days a week while at the same time taking necessary observation of plant practices. He also collected samples and made observations of milk handling procedures at several of the dormitories where dispensers were used. Another graduate student in public health collected samples and made observations at other sampling stations.

The samples were iced and delivered promptly to the laboratory for examination. Samples from dispensers and milk pumps were taken from glasses filled by the attendant. This factor might be expected to influence the bacteriological results. The milk in glass bottles and paper containers was iced and taken directly to the laboratory in the unopened container. Pouring and contact with the glass was not a factor in the results. Temperatures of the milk were taken regularly and recorded at the time of collecting samples. The samples were taken by means of autoclaved metal milk thieves and were placed in autoclaved screw capped sample jars of approximately 40 ml. capacity. The thieves used for collecting samples from glasses were of stainless steel, approximately 11 inches long and those used for collecting samples from milk cans at the plant were of aluminum, approximately 22 inches long.

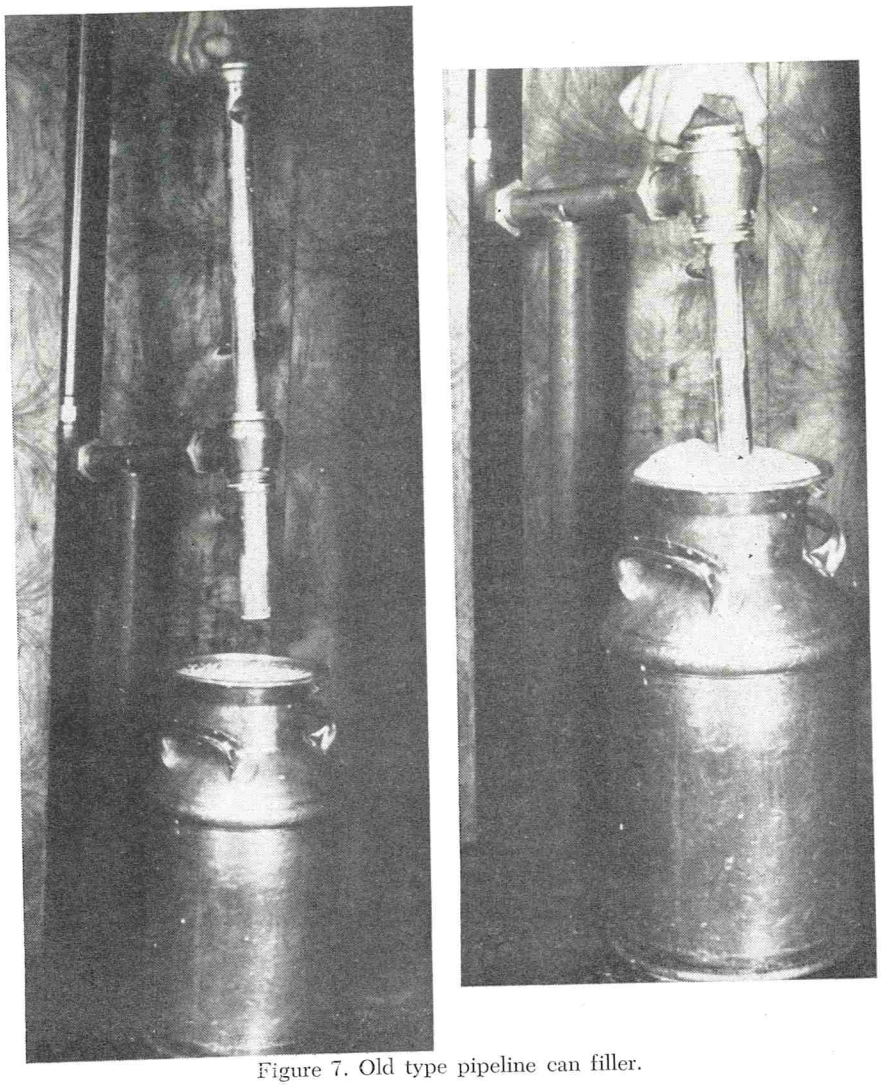

Figure 7. Old type pipeline can filler.

Tests performed

Standard plate counts were made, using the then standard tryptone glucose extract milk medium. It is recognized that the standard plate count has limitations as a measurement of bacteriological quality but was included because it has long been recognized and used as a yardstick for this purpose. It was felt that these counts, also, might aid in reflecting poor refrigeration as well as in interpreting the results obtained by the coliform tests. Coliform plate counts were made on all samples of milk using standard violet red bile agar. This test was included in the hope of measuring any gross contamination of the milk either at the plant or as dispensed at any of the sampling points. Pasteurization should practically destroy all coliform organisms so that those found generally may be assumed to have been introduced after pasteurization. This test gives more pertinent information than the standard plate count but, of course, is much less sensitive than the fermentation tube method.

Finally every sample of milk was examined by adding to brilliant green lactose bile broth in fermentation tubes one 10-ml. portion, five 1-ml. portions, and one 0.1-ml. portion of milk from each sample and examining each of these tubes

for the presence or absence of gas after incubation at 35° C. for 48 hours. The results are reported as most probable number of coliform organisms per 100 ml. of sample. At frequent intervals positive presumptive tests were confirmed. This test is recognized as the most sensitive routine method that could be employed to detect chance contamination of the product by dairy plant workers or food handlers, or directly through the mishandling of equipment or through failure to properly wash and disinfect the equipment.

As a check on pasteurizing plant efficiency, phosphatase tests were run on samples from each sample station at least once a week.

Finally, occasional direct microscopic counts were made with a view to securing additional information as to the general bacteriological quality of the milk.

RESULTS OF STUDY

Time and space will not permit a presentation of the detailed results of examination of all of the approximate 78 samples of milk collected from each of the 9 sources. However, a summary of the results of these tests expressed in terms of percentage negative or meeting certain stated standards is given in Table 1.

Standard plate counts

Whereas only 52.6 per cent of the samples collected at the plant met the Public Health Service standard of not more than 30,000 standard plate count per ml, 72.4 per cent of these samples met the legal

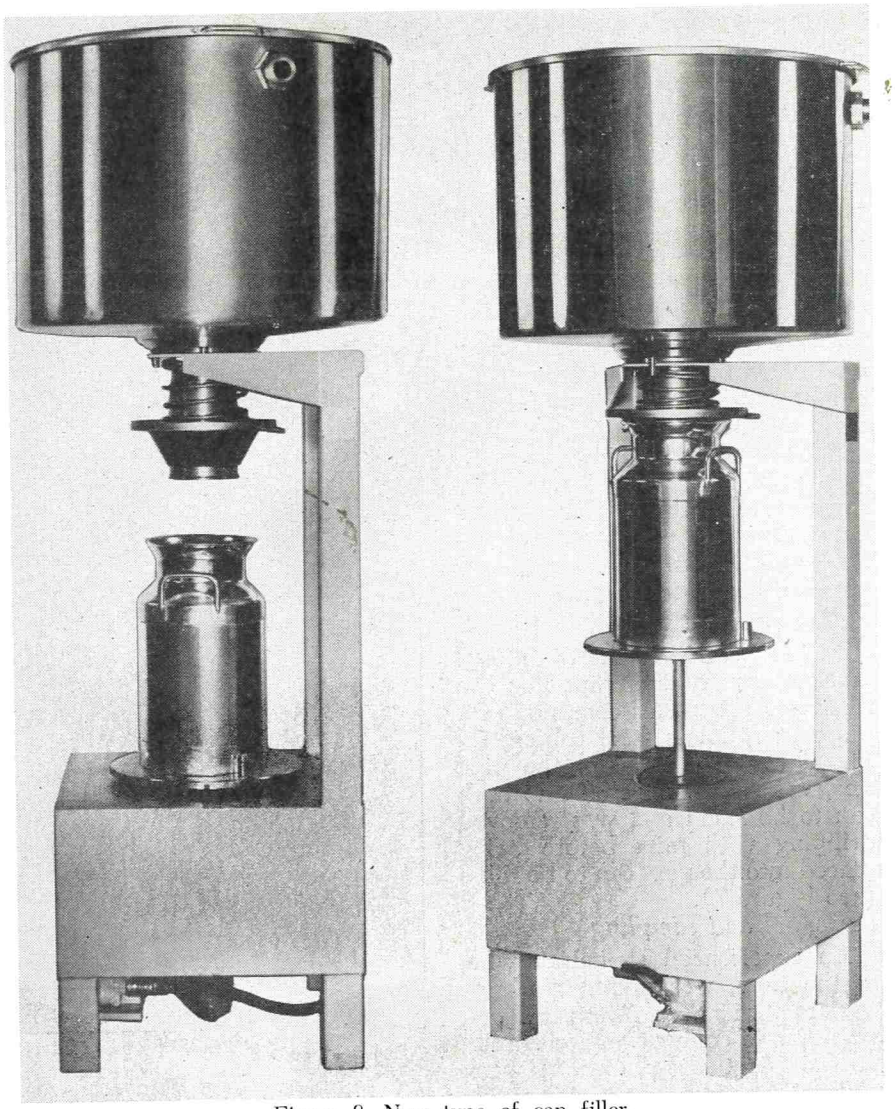

Figure 8. New type of can filler.

