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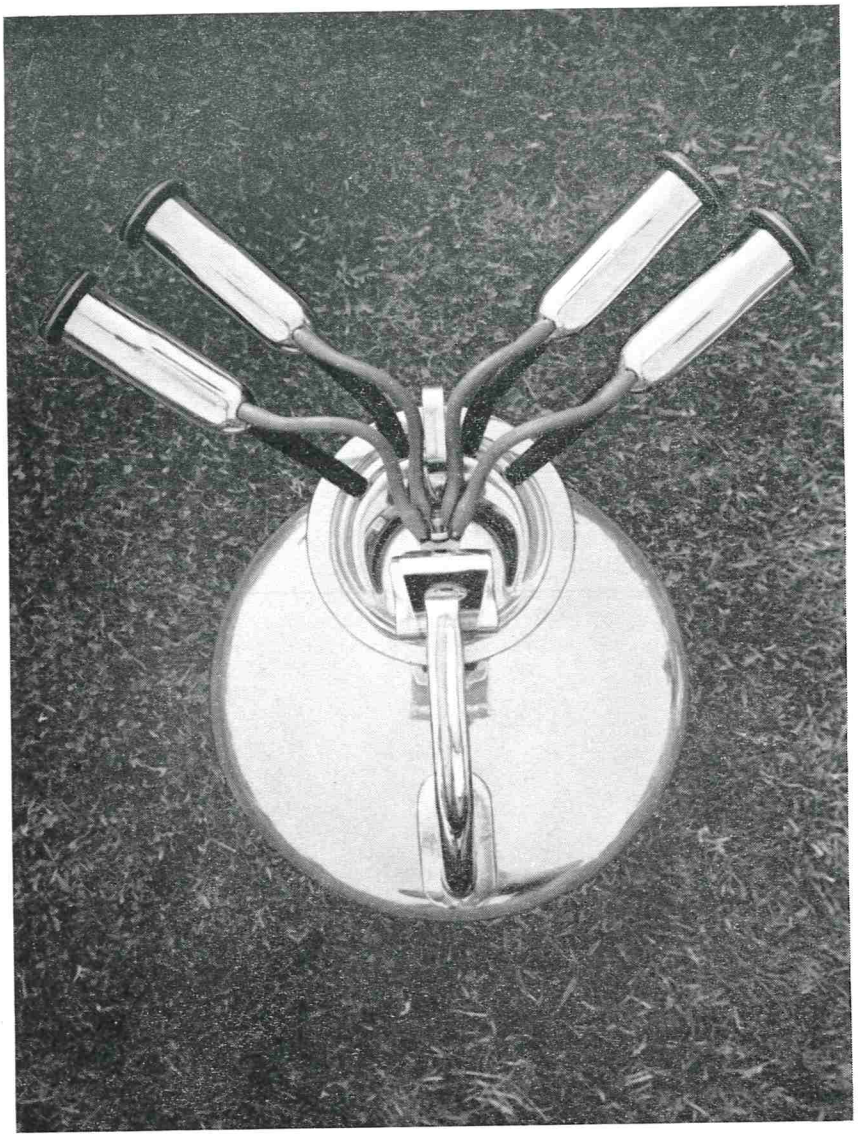

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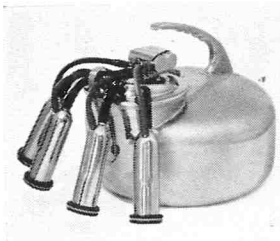

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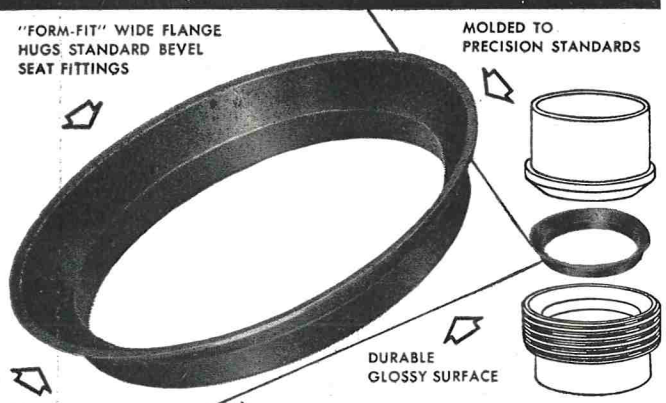

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PROGRESS REPORT ON THE DEVELOPMENT OF THE NEW PUBLIC HEALTH SERVICE RECOMMENDED FOOD SANITATION MANUAL[1]

By William C. Miller, Jr.

Food Sanitation Section, Milk and Food Program,
Department of Health, Education, and Welfare, Washington, D. C.

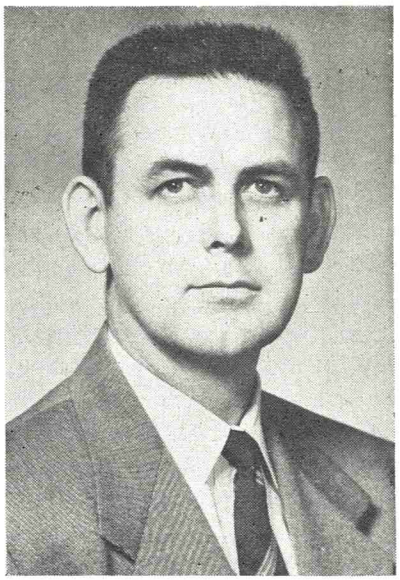
During 1959, it is expected that the first working draft of the proposed new food establishment manual, which is currently under development by the Public Health Service will be submitted for review and comment to the States and, through the States, to representative counties and municipalities, and to the food service industries involved. This manual will represent the third major revision of PHS recommendations for the public health protection of food during its storage, preparation, and service. The first was the 1940 edition, the second the 1943 edition.

The Ordinance and Code Regulating Eating and Drinking Establishments — 1943 Recommendations of the Public Health Service represents the most current sanitation standards for food preparation and service published by the Public Health Service. Although these criteria are based on the 1943 technology, many of the fundementals of food preparation set forth are as applicable today as they were 15 years ago. Accordingly, it might be said that many of the deficiencies in the 1943 Ordinance and Code are attributable to omissions rather than commissions.

The need to revise the 1943 edition or to prepare a completely new food establishment sanitation manual became apparent soon after the termination of World War II. In 1946 the Conference of State and Territorial Health Officers recommended that the code be revised and expanded to include provisions for other types of food service and food processing establishments such as meat markets, grocery stores, slaughter houses, confectionaries, etc. The National Sanitation Foundation Clinic in 1948, made a similar recommendation. The need to revise the 1943 recommendations was underscored both by advancements in technology and in public health practices. In addition, the experience gained by health authorities and restaurant operators in its application and enforcement prompted suggestions for modification of a number of the specific technical and administrative provisions.

Preliminary work on the development of a new manual was initiated in 1954. At that time two important steps were taken. The first was to request the food service industry, all of the States, and through the States, a small but representative number of municipalities and counties to review the 1943 Ordinance and Code and to submit suggestions for changes. Because of earlier comments in two areas; first, objections to the grading option of the 1943 Ordinance, and second, questioning the desirability and need of the interpretative code section, the views of the States and communities in these two areas were specifically requested.

The response was most gratifying in that replies were received from 38 States, the Territories of Alaska and Hawaii, and 122 municipalities and counties. Most comments related to the need for clarification and the need for incorporation of additional information based on research and technical advance-



Mr. William C. Miller, Jr., began public health work as a Sanitarian in Columbus County, North Carolina. He was commissioned in the Public Health Service in 1943 and has served in assignments to the State of Tennessee, UNRRA in Egypt and Greece, and Public Health Service regional and headquarters offices. Since 1951 Mr. Miller has been a member of the staff of the Washington office of the Milk and Food Program, Public Health Service. He is a graduate of Erskine College and holds the MS degree in Food Technology from the Massachusetts Institute of Technology.

[1]Presented at the 45th Annual Meeting of the International Association of Milk and Food Sanitarians, Inc., at New York City, September 8-10, 1958.

ments. With reference to the two matters on which views were specifically requested, 20 States and 84 cities and counties favored retention of the optional grading provisions, and 29 States and 105 municipalities and counties favored retention or expansion of the interpretative material. A discussion of suggested changes from States, communities, and industry was presented at the 1955 Annual Meeting of this Association by Mr. John D. Faulkner, Chief of the Service's Milk and Food Program.

The second important step, taken almost simultaneously with the first, was the reorganization of the advisory board structure to provide a higher degree of competency in the field of food establishment sanitation; and to provide for greater industry participation in the development of program guides. The Public Health Service Food Establishment Sanitation Advisory Committee was formally authorized by the Surgeon General in December 1955. This 16 member Committee was organized to provide representation from State and local health agencies, national public health and sanitation organizations, and the food service industries most directly concerned. In addition, two members from educational institutions were appointed. The Chief of the Milk and Food Program was designated as the Public Health Service representative on the Committee to serve as Chairman. The International Association of Milk and Food Sanitatarians is officially represented on the Advisory Committee by Mr. Jack Fritz, who is Chairman of this Association's Committee on Food Equipment.

The first meeting of the Advisory Committee was held in November 1956. This meeting was not concerned with the details of specific technical provisions but primarily with the establishment of the broad guide-lines which should be followed in the development of the new manual.

It was generally agreed that the new manual should serve as a guide to both public health officials and industry personnel. It should present a clear picture of the aims and objectives of a food and beverage sanitation program. It should be an educational document in addition to presenting a model ordinance and code. It should include an introductory statement of purpose and supplemental technical information, as required. It should be acceptable to the industries involved and should be effective in program application. For health department field use and industry application, it should contain clear and concise interpretations.

Basic considerations with reference to the approach to the new document, the scope of its coverage, and the format in which it should be presented were major items of discussion.

With reference to approach, the Committee made 7 specific recommendations as follows:

1. The approach should be an open-minded one, based on present-day needs and knowledge, embracing new techniques and procedures where these would improve current food sanitation practices.
2. The provision of the 1943 Ordinance and Code should be evaluated for their applicability and utility in the new manual.
3. The new manual should include an appropriate section emphasizing the advantages of an educational approach to food sanitation, and delineating the responsibilities of both public health agencies and industry.
4. A special effort should be made to differentiate between aesthetic factors and those essential to food protection.
5. An alternate procedure to "grading" which would be acceptable to health agencies and industry should be developed.
6. Consideration should be given to the feasibility of including provisions for industry self-inspection.
7. The place of periodic State evaluation in the implementation of local food sanitation programs should be set forth in an appropriate section of the new manual.

As to scope, the Committee unanimously recommended that no attempt be made at this time to cover retail food establishments other than food preparation and service types. In other words, it was felt that other types of retail food establishments, such as bakeries, meat markets, grocery stores, etc., should be covered separately. The Committee also recommended that, in view of the many different types of food preparation and service establishments now in operation, the definition of "restaurants" should be broadened and should clearly identify the additional types of operation covered by the manual.

Committee recommendations with reference to format were somewhat less definite. However, it was suggested that the new manual might best be presented in at least two parts, one dealing with the need, purpose, scope, and administration of an effective food and beverage sanitation program, and the other to contain the ordinance and code provisions. It was further suggested that the ordinance and code provisions should not be justified on public health reasons alone, but should take into account good industry practices and consumer expectations. Consideration was also given to the possibility of including an "appendix" or explanatory section which could provide details as to alternate methods of obtaining ob-

jectives, and which could be modified as required by technical changes.

The first meeting of the Committee resulted in several other developments which are particularly noteworthy. During this meeting, the Committee carefully reviewed the suggestions for changes in the 1943 Ordinance and Code which had been submitted to the Public Health Service by the States, communities, industry, other Federal agencies, and interested individuals and groups. Based on this review, the Committee identified some twenty-three technical and administrative problem areas on which further study or research should be undertaken. While the Committee members assumed responsibility for study of some of these problems, the Robert A. Taft Sanitary Engineering Center was requested to investigate others and to make recommendations to the Committee as to methods or procedures for their solution.