TABLE 1—GENERAL SUMMARY OF BACTERIOLOGICAL TESTS ON MILK FROM A COMMON SOURCE DISPENSED IN DIFFERENT WAYS DURING A THREE MONTH PERIOD (APPROX. 78 SAMPLES FROM EACH SOURCE)

	Results of coliform tests				Results of Standard plate count	
	Liquid medium[b]		Solid medium[c]			
Source of sample[a]	Per cent negative	Rank[d]	Per cent negative	Rank[d]	<30,000	Rank
	(MPN[e] <1.4)		(No colonies per ml.)		(per ml.)	
Milk plant	34.2	5	68.4	5	52.6	5
Glass bottles (½ pt.)	20.6	7	48.7	8[f]	56.4	2
Paper bottles (½ pt.)	27.0	6	62.2	6	54.1	4
Pitchers	7.7	9	18.0	9	35.9	9
Milk pump A	15.4	8	48.7	7[f]	43.6	8
Milk pump B	40.5	3	73.7	3	55.2	3
Dispenser C	38.4	4	71.8	4	51.3	7[g]
Dispenser D	41.0	2	92.3	1	51.3	6[g]
Dispenser E	42.1	1	86.8	2	57.9	1

[a]All milk processed at same plant.
[b]Brilliant green lactose bile broth.
[c]Violet red bile agar.
[d]1 = highest; 2 = next highest; etc. (for significance of rank see text).
[e]MPN = most probable number.
[f]Milk pump A ranked higher than glass bottles because of lower percentage of samples having coliform counts between 0.5 and 9 per ml.
[g]Dispenser D ranked higher than Dispenser C because of fewer number of plate counts over 100,000 per ml.

standard in Michigan of not more than 50,000 per ml. In comparing the results obtained in dispensing milk by various methods, this failure of the milk at the plant to meet a very high standard should be kept in mind because the milk as dispensed cannot be expected to be of any higher quality than the milk at the plant. Some reduction in counts might be expected during the period of 12 to 24 hours of refrigeration immediately following pasteurization. Since the samples of milk at the plant were taken as the cooled milk came from the pasteurizer, somewhat lower counts might be expected in milk sampled as dispensed the following day.

Judging from the results obtained by the standard plate count all methods of dispensing except milk from pitchers and milk pump "A" show practically as good or better compliance with the 30,000 standard as milk sampled at the plant.

Coliform plate counts

The percentage of samples producing no coliform colonies on violet red bile agar plates is slightly higher for dispensers "C", "D", and "E" as well as for milk pump "B" than for milk sampled at the plant. Milk from pitchers gave only 18 per cent negative results, and milk from glass bottles and from milk pump "A" showed an appreciably lower percentage of negative coliform plate counts, while milk from paper containers showed only a slightly lower negative percentage than did milk from the plant. This is recognized as a relatively insensitive test which, however, has a more direct bearing upon possible contamination after pasteurization than has the standard plate count.

Coliform tube method

The first column in Table 1, namely that showing percentage of samples with the most probably number of coliform organisms of less than 1.4 per 100 ml, represents the most critical of the tests performed. Dispensers "C", "D", and "E" and milk pump "B" all showed a higher percentage of tests negative than did milk collected at the plant. Milk from paper containers gave a somewhat lower percentage of negative tests than did milk from the plant. Milk from glass bottles showed a still lower percentage of negative tests, milk from pump "A" still lower, and milk from pitchers rated lowest of all.

Phosphatase test

The results obtained by the examination of a representative portion of the samples of milk from each source by the phosphatase test indicated consistently effective heat treatment throughout the period of the test. This gives assurance that the positive coliform results were due to re-contamination rather than to inadequate heat treatment.

Direct microscopic counts

The results of the direct microscopic examination of the samples were not of sufficient significance to justify reporting them.

Examination of rubber outlet tubes

Critical bacteriological examinations were made of a number of supposedly sterile rubber outlet tubes from both types of dispensers. Each tube was vigorously shaken in 50 ml. of sterile buffered distilled water. Bacteriological tests then were made of the water. Of 18 tubes examined by this method, 15 gave standard plate counts of <500 per ml. and only 3 had counts somewhat in excess of 500 per ml. None showed coliform organisms either on solid or liquid media.

In another series of tests on 24 tubes, half from each dispenser, the interior of each tube was examined by a special technic of rinsing with 15 ml. of sterile buffered distilled water followed by examination of the rinse water. Only 2 of the 24 tubes examined gave standard plate counts in excess of 10, and none were coliform positive on either solid or liquid media. These results are as good or better than those obtained by the examination of other parts of containers or equipment with which milk comes in contact.

Statistical analysis

An analysis of these results by statistical methods showed that there was no significant difference in the results obtained from samples of milk from the plant when compared with that from paper containers, glass bottles, milk pump "B" and dispensers "C", "D", and "E". The differences in milk served in pitchers and that dispensed from milk pump "A" were significant as compared with milk sampled at the plant. For further comparison the results of samples taken at the plant and samples taken from paper containers were combined and compared with the results obtained on milk in glass bottles. This comparison indicated numercially poorer results on the milk in the glass bottles; however, the difference was not statistically significant. By a similar method of comparison the results obtained on samples from milk pump "B" and from dispensers "C", "D", and "E" were not found significantly different from the results on samples from the plant and from paper containers.

These statistical analyses also showed that the differences between results obtained from samples of milk from pitchers and results obtained from the original milk sampled at the plant or from bottles were significant.

Temperature observations

Extensive temperature observations were made at the time of sampling. Duplicate samples were taken for the purpose of determining temperature. Temperatures of milk sampled at the plant varied from 36° - 48° F. Milk from pitchers varied from 40° - 59° F. That in glass bottles ran from 41° - 50° F. with a single sample reading 52° F. The temperature of milk in paper containers varied from 42° - 46° F. with a single sample at 52° F. The temperature of milk dispensed from milk pump "A" varied from 46° - 54° F. and from milk pump "B" 43° - 58° F. The temperature of milk from the three dispensers varied from 38° - 52° F. for dispenser "C", 36° - 54° F. for dispenser "D", and 42° - 62° F. for dispenser "E". The temperatures maintained in these dispensers could have been lowered easily by changing the regulators on the refrigerating units. However, they were left as set by the manufacturer.

Special efforts were made to take the temperature of milk that had remained over night in the outlet tubes of dispensers "C", "D", and "E". This temperature in one instance ran as much as 5° F. higher than the temperature of the milk in the can. Generally the difference was only 2° or 3° F. With the original temperature 45° F. or lower such milk still would be below 50° F. Samples of this milk that had remained in the tube also were collected and did not show

significantly different bacteriological results than those obtained on milk drawn later from the can.

Field observations

The good results obtained with milk pump "B" were unexpected although that type of pump is somewhat easier to clean than milk pump "A". Observations in the field indicate that the good results were probably due to efforts above and beyond the line of duty on the part of the woman responsible for cleaning this pump. On inspections made between meals, the pump was found completely disassembled, the parts washed and dried and laid aside wrapped in clean towels, pending re-use. This was not the case with pump "A" and could not be expected in commercial operation.

At the times of sampling, observations were made upon the methods employed in handling milk and, also, inquiries were made as to accidental happenings. Also, the managers of the cafeterias in which samples were being collected were encouraged to report all unusual happenings by telephone. In one instance a rubber discharge tube accidently was pulled off of a can intended for use in one of the dispensers causing milk to be wasted on the floor. It is believed that the outlet hose is not satisfactorily protected by fastening it on clips in the hollow at the bottom of the can. No difficulties were observed in handling the cans with the rubber outlet tube stored in a steel tube attached to the outside of the can.

In two or three instances the single service rubber valve was pulled out of the end of the metal tube in a can used in another dispenser causing a flood of milk. This happened when the operator withdrew the tube from the can when placing it in the cabinet. The last time this occured it was found to be due to faulty insertion of the valve by a substitute Sunday operator at the milk plant. The lugs in the valve that fasten in to the flange at the end of the tube had been doubled back upon themselves instead of over the flange so that when the operator inserted a special tool provided to withdraw the tube he pulled the valve out instead of withdrawing the tube with the valve intact. This accidental spilling of milk resulted in an accumulation of dry milk solids between the flange surrounding the outlet opening and the dispensing cabinet.

This is not likely to happen often as it results in economic waste and the operator has to clean up the spilled milk. All these operating difficulties occured during the first few weeks of the test and did not happen again during the remaining months.

Milk can filler

Observation of the operation of the milk can filler at the plant led to the conclusion that regardless of whether the bacteriological results were favorable or unfavorable this potential source of contamination should be eliminated. It was found that at least two manufacturers are offering a new kind of can filler shown in Figure 8 which offers protection to the milk during filling equivalent to that obtained in the use of bottle fillers. In our opinion the use of such fillers should be required.

Can washing

Another possible hazard not observed in this study due to the use of separate can washers would be the washing of cans, in which the pasteurized milk is to be placed, in the same water used for cans in which the dairy farmers deliver raw milk. Failure to maintain the temperatures of the wash water above 140° F. might result in introducing milk borne pathogens into the cans. It is believed that it is a reasonable precaution to require a separate washer for the dispenser cans. Small operators could use the relatively cheap can scrubber followed by sterilization over a pedal-controlled steam jet.

CONCLUSIONS AND RECOMMENDATIONS

A review of the data presented herein leads to the conclusion that milk dispensed by means of devices "C", "D", and "E" as well as from milk pump "B" was of a good sanitary quality determined by bacteriological examination as the milk sampled at the plant and as milk from the same source dispensed in individual one-half pint glass bottles or one-half pint paper containers. However, a study of reports of frequent observations by sanitarians in the field lead to the reservation that the average food handler would not do the work required to keep milk pump "B" in the condition required to obtain the bacteriological results reported herein. Furthermore the residual milk left in the can presents a health problem as it is possible that an economically minded operator might either pour such milk into pitchers for serving or add it to the milk in a partly emptied can. Therefore, the use of this pump is not recommended.

It also is apparent from the field observations that the conventional type of can filler represents a hazard and that the use of the new type of filler comparable with a milk bottle filler should be required. Finally, in our opinion, the practice of fastening the rubber outlet tube by clamps in the bottom of the can presents a hazard, and the protection afforded by a closed well at the outlet of the can or an open metal tube on the outside of the can should be required. It is recognized that there are possibilities in the use of bulk milk dispensers for mishandling of milk by personnel at the milk plant or at the place where the milk is served. However, no equipment is absolutely fool-proof and at the milk plant the human factor may be cancelled out because washing, bactericidal treatment, and filling of dispensers is the responsibility of the same individuals who perform similar functions for bottled milk. It is believed that no greater hazard to health is involved in the use of milk from bulk milk containers than from one-half pint glass bottles .

At present the 3-A Sanitary Standards Committee is working on a standard for bulk milk dispensers. Until such time as that standard is adopted and available it is recommended that the following criteria be applied in the designation of acceptable bulk milk dispensers:

(a) An insulated refrigerated cabinet shall be provided to hold one or more dispenser cans with sufficient refrigeration capacity to maintain cans filled with milk at a temperature not to exceed 45° F. when such milk is placed in the cabinet at or below that temperature.

(b) Surfaces with which milk comes in contact shall be protected at all times from manual contact, droplet infection, dust or flies. Except while the milk can is in the dispenser, the sterilized wrapped

delivery tube shall be in an enclosed compartment to protect it during filling, transportation and storage, prior to use.

(c) The milk container shall be a standard milk can of tinned or stainless steel. The can and cover shall be washable by means of standard can scrubbers and can washers. Under special circumstances a single use disposable can with a similar outlet may be used.

(d) In filling cans at the milk plant the use of the type of can filler with valve similar to a milk bottle filler shall be required. In small well-operated and supervised plants the health officer may wish to authorize the use of the old type can filler with stipulated precautions.

(e) All parts of the dispensing device with which milk comes in contact shall be cleaned and subjected to bactericidal treatment at the milk plant, that is, no such part shall remain with the cabinet at the place where milk is dispensed. If use of a separate can washer is not required precautions should be taken to prevent possible contamination from residuals of raw milk from producers' cans.

(f) The edge of the cover and rim of the milk can used in the dispenser shall be punched with holes to permit sealing by the use of standard lead and wire seals at the milk plant. In sealing such cans one of the wires shall be left loose enough so that the cover can be loosened to provide air relief when the can is placed in the cabinet without breaking the seal.

(g) The part covering the milk outlet shall be either single service and non-replaceable or the outlet shall be sealed with a lead and wire seal.

(h) All rubber parts such as tubes or valves shall be of single service type and sterilized, applied at the milk plant and discarded at the place where milk is dispensed before the empty can is returned to the plant.

ACKNOWLEDGEMENTS

The investigators gratefully acknowledge the cooperation of officials of the University of Michigan particularly Mr. L. A. Schaadt, Business Manager of Residence Halls; Miss Kathleen Hamm, Chief Dietitian; Messrs. H. J. Helle and H. P. Wagner, Business Managers of Food Service; Mr. Harold Dunstan, Sanitarian; as well as the cooperation of the managers and dietitians of the Residence Halls in which the various dispensers were located. The manager of the milk plant and his assistants also rendered valuable help in this work. The field and laboratory work was done under the immediate supervision of the authors by Mr. Francis A. Juskiewicz, Mr. Louis Hemphill, Mr. John A. Watson and Mrs. Kerima E. Dormoi.

REPORT OF COMMITTEE ON APPLIED LABORATORY METHODS

(Continued from Page 121)

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CONTROL OF BACTERIOLOGICAL QUALITY OF RAW MILK ENTIRELY BY LABORATORY PASTEURIZED COUNTS

Information was obtained and opinion solicited from a number of people competent to express an opinion. Although a strong affirmative argument was advanced by Past President Barnum, the Subcommittee feels that *both raw and laboratory pasteurized counts are necessary.* Sour milk could conceivably pasteurize out to a very low count product, while a 100,000 per ml. raw count might not diminish on pasteurization.

It is the Chairman's belief that, where there is good field service there is less need for the laboratory pasteurization test as a supplement where standard plate counts are made on the raw milk than when other tests (methylene blue, direct microscopic, etc.) are used. This view is substantiated by data from the Chairman's own files, but it cannot be emphasized too strongly that the type of test used to grade the raw milk is far less important than the adequacy of the field service and enforcement. A really first-rate fieldman can improve a milk supply without any laboratory assistance—though the latter can be a great help—but without good field service the laboratory is likely to find itself just going through the motions but making no progress toward quality improvement.

Apart from the thermoduric aspect, there are distinct possibilities that undesirable farm practices and conditions may escape detection if reliance is placed solely upon laboratory pasteurized counts to control quality. Tests on the milk before and after pasteurization, supplemented by good field service, appear to be necessary in obtaining a satisfactory quality of milk.

Members of the Sub-Committee were F. W. BARBER, R. N. COSTILOW, J. C. MCCAFFREY, R. B. PARKER and G. W. SHADWICK with W. K. MOSELEY, *Chairman.*

THE NATURE, SIGNIFICANCE AND CONTROL OF PSYCHROPHILIC BACTERIA IN DAIRY PRODUCTS

The members of this Sub-committee, consisting of R. B. PARKER, W. S. MUELLER, W. K. MOSELEY, F. W. BARBER, with J. C. OLSON, JR., *Chairman,* have compiled a very comprehensive report. It is the recommendation of the Chairman of the Applied Laboratory Methods Committee that this report be published in full as a Journal paper. The Chairman of the Sub-committee has been so advised and the report will be published elsewhere in the Journal.

Members of the Committe on Applied Laboratory Methods: Dr. C. K. Johns, *Chairman*; Dr. F. W. Barber; Dr. R. N. Costilow; Dr. E. F. McFarren; Dr. W. K. Moseley; Dr. W. S. Mueller; Dr. J. C. Olson, Jr.; Dr. H. B. Richie; Dr. G. W. Shadwick; Dr. H. W. Weiser; Mr. R. B. Parker.

THE U. S. PUBLIC HEALTH SERVICE MODEL POULTRY ORDINANCE AND CODE[1]

T. E. SULLIVAN

Division of Food and Drugs, Indiana State Board of Health, Indianapolis, Indiana

The new Poultry Ordinance and Code which is to be recommended to State and local health departments by the U. S. Public Health Service marks another milestone in the efforts of public health agencies to provide more effective protection to the health and welfare of the American public. It has been the subject of many inquiries from health officials and a matter of interest and discussion among sanitarians. It has been the subject of some controversy, too, particularly during the early stages of its drafting.

Those of us who are working in the field of public health realize the prime importance of food sanitation —that is to say, we realize the hazard that can exist to the health and welfare of the consuming public if food for human consumption is not fabricated from clean, wholesome ingredients and is not processed, prepared and handled in such a manner that its wholesomeness is preserved. This hazard includes everything from impaired nutrition to actual illness or even death. It can exist in any food and can occur during any stage of its preparation —during manufacture, transportation, storage, or delivery to the consumer.

The problem that has always existed — it exists in some fields today — is to determine what constitutes an adequate safeguard to the consuming public — one which will assure protection from adulterated or contaminated food and at the same time will permit a given food industry to function economically in its particular field. It is possible to set sanitation standards so high that they will be unenforceable, or so low that they will not meet the public health objectives for which they were designed. It is also possible to have so many differing requirements for the same industry in various health jurisdictions that they become confusing to the industry and stifle normal distribution.

If it were possible to draft a single standard that would apply alike to all food industries, the problem would have been solved years ago. We know, however, the diversity of foods, the differences that exist in the raw materials that go into their manufacture, the special problems involved in their processing and preservation require the use of techniques tailored to the individual foods or related groups of foods involved. This, in turn, requires public health people to apply sanitation standards tailored to the particular food or groups of food which are to be controlled.

Such a standard, then, must be practicable of enforcement, effective in its requirements, and acceptable to the various public health or related agencies responsible for supervising the particular industry and to the regulated industry itself. Furthermore, it must be amenable to uniform interpretation and enforcement. All of these criteria have been met in the fluid milk and the retail public eating and drinking establishment fields where the U. S. Public Health Service ordinances and codes relating to those fields are universally accepted standards.

A similar standard, with the same objectives in view, is nearing completion for poultry and poultry products. It is to be known as the Public Health Service Recommended Poultry Ordinance and Code.

Before discussing the new Recommended Ordinance and Code in detail, it might be well to review briefly the history of the poultry industry, some of the problems that exist in that industry, their effect on the consumers of poultry and poultry products, and the public health considerations that led to the drafting of the ordinance.

Until a comparatively short time ago, poultry and poultry products were consumed generally in the immediate area where the birds themselves were raised. Birds raised for consumption in distant markets were usually shipped alive and slaughtered and processed for local consumption at the point of destination. During recent years, however, improved refrigeration methods, rapid transportation, advances in the science of poultry husbandry which have resulted in the mass production of poultry, and the demand of the consuming public for a wider variety of ready-to-eat poultry and poultry products has brought about a revolution in the processing and distribution of poultry. It is no longer a local industry. Poultry consumed in New York or Chicago may have been produced in California or Virginia or at some point hundreds or thousands of miles away. Today, poultry processing is not only big business but it is a highly competitive industry. Plants in the southwest and west are competing vigorously with plants in the middle west and east. As a result, the consumer is offered a wider variety of poultry products at a lower price than ever before. Per capita consumption of poultry in the United States in 1953 was 34.4 pounds, or a total consumption in excess of 5 billion pounds.

This, in turn, has brought about two principal problems affecting public health. Public Health agencies enforcing sanitation laws or ordinances can no longer supervise the operation of the plants where the poultry consumed in a given jurisdiction is being processed, or observe the birds before and after slaughter. Secondly, the tremendous increase in the mass production and consumption of poultry has brought about the construction of l a r g e , complex establishments which utilize new and revolutionary techniques in growing, processing and handling this type of food.