A highly significant development was an agreement by all members of the Committee to participate in the actual drafting of the new manual. This was particularly significant in that it represents a departure from the role normally played by previous milk and food advisory groups, and emphasizes the direct and personal interest of this Committee in the development of the new manual. To expedite the agreement, a three-man subcommittee met with the Public Health Service in January 1957, drafted a proposed outline of the new manual, and assigned the responsibility for drafting specific ordinance and code provisions to subcommittees.

With the background of the first Committee meeting discussions, together with a compilation of changes suggested by State and local health authorities and industry, the various subcommittees proceeded to develop recommendations covering their respective subject areas for incorporation into the first preliminary draft of the manual. This was critically reviewed by all Committee members. Their comments provided the basis for development of the second preliminary draft. Another meeting of the Advisory Committee in April 1958 was primarily for the purpose of reviewing the second draft.

To date, the revision of the proposed new food establishment sanitation manual has progressed through three drafts. In view of the extremely preliminary nature of these drafts, their distribution has been restricted to within the Public Health Service and to the members of the Advisory Committee.

While it would not be appropriate at this time to discuss the specific contents of the new manual in its present tentative form, there are several considerations which are of interest to the members of this Association.

The term "New Look" has repeatedly come up during Committee discussions. This term has prompted and been the object of considerable levity. However, it has now begun to connote a philosophy which appears to have a great deal of merit. Essentially, it is concerned with motivating both the official agencies and the food service industry to a mutual understanding of the duties and responsibilities of each. It is intended to stimulate closer working relationships between industry and health agencies in seeking the common objective – the highest possible degree of consumer protection.

During the past few years a number of methods have been successful in establishing good rapport between officials and certain industries which are subject to regulation. It will not be the purpose of the new manual to attempt a detailed discussion of all such methods, nor to try to establish any sort of an inflexible pattern. On the contrary, the purpose will be to point up some measures that have been found to be helpful. Much of this so-called "New Look" deals with intangibles and will be presented in Part I; however, the philosophy is also to be incorporated into the ordinance and code provisions to the extent possible.

Of interest also is the proposed reorganization of the ordinance and code provisions. For a good many years the food service industry and a number of health authorities have felt that the order of items in the 1943 Ordinance and Code has given undue emphasis to factors indirectly associated with food protection, such as floors, walls, ceilings, etc. The Committee has proposed a reorganization of the ordinance and code material to deal first with the sources of food, its wholesomeness and protection; second, the people who handle it; third, the equipment and utensils contacting food; fourth, essential sanitary facilities and their maintenance; and fifth, other physical facilities, their maintenance and operation.

It is most appropriate at this point to recognize publicly the keen interest and active participation in this project by every member of the Advisory Committee. The Food Establishment Sanitation Advisory Committee is truly a working group. In addition to participating in called meetings, each member has served on one or more subcommittees and has taken time from already heavy schedules to assist in the investigation of problems and the preparation of subcommittee reports.

As to the current status of the new food establishment sanitation manual, a working draft of the ordi-

nance and code is being assembled from the most recent Advisory Committee reports and recommendations. This phase of the project is being undertaken by the staff of the Milk and Food Program, with the very able assistance of Mr. A. W. Fuchs, who is a past president of this Association. As soon as the working draft of the new manual can be completed and reviewed by the Advisory Committee, it will be ready for distribution.

As previously indicated, it is expected that the working draft of the proposed new food establishment sanitation manual will be completed in 1959. At that time, copies will be distributed for review and comment to all States, and through the States, to a representative number of counties and municipalities. Copies will also be submitted for comment to industry, Federal agencies, and other interested organizations.

It should be emphasized that the new manual will have value to the extent that it meets the needs of the States and communities in the implementation of effective food sanitation programs. It is particularly important that it reflect the views of the official agencies and industries primarily concerned with the public health aspects of food establishment sanitation. Accordingly, it is urged that everyone concerned, who has the opportunity, carefully and critically review the working draft. Only by providing the Service and Advisory Committee with the benefit of your experience and thinking can the new manual most nearly meet the objective for which it is intended.

A STUDENT PROJECT IN COMMUNITY HEALTH

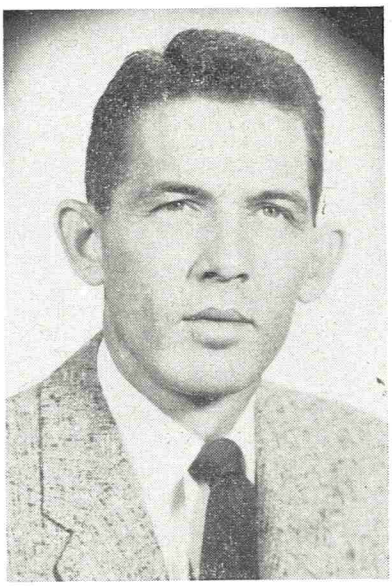
RICHARD MANSFIELD

Anderson County Health Department, Clinton, Tennessee

The problem of explaining and interpreting the functions and purposes of a public health department has been a subject of interest to the International Association of Milk and Food Sanitarians for a number of years. The feeling has been expressed, upon a number of occasions, that an appreciation and understanding of public health can best be initiated at the secondary school level. At the annual Association meeting in 1955, at Augusta, Georgia, this problem was discussed, in relation to the Scholarship Fund. It was suggested that stimulation of students in high school to consider the career possibilities of public health might be helpful in attaining the ultimate objective of the Scholarship Fund.

The report which follows covers the period October-December 1955. It is based upon the experience of the writer in his work with the Clinton, Tennessee High School. It is hoped that this report will serve to demonstrate how contact can be made with school authorities, what procedures may be followed and what subject matter may be presented to better inform students of the objectives of a modern community health program.

Prior to the time this joint project was conducted, public health education had been confined to about two weeks of health study normally taken during the sophomore year. The health teacher observed that many of her students had the pre-conceived idea that a health department was a kind of welfare agency whose main function was to care for the poor and the medically indigent. With this misconception of public health in the minds of her students the teacher made inquiry at our department to learn what assistance we might render.



Mr. Richard Mansfield is a Sanitarian in the Anderson County Health Department, Clinton, Tennessee, a position which he has held for seven years. In 1951 Mr. Mansfield received his Bachelor of Science in Public Health from Indiana University. He is a past President of the Tennessee Association of Sanitarians. Although his primary work is in a generalized sanitarian program, he has carried on extensive educational programs in the public schools of Anderson County.

In addition, and just prior to the start of the project, the Women's Auxillary of the Tennessee Medical Association announced an annual Health Project contest open to secondary school students throughout the state. The main purpose of this contest was to alert students to some of the health needs of their community and to report their findings with recommendations. This contest announcement stimulated both teacher and students to ask the question, "What can we do which will have lasting educational value to the individual student as well as prove meaningful to the community"?

A committee of students was formed to study the question and a number of possibilities were considered. The writer proposed that a sanitary survey be made of the city of Clinton. This idea appeared to offer the best opportunity for group participation. There were five health classes involved with a total of 150 students. Each student would participate in the survey and have an opportunity of going house to house, introducing himself to the occupants, describing the purpose of the call and filling out a survey sheet which listed items of public health significance. The survey form was provided by the Tennessee Department of Public Health and covered such items as sewage and garbage disposal, water supply, animals on premises, rodent and insect control and the general condition of the premises. Maps of the city were obtained from the City Recorder. Each block was given a number and these numbers recorded on maps. On the day of the survey each student was given a map and a block assignment for his survey.

After the survey had been completed, survey sheets were assembled and students tabulated results with assistance from the teacher and the writer. After each block had been given a numerical rating, the block was shaded on a large map with the appropriate color for the rating attained. Blocks scoring 95 per cent or over were left white, those scoring 85-94 were colored orange, 70-84 green and for a score below 70, red.

While the actual survey conducted by the students gave them first hand information on matters pertaining to environmental health, the follow-up was also of value to them in understanding the significance of their findings. This was accomplished through a series of classroom lectures, demonstrations and the showing of appropriate motion pictures. This gave the writer an opportunity to discuss diseases that can be controlled through hygienic measures, allowed a discussion of water supply control and sewage disposal, the place of insects and rodents in the possible transmission of disease, and gave the students a better concept of how a health department functions in protecting community health.

The project did not end, however, at this point and the teacher found a continuing interest in sanitation on the part of her students. Further exploration into other areas which had not been covered, were proposed. As a result, three additional days were scheduled for a study of milk and food sanitation. The phosphatase test, standard plate count and certain field tests were demonstrated. In addition, significant items of sanitation included on standard dairy and food inspection forms were discussed to explain further the many points which bear upon the sanitary quality of milk and food.

The influence of this project extended beyond the limits of the classroom. The Clinton-Courier News carried a number of articles describing the project and the sanitary survey. A summary of the results compiled by students through their house to house canvas was also published in the local press. One of the students was elected spokesman and he publicly presented the survey report before the Board of Aldermen. A highly complimentary letter was addressed to the teacher and students from the Mayor and City Recorder, commending them for their efforts in this connection. The Clinton Chamber of Commerce formed a, "City Beautiful Commission", and members of the county health department and city high school were appointed to membership.

It is of course, somewhat difficult to measure objectively the lasting value of a project of this nature but there are some tangible conclusions that can be drawn. The project developed a fine working relationship between faculty and students of the high school and the department of health. Each learned to integrate common interests and develop a project that was mutually advantageous. The students who participated learned by doing and their calls at households were meaningful when supplemented by lectures and class discussions of the place and importance of environmental health on community living. Certainly the health department benefitted in that some 150 sophomore students in the health class were given an insight into the aims and purposes of a modern public health program and its approach to the promotion of man's health through control of his environment.

It is the opinion of the writer that teachers and school authorities welcome guidance and assistance from local health department personnel when the approach is made from the advisory viewpoint. The experience at the Clinton High School has demonstrated that a worthwhile community project can be developed which will be enthusiastically received by health teachers and students alike. If such a plan is followed, the high school student will be better in-

formed about a community service which, in too many instances is looked upon as aid to the poor or related mainly to street cleaning and garbage collection. Public health sanitarians have much to contribute and are well equipped to assist in public health education of high school students at the secondary level.

THE INFLUENCE OF VARIOUS PRACTICES USED IN SAMPLING FOR THE A. B. R. TEST ON THE FAT TEST OF COMPOSITE SAMPLES OF MILK[1 2]

HAROLD E. CALBERT
Department of Dairy and Food Industries
University of Wisconsin

In 1951 Wisconsin adopted the ring test as an integral part of its Brucellosis control program.

The first round of ring testing disclosed 41.4% suspicious herds. Today, after seven years and 14 rounds of ring testing, only 3.0% of Wisconsin herds are ring test suspicious according to the reports of the Livestock Sanitation Division of the Wisconsin State Department of Agriculture.

As the percent of suspicious ring test herds decreased, the problem of false suspicious herds increased until better than 80% of all suspicious ring reactions were false – that is, no reactors were disclosed upon blood test of the herd; only suspects or negative animals.

In searching for a way to reduce the false suspicious reactions, a study survey was conducted during the 12th round of ring testing to determine the feasibility of testing a 1-ml. aliquot sample of milk taken from the dairy plant's patron composite milk sample.

This method of testing not only proved to be reliable but reduced the number of false suspicious reactions by 50%. As this method of testing seemed to offer definite advantages, the Wisconsin State Department of Apriculture requested the Dairy and Food Industries Department of the University of Wisconsin to conduct a series of studies to determine the effect on the fat test of the composite sample of milk of removing a 1-ml. aliquot sample of milk from the composite sample. Not only did it seem desirable to determine if the removal of this 1-ml. portion would have any significant effect on the fat test of the composite, but it also seemed desirable to determine whether or not the method of shaking the composite prior to removal of the 1-ml. portion would have any influence on the fat test of the composite sample.

To attempt to answer these questions, the following experiment was devised. The design of this experiment resulted from a series of conferences between representatives of the Livestock Sanitation Division and the Dairy and Food Divison of the Wisconsin State Department of Agriculture and representatives of the Dairy and Food Industries Department of the University of Wisconsin.