These, in turn, gave rise to a third problem — an increase in the number of food-borne diseases attributed to poultry or poultry products. Many of these outbreaks were caused by mishandling at the retail level or in the home, but a sufficient number were found to have been caused by contaminated poultry itself to cast suspicion on poultry as a food product. Health authorities voiced concern particularly over the sanitation controls in plants processing poultry and poul-

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[1]Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS at Atlantic City, New Jersey, October 21-23, 1954.

try products in their own and other jurisdictions. Consumers themselves have from time to time expressed their displeasure at some of the poultry and poultry products sold to them. As a result, some states and many cities adopted laws or ordinances or strengthened already existing ones designed to protect the consuming public in those jurisdictions from adulterated poultry. As might be expected, neither the ordinances nor the inspection programs were uniform between jurisdictions. Some left much to be desired from the standpoint of protecting the consumer. Some erected trade barriers which prevented the normal distribution of poultry.

Other states and municipalities, realizing these difficulties, requested assistance from the U. S. Public Health Service in meeting the problem. Numerous state and local officials individually requested the Public Health Service to develop a model poultry ordinance. The U. S. Livestock Sanitary Association and the Conference of State and Territorial Health Officers formally recommended that states and municipalities enlarge and strengthen their poultry inspection and sanitation programs, and that a model ordinance or regulation be developed as an aid to accomplish that purpose.

The poultry industry itself became concerned and requested assistance from the U. S. Food and Drug Administration, the U. S. Public Health Service, as well as from a number of state and local health officers in solving these problems.

As a result of these growing demands, the U. S. Public Health Service undertook the task of developing a model poultry ordinance, with joint responsibility delegated to the Milk and Food Program, and the Veterinary Public Health Section. Field studies were conducted to determine the problems of public health significance within the poultry industry. Existing Federal, State and local regulations and ordinances were studied and compared. From these, a tentative draft of sanitation provisions were prepared. The poultry industry itself was invited to assist in the preparation of the ordinance and advice and consultation were solicited from state and local health agencies.

This resulted in the formation of a public health-poultry industry liaison committee. This committee is composed of seven representatives from the Institute of American Poultry Industries and seven representatives of the Public Health Service and state and municipal health agencies. This committee was formed in 1952 and was charged with the prime responsibility of drafting the ordinance itself. The Public Health Group appointed to the committee was selected from State and local health departments and from specialists in the Public Health Service so that a broad spectrum of experience could be brought to bear on the problems. The group included Dr. John D. Porterfield, Ohio State Health Commissioner; T. E. Sullivan, Director, Division of Food and Drugs, Indiana State Board of Health; Dr. R. K. Anderson, Public Health Veterinarian, Denver, Colorado City-County Health Department; Charles L. Senn, Director, Bureau of Sanitation, Los Angeles Department of Health; Dr. James H. Steele, Chief of Veterinary Public Health, U. S. Public Health Service Communicable Disease Center, Atlanta, Georgia; Dr. Joe W. Atkinson, Poultry Inspection and Sanitation Specialist of the U. S. Public Health Service, and R. W. Hart, Kansas City Regional Engineer, U. S. Public Health Service. In addition, Dr. R. J. Helvig and Dr. James Lieberman of the Public Health Service rendered valuable service as consultants and advisors.

It should be recorded here to the credit of the poultry industry that its representatives contributed much to the success of the committee's work. They gave wholeheartedly of their time and technical knowledge and exhibited to a high degree their awareness of the industry's responsibility to the health and safety of its consumers. In the process of drafting this ordinance, the public health members of the committee obtained a liberal education in poultry economics and the industry members received a liberal education in public health philosophy and objectives.

The functioning of this committee illustrates another important point — the value of understanding between industry and public health and regulatory groups. Most of the early difficulties in the committee stemmed from misunderstandings or diverse interpretations of the various ordinance provisions. As soon as the reasons for a requirement were understood by industry representatives or as soon as the public health members were shown the practical difficulties that would result if a provision were included, it became only a matter of adjustment to arrive at a complete understanding without sacrificing either public health objectives or industry economy.

After numerous meetings and much correspondence, study drafts of the sanitation part of the ordinance were sent out for review and comment to all state and territorial health officers; all major organizations within the poultry industry; the Food and Drug Administration; the Association of Food and Drug Officials of the United States; the U. S. Department of Agriculture; the Army, Navy, and Air Force; the American Veterinary Medical Association; the Conference of State Sanitary Engineers; the Conference of Municipal Public Health Engineers; the Association of Public Health Veterinarians; the International Association of Milk and Food Sanitarians; the National Association of Sanitarians; and the National Sanitation Foundation, as well as to various other individuals in educational institutions, in industry, and in health agencies.

All comments and recommendations received were considered and discussed by the Liaison Committee during a four-day meeting in June of 1953. Revisions were prepared and various provisions discussed in detail with officials of the U. S. Department of Agriculture and the U. S. Food and Drug Administration. These efforts resulted in a draft which was considerably shorter than the one previously circulated for review but which retained provisions essential to enforcement and sanitation control.

At a meeting held in March, 1954, the final draft was reviewed by the Liaison Committee. Technical assistance was provided by specialists in the U. S. Public Health Service, the U. S. Food and Drug Administration, and the poultry industry. Legal guidance was obtained from attorneys from General Counsel's

office of the U. S. Department of Health, Education, and Welfare and from counsel representing the poultry industry. Substantial agreement was reached on all provisions, and the ordinance has since been put into tentative final shape. It is now subject to editing and possible final revision prior to publication. While officials of the U. S. Food and Drug Administration, the Department of the Army, and the Department of Agriculture have concurred in the ordinance as it now stands, it has not yet received official clearance by these agencies or the Department of Health, Education, and Welfare.

During the discussions by the Liaison Committee, it was determined to separate the two basic problems related to the poultry industry. One involved the sanitary conditions which must exist in an establishment where poultry is slaughtered and processed; the other involved ante and postmortem inspections of the birds themselves at the time of slaughter. This separation was made because the technical problems relating to inspection of poultry for wholesomeness are complex ones and differ sharply from those involving sanitation. They, therefore, require special study and consideration. Furthermore, the pressing need of states and municipalities, judging from the inquiries made and requests for assistance received by the Public Health Service, principally concerned sanitary procedures and controls. Therefore, the part of the ordinance which has been completed thus far involves the commercial processing, storage, transportation and sale of poultry and poultry meat products, and includes sanitation and refrigeration factors.

Consideration is now being given to the drafting of Part 2 which will involve problems dealing with ante and post-mortem inspection of poultry. Health jurisdictions desiring to adopt the first part of the ordinance can do so, since provisions have been incorporated in the sanitation portion which will make it possible for those same jurisdictions to adopt the ante and post-mortem provisions at a later date, if they so desire. Since inspection of poultry for wholesomeness should be done only in a clean environment where adequate sanitary safeguards exist, compliance with the first part of the ordinance is necessary before inspection for wholesomeness begins.

The basic purpose of the ordinance is (a) to provide a guide to state and local regulatory officials and to the poultry industry in those matters involving sanitation of poultry plants and wholesomeness of poultry products, and (b) to promote uniformity in state and local regulatory programs affecting poultry so as to facilitate the acceptance of poultry and poultry products between jurisdictions, both in interstate and intrastate commerce.

The ordinance itself follows the familiar pattern used in the fluid milk and public eating establishment ordinances and codes. It provides a short form for adoption by reference and a long form to be adopted by those jurisdictions whose laws prevent adoption by reference. It provides for the issuance of permits, detailed enforcement procedures, serving of notices and orders, suspension or revocation of permits. One section contains detailed plant operating procedures; another deals with construction and general layout of the establishment. Other sections refer to floors, walls, ceilings, light, ventilation, water supply, toilet and handwashing facilities, etc. One section outlines in detail what constitutes satisfactory methods and procedures for chilling, freezing and refrigerated storage and transportation of carcasses or products including time and temperature factors.

This ordinance is unique in several respects:

1. The definitions section includes not only the usual definitions of health officer, establishment, person, etc.; it also defines what is adulterated poultry, what is misbranded poultry, and includes definitions for the various types of poultry such as dressed poultry, ready-to-cook poultry, giblets, and similar terms.

2. It provides for the prior approval of plans and specifications by the health officer for newly constructed plants or for extensive alterations of existing plants.

3. It prohibits the sale or possession of adulterated or misbranded poultry.

4. It specifies the type of labeling or identification that can be placed on packages or containers of poultry and prohibits the placing of any official stamp or other indication on the retail package which might imply to the consumer that the poultry has been inspected unless such poultry or poultry products were actually processed and packaged under continuous inspection including ante and postmortem examination by qualified persons.

5. It provides for the examination of pertinent records of the poultry plant or the dealer by the health officer having jurisdiction and authorizes the health officer to seize and hold any poultry or poultry products that he finds, or has probable cause to believe, are either adulterated or misbranded.

6. It authorizes the health officer to order the immediate closing of a poultry plant when danger to public health exists from its operation.

7. It sets up an orderly procedure for the revocation or suspension of permits, for hearings, appeals and other similar matters dealing with the issuance of orders, suspensions, and revocations.

8. It authorizes the tagging by the health officer or his representative of equipment or packaging materials which he knows, or has probable cause to believe, will contaminate poultry or poultry products and prohibits the use of such packaging material or equipment unless it has been brought into compliance with the provisions of the ordinance.

9. The detailed operating procedures to be followed by the poultry plant include disposition of dead birds, withholding of feed, the use of bleeding cones, the requirement that scald tanks be provided with a continuous flow of water, venting, separation of giblets from inedible offal, the washing and chilling of eviscerated poultry, refrigeration, storage, packaging and labeling of the finished product.

10. The ordinance is designed in such a manner that it can apply equally to the large processor who slaughters several hundred birds an hour and to the small operator who slaughters a comparatively small number of birds during the weekend.

11. It provides a method for the acceptance of poultry and poultry

products from other jurisdictions and prohibits the distribution of poultry or poultry products within a given jurisdiction unless they meet certain requirements as outlined in the ordinance.

12. Last, but by no means least, it is the first document of its kind in which the affected industry has had an opportunity to collaborate from its inception to its completion.

In short, it provides comprehensive sanitation controls for all phases of poultry processing and distribution, together with effective methods to be employed in removing adulterated poultry from the market and preventing the use of contaminated materials or processing equipment. It goes farther than the usual public health ordinance since it empowers the removal of mislabeled poultry from the market and sets up a method whereby the identity and acceptability of poultry processed in other jurisdictions can be determined and evaluated.

Time and space will not permit the detailed examination of each section of the ordinance; however, they include all of the known factors which would affect the wholesomeness or acceptability of the product. Expert advice and consultation from public health and industry specialists and the research that went into the various problems have, we believe, resulted in including adequate protection in those matters involving public health and welfare and the elimination of unimportant or controversial provisions or requirements which are not enforceable.

F. E. HOLIDAY

Mr. F. E. Holiday, a former member of the I.A.M. & F.S. and a past president of the Michigan Association of Sanitarians (when it was known as the Michigan Milk Insp. Assoc.) passed away in Florida, April 10, 1955 at the age of 70, burial was in Detroit.

Mr. Holiday had retired from the Detroit Health Department, Milk Insp. Division, on August 29, 1953 after 27 years of efficient conscientious service. His passing is mourned by his many friends especially those among the Sanitarians, the Dairy Industry, and the fraternal groups.

NEWS AND EVENTS

WASHINGTON STATE HOLDS SUCCESSFUL INSTITUTE

Over 200 representatives of the dairy industry from the Pacific Coast, Canada, Alaska and the Midwest completed a session of lectures, demonstrations, panel discussions, banquets, conducted tours and entertainment features at the recent 24th annual Washington State College Institute of Dairying, March 7-11.

Dr. H. A. Bendixen, acting chairman of the college's Department of Dairy Science, was program chairman for the five day session.

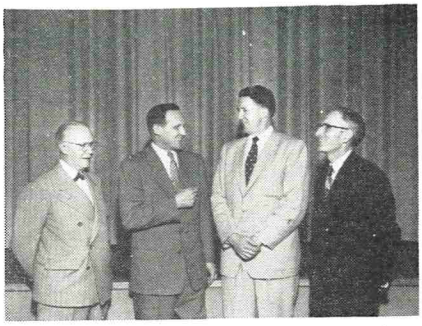
Also, more than 250 entries in the quality ice creams, cheeses, butter and milk contests were judged by a board of experts, and later, in part, by members of the Institute in open judging contests and quality clinics.

The Institute's educational fare included the operation of federal milk marketing orders; advancements in detergents and sanitizers; work simplification procedure; cause and prevention of milk flavor defects, especially in connection with modern bulk handling methods; sanitary standards; waste disposal; and the importance of psychrophils, organisms that live at low temperatures in finished milk products.

Outstanding speakers were Norman Myrick, New York, editor of American Milk Review; O. E. Ross, Chicago, Ill., Chief Chemist for National Pectin Products company; Lee Minor, technical service department, Wyandotte Chemicals Corporation and C. B. A. Bryant, Director of Field Service, Johnson & Johnson, Chicago.

Other notable out-of-state staffers Hugh E. McSweeney, Director of Merchandising, American Dairying association, Chicago; G. D. Sperry, technical department, Kelco company, San Diego; and Dr. I. C. Boyd, associate professor of dairy husbandry, and Scott A. Walker, assistant agricultural economist, both of the University of Idaho, Moscow, Idaho.

Four featured speakers were awarded the honorary degree Doctor of the Institute of Dairying (DID) by Dr. Bendixen. The four were: Dr. V. H. Nielsen, Extension Dairyman, Iowa State College, Ames, Iowa; Dr. W. C. Cole, Research Director, Arden Farms company, Los Angeles; C. A. Abele, Director of Public Health Research, Diversey corporation, Chicago, and Perry R. Ellsworth, Milk Industry Foundation, Washington, D. C.



SWAP SESSION: Four of the speakers at WSC's 24th Institute of Dairying swap comments between sessions. They are (l to r) C. A. Abele, Chicago, director of public health research, The Diversey corporation; Dr. V. H. Nielsen, Ames, Iowa, Extension dairy manufacturing specialist, Iowa State College; Perry R. Ellsworth, Washington, D. C., assistant to the executive director of the Milk Industry Foundation; and Dr. W. C. Cole, Los Angeles, research director, Arden Farms Company. The Institute opened on the WSC campus Monday and continued through Friday. Dairy producers, manufacturers, sanitarians and researchers from 8 states, Alaska, British Columbia, and Washington, D. C. are attending. States represented include Washington, Oregon, Idaho, California, Illinois, Iowa, Michigan and New York.

Valuable prizes were awarded to winners in the dairy products scoring and judging contests. Some of the awards were donated by 80 firms allied with the dairy industry. Outstanding entrants in the scoring contests also received Diplomas of Merit from the State College.

Agencies cooperating with WSC on the Institute were: Division of Dairy and Livestock, Washington State Department of Agriculture; Washington State Department of Health; Washington State Dairy Foundation; Washington State Dairy Products commission; Washington State Dairy Council; Washington State Association of Sanitarians; Washington Milk Sanitarians association; State College of Washington Institute alumni association, and the Washington State student chapter, American Dairy Science association.

Continued on Page 135

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Vice-Chairman, Joe Lewis .....Longview
Secretary, Henry C. Williams.....Dallas
Section Council:
Three years; W. W. Clarkson ..... Abilene
Two years; Lige M. Fox..Big Springs
One year; D. H. Evans .....Austin

South Dakota Association of Sanitarians

Pres., Ira DeHaai ..... Spearfish
Pres.-Elect, Howard Froiland, Aberdeen
Sec.-Treas., T. A. Evans, State Dept of Health .....Pierre
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Pres.-Elect, C. R. Mike O'Connor ..... Bellingham
Sec.-Treas., George Andrews, Room 125 Ferry Terminal, Pier 52, Seattle 4, Washington.

Wisconsin Milk Sanitarians Association

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Robert M. Keown .....Elkhorn
Sec. Treas., L. Wayne Brown, 421 Chemistry Bldg., Univ. of Wisconsin, Madison, Wisconsin.
Directors
Burdette L. Fisher .....Kiel
James T. Judd .....Shawano

NEWS AND EVENTS

(Continued from Page 133)

Also held in conjunction with the Institute was the Washington Milk Sanitarians annual business meeting and election of officers. New officers elected were W. J. Oldenburg, Universal Laboratory, Seattle, president; C. R. "Mike" O'Connor, Seattle Health Department, Bellingham, Washington; and George Andrews, Washington State Department of Agriculture, Seattle.

Attendants reported the Institute a fine success, and enjoyed beautiful sunshine for two days, and a rousing snow storm on the final day of the session.

A meeting of the Institute Alumni association resulted in the election of the following officers for the next year: James C. Greenaway, Carnation company, Seattle, president; Walter R. Ullrich, Okanogan Creamery company, Okanogan, Wash., vice-president, and Dr. Bendixen, perpetual secretary-treasurer.

OSC DAIRYMAN RECEIVES GRANT

Dr. G. H. Wilster, professor of dairy manufacturing at Oregon State College, has been awarded a Fulbright educational exchange grant for next school year to be a lecturer in dairy science in Denmark.

The grant, which covers all travel and living expenses, is the first ever awarded in dairy science in Denmark, one of the world's leading dairy countries.

Under the grant, Wilster will be on the staff of the Royal Agricultural and Veterinary college at Copenhagen. In addition to teaching duties there, however, he will present a series of public lectures and short courses in various communities throughout the country. He will also assist with dairy products research, especially in production of condensed milk and milk powders.

Wilster was born in Copenhagen and lived there until he was 18. All of his lectures under the grant will be in Danish.

A member of the OSC staff since 1929, Wilster is the author of three nationally-used reference books on "Practical Cheese Making," "Practical Butter Manufacture," and 'Testing Dairy Products and Dairy Plant Sanitation." The cheese book is now in its eighth edition and the butter text in its seventh.

He has also written more than 30 bulletins and more than 100 technical papers.

His research at OSC has centered around improvements in dairy products. For 14 years, he was head of the monthly service which scored and analyzed butter samples for Oregon dairymen as a means of improving quality and composition.

In 1949, he presented two technical papers at the World's Dairy Congress in Sweden and had one read at the 1953 sessions in Holland.

He has been secretary of Oregon Dairy Industries association each year since he came to OSC and has handled arrangements for the group's annual meetings here.

Wilster will leave the campus in July and will visit dairy products research centers across the country before going to Denmark in August. Mrs. Wilster will accompany him. They will return to Corvallis in June 1956.

ANNUAL MEETING SOUTH DAKOTA ASSOCIATION OF SANITARIANS

The Annual Meeting and Short Course of the South Dakota Association of Sanitarians will be held in the historic City of Deadwood in the beautiful Black Hills of South Dakota on June 29 and 30 and July 1, 1955.

A number of outstanding program speakers have been obtained including H. L. "Red" Thomasson, Executive Secretary of the International Association of Milk and Food Sanitarians; Charles A. Farish, National Sanitation Foundation Testing Laboratory, and Milton E. Held, Milk and Food Consultant, U.S.P.H.S. Region VI, Kansas City.

For a copy of the program and details relative to reservations, etc., write T. A. Evans, Sec.-Treas., South Dakota Association of Sanitarians, State Dept. of Health, Pierre.

ANNUAL MEETING MICHIGAN ASSOCIATION OF SANITARIANS

The eleventh annual meeting of the Michigan Association of Sanitarians was held at Kellogg Center, Michigan State College, East Lansing, Michigan, April 4, 5, and 6, 1955.