Professor Harold E. Calbert has been interested in dairy and food sanitation for a number of years. In addition to a course in Dairy and Food Plant Sanitation, he also teaches courses in Dairy and Food Chemistry, Food Ingredients, and Fluid Milk Processing. His research work has been in the fields of milk and food sanitation, bulk milk handling, and milk product research and development. Dr. Calbert is a Past-President of the Wisconsin Association of Milk and Food Sanitarians.

[1]Published with the approval of the Director of the Wisconsin Agricultural Experiment Station.

[2]The costs of performing the fat tests involved in this study were defrayed by the Wisconsin State Department of Agriculture.

EXPERIMENTAL PROCEDURE

Samples of milk from all of the patrons of the University of Wisconsin Dairy were involved in this study. Of the total of 23 patrons, 16 were can patrons and 7 were bulk patrons. The study covered a 15 day period during October of 1957. Each day a one quart representative sample of milk was obtained from each patron. The samples of the milk from the patrons on the bulk route were obtained by the operator of the bulk pick-up truck. These samples were refrigerated while being transported to the laboratory. The samples of milk from the patrons on the can routes were obtained at the receiving room of the Universtiy Dairy. The one quart representative samples of each patrons milk were held at 45°F. until they could be used for preparing the various composite samples. This usually represented a period of about two to three hours.

Preparation of Samples For Testing

The following procedure for handling the milk samples was used for all patron samples. The procedure outlined is for patron No. 13 and is typical of the procedure used for all patrons, and that was repeated each day during the 15 day test period.

1. The quart representative sample of milk from patron 13 was removed from the refigerator, poured into a 1-liter beaker and was thoroughly mixed.

2. A 50-ml. aliquot of the mixed milk was taken from the beaker and placed in a sample jar bearing the patron's number and the date. This was known as the fresh milk sample. At the end of the day's activities, this sample was taken to the D.H.I.A. Laboratory for the testing.

3. Then a series of 10-ml. aliquot samples was removed from the mixed milk sample and placed in each of the 51 composite bottles for patron 13. Each composite test bottle contained two bichloride of mercury preservative tablets.

4. Samples labelled 13C1, 13C2 and 13C3 were control composite samples. They were returned to the refrigerator without any undue stirring, shaking, etc.

5. Sample 13CV was slowly inverted five times to mix contents and was then returned to the refrigerator.

6. Sample 13CR was mixed while at a 45° angle in an upright position by rotating through a circle approximately 12 in. in diameter for 10 rotations in a period of 10 seconds. It was then returned to the refrigerator.

7. Sample 13CS was shaken through 25 complete up and down movements of about 1 ft. in 7 seconds. It was then returned to the refrigerator.

8. All composite samples of the 13V series (13V1, 13V2, 13V3, etc.) were slowly inverted 5 times to mix contents. Then on the first day of the test period, 1 ml. of the milk was removed from sample 13V1. After this, all samples of the 13V series were returned to the refrigerator. On the second day, 1 ml. of milk was removed from sample 13V2, on the third day from sample 13V3, etc. This practice was followed throughout the testing period until all 15 samples of the 13V series had a 1 ml. portion removed from them on the appropriate day.

9. All composite samples of the 13R series (13R1, 13R2, 13R3, etc.) were shaken while at a 45° angle in an upright position by rotating through a circle approximately 12 in. in diameter for 10 rotations in a period of 10 seconds. Then 1 ml. of milk was removed from the proper bottle. Following this all samples of the 13R series were returned to the refrigerator. Each day the 1 ml. sample of milk would be removed from the appropriate composite sample following a schedule identical to that described for the preceding series of samples.

10. All composite samples of the 13S series (13S1, 13S2, 13S3, etc.) were shaken through 25 complete up and down movements of about 1 ft. in 7 seconds. On the first day 1 ml. of milk was removed from sample 13S1. After this all samples of the 13S series were returned to the refrigerator. On succeeding days the 1 ml. of milk was removed from the appropriate composite following the schedule example as previously described.

The 1 ml. of milk removed from any of the above composite samples was discarded.

The procedure outlined above for patron No. 13 was followed in the same manner with all other patrons.

Testing of Samples

Each day the daily fresh milk samples were tested by the Dane County D.H.I.A. Laboratory using the authorized Babcock Test procedure. The samples were tested in duplicate and the results given to the Department of Dairy and Food Industries, University of Wisconsin.

The composite samples at the end of the sampling period wese tested by qualified testers of the Dairy Husbandry Department of the University of Wisconsin. The samples were coded and the testers were not informed as to the meaning of the code numbers. The authorized Babcock Test procedure was used in testing these samples. The results of these tests were given to the Department of Dairy and Food Industries, University of Wisconsin.

TABLE 1.— FAT TESTS OF NORMAL 15 DAY COMPOSITE MILK SAMPLES AND OF COMPARATIVE COMPOSITE SAMPLES FROM WHICH 1 ML. PORTIONS HAD BEEN REMOVED UNDER VARYING CONDITIONS.

Patron No.	Normal composite (Ave.)	C-V [a]	C-S [a]	C-R [a]	V1-V15 [a] (Ave.)	S1-S15 [a] (Ave.)	R1-R15 [a] (Ave.)
72	3.667	3.700	3.700	3.800	3.653	3.727	3.620
571	4.000	4.100	4.000	4.100	4.027	4.027	4.060
100	3.667	3.700	3.600	3.600	3.600	3.653	3.640
74	3.400	3.300	3.300	3.300	3.340	3.340	3.333
21	3.700	3.700	3.700	3.700	3.680	3.640	3.680
69	3.800	3.800	3.800	3.800	3.847	3.820	3.807
57	3.567	3.500	3.500	3.500	3.580	3.533	3.573
124	3.800	3.800	3.800	3.800	3.813	3.847	3.787
34	3.700	3.800	3.800	3.800	3.787	3.767	3.793
30	3.700	3.700	3.700	3.800	3.647	3.500	3.587
47	3.367	3.300	3.300	3.400	3.400	3.433	3.353
27	3.533	3.500	3.500	3.600	3.487	3.447	3.500
51	3.433	3.400	3.500	3.500	3.467	3.473	3.480
129	3.700	3.700	3.700	3.700	3.700	3.653	3.693
103	3.467	3.500	3.500	3.400	3.460	3.493	3.480
46	3.600	3.600	3.600	3.600	3.587	3.587	3.600
23	3.633	3.700	3.700	3.600	3.627	3.620	3.633
58	3.567	3.500	3.500	3.600	3.533	3.587	3.520
9	3.667	3.700	3.700	3.700	3.687	3.693	3.733
29	3.567	3.500	3.600	3.600	3.567	3.553	3.607
14	3.433	3.400	3.400	3.400	3.453	3.427	3.400
76	4.033	4.000	4.000	4.000	3.993	3.993	3.993
13	3.633	3.700	3.700	3.700	3.687	3.700	3.700
Ave. all patrons	3.636	3.634	3.634	3.652	3.635	3.634	3.633

[a]Legend: C-V = Sample inverted 5 times during preparation
C-S = Sample mixed by shaking during preparation
C-R = Sample mixed by rotating at 45° angle during preparation
V1-V15 = Series of composites (total of 15) prepared by inverting 5 times from which 1 ml. portions were removed during 15 day test period
S1-S15 = Series of composites (total of 15) prepared by shaking from which 1 ml. portions were removed during 15 day test period
R1-R15 = Series of composites (total of 15) prepared by rotating at 45° angle from which 1 ml. portions were removed during 15 day test period.

EXPERIMENTAL RESULTS

A summary of the results of the tests of the various samples are shown in the accompanying Table 1.

In column 1 are listed the various patrons of the University of Wisconsin Dairy. In column 2 is shown the average of the three normal composite samples of the milk derived from the patron for the 15 day test period. As an example, for patron No. 72 these would be samples 72C1, 72C2, and 72C3. The tests for these composites were 3.7, 3.6 and 3.7 per cent respectively. Therefore, the average of these tests would be 3.667 as shown in column 2.

The tests of the composite samples of milk that were mixed by different methods are shown in columns 3, 4 and 5. Again for patron No. 72, the 15 day composite test of this patron's milk that had been prepared by inverting the sample five times each day to mix it is shown in column 3. This was sample 72CV. Similarly the test of the composite sample that had been shaken as a means of mixing, 72CS is shown in column 4 and the test of the sample rotated for mixing 72CR is shown in column 5.

The tests of the 15 composite samples that had been mixed in a similar manner but from which a 1 ml. aliquot had been removed on a different day were averaged and are shown in columns 6, 7 and 8. For example, the average test of 3.653 for patron 72 in column 6 represents the average of the tests of samples 72V1 through 72V15. Likewise the tests of samples 72S1 through 72S15 have been averaged and are represented by the value 3.727 in column 7. The value 3.620 in column 8 is the average of the tests for samples 72R1 through 72R15.

At the bottom of Table 1 are shown the average of the various tests for all patrons. In column 2 the value

3.636 represents the average test of 69 normal composite samples of milk. In columns 3, 4 and 5 the averages given at the bottom of the column represent the average of the 23 composite samples listed above them. The values at the bottom of the columns 6, 7 and 8 are the averages for the 23 averages listed above them. Since each of these entries is in itself an average of 15 tests, the average at the bottom of the column represents the average of 15 x 23 tests or a combined total of 345 tests.

Discussion and Conclusions

The values of greatest interest in this experiment are those given at the bottom of Table 1. It is on the basis of these values that several interesting comparisons can be made. As can be noted from column 2, the average test of the milk delivered at the University Dairy during the period of this experiment was 3.636 per cent fat. This is an arithmetic average and not a weighted average. However, this basis of comparison will be used in comparing all tests. The influence of any practice studied in this experiment on the fat tests of the composite milk sample can be determined by a comparsion with the above average value for the normal composite tests.

It will be noted that no matter what practice was used the averages of the tests did not vary from the value of the normal test by more than 0.016%. This occurred in only one instance *i.e.* compare average for normal composite samples (3.636%) with that of the CR series (3.652%). In all other cases the variation was only 0.001 to 0.003%.

From a practical standpoint these values are of no great significance. The Babcock Test can be read to only the first decimal place and estimated to only the second. The variations encountered in this series of tests were all in the 3 decimal place and were of a very small order.

Therefore, it is the conclusion that any modification of procedures in preparing or handling composite samples that were tried in this series of experiments, had no effect on the fat test of the composite samples of milk that would be of any practical significance.

Summary

The removal of a 1-ml. portion of milk, for the purpose of making an A.B.R. test, from the composite sample prepared for the fat test has no appreciable effect on the Babcock Test of the composite sample. This investigation demonstrates that under conditions normally used for preparing composite samples, the removal of a 1-ml. portion from the sample prior to testing did not cause a variation in the test of the sample compared to a normal sample of more than 0.016%. This occurred in only one instance. In all other cases the variation was between 0.001 and 0.003%.

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MIXING OF MILK IN WEIGH TANKS[1]

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A mixing device suspended in weigh tanks of dairy plants significantly improved the mixing of the milk and aided greatly in the securing of a "representative" sample of the daily delivery for compositing. All weigh tanks from which the samples were secured were found to need some aid for mixing the milk. The mixing device tested was better than mechanical and air agitators in this respect. The method of mixing the milk did influence the butterfat value of the composite sample under commercial conditions.

Milk delivered to dairy plants by producers must be well mixed before securing a representative daily sample from which the composite sample, on which producer payment is based, may be prepared. The few published investigations (*2, 4, 7, 8, 9, 10*) dealing with the mixing of milk in weigh tanks indicate that well-mixed milk for sampling is difficult to obtain. Unpublished data (*3, 5, 11*)support the published work on the prevalence of inadequate mixing. This report is a summary of work attempting to show the incidence and magnitude of mixing problems, to solve such problems, and to assess the effect of inadequate mixing on composite sample butterfat tests.