The business meeting of the association was held the afternoon of the 5th, and was called to order by the president, Mr. Clifford Bracy. Following the secretary-treasurer's reports, the chairmen of the various standing committees were called upon to outline their work. The one of particular interest, in these reports, was that of the membership committee. The chairman of this committee, Mr. Dale Brooks, reported a 20% increase in membership for the past year.

Various proposed changes in the constitution were presented to the membership for their consideration. Among the changes suggested were:

1. Increase dues so as to be in position to contribute to the International association's scholarship plan.
2. Provide for a planned progression of officers so that the 2nd vice president is promoted each year toward the presidency.
3. Instruct the nominating committee to choose more than one candidate for each office so that the membership would have a wider choice of officers.

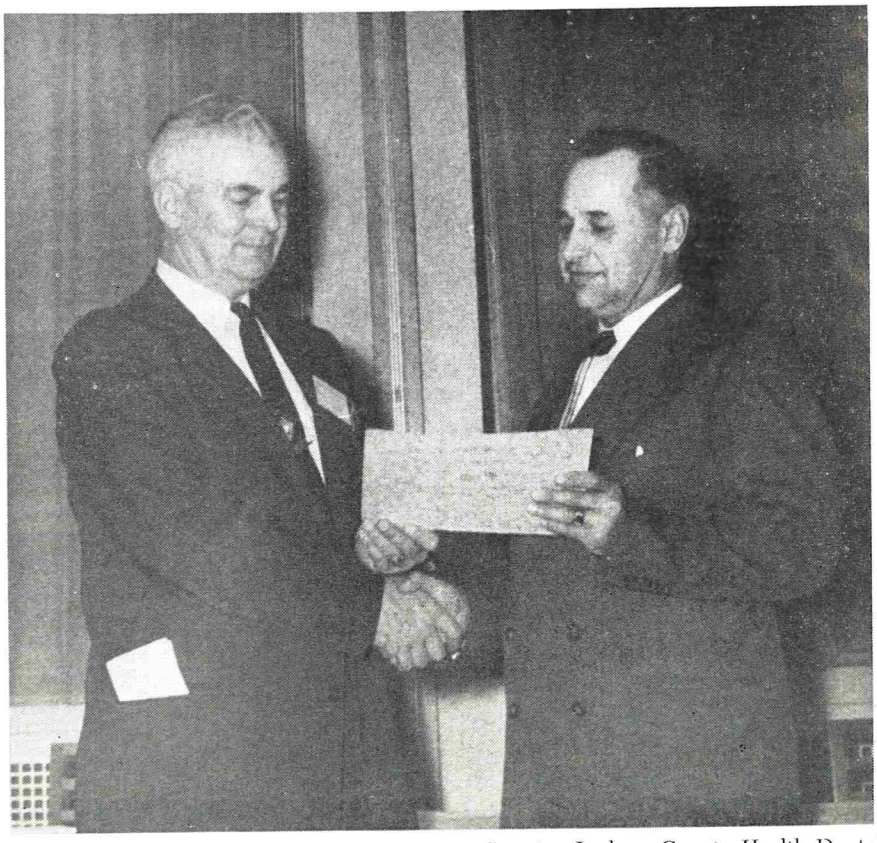
After some discussion, the proposed changes were approved.

The report of the nominating committee was then called for by Mr. Bracy and the proposed slate was elected unaminously.

At the annual banquet, following the business meeting, the association's annual Service Award was presented to Mr. Grey Turney, of the Lansing-Ingham County Health Department. Mr. Turney was so honored for his outstanding work on behalf of the organization and in the field of public health sanitation. He has been a tireless worker in the association and was a pioneer in the field of industry participation in foodhandler-training programs.

The banquet speaker was Mr. Paul M. Barrett, Extension Specialist, Department of Land and Water Conservation, M. S. C., East Lansing, Mich.

Clifford Bracy, Junior Past President, welcoming incoming president, Dale Brooks.



Clifford Bracy presenting Grey J. Turney, Lansing-Ingham County Health Dept., with the Michigan Ass'n Sanitarians' Service award.

FLORIDA ASSOCIATION OF MILK AND FOOD SANITARIANS

Pres., Dr. H. H. Rothe

The Florida Association of Milk and Food Sanitarians held its eleventh annual meeting April 5-8 at the University of Florida in Gainesville. A day and a half meeting of the Laboratorians Section, which is affiliated with the Florida Association, featured all aspects of the antibiotics in milk problem, including special lectures, demonstrations and laboratory practice. It was reported that the data of one State laboratory showed the standard plate counts on pasteurized milk to be below 500 (5 colonies on the one to one hundred dilution) approximately 15 per cent of the time. This percentage of samples might be reported as having "growth inhibitors" present as outlined in Standard Methods.

The Sanitarians program featured several outstanding national and local speakers. Miss Rita Dubois, Extension Consumer Marketing Specialist, USDA, Washington, D. C., listed the main reasons given by housewives for not using more milk was their belief that it was fattening, too high priced and that adults don't need milk as children do. "They are mistaken ideas, especially in that milk is not a high calorie food as compared to some others and the price has not risen as much as many other foods," she stated, adding "Adults must be made to realize they need milk nutrients, such as calcium, to help muscular work. Housewives complain of being tired all the time, but if they would drink more milk maybe they would have more energy for their housework." This goes for Sanitarians, too.

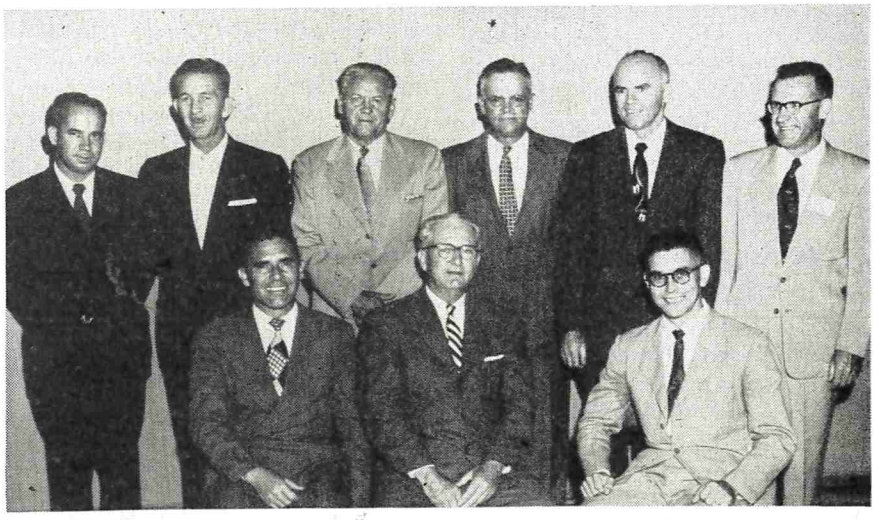
H. L. "Red" Thomasson was present to meet his many friends in Florida. He aptly pointed out that many sanitarians in the Southeastern area, as well as other parts of the country, do both milk and food work. Following this fundamental approach the Association decided to include "and Food" in the name of the Association and open the meetings to those in the state who do both milk and food sanitation work.

Dr. J. J. Sheuring of Georgia told of plans for the forthcoming IAMFS annual meeting to be held in Augusta, Georgia, October 4-6. The plans for an outstanding program are well advanced, with plenty of good entertainment, fellowship and a special ladies program. After hearing his report one realizes that this is a program that should be attended.

Dr. T. W. Workman, Borden's, New York, pointed out that both present forms of pasteurization, holding and HTST, were found to be sufficient for the complete destruction of polio viruses isolated from natural sources. Space does not permit review of all papers presented, but copies of the program are being sent to all affiliate secretaries for their information. Others interested may write for a copy. Briefly, other topics discussed include CIP automatically, clean milk production, instrumentation, stainless steel care, iodine compounds in sanitation, bulk milk sanitation, sanitary plant operations, public relations, milk secretion and milk composition.

At the annual business meeting the Association went on record as favoring in principle the idea of establishing scholarships by IAMFS as proposed by the Committee on Education and Professional Development. Ten Year Service Citation Certificates were presented to seven outstanding Florida men, shown in the picture.

The officers and directors elected are shown in the accompanying picture. Dr. H. H. Rothe, State Dairy Supervisor, Dairy Division, State Department of Agriculture, advanced to the Presidency and pledged an aggressive and cooperative program. He is well known throughout Florida as an outstand-



Florida Association of Milk and Food Sanitarians Officers and Directors—1955-56.

Left to right, seated: Vice President — S. O. Noles, Milk Consultant, State Board of Health, Jacksonville; President — H. H. Rothe, State Dairy Supervisor, Dairy Division, State Department of Agriculture; Secretary-Treasurer — H. H. Wilkowske, Associate Professor, University of Florida, Gainesville; Directors, standing: J. D. Robinson, State Dairy Supervisor, Plant City; J. S. Massey, Milk Sanitarian, Escambia County Health Department, Pensacola; Immediate Past President — C O. Stoy, Dairy Supervisor, Dade County Health Unit, Miami; J. H. Baker, City Sanitarian, Ft. Pierce; W. A. Krienke, Associate Professor, University of Florida, Gainesville; and L. A. Scribner, Dairy Inspector, City Health Department, Orlando. Not shown, Laboratory Section Chairman — Mary F. Schmoker, Laboratory Technician, Borden's Dairy, Orlando, Florida.

Florida Association Recipients of 10-Year Service Citation Certificates – 1955. Left to right: Brady S. Johnston, Vice-President, Dinsmore Dairy Company, Jacksonville; V. C. Johnson, President, Dinsmore Dairy Company, Jacksonville; J. French Koger, Chief Dairy Sanitarian, Dade County, Miami; and extreme right, H. B. Martin, Dairy Engineer, Miller Machinery and Supply Company, Miami. Other recipients not shown were Dr. H. W. Bolser, Sanitarian, Indian Rocks; H. M. Champion, Bay County Sanitarian, Panama City; and W. R. Thompson, Milk Sanitarian, City Board of Health, Jacksonville.

This is a joint award by IAMFS, the Florida Association and the University of Florida, represented, respectively, fourth, fifth and sixth from left by H. L. "Red" Thomasson, C. O. Stoy, retiring President of the Florida Association, and Dr. E. L. Fouts, Head, Department of Dairy Science, University of Florida, Gainesville.

ing spokesman for uniformity in regulation, believing that the best way to improve sanitation is through education. His number one objective is to establish a statewide "committee" representing all interested parties to meet together and interpret regulations, resolve differences and promote sanitation generally for the good of all concerned.

H. H. Wilkowske,
Secretary-Treasurer

KLENZADE SEMINAR DRAWS RECORD CROWD

Well over 700 people from virtually every state in the Union, and from Canada, attended the 18th Klenzade Educational Seminar recently held at French Lick Springs Hotel, French Lick, Indiana. The entire facilities of this famed hostelry were taken over by Klenzade for the duration of the three day sessions.

Among the guest speakers were professors from many of the leading universities including such eminent authorities as: H. S. Adams, Indiana University; Dr. W. S. Arbuckle, University of Maryland; Dr. F. J. Babel, Purdue University; Frank H. Beach, University of Illinois; Dr. Harold E. Calbert, University of Wisconsin; Dr. Robert Y. Cannon, Alabama Polytechnic Institute; J. E. Edmondson, University of Missouri; Dr. P. R. Elliker, Oregon State College; B. C. Goodale, Clemson Agricultural College; Dr. I. A. Gould, Ohio State University; Wilbur A. Gould, Ohio State University; Dr. H. W. Gregory, Purdue University; Thos. B. Harrison, University of Tennessee; R. F. Holland, Cornell University; Dr. J. J. Jezeski, University of Minnesota; O. W. Kaufmann, University of Illinois; Dr. R. R. Marsh, University of Illinois; Dr. A. V. Moore, Texas A & M College; Dr. H. B. Morrison, University of Kentucky; Dr. F. E. Nelson, Iowa State College; Dr. Z. John Ordal, University of Illinois; P. W. Rivers, Southwestern Louisiana Institute; Dr. Paul H. Tracy, University of Illinois; Dr. K. G. Weckel, University of Wisconsin; Dr. J. J. Willingham, Texas Technological College.

Included in the roster of scientific workers were: Dr. Franklin W. Barber, National Dairy Research Laboratory; Dr. Luther A. Black, United States Public Health Service; Dr. A. G. Castellani, American Institute of Baking; Dr. W. I. Corbett, Dean Milk Company; H. E. Eagan, United States Public Health Service; Dr. A. C. Fay, H. P. Hood & Sons; Dr. T. I. Hedrick, United States Department of Agriculture; Dr. C. K. Johns, Canadian Department of Agriculture; Dr. F. R. Smith, Pet Milk Company; Irvin J. Marshall, The Borden Company; Max C. Metziger, Blockson Chemical Company; Dr. O. M. Morgan, Allied Chemical & Dye Corporation; Dr. W. K. Moseley, W. K. Moseley Laboratories; Dr. Robert P. Myers, United States Public Health Service; Alfred Ratzlaff, Marigold Dairies, Inc.; R. W. Schultz, Armour & Company; Dale A. Seiberling, Ohio State University; Dr. G. W. Shadwick, Beatrice Foods Company; D. D. Shaw, Kraft Foods Company; Dr. John J. Singer, Versenes, Inc.; A. J. Steffen, Wilson & Company; Dr. H. A. Trebler, Baltimore; Dr. E. C. Thompson, Brooklyn, N. Y.; Dr. G. A. Vacha, Minnesota Department of Agriculture; Ben M. Zakariasen, Land O'Lakes Creameries, Inc.

A representative number of public health officials from various regulatory branches of state and federal health departments were also present, including such well known leaders as: Dr. J. W. Atkinson, United States Public Health Service; Harold J. Barnum, City and County of Denver Health Department; Paul Corash, New York City Department of Health; Herbert J. Dunsmore, Pittsburgh Department of Public Health; Dr. Milton R. Fisher, St. Louis Health Division; Franklin H. Fiske, City and County of Denver Health Department; T. S. Gable, University of Nebraska; Dr. Samuel H. Hopper, Indiana University Medical Center; E. R. Jackson, Florida Board of Health; Dr. S. C. Mount, Milwaukee Health Department; T. E. Sullivan, Indiana State Board of Health.

The list of 143 speakers also included many notables in the field of sanitation technology and those engaged in the various engineering aspects of sanitation as related to equipment and methods.

The Seminar opened officially at 8:30 on Thursday morning, March 24th, with a general session for the entire assembly. Thereafter, the meetings were divided into specialized group panel sessions which continued through Thursday afternoon and Friday. General sessions

were continued on Saturday morning. A banquet for the entire assemblage was held in the main dining room of the hotel on Friday evening, with a group luncheon on Saturday morning. Smorgasbord was served every evening at 10:00 P.M.

Papers given at the Seminar will be made available to those interested as soon as the work of reproducing them has been completed. A list of Seminar topics may be had by writing to Klenzade Products, Inc., Beloit, Wisconsin.

AMERICAN DAIRY SCIENCE ASSOCIATION TO HOLD PANEL DISCUSSIONS

Three panel discussions and 54 papers will highlight the formal sessions of the Manufacturing Section of the American Dairy Science Association during its 49th Annual Meeting at Michigan State College, East Lansing, Michigan, June 21 through 23rd. Research workers from 41 states, colleges, and universities will present the latest information in their fields. Industry research workers as well as six branches of the U. S. Department of Agriculture and two Canadian Experiment Stations will also be represented.

One symposium will deal with lactic acid cultures. P. R. Elliker, Oregon State College, will be chairman. Members participating will be: J. M. Sherman of Cornell University; M. L. Speck, North Carolina State College, F. E. Nelson, Iowa State College; F. J. Babel, Purdue University; and M. E. Powell, Knudsen Creamery Company, Los Angeles. Recent developments in the preparation of Starter Cultures will be discussed by V. W. Greene and J. J. Jezeski of the University of Minnesota, D. D. Deane and F. E. Nelson of Iowa State College. University of Wisconsin researchers will report on new methods of making cottage cheese.

A symposium will be held on the importance of dairy products in Human Nutrition. D. H. Jacobsen of the American Dairy Association will preside. Panel members will be: H. DeGraff, Cornell University; Margaret Ohlson, Michigan State College; D. B. Coursin, St. Joseph's Hospital, Lancaster, Pennsylvania; C. A. Elvehjem, University of Wisconsin, R. T. Holman, University of Minnesota; and Zoe Anderson, National Dairy Council.

One afternoon session will be devoted to current research on the manufacture of cheese. Ricotta, Cheddar, Liederkranz, and Blue cheese will be discussed.

A number of papers of immediate interest to the market milk industry will be presented. Topics will deal with featuring of coffee cream, keeping quality of pasteurized milk, and testing milk for inhibitory substances. Also, discussions will include butterfat and total solids in milk from bulk farm tanks and the effects of various methods of milk handling on the flavors of milk.

Means of detecting adulteration of butterfat continue to receive the attention of the dairy chemists as evidenced by the appearance of several reports on the program relating to this subject.

C. B. A. (BILL) BRYANT RETIRES

After 25 years of service to the dairy industry C. B. A. (Bill) Bryant, Field Service Director of Dairy Filters Department, Johnson and Johnson, retires.

In announcing Mr. Bryant's retirement February 15, 1955, Mr. G. W. Willits, General Manager of Filter Products Division, Johnson and Johnson, recalls just a few of the many highlights of Bill's illustrious career: Bill's "Never-Be-Broke" Club; his numerous writings on Dairy subjects having international acceptance; his amateur color movie travelogues on Dairy subjects receiving National recognition; his 25th Anniversary party, at which time Bill received the traditional gold watch, a symbol of 25 years of outstanding service with Johnson and Johnson. Bill is currently writing up a series of speaking engagements on his favorite subject, Quality Milk Improvement at the Farm Level.

As Bill's host of friends will recall, he has staged a wonderful comeback after a recent illness and will be available, following his retirement, as a consultant on matters pertaining to quality milk production at the farm level and, as conditions permit, a limited number of speaking engagements.

Between May 15th and October 1st, Bill will spend his time at his farm lake home at Montgomery, Michigan, remodeling a farm house. He plans to attend Dairy Science Annual Meeting at Michigan State College in June. While home he will re-edit his vast library of amateur color movie films. He will take eight or ten reels upon a dairy subject and place them to sound with his narration. Copies will be made so that they may be available for farm meetings or other gatherings. He is already receiving a brisk request for this service for these amateur color films.

All of Bill's associates and friends wish him a well-earned and happy retirement.

CORRECTION NOTICE

The name of H. Clifford Goslee, Conn. Dept. of Agriculture, Hartford, Conn., was inadvertantly left off the 1955 list of members of the Sanitary Procedures Committee. Members, please, correct your list accordingly.

HELPFUL INFORMATION

Editorial Note: Listed below are sources of information on a variety of subjects. Requests for any of the material listed should be sent by letter or postcard to the source indicated.

ABC's of Canning Soft Drinks. Available from Chris Buckley, Continental Can Co., 100 E. 42nd Street, New York 17, N.Y.

Progress in Farm-to-Plant Bulk Milk Handling. Available from Superintendent of Documents, Washington, D. C. Price 25 cents.

"Report of the Thirty-Ninth National Conference on Weights and Measures", National Bureau of Standards Miscellaneous Publication 212. Available from the Government Printing Office, Washington 25, D. C. 108 pages. Price 50 cents.