Experimental Procedure

Seven weigh tanks of different make, shape, and capacity were selected for study. Four of these installations had mechanical agitators, one had an air agitator, and the other two had no aid to mixing other than the design of the weigh tank.

A chute was designed and fabricated to fit the weigh tanks of two plants. Installation of the chute in a weigh tank is shown in Figure 1. It was suspended under the strainer to combine the small streams of milk into a single stream with velocity sufficient to promote mixing in the tanks. An adjustable chute was used in the other five plants.

The chute was designed so that 1/4 of it length extended in front of the strainer of the weigh tank and to prevent milk spilling over at the rear end under the strainer. The slope of the chute depends upon the depth of the individual weigh cans. When installed the chute should hang in the upper third of the weigh tank. The delivery end of the chute was narrowed to about 1/3 the width of the weigh tanks.

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Samples of milk were taken simultaneously from the four corners of the weigh tanks ten seconds after dumping the last can of a producer's delivery, the time between dumping and sampling in "normal" plant practice. The sampling scheme was followed when the milk was mixed with no agitation, air agitation, mechanical agitation, and with the chute in place. Producers were chosen for sampling on the basis of volume of milk delivered, half of them delivering less than one-half weigh tank full of milk and half of them delivering more than three-quarters weigh tank full of milk.

Mixing was evaluated by comparing differences in the Babcock butterfat tests (*1*) of the samples taken from the weigh tank corners. All butterfat tests were read by the same person. To compare the relative efficiency of mixing, a simple analysis of variance (*6*)

[1]Technical Contribution No. 280, S. C. Agricultural Experiment Station

was made to estimate the variation among samples within weigh tanks for each method of mixing. Where it was desirable to make specific comparisons of the variances for any two methods of mixing milk, a ratio of the variances was used to compute an "F" value (*6*). The calculated "F" was then compared with the tabular value for the appropriate degrees of freedom to determine if the variances were significantly different.

The effect of chute mixing on the butterfat values of composite samples was evaluated in one plant. The producers delivering milk to the plant were split into two groups based on time of delivery, and the composite samples were collected using different means of mixing the milk in several pay periods.

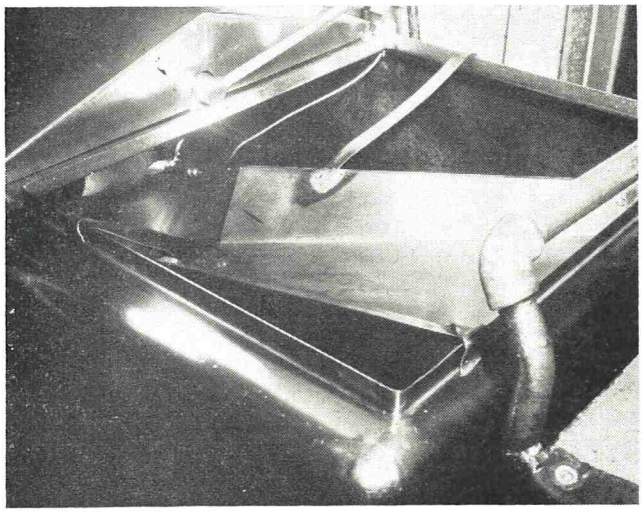

Figure 1. Chute in place under strainer in a weigh tank.

RESULTS

The variances calculated from butterfat values of samples from corners of weigh tanks according to method of mixing the milk and the size of the producer's delivery are presented in Table 1. In plants No. 1, 3, 4, and 7, weigh tanks with no agitation other than the design of the tank, mixed larger volumes of milk significantly[2] better than smaller volumes of milk. In the one other plant in which lack of agitation was evaluated (No. 6), the numerical size of the variance was smaller for the larger volumes of milk but the difference was not significant.

In plants No. 1, 3 and 5 mechanical agitators mixed larger volumes of milk significantly better than smaller volumes. In the one other plant equipped with a mechanical agitator (No. 6), the numerical size of the variance was smaller for the larger volumes of milk but the difference was not significant.

TABLE 1 — MEAN SQUARES CALCULATED FROM BUTTERFAT VALUES OF SAMPLES FROM CORNERS OF WEIGH TANKS ACCORDING TO METHOD OF MIXING AND SIZE OF PRODUCERS DELIVERY.

Plant number and fill of weigh tank	df[a]	No agitation	Mechanical agitation	Air agitation	Chute
Plant 1					
< ½ full[b]	18	0.6839	0.5461		0.0522
> ¾ full	18	0.2271[c]	0.0689		0.0329[d]
Plant 2					
< ½ full	18			1.4717	0.1244
> ¾ full	18			0.4428	0.0256
Plant 3					
< ½ full	15	1.2660	2.3060		0.1340
> ¾ full	15	0.6327	0.1233		0.0293
Plant 4					
< ½ full	18	1.0322			0.0233
> ¾ full	18	0.1918[c]			0.0250
Plant 5					
< ½ full	18		0.5156		0.0661
> ¾ full	18		0.0256		0.0217
Plant 6					
< ½ full	15	0.1420	0.0760		0.0287
> ¾ full	15	0.0987	0.0647		0.0264[e]
Plant 7					
< ½ full	18	0.8753[c]			0.1244
> ¾ full	18	0.1639			0.0850

Legend:
[a] = degrees of freedom.
[b] = <, less than, >, more than.
[c] = 17 degrees of freedom.
[d] = 21 degrees of freedom.
[e] = 14 degrees of freedom.

In all plants in which lack of agitation was evaluated (No. 1, 3, 4, 6, and 7), the chute mixed both large and small volumes of milk significantly better than no agitation. The chute mixed both large and small volumes of milk significantly better than air agitation in the one plant (No. 2) equipped with an air agitation device. In four plants equipped with a mechanical agitator (No. 1, 3, 5, and 6) the chute mixed both large and small volumes of milk significantly better than mechanical agitation with one exception. The exception was the larger volumes of milk in plant number five.

The mechanical agitator in plants No. 1 and 3 mixed larger volumes of milk significantly better than no agitation. In plant No. 6 the numerical size of the variation for the mechanical agitation of larger volumes of milk was much smaller than for no agitation. The mechanical agitators in plants No. 1, 3, and 6 did *not* mix the smaller volumes of milk significantly different from no agitation.

[2]Significant means at the 1% level; nonsignificant means at the 5% level.

In plants No. 1, 4, 5, 6, and 7 the chute did not mix the large and small volumes of milk with significant differences. In plants No. 2 and 3 the chute did mix larger volumes of milk significantly better than smaller volumes.

TABLE 2 — THE AVERAGE DIFFERENCE IN PERCENT BUTTERFAT BETWEEN THE HIGHEST AND LOWEST BUTTERFAT TEST OF SAMPLES TAKEN FROM THE FOUR CORNERS OF WEIGH TANKS AS INFLUENCED BY METHOD OF MIXING AND SIZE OF PRODUCERS DELIVERY.

Plant number and fill of weigh tank	No agitation	Mechanical agitation	Air agitation	Chute
Plant 1				
< ½ full	1.7	1.6		0.4
> ¾ full	1.0	0.5		0.4
Plant 2				
< ½ full			2.5	0.7
> ¾ full			1.5	0.3
Plant 3				
< ½ full	2.3	2.9		0.8
> ¾ full	1.6	0.7		0.3
Plant 4				
< ½ full	2.0			0.3
> ¾ full	0.8			0.3
Plant 5				
< ½ full		1.4		0.3
> ¾ full		.3		0.3
Plant 6				
< ½ full	0.8	0.6		0.3
> ¾ full	0.7	0.5		0.3
Plant 7				
< ½ full	2.1			0.7
> ¾ full	0.9			0.6

<, = less than; > = more than.

Table 2 shows the influence of the chute in reducing the differences between the highest and lowest butterfat value of samples taken from the four corners of the weigh tanks.

The 185 producers delivering milk to a single plant were divided into two groups of 81 and 104 producers. For seven pay periods, of 15 days, composite samples were collected using mechanical agitation or the chute as means of mixing the milk as shown in Table 3. The butterfat values for producers in each group were then averaged for each pay period (Table 3). The first three and the last two pay periods serve as a control for seasonal variation between the two groups, since the method of mixing the milk was the same for both in these periods. The differences between the average tests of the two groups of producers in these five control periods ranged from 0.17 to 0.23% butterfat indicating similar changes in butterfat values for both groups during the seven pay periods of the experiment. In the two pay periods (4 and 5, Table 3) when the method of mixing the milk was reversed for the two groups of producers, the differences in the average butterfat values of the two groups was 0.05 and 0.36%, showing the influence of the chute on composite butterfat values.

DISCUSSION

It was established in each plant visited that some means of mixing the milk was required in order to approach as closely as possible the state requirement for representative sampling. Mechanical agitators were found to be ineffective (Table 1 and 2) in aiding the mixing of less than half a weigh tank full of milk. The chute improved markedly (Table 1 and 2) the mixing of the smaller volumes of milk. In every plant visited that had an aid to mixing, the chute mixed the milk as well as, or better than, the agitator as evidenced by the reduction in the numerical value of the variances (Table 1) and in the reduction of differences in butterfat values of samples taken from the four corners of weigh tanks (Table 2).

The four corners of weigh tanks were selected for the sampling positions because wider differences are known to occur there; hence, it was easier to show differences in the mixing ability of the several means of mixing the milk which were evaluated. Samples drawn from the sampling port of weigh tanks will be nearer the true value of the lot of milk than the butterfat value of the corner samples indicate. However, the closer the agreement between butterfat values of the corner samples the better the "representative" sample drawn from the sampling port will be.

Weigh tanks were found in which the samples from the two corners on one side were consistently higher or lower in butterfat value than the two samples from the corners of the other side of the tank. Other weigh tanks gave consistently higher butterfat values for the samples drawn from the two front corners than for the samples drawn from the rear corners under the strainer. The best mixing agitator found was a paddle type (plant 6, Table 1 and 2) which was mounted on the floor of the weigh tank. This agitator made fewer revolutions per minute than the other mechanical

TABLE 3 — EFFECT OF MIXING MILKS FOR SAMPLING ON DIFFERENCE IN AVERAGE COMPOSITE BUTTERFAT TESTS OF TWO GROUPS OF PRODUCERS IN SEVEN PAY PERIODS.

Pay Period	1	2	3	4	5	6	7
Method of Mixing							
Group A	chute	mech.	chute	mech.	chute	chute	mech.
Group B	chute	mech.	chute	chute	mech.	chute	mech.
Average Test							
Group A	3.98	3.87	4.00	4.00	4.28	4.27	4.31
Group B	3.81	3.69	3.77	3.95	3.92	4.08	4.12
Difference in % Butterfat	0.17	0.18	0.23	0.05	0.36	0.19	0.19

agitators which were "lightning" style mixers mounted on weigh tank supports and entering the tanks from above. These "lightning" type mixers did not reach the bottom of the weigh tanks, and this accounts for the inability of the agitators to match the chute in mixing smaller volumes of milk.

The experiment involving different means of mixing the milk for composite sample collection was designed to determine if the chute could influence the butterfat value on which producer payment is based. In this experiment the chute was matched with a "lightning" type mechanical agitator. All samples were drawn from the sampling port of the weigh tank in the usual commercial manner.

The differences between the average butterfat values for the two groups of producers were quite similar during the five pay periods when the method of mixing the milk was the same (Table 3). These five pay periods serve as controls for seasonal variation. The differences in these periods, ranging from 0.17 to 0.23% butterfat, were about the same before and after the two pay periods in which the method of mixing the milk was reversed for the two groups of producers, indicating similar seasonal variations for each group. Additional evidence for similar seasonal variation in each group is the total increase in butterfat value for the 7 pay periods. Group A increased 0.33% and group B increased 0.31%. Group A and B increased 0.27% and 0.31% respectively in butterfat value during the time the method of mixing the milk was reversed for the two groups.

The similar seasonal trends in butterfat value were disrupted during pay periods 4 and 5 when the method of mixing the milk was reversed for the two groups. In these two periods the differences in butterfat value were 0.05 and 0.36%. Reversing the methods of mixing the milk for the two groups eliminated the consistent difference in butterfat values between the two groups during the fourth pay period and doubled this consistent difference during the fifth pay period. It appears that the chute influences the butterfat value of composite samples under plant conditions.

The butterfat value of group B increased 0.18% from pay period three to four with the method of mixing the milk the same (chute). The butterfat value of group A remained the same from pay period three to four with the method of mixing the milk changing from chute to mechanical agitation. The butterfat value of group A increased 0.28% from pay period four to five with the method of mixing the milk changing from mechanical agitation to chute. Group B's butterfat value decreased 0.03% from pay period four to five with the method of mixing the milk changing from chute to mechanical agitation. The butterfat values of both groups increased 0.27% (A) and 0.31% (B) from pay period three to six when the chute was used to mix the milk of both groups in both pay periods. The mechanical agitation showed no increase for one group and a slight decrease for the other in a period of generally increasing butterfat values. This indicates that mechanical agitation of milk resulted in a lower average butterfat value for two groups of producers when compared with chute mixing of milk.

In this particular plant the chute increased the average butterfat value of composite samples for two groups of producers. This may or may not have been the case for each individual producer. However the effect of the chute is to more closely approach the "true" butterfat value, as shown by the lower numerical value of the variances (Table 1); the fact that the butterfat values were increased is incidental. In another plant, depending on weigh tank design, the effect of the chute might decrease butterfat values.

In addition to the improvement in the mixing of milk with a chute, there are many fringe benefits. The chute is cheaper than either type of agitator. It is constructed of stainless steel, which is easier to sanitize and is also better looking. It will not cause scales to vibrate, requires no grease or oil, and will not mutilate the weigh tank. The chute requires no power nor maintenance and cannot break down. It requires no switch to place in operation. It would be important in reducing producer complaints about butterfat values and in building producer good will.

SUMMARY

A chute designed to fit under the weigh can strainer and combine the milk into a single stream with enough velocity to promote the mixing of the milk in the weigh tank was found to decrease differences between the butterfat values of samples taken from the four corners of the weigh tank. All weigh tanks tested were found to require some method of improving the mixing of the milk for sampling purposes. The chute mixed both large and small volumes of milk significantly better than air or mechanical agitators and was markedly better in mixing the smaller volumes of milk. The method of mixing the milk was shown to influence the butterfat value of composite samples under commercial conditions. The chute was cheaper and more easily sanitized than air or mechanical agitators.

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EPIDEMIOLOGY AND THE SANITARIAN[1]

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This is the day of the machine and gimmick. Mechanization is commonplace and automation is just around the corner. The x-ray and the blood test appear to have replaced the stethoscope and the senses of taste and smell in the field of clinical diagnosis. The electron microscope, the ultra centrifuge and the minus 70 refrigerator are becoming bare essentials for bacteriologic investigation. The ultra expensive and complicated area sample and mechanical tabulating equipment are almost a must for any respectable epidemiologic research. In such a day it is difficult to remember the tremendous contributions to our understanding of the natural history of disease made by those who practiced nothing more than careful and detailed observation of the distribution of cases of diseases in the community and subsequently applied relatively simple methods of analyses with the hope of discovering some of the factors in the environment capable of having a significant influence on the disease. Their equipment consisted of pad, pencil, shoe leather and perserverance. That public health has been able to make a real impact on disease is testimony to their success. It is sometimes well to remember that as early as 1883, Hirsch wrote a definition of epidemiology essentially acceptable today. "Epidemiology", he wrote, "is the science which gives a picture of the occurrence, distribution and types of disease in different epochs of time and different points on the earth's surface and will render an account of the relation of these diseases to the external conditions surrounding the individuals and determining his manner of life."

Epidemiology can well be defined as a science concerned with the factors that influence the occurence and distribution of disease in aggregations of individuals. It is basically a science of observation, of course, but it is something more than that — for as Frost has pointed out, it allows for the "orderly arrangement of the observed facts into chains of inference which extend beyond the bounds of direct observation."

As with other sciences, it is not the science itself which is of primary concern to us — the real importance being application of the scientific method and the results of its explorations to the betterment of the state of man. Epidemiology is especially suited for application in three distinct areas — firstly, the epidemiologic method has been applied to the study of the cause of disease. The method has been so successfully applied to the field of infectious diseases that its contribution to the non-infectious disease field frequently goes unheralded. While epidemiology has made tremendous contributions to the understanding of such diseases as cholera, typhoid, yellow fever, malaria, equine encephalitis, poliomyelitis, and many others, it also provided important links in the chain of inferences leading to the cause of such important non-infectious diseases as pellagra, iodine-deficiency goiter, and blindness of the premature infant (retrolental fibroplasia). Its continued application to the non-infectious field is already giving promise of providing basic information toward the eventual understanding of certain types of cancer, hypertension, coronary artery disease, accidental injury, emotional disturbances, and congenital defects.

The second important area of the application of epidemiology is in the field of disease control. If through a study of the distribution of disease in the population and its relation to environment certain important factors can be recognized which materially

[1]Presented at the Annual Meeting of the Ohio Association of Public Health Sanitarians at Columbus, Ohio, April 17, 1958.

influence the occurrence of the disease, it may follow that these factors may be specifically altered or interrupted to the point where they become harmless and the disease prevented or materially reduced in incidence. It is generally true that the extent to which our disease control efforts are based on a sound understanding of the epidemiology of the disease, we have an opportunity to establish economical and efficient control programs and conversely the extent to which we are ignorant of the natural course of disease we will be wasteful and essentially ineffective. Schneider has drawn an interesting analogy. Likening the problems of disease control to those of the military, he points out that, "Epidemiology has to do with the strategic aspect, defining when and where the action may be most effective rather than with the tactical aspect relating to specific details of how the action is to be performed. Epidemiology maps out the strategy for action."

These first two areas of application depend to some extent upon the epidemiologic method but more specifically upon the utilization of the body of epidemiologic knowledge. The third area depends upon the method itself, for epidemiology as a science has an important practical usage in the public health field. No matter how well we have studied the disease or how wisely we have constructed our control barriers, more or less frequent breakthroughs still occur. To my knowledge there is no way of discovering the nature of the break in the barrier except the direct application of the methods of epidemiology to the epidemic. Observation of the distribution of the cases and subsequent analysis of the data will lead to the nature and identification of the break thus allowing for its repair.

Leavell and Clark have nicely summarized the objectives of epidemiology in public health as follows:

1. To study factors influencing departure from the state of health and to elucidate the roles of disease agents, the human hosts, and environmental factors in the natural history of disease.

2. To describe and interpret disease occurrence and distribution according to pertinent variables.

3. To provide the analytic phase for public health action.

4. To study immediate and special problems in the field of health.

5. To measure the effectiveness of preventive and control programs instituted as a result of earlier epidemiologic strategy.

The science of epidemiology, as any other science, may acquire frills and fancy dress and become exceedingly complex. It is well to remember, however, that the entire edifice of epidemiology is built upon the rather simple fact that disease is not randomly distributed in the population. All diseases are profoundly influenced by characteristics of the population and the social and physical environment of the community. Its occurrence, is therefore, directed by the age, sex, and race of the population, by the geographic location of the community, by the time of year and the prevailing combination of climatic conditions, and by a host of other environmental circumstances – few of which we understand, many of which we are still completely or partially ignorant. A careful recording of the time of onset of the disease, the age, sex, and race of the patient, his area of residence, certain selected information concerning the general environmental circumstances under which he lives, and his occupation provide the basic data for the epidemiologic method whether its application be research, disease control or epidemic investigation. In the past, these observations have been made successfully by members of a great number of formal disciplines. The general biologist, the zoologist, the meterologist, the bacteriologist, the engineer, the sanitarian, the veterinarian, the nurse, the physician and others working individually or in teams have all made important contributions to epidemiologic observation. When one adds to the observations themselves the need for analysis in terms of possibly important environmental influences, a moment's thought will make it obvious that there are few disciplines indeed which could not if called make meaningful contributions to epidemiology.

I have taken the time to dwell for a few minutes on epidemiology as a science because too often I am tempted to jump directly into its practical application in the field of public health without attempting to establish it as an important basic science. The sanitarian is indispensable to most types of epidemiologic investigations because of his special knowledge of the physical environment and its possible relationship to disease. He may appropriately be referred to as an environmental specialist. In the general day-to-day application of the science to disease control, the sanitarian supplies the skills upon which depends the implementation of the epidemiologic information. In this sense the sanitarian supplies the who, what, and how, while epidemology supplies the why, when, and where of disease control.

The engineer and sanitarian may well be proud of their ability to supply the necessary skill to alter or interrupt the source or mode of transmission of disease which epidemiology has told them may have an important influence on the occurrence of the disease. The field of sanitation is required to be imaginative and resourceful in the exploration of new methods of

disease control, while at the same time remaining meticulous in the application of better understood methods to allow the body of knowledge supplied by the science of epidemiology to make a real impact upon the incidence and prevalance of disease.

In recent years it has become increasingly apparent that because the application of the sanitary methods requires the changing of human behavior, the sanitarian must acquire a basic understanding of the motivation of human behavior and the skill to deal with it. In direct proportion to the complexity of the problem, this skill we are learning is the most difficult and time-consuming to master. I might say, parenthetically, at this point that it is my earnest belief that well trained sanitarians to a greater extent than any other group in public health have accepted this fact and are working at mastering these skills.

It is a human trait to enjoy the comfortable. Once we have mastered a method or technique or a way of doing things, it is not easy for any of us to relinquish or to delegate them to someone else while we voluntarily go through the painful experience of learning new skills or of applying what we know to entirely unfamiliar territory. While it is painful it is at the same time a basic ingredient of job satisfaction, for there is nothing more satisfying than a new area conquered.

The challenges presented to the field of environmental health by epidemiology in the past have been formidable. The knowledge that mosquitoes were essential to the spread of malaria, that water can be an important vehicle of transmission of typhoid fever, that milk is capable of transmitting a number of bacteriologic diseases, that the dispensing of food can be as dangerous as it is healthful, or that the basic ingredients of food — meat and vegetables — can be important sources or modes of transmission of disease, all presented tremendous challenges to the skill of the sanitarian. That the diseases presenting the challenges are largely under control is a tremendous tribute to the resourcefulness and enthusiasm of the sanitarian. The other side of the coin presents not so pleasant a picture, however. While we have brought many diseases under respectable control, there are many of tremendous importance about which we know virtually nothing that is presently useful in their control. Of the first ten leading causes of death in the United States in 1956, we are in virtual ignorance of the epidemiology of nine of them. As I mentioned earlier, however, epidemiologists are rigorously attacking many of these diseases, and it is quite reasonable to expect that new epidemiologic information will put new demands upon the sanitarian for his skill in applying this information to disease control. Information concerning the association of certain cancers with certain elements in the environment such as the well publicized association of cancer of the lung with smoking suggests that cancer of other sites may well bear a relationship to other environmental factors, some of which may be controlled by the skills of the sanitarian and the sanitary engineer. Epidemiologic studies of accidental injury in the home, on the farm, on the playground, in industry and on the highway are producing information which may soon be interpretable in terms of disease control strategy. Studies on certain types of chronic lung disease in England strongly point to an association with certain pollutants in the air. Even more serious in this regard is the fact that some of the pollutants which we know are put into the air in our general environment are capable of causing cancer under experimental circumstances. Air as a vehicle of transmission of infectious agents has been studied for years, and the many attempts to cleanse from it infectious agents have not been very effective. If the association of serious lung disease, or cancer, or other serious disease with materials in the air is confirmed, new attempts must be made to apply the skills of sanitation to the prevention of these diseases through the control of air pollution. The general effect of poor housing and other environmental circumstances conducive to the spread of infectious disease is well known. The influence of these environmental circumstances on the development of serious emotional disturbances is just now being explored. In addition it is becoming clear that as the population ages and individuals live long enough to suffer from chronically debilitating diseases and disabilities, changes in housing accommodations must be made if these individuals are to live at home and remain at least partially productive and happy during their later years.

The point I am trying to make is that we are not and will never be happy with a situation in which we know virtually nothing about how to control the leading causes of death and disability, and those working at the science of epidemiology will not let us stay ignorant. While the specific approaches to the control of these diseases are unknown at the moment, a familiarity with the history of disease control suggests that new challenges will be placed upon the skills of the environmental specialist — the sanitary engineer, and sanitarian — as new information concerning the cause and course of these diseases becomes available.

Practically speaking, this means that the sanitarian must continue to maintain the control programs with which he is now effectively controlling certain diseases with his left hand, while he stands ready to accept with his right hand new areas in which to apply

his skill. This also implies that every attempt should be made to make the present programs as efficient as possible so that the sanitarian will have time to be concerned with new areas of disease control. If the newer information suddenly becomes available, it will also mean the need for increased numbers of well-trained sanitarians. This leads me to the first thought which I want to leave with you. It concerns the training of sanitarians. I realize that in order to accomplish the job of applying the skills of sanitation to disease control it is not absolutely necessary that the why of the strategy be understood. It is reasonable to assume, however, that the more one is familiar with the full purpose of his work and the methods whereby it has been shown to be useful, the more intelligently he can apply his particular skill to the task. From my own personal experience I think also that some degree of efficiency can be expected to result if the sanitarian is familiar with the epidemiology of the disease he is controlling, as he will tend to inquire into the specific value of certain of the things he is doing and perhaps will be able to eliminate the less useful. If the facts which I have presented thus far are true, and if the train of thought is a reasonable one, it would naturally follow that a knowledge of epidemiology is as essential to the training of sanitarians as are the methods of inspection and the knowledge of human motivation. If the sanitarian is going to be as important in the future control of the many non-infectious diseases as I believe he will, the need for a basic understanding of epidemiology on the part of the sanitarian is vital to the proper growth and development of the field of public health.

One of the important applications of epidemiology to public health is the epidemiologic method itself in the investigation of epidemics of disease. It is perhaps paradoxical that as diseases come partially under control they may appear to occur in epidemic fashion because this facet of their behavior had been previously obscured. The need to apply the epidemiologic method to the diseases which we now have under control in order to promptly locate what has gone wrong in our control program will be an increasing need in the future. The final thought I want to leave with you is that unless we begin to make more active use of the sanitarian in epidemiologic investigations, we will not be able to properly meet this need and we may be rightfully accused of being wasteful of talent. This next is said in the spirit of constructive criticism and with a sympathetic understanding of why it is true, but it must be said that the degree to which disease is investigated in the vast majority of our health jurisdictions and the caliber and productiveness of these investigations is not very good. I well understand that the sanitarian frequently desires to be of help in initiating this type of public health activity but is not asked to do so or occasionally told not to do so. It is my feeling that the sanitarian must accept the responsibility of demonstrating his unique usefulness in this regard and take every opportunity to practice the science of disease investigation. An example of what I am trying to get at is the problem of foodborne disease. Inspections of food service operations and the education of food service operators are certainly important in controlling these diseases. The sanitarian has worked out certain indicators such as the temperature of washing water or of the steam table or the bacterial counts of certain implements which he can use to gauge the efficiency of the operation. I should like to suggest that while these are useful surely there can be no better indication of a break in food service operation than the occurrence of human disease as the result of the consumption of the food. The investigation of cases or possible outbreaks of such diseases cannot only lead to the discovery of what went wrong but can be used effectively as educational material for the operators. I realize that these statements are easier to make than they are to implement. I am not suggesting that all cases of gastroenteritis or diarrhea or nausea and vomiting be investigated as being possible cases of foodborne disease and I well know that the sanitarian cannot by himself work out the necessary program with the medical society or hospitals that would lead to the proper reporting of suspicious circumstances deserving investigation. I am suggesting that as the one member of the public health team well acquainted with food service operations and perhaps more than anyone else knowledgeable of the possible results of poor operations, the sanitarian may supply the inspiration for the development of sound programs of the control of foodborne disease which would include the proper reporting of cases and their prompt investigation by the health department.

In summary, I have attempted to share with you briefly a few of my thoughts concerning the importance of the science of epidemiology to the proper practice of sanitation and the immense importance of the sanitarian to the efficient and productive application of epidemiology to the control of disease. I envision the need for the sanitarian to maintain his presently operating programs while at the same time accepting new areas of challenge to which he must apply his skills. I have suggested that toward the ends, both of increasing the efficiency of present programs, and being ready to accept new areas of operation, epidemiology can profitably be more extensively included in the training of sanitarians. I have also

suggested that the sanitarian can engage in epidemiologic investigations and can serve as a stimulus to other members of the public health team for the investigation of diseases known to be transmitted by environmental factors. It should be obvious that it is my belief that neither epidemiology or sanitation can fully serve the public without the helping hand of the other.

Special Service Article

SOME PUBLIC HEALTH ASPECTS OF FOOD AND BEVERAGE VENDING

Editor's Note: This is the third and concluding article on Food and Beverage Vending. The two preceeding articles appeared in the November and December 1958, issues of the Journal.

NEED FOR PLANNED PROGRAM

In the two previous articles it was shown that food and beverage vending is not only an important and expanding merchandising method, but it also presents certain health problems calling for recognition and study by public health agencies.

As technology and other changes take place, regluatory groups find it necessary to adjust their total environmental health program to include them. The inspection of food and beverage vending machines presents certain situations peculiar to that industry. Unlike the public food service establishment, which is open during normal business hours and can be inspected routinely without prior arrangements, vending machines can be inspected only in the presence of the operator, or his authorized employee. Of necessity, machines must be kept locked, consequently arrangements must be made before hand so an authorized person will be present to unlock them to allow inspections to be made. At the outset, this may appear to be an undesirable situation since most inspection programs are normally conducted on the basis of the unannounced visit. This however, is not a disadvantage when supervision is looked upon as an educational process. In the early development of a vending machine sanitation program, it will be found that the sincere, conscientious operator is anxious to have the meaning of ordinance requirements explained and to have the sanitarian point out to him how best to apply the principles of sanitation in his servicing and maintenance operations. Initially, the inspection program should be educational in nature both for the operator and the sanitarian. In a relatively new field such as this, cooperative effort between all interested parties is essential for the development of a sound program.

Sanitarians will know the principles of sanitary food and beverage handling, while the operator can point out the functional parts of machines and explain what is done in normal servicing operations. This should lead to a good working relationship. In addition, the sanitarian will learn quite readily which operator is conscientious in his job and which is likely to be indifferent or careless. In the latter case, more careful surveillance and supervision will be required to enforce ordinance requirements.

PERSONNEL REQUIREMENTS AND PROGRAM PLANNING

It is the experience of most health departments that as new industries evolve or as inovations occur in the processing, production or sale of food, program plans must be adjusted accordingly. Few if any departments have sufficient funds to employ additional personnel each time a new activity developes. However, no efficient department can afford to ignore new developments and some realignment to accommodate them must be made. This calls for re-evaluation of current activities. For example, if the food and drink establishment program is operating effectively, one or two men may be re-assigned temporarily to work closely with a new industry, such as vending. Such personnel may spend full time for a limited period in order to make a complete survey of the new industry and to learn as much as possible about problems, needs and requirements. Personnel thus assigned may then work with and train other staff sanitarians until they too are sufficiently oriented to the new activity to the point where routine supervision can be assumed. In cities and large county units, sanitarians are frequently assigned specific districts, in which case vending machines operating therein may be given routine inspection on a continuing basis.

It is readily recognized that there is no set rule nor an exact formula for situations such as this. Local

administrative policy will determine the most expeditious solution. In small local units staffed by only one or two sanitarians, the problem becomes even more difficult and new programs have to be intergrated with current ones or new developments taken on when seasonal situations are less demanding.

INSPECTION FREQUENCY

The frequency of food and beverage vending machine inspection is also a point about which planning is necessary. Machines which vend products such as, packaged cookies, crackers and candy bars; fresh fruit, bottled and canned carbonated beverages, present no special health hazard and a semi-annual inspection, as a minimum, would appear to be adequate. In the case of these products, the commissary where they are stored, their proper labeling, source of procurement and transportation are undoubtedly more important than the fact that they are dispensed from a vending machine.

In the case of vending machines which dispense readily perishable foods the situation is quite different. In this category are the sandwich and pastry machines, those that dispense hot coffee, tea and chocolate to which fresh milk or cream may be added, malted milk and fluid milk machines dispensing into a single service cup, machines dispensing milk in a paper carton, machines serving hot food plates which include meat stews, soup, baked beans, poultry, meat and the like, ice cream and frozen dessert machines; these obviously should be subject to close sanitary supervision and a bi-monthly inspection, as a minimum, would appear to be reasonable. In this case however, the bi-monthly routine would be instituted after all operators had been carefully instructed and supervised so each is well informed of ordinance specifications and operator responsibilities.

In the preliminary phases of a vending machine sanitation program it is advisable to make inspections with different service men covering different routes. It will soon become apparent which companies demand high standards of sanitation and which do not. This situation has many parallels in public health. The sanitarian soon learns which among those under his supervision practice good methods and, contrariwise, those who require almost constant prodding. This same situation may be found in the vending field. Some operators may need more frequent inspection than others. Only first hand experience will serve to answer this question.

There is still another machine category which needs to be mentioned. This concerns pre-mix and the post-mix machines. These dispense cold carbonated beverages or fruit flavored non-carbonated beverages. In both the pre-mix and post-mix group are included the cola beverages, carbonated fruit juices such as orange and lime, root beer and other similar drinks. In general, pre-mix machines are operated by a beverage bottler since in this operation tanks or cannisters are filled at a bottling plant. The sanitarian will need to investigate the cleaning and sanitizing of pre-mix tanks and the method of filling employed. The general care and cleanliness of the machine on location will also need attention.

In the post-mix machine, sanitary maintenance is done mainly on location. Drink ingredients are transported from the commissary to the machine and syrup containers are replenished at the machine. Tubing, while removable, does not need to be removed at each servicing since the drink ingredients moving through them has been shown to be bacteriostatic or bactericidal. In a study of twenty three syrups, made by Mallmann and Harley[1], it was found that the pH range was from a high of 5.2 to a low of 1.8 with percent of sugar showing a range of forty-seven to sixty-five percent. These investigators studied two machines using two well known syrups and operated them continuously for a year without cleaning the tanks, the lines, valves and delivery orificies. Both machines were in a dusty atmosphere but at the end of the test period the syrups had a bacterial content of zero. However, such operation in such manner is not recommended. From the standpoint of good sanitation and good operating procedure, post-mix machines should be completely overhauled, cleaned and sanitized once each six months.

From what has been said above it is readily recognized that pre-mix and post-mix carbonated beverage machines do not present an urgent health situation. However, from the standpoint of aesthetics and customer appeal, operators should keep them in clean condition at all times.

INSPECTION ITEMS OF SPECIAL SIGNIFICANCE

As has been pointed out above, the public health importance of machines relate directly to the kinds of products handled. Some of the inspection items of special significance may be listed as follows:

1. *All Machines* — construction sturdy and sufficiently tight to exclude insects and rodents. Ventilating louvers, if provided, should be screened. Service connections to the machine should be grommeted or sealed. Machines, unless sealed to the floor, should be elevated on six inch legs, or, be manually moved with ease,

or, be mounted on casters or rollers, or mounted on gliders which permit the machine to be easily moved. The immediate area where the machine is located should be clean. Waste containers for the disposal of used cups and other wastes should be clean. Record of cleaning card should be attached to interior. The general cleanliness and appearance of the machine should be satisfactory.

2. *Machines Dispensing Readily Perishable Foods*
Temperature — If a readily perishable product is stored (cold) in the machine, the storage compartment must be at a temperature not to exceed 50°F. A thermometer accurate to ±2°F., should be installed in such compartment. If foods are stored hot, unless in hermetically sealed containers processed by heat, such food must be maintained at not less than 150°F.

Product Contact Surfaces — These should be smooth, in good repair, non toxic, relatively non-absorbent and corrosion resistant. When fresh readily perishable foods or ingredients are added to a container, the container must have been cleaned and sanitized prior to the addition of such food. Containers of the non-pressurized type should have an overlapping cover, should be sloped, and port openings should be flanged upward. Drip deflecting aprons should be provided if shafts or pipes extend into the container unless a water tight seal is provided. If bulk liquid products are dispensed the liquid waste container in the machine should be so arranged that the machine will be inoperative before the container overflows. In current models, machines will go on, *Sold Out*, when the container is about two-thirds full.

The delivery tube or chute and orifice for machines dispensing bulk food and beverages should be protected from normal manual contact, dust, insects, and other contamination. This is accomplished mainly through the use of a tight fitting, self closing door or cover, which is kept closed, except when the machine is actually delivering the food or beverage. The door in question may simply drop by gravity, or be spring activated. The vending stage area should be kept clean and sanitary. In later model machines the vending area, cup chute, plate and similar components are readily removable for cleaning.

3. Pre-Mix and Post-Mix Machines
As indicated earlier, the pre-mix machine incorporates the principle of a pre-filled, pressurized container or cannister containing the carbonated beverage. The container is delivered full to the machine. It is then hooked to the delivery tubing and is ready to operate. In this case, the delivery orifice and vending stage are the areas needing attention along with other general features which were mentioned under the heading, *All Machines.*

With the post-mix machine, the handling of syrups and drink ingredients should be checked. In this type machine these liquid ingredients are replenished at the machine, and their careful handling is important. The interior of the machine should be checked for drip and spillage. Delivery orifices and vending stage should be examined for sanitary maintenance. Handling of single service cups should also be noted. Condition of tubing should likewise be included in the inspection. Another important item is the presence of a device to prevent backflow of carbonated water or CO_2 gas into water supply piping which commonly is copper. In this case some satisfactory device must be installed to prevent backflow. Inspection should be made to ascertain what, if any, method is used. The device should be installed upstream from the carbonator and if two check valves, or double check valves are used, a screen of not less than 100 mesh to the inch should be installed in the water supply line immediately upstream from such valves. [2]

USE OF MODEL ORDINANCE

In the above discussion of inspection procedures to be carried out no attempt has been made to give detailed consideration to every item. Health department personnel should become completely conversant with the document, *The Vending of Foods and Beverages, A Sanitation Ordinance and Code, 1957 Recommendations of the Public Health Service.*

In addition, an itemized check sheet or inspection form should be developed which incorporates all items of sanitary significance. Such a sheet will serve as both a guide and a record for use when food and beverage machines are examined. As a matter of fact, the Milk and Food Program personnel of the Public Health Service is now field testing such a form. This should be ready and available in the very near future for the guidance of state and local health agencies.

As has been repeatedly pointed out in this series of articles, the inspection of machines vending readily perishable foods and beverages is the portion of public health supervision which is of most significance. In addition, the inspection of commissaries, kitchens

and prepared should form an equally important segment of the vending program. There is every indication that industry is ready to work with regulatory agencies to the end that the consumer will receive the public health protection to which he is entitled.

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NEWS AND EVENTS

WASHINGTON STATE TO HOLD DAIRY INSTITUTE

The State College of Washington will hold its 28th Annual Institute of Dairying and Dairy Products Scoring and Judging Contests, open to the world, on March 9-12, 1959, at Pullman, Wash. The conference is designed to keep industry people abreast of the new developments in dairy technology, to discuss current problems in management, processing, marketing, and to anticipate future trends. A great array of guest speakers of national and international reputation will be on hand to present latest research findings along the line of extending the shelflife of dairy products, mechanization, new products, local and world markets.

There will be special discussions for milk sanitarians and the Washington Milk Sanitarians Association will hold its annual meeting at the time of the Institute.

Diplomas and excellent prizes will be awarded to the winners in the ever popular dairy products scoring and judging contest made possible by the nationwide support of dairy equipment and supply firms. For details write H. A. Bendixen, Dept. of Dairy Science, W. S. C., Pullman, Wash.

MINNESOTA, MICHIGAN, CONNECTICUT UNIVERSITIES GET TOP STUDY GRANTS IN DAIRY PRODUCTS JUDGING CONTEST

Three men from the University of Minnesota, St. Paul, made it a near-clean sweep in winning almost all the awards in the 24th Collegiate Students' International Contest in Judging Dairy Products.

The 3-man Minnesota team topped teams from 29 other U. S. colleges and universities in the judging of Milk, Butter and Cheese, and it also was awarded a Fellowship worth $1,800 by Dairy Industries Supply Association for graduate study for all-round excellence in judging all dairy products. Their coach was Dr. E. L. Thomas.

The only category of the Contest in which Minnesota failed to take top honors as a team was the Ice Cream judging Division. Here, a team from California State Polytechnic College, San Luis Obispo, a relative newcomer in competition, took top honors.

Winners were announced by the former All American Red Grange at a gala banquet and ceremony, December 9, at the Morrison Hotel in Chicago, attended by 900 dairy industry guests.

The second and third place All Products judging teams also received valuable fellowships from DISA. Michigan State University's 3-man team, coached by Prof. J. M. Jensen, took a $1,650 fellowship. And the University of Connecticut, coached by former contestant Prof. L. R. Dowd and by Prof. L. R. Glazier, took a $1,500 fellowship.

In addition to winning the top team awards, each Minnesota team member also scored outstandingly in the individual competition.

Donald Benning, a 21 year old senior from Browerville, Minn., received a wrist watch for being the top individual judge of All Products in the Contest. He comes by his talent naturally — his father being a dairy farmer.

The second-place All Products individual winner was Philip R. Lucas, a 22-year old senior from White Bear Lake, Minn., who received a silver medal for this achievement, and who also took the silver medal in Butter judging and the bronze medal in Milk judging.

The third-place All-Products individual winner was William H. Schulz, a 21-year old senior from Robbinsdale, Minn., who hopes to go into dairy plant management upon graduation. He also won silver medals in Milk and Cheese judging.

The remaining top individual awards were won by students from a number of schools across the country.

Peter F. Pierpont, a 21-year old senior at the Uni-

versity of Connecticut from Waterbury, Conn., took top individual honors in ice cream judging and won a fine wrist watch.

The second-place Ice Cream individualist, who received a silver medal, was Keith P. Burnquist, a 27-year old senior at California State Polytechnic College, who is a 4-year Navy Veteran.

Howard A. Eastham, a 24-year old senior at California State Polytechnic College, took the third place and bronze medal in ice cream judging. Eastham is a native of San Jacinto, California, and a veteran of three years with the Air Force in the Middle East.

The top Milk judge was Max A. Gonzenbach, a 22-year old senior at Michigan State University, although his home is in Milbank, South Dakota, where his father is a co-owner of a cheese manufacturing plant. He received a fine wrist watch for his judging performance.

Schulz and Lucas – the judging experts from Minnesota – took the silver and bronze Milk judging medals, as noted above.

Robert L. Gromko, a 21-year old senior at Washington State College, Pullman, Washington, whose home is in Edmonds, Washington, was named the top Cheese judge and awarded a fine wrist watch.

Minnesota's Schulz took the silver Cheese judging medal, as noted above.

Henry J. Sausen, Jr., a 28-year old senior at the University of Wisconsin, Madison, Wisconsin, took the bronze medal in Cheese judging. He's a veteran of the Marine Corps and he hopes to make the dairy industry his career.

Ross R. Wagner, a 25-year old senior from South Dakota State College, was the best Butter judge and received a wrist watch for his performance.

Minnesota's Lucas took the silver Butter judging medal, as noted above.

Ralph D. Peterson, a 20-year old senior at Cornell University, Ithaca, N. Y., and a native of Jamestown, N. Y., received the bronze medal in Butter judging.

The contest was held this year in connection with the 21st Dairy Industries Exposition (December 8-13, Chicago, Ill.) and in conjunction with the conventions of at least eight national and international dairy industrial trade bodies.

The contest has been co-sponsored since 1930 by American Dairy Science Association and Dairy Industries Supply Association.

CALVER APPOINTED PROFESSOR AT UNIVERSITY OF BEIRUT

Homer N. Calver, well known administrator and public health educator has accepted appointment as Professor of Public Health at the American University of Beirut in Lebanon. He will assume his academic duties early in 1959.

Mr. Calver, for a number of years, was Executive Secretary of the Public Health Committee of the Paper Cup and Container Institute. He retired from this position in 1957, following which he served with the National Health Council as Forum Consultant.

In a recent letter he writes that he hopes to be back in this country on leave, by mid summer, and will try and plan his itinerary to include the 1959 annual meeting of this Association at Glenwood Springs, Colorado in August.

FINDINGS INDICATE MAN'S BEHAVIOR PATTERN AFFECTED BY DIET

Man's mental processes, behavior and work capacity are profoundly altered by defective diets and/or insufficient amounts of food intake. Controlled investigations indicate this fact clearly, according to a special report by Dr. Josef Brozek, of the University of Minnesota, reviewed in *Nutrition Reviews*, monthly scientific publication of the Nutrition Foundation.

Dr. Brozek points out that apathy and an extreme loss of the desire for food, for example, were repeatedly noted among the clinical characteristics of severe protein malnutrition, varying in type, but severely affecting children in many parts of the globe. At the present time behavioral manifestations are being examined using standardized psychological test situations and evaluations procedures at the Hospital Infantil in Mexico City, among others.

It is already clearly indicated that deficits of calories and of essential nutrients, Dr. Brozek explains have a profound impact upon work capacity and motivation. Food directed behavior involves much more than physiologic need. It includes appetite, esthetic enjoyments and remote goals, including longevity. The degree and nature of adaption to undernutrition and malnutrition, with special reference to the functioning of the endocrines and of the nervous system, and the impact of improved nutrition in the under-developed parts of the world, represents some of the most interesting, intriguing and import-

ant research topics in human nutrition, Dr. Brozek noted.

Weight reduction, the physiologist states, whether undertaken as a preventative or a curative measure on an individual or a group basis, is a fruitful field of research and application for the clinical psychologist, the psychiatrist and the social psychologist, working in cooperation with nutritionists and internists. In the light of accumulating evidence, Dr. Brozek concludes, it may be that food habits, and the attempts to modify them, will become one of the crucial topics in the study of the relationships between nutrition behavior in the next phase of the development of the science of human nutrition.

NEW BOOKS OF INTEREST

ENVIRONMENT SANITATION, by Joseph Salvato, Jr. John Wiley and Sons, Inc., New York 16, N. Y. 660 pages, priced at $12.00. This book takes up the application of sanitary and public health engineering theory and principles, with special reference to the smaller community or establishment.

The design, operation, and maintenance of major phases of environmental sanitation receive special attention. Included here are discussions of: control of communicable diseases, location and planning of sites for camp, industrial, housing and similar uses; water supply sources — design, construction, treatment, storage, distribution and operation; and wastewater disposal and treatment. Other highlights include information on: swimming pools and bathing beaches; food, including milk — equipment, sanitary inspection and control; insects, rodents, and noxious weed control; hygiene of housing, camps and resort hotels, schools, and convalescent homes; and environmental sanitation administration.

Mr. Salvato, a professional engineer, is Director of the Division of Environmental Hygiene with the Rensselaer County Health Department, New York.

DAIRY HANDBOOK AND DICTIONARY, BY Professor J. H. Frandsen. Published by the author at Amherst, Massachusetts. Price $9.75.

This book is a condensed reference volume of essential information on all phases of dairy work arranged in four sections.

Handbook Section contains authoritative articles on most of the important phases of the dairy industry, including the breeding, feeding, and housing of dairy cattle; the production of milk; the processing of market milk, butter, cheese, ice cream, and by-products of milk; the nutritive value of dairy products; the role of chemistry and bacteriology; sanitation.

Reference Section contains formulas and tables of use in the laboratory, in the factory, on the farm, and in school and college work, carefully indexed for easy reference.

Dairy Dictionary Section contains alphabetically arranged definitions of several thousand terms or subjects about which the dairy farmer, the dairy processor, the laboratory director, county agents and dairy experts, the teacher, and the student may wish general information.

Some of these are grouped under alphabetically arranged subject headings such at Butter, Cheese, Dairy Tests, Ice Cream, Milk and Cream. Such grouping will give the user a comprehensive picture of the information listed under these subjects as well as particular definitions.

In addition, cross reference is made from many of these terms to others of related meanings. Thus, the user may find terms which have slipped his mind as well as the definitions of terms which he remembers.

Advertising Section gives information regarding important kinds of equipment, supplies, and materials now available, and how and where they may be obtained.

REFUSE COLLECTION PRACTICE is a completely revised second edition of a book originally published in 1941. Prepared by the Committee on Refuse Collection of the American Public Works Association, it is a practical manual covering the many facets of the problem — the kinds and amounts of community refuse materials and their preparation for collection; costs, methods, and equipment; planning the collection systems; municipal, contract, or private collection; and the management problems of financing, organization, personnel, equipment management, reporting, cost accounting, budgeting, and public relations.

The Committee on Refuse Collection first gathered information on the practices of more than 900 cities of over 5,000 population throughout the United States and Canada. It then forwarded a detailed questionnaire to 125 cities selected by the members of the Committee as able to provide the most accurate and complete information on operations, quantity, and costs. Of this group, 89 cities responded, ranging in population from 13,000 (Winnetka, Illinois) to over 8,000,000 (New York City). All data reported are of experience in 1955 or later.

The U. S. Public Health Service cooperated in the preparation of the book through provision of technical assistance, particularly in the tabulation and analysis of the data contained in the returned questionnaires.

Published by Public Administration Service, 1313 East 60th Street, Chicago 37, Illinois. 1958. 562 pp. Cloth, indexed, tables, selected bibliography, pro-

visions of typical refuse collection ordinances. Fully illustrated. $8.00.

ANNOUNCEMENT

COURSE IN FOOD BORNE DISEASE CONTROL OFFERED

A course on "Laboratory Methods for Prevention and Control of Food-Borne Disease" will be offered February 9-11 at the Public Health Service's Robert A. Taft Sanitary Engineering Center in Cincinnati to laboratory supervisory personnel concerned with bacteriological and chemical contamination of foods. Emphasis will be given to methods, standards, and operating procedures applicable to a food sanitation program, including inspections, grading, and licensing of food establishments. Demonstrations and laboratory exercises include microbiological and chemical methods for food quality control, and procedures for enumeration, isolation, and identification of food poisoning bacteria.

Major subjects include: (1) research developments in food sanitation; (2) sampling procedures; (3) epidemiological investigation of food poisoning outbreaks; (4) laboratory testing for food poisoning organisms; (5) bacteriological tests for evaluating sanitary quality of foods and examination of equipment and utensils; (6) agar plate counts; (7) coliform counts; (8) direct microscopic examination; (9) sanitary food quality standards and tests; (10) detection of extraneous matter in foods; (11) cleaning and germicidal treatments of food utensils; (12) food sanitation topics — poultry, meat, precooked frozen foods; (13) time-temperature relationships in preventing growth of microorganisms; and (14) summary and discussion.

Applications should be addressed to the Chief, Training Program, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

ANNOUNCEMENT

NATIONAL DAIRY ENGINEERING CONFERENCE SCHEDULED

The 7th annual dairy engineering conference will be held at Michigan State University, East Lansing, Michigan on February 26 and 27. Persons interested in registering for the conference should address inquiries to Professor Carl W. Hall, Agricultural Engineering Department.

DAIRY PRODUCTS IMPROVEMENT INSTITUTE TO HOLD ANNUAL MEETING IAMFS MEMBERS TO ADDRESS MEETING

The Food Additives Amendment, 3A Sanitary Standards, and Uniform Labeling will be among the subjects discussed at the Dairy Products Improvement Institute meeting February 19, 1959. Also included in the program will be a paper on quality considerations for milk to be used in manufacturing and a final report on the Northeast's approved uniform industry score sheet.

This, the twelfth annual meeting for the Institute, will be held at the Hotel Governor Clinton, New York, N. Y. Attendance of members, regulatory officials, educators and industry representatives is expected to reach 250.

Following a luncheon, which will be served at 12:30 P. M., George P. Larrick, Commissioner of the Food and Drug Administration, U. S. Department of Health, Education, and Welfare will discuss the recently enacted Food Additives Amendment to the Federal Food, Drug, and Cosmetic Act.

Professor Ivan E. Parkin, Pennsylvania State University and Charles M. Fistere of Washington, D. C. who is general counsel for the Dairy Industry Committee, parent organization of the Sanitary Standards Subcommittee, will follow with a discussion of the 3A Sanitary Standards from the standpoint of the purposes and present status and the legal aspects, respectively.

The Northeastern industry's new uniform score sheet will be reported on by Dr. R. W. Metzger, Director of Quality Control, Dairymen's League Cooperative Association, Syracuse, N. Y. Dr. Metzger is president of the New York State Association of Milk Sanitarians.

Dr. Richard M. Parry, Chief of the Dairy Division, Connecticut Department of Agriculture will follow with a discussion of committee activities on uniform labeling of milk and selected milk products.

Final speaker on the program will be E. Small, Head of the Standards Section, Dairy Division, U. S. D. A. who will present a paper on "Quality Considerations for Milk to be Used in Manufacturing".

NOTICE TO MEMBERSHIP

Constitution amendments adopted at the 45th Annual Meeting of the International Association of Milk and Food Sanitarians in New York City, September 8-11, 1958

PROPOSALS FOR AMMENDMENTS TO THE CONSTITUTION OF THE INTERNATIONAL ASSOCIATION OF MILK & FOOD SANITARIANS, INC.[1]

CONSTITUTION

New matter *in italics.*

Matter intended for deletion in double parentheses (( )).

Article I
Association

Unchanged

Article II
Objectives

1. *To foster efforts designed to improve the professional status of the Sanitarian.*

Note: other subdivision to be renumbered in sequence.

Article III
Membership

Unchanged

Article IV
Officers, Executive Board & Council

Section 1. The officers of this Association shall be a President, a President-Elect, a First Vice President, a Second Vice President, and a Secretary-Treasurer who shall hold these offices for one year or until their successors are elected or appointed, as provided in ((Section 2)) *the By-Laws.* At the termination of each Annual Meeting, the President-Elect, First-Vice President and Second Vice President shall automatically succeed into the offices of President, President-Elect, and First Vice President respectively. A Second Vice-President and Secretary-Treasurer shall be elected by majority ballot at the Annual Meeting of the Association.

Section 2. Unchanged

Section 3. Repeat present section in total and substitute the following:

"There shall be created a Council which shall consist of the Secretary or other authorized delegate from each Affilliate Association, and the immediate two Past Presidents of the Association. Each Affilliate Association shall have one vote at Council meetings. The Council shall select its Chairman and Secretary, shall keep a record of its proceedings, and shall, at each annual meeting of the Association, submit its recommendations to the Executive Board.

Note: This change was recommended by the Constitutional Revision Committee and has the effect of giving the Council greater independence in the selection of its officers and reducing the membership of Executive Board Members.

Section 4. Unchanged

Article V
Affilliate Associations

Section 1. Unchanged

Section 2. Each Affiliate Association shall have one representative on the Council. The representative shall be the Secretary ((of the Affilliate Council)) *or other duly authorized delegate of the Affilliate Association.* ((An alternate representative on the Council may be certified by the Affilliate Association to serve in the absence of the Secretary)).

Note: This change is in the direction of simplification but does not change the substance. It was a recommendation of the Committee on Constitutional Revision.

Article VI
Meetings

Section 1. Unchanged

Section 2. Unchanged

Section 3. Unchanged

Section 4. *The Executive Board shall meet at each annual meeting of the Association and at such other times as the President shall deem necessary. A quorum for Executive Board meetings shall consist of at least five members and decisions shall be by a majority vote of those present.*

Note: This provision is lacking in the present Constitution and it is considered advisable to spell out the obligation to hold at least one Executive Board meeting and define a quorum.

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[1] After adoption of Constitutional amendments at an annual business meeting, approval of the membership by a mail ballot is required. A two thirds affirmative vote of the votes cast is required for the final adoption of the constitutional amendments. Please vote on the card inserted inside front cover, sign and return.

COMMITTEES OF THE INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., FOR 1959

COMMITTEE ON APPLIED LABORATORY METHODS

Objectives

To study new laboratory procedures and bacteriological authorities, to evaluate both published and unpublished data, and to present conclusions which will be helpful to the sanitarian in the conduct of his work.

Members

J. C. McCaffrey, *Chairman*, Illinois Dept. of Public Health, 1800 West Fillmore St., Chicago 12, Illinois.

B. M. Barney, Midwest Dairy Products, Div. City Products Corp., 1632 Union Ave., Memphis 4, Tennessee.

Dr. Ralph N. Costilow, Dept. of Microbiology & Public Health, Michigan State University, East Lansing, Michigan.

Dr. W. E. Glenn, Agriculture Experiment Station, University of Kentucky, Lexington, Kentucky.

Dr. J. J. Jezeski, Dept. of Dairy Husbandry, University of Minnesota, St. Paul 1, Minnesota.

Dr. C. K. Johns, Officer-in-Charge, Dairy Technology, Canada Dept. of Agriculture, Experimental Farm Service & Science, Science Service Bldg., Ottawa, Ontario, Canada.

Dr. W. C. Lawton, Director, Minneapolis & St. Paul Quality Control Laboratory, 2274 Como Ave., West, St. Paul 8, Minnesota.

Earl F. McFarren, Food Chemistry, Milk and Food Research, U. S. Public Health Service, Robert A. Taft Sanitary Engineering Center, 4676 Columbia Pkwy., Cincinnati 26, Ohio.

W. K. Moseley, Moseley Laboratories, 3826 E. Washington St., Indianapolis 1, Indiana.

Dr. W. S. Mueller, Dept. of Dairy & Animal Science, University of Massachusetts, Amherst, Massachusetts.

Dr. R. B. Parker, Sanitarian in Charge, Research Labs., Carnation Co., 8015 Van Nuys Blvd., Van Nuys, California.

H. B. Richie, Research Laboratories, Swift & Co., Union Stock Yards, Chicago 9, Illinois.

Dr. G. W. Shadwick, Beatrice Foods Co., 1526 S. State St., Chicago, Illinois.

D. I. Thompson, State Laboratory of Hygiene, State Board of Health, Madison 6, Wisconsin.

Dr. H. H. Weiser, Professor, Dept. of Bacteriology, Ohio State University, Columbus 10, Ohio.

COMMITTE ON BAKING INDUSTRY EQUIPMENT

Objectives

The objectives of this committee are to provide consultative assistance to the Baking Industry Sanitation Standards Committee in the development of standards for items in the Baking Industry.

Members

Vincent T. Foley, *Chairman*, c/o Kansas City Health Dept., 21st Flr., City Hall, Kansas City 6, Missouri.

A. E. Abrahamson, Chief, Div. of Wholesale Inspection, New York City Dept. of Health, 125 Worth St., New York 13, *New* York.

James H. Burrows, Health Officer, City Dept. of Health, Niles, Michigan.

W. R. McLean, Milk & Food Consultant, U. S. Public Health Service, Dept. Health, Education & Welfare, Region IV, 50 Seventh St., N. E., Atlanta 23, Georgia.

Louis W. Pickles, Director, Div. Sanitation, City Dept. of Health, Room 202, City Hall, Peoria, Illinois.

George E. Prime, Ass't. Chief, Food Sanitation, Div. of Health, Bureau of Food and Drugs, Jefferson City, Missouri.

Armin A. Roth, Technical Service Dept., Wyandotte Chemicals Corp., Wyandotte, Michigan.

Paul Valaer, District of Columbia Dept. of Public Health, 300 Indiana Ave., N. W. Washington 1, D. C.

COMMITTEE ON COMMUNICABLE DISEASES