Proceedings: Second National Conference on Trichinosis. Available from U. S. Department of Health, Education, and Welfare, Communicable Disease Center, Atlanta, Georgia.

Index to Publications. Published by the American Society of Bakery Engineers, Chicago, Illinois. No charge.

Cleaning and Sanitizing Methods and Materials for the Meat Packing Plant. Published by American Meat Institute, Chicago, Illinois. No charge.

Uses of Sodium Phosphates in Bakery Products. Available from

Inorganic Chemicals Division, Monsanto Chemical Co., St. Louis, Mo.

Farm Shop Equipment, Its Usefulness on California Farms. Circular 443. Available from Agricultural Publications, 22 Giannini Hall, University of California, Berkeley 4, California.

"Insect Control in 1955", Special Circular No. 34, February 1955. Available from Bulletin Room, College of Agriculture, University of Wisconsin, Madison, Wisc.

Milk as a Food Throughout Life. Bulletin 447, December 1954. 55 pages. Available from Bulletin Room, College of Agriculture, University of Wisconsin, Madison, Wisc.

Storage of Cereal Grains and Their Products. Book by J. A. Anderson and A. W. Alcock. American Association of Cereal Chemists, University of Minnesota, St. Paul 1, Minn. 1954. 555 pages, 90 illustrations, 52 tables. Price $11.00.

Wine as Food and Medicine. Book by S. P. Lucia. The Blakiston Division, 330 W. 42nd Street, New York 36, N. Y. 1954. 149 pages. Price $3.00.

Agricultural Process Engineering. By S. M. Henderson and R. I. Perry. 402 pages. John Wiley and Sons, Inc. 440 Fourth Avenue, New York 16, N.Y. Price $8.50.

Industrial Detergency. William W. Niven, Jr., Editor. Reinhold Publishing Corp., 430 Park Avenue, New York, N. Y. 340 pages. Price $8.75. 1955.

Manufacturing Processes for Soluble Coffee. William H. Kanninen and Stephen E. Taub. Available from Coffee and Tea Industries, 106 Water Street, New York 5, N.Y. 1954. 20 pages, Price 50 cents.

State Sediment Grading Standards. A compilation of state and territorial sediment grading standards for milk and cream. Available from Sediment Testing Supply Co., 20 E. Jackson Blvd., Chicago 4, Ill.

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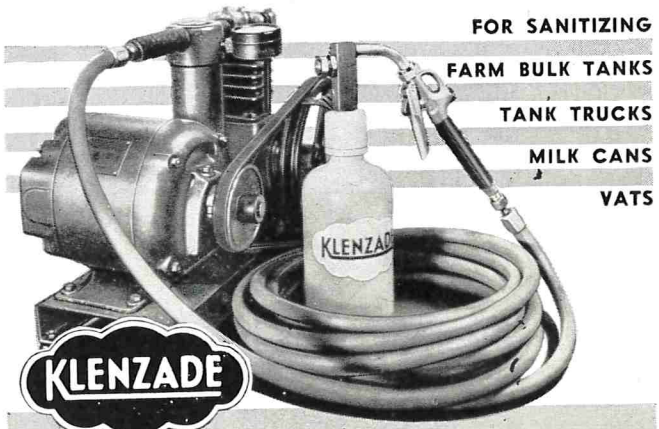

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QUESTIONNAIRE FOR INFORMATION ON VOCATIONAL DATA OF MEMBERSHIP

Dear IAMFS Member:

Your association and the Journal of Milk and Food Technology has steadily grown in stature over the years. Beginning with January 1954, the Journal was issued monthly. In order to continue this and to increase the size and scope, it is necessary to increase our advertising volume. Prospective advertisers have informed us that they need additional information relative to the professional activities, employment and other general data of our membership. We would therefore appreciate it if you would fill out the following questionnaire to the best of your ability and send it to H. L. Templeton, Chairman, Membership Committee, 6125 Florence Blvd., Omaha 11, Nebraska. The material you submit will be held completely confidential. In addition, we would appreciate having any comments you wish to make.

Very truly yours,
H. L. Templeton, Chairman
Membership Committee

1. *Which of the following occupational groups would you say you would fit? (You may answer more than one category.)*
   - Attorney ☐
   - Bacteriologist ☐
   - Chemist ☐
   - Consultant ☐
   - Educator ☐
   - Engineer (general) ☐
   - Farmer ☐
   - Food Processor ☐
   - Laboratory Technician ☐
   - Librarian ☐
   - Manufacturer of Food Equipment ☐
   - Manufacturer of Milk Equipment ☐
   - Milk Processor ☐
   - Physician ☐
   - Publisher ☐
   - Sanitarian ☐
   - Sanitary Engineer ☐
   - Student ☐
   - Veterinarian ☐
   - Other ☐

2. *How many of the following do you visit each year?*
   - Barber Shops _____
   - Butcher Shops _____
   - Dairy Farms _____
   - Food Plants (excl. milk) _____
   - Groceries _____
   - Hotels _____
   - Lodging Houses _____
   - Milk Plants _____
   - Nurseries _____
   - Restaurants _____
     - Drug Stores _____
     - Soda Fountains _____
   - Schools _____
   - Sewage Disposal Plants _____
   - Tourist Homes _____
   - Trailer Camps _____
   - Water Works _____
   - Other _____

3. *Milk Sanitation*
   a. Approximately how many cows are there on the farms under your supervision? _____
   b. Approximately how many milking machines are there on these farms? _____
   c. How many farms are now under the bulk milk pickup system? _____
   d. What is the total production of the farms? _____ plants? _____ under your supervision?
   e. Are the plants filling bulk milk dispensers? _____ How many? _____

4. *By which of the following agencies are you employed?*
   a. Government Agencies —
      - Federal ☐ State ☐
      - Civilian ☐ City ☐
      - Military ☐ County ☐

   b. Educational Institutions —
      - University or College ☐
      - High School ☐
      - Federal, State, or City ☐
      - Industrial ☐

   c. Laboratories —
      - Official agency ☐
      - Commercial or industrial ☐
      - Institutional ☐

   d. Industry —
      Milk and milk processing plants:
      - Receiving stations ☐
      - Evaporating plants ☐
      - Dry milk plants ☐
      - Ice cream plants ☐
      - Fluid milk plants ☐
      - Cheese plants ☐
      - Butter plants ☐
      - Butter ☐

   e. Other ☐

5. *Automatic Vending Machines — How many of the following are under your jurisdiction?*
   Carbonated and non-carbonated beverage _____
   Coffee _____ Sandwich _____
   Milk _____ Other Foods _____
   Soup _____ Other _____

6. *For statistical information, please indicate size of the city or place in which you have your residence. (If a suburb, check size of city of which it is a suburb.)*
   - Over 1,000,000 (in the United States, *only* New York, Chicago, Philadelphia, Los Angeles, Detroit) _____
   - 100,000 to 1,000,000 _____
   - 25,000 to 100,000 _____
   - 2,500 to 25,000 _____
   - Under 2,500 (non-farm) _____
   - Farm _____

7. *Please write in the state in which you have your permanent residence* _____

8. *Please furnish the following information relative to the car you drive.*
   Make _____ Year _____
   Miles driven per year _____

9. *Do the advertisements in the Journal of Milk and Food Technology help you in your work?* Yes ☐ No ☐

10. Comments:
    _____
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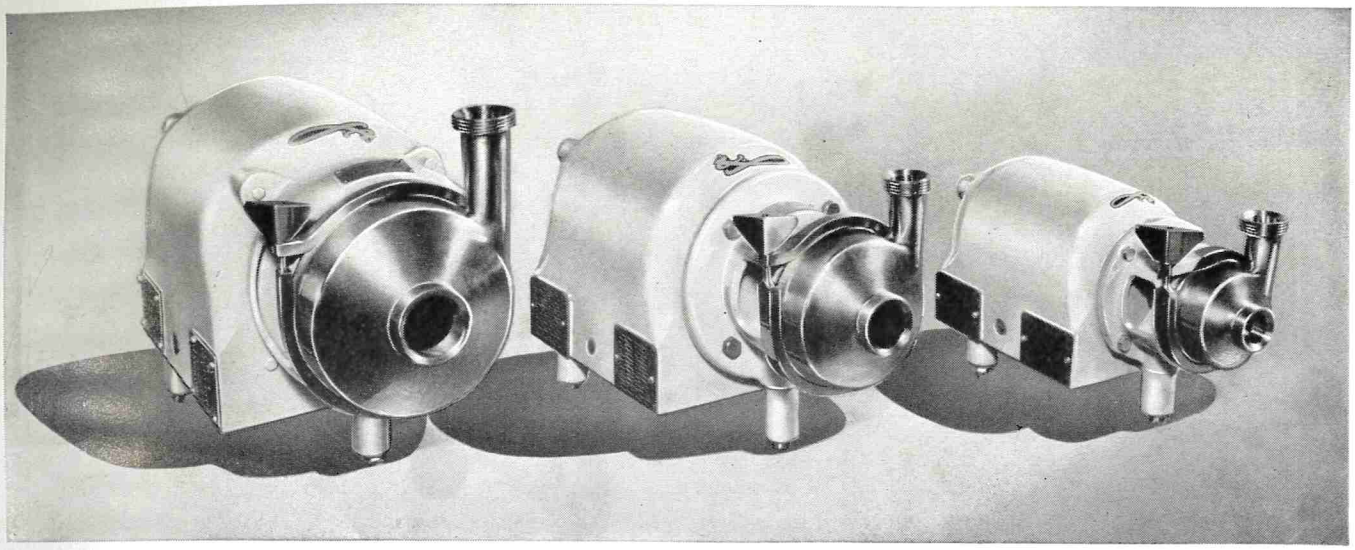

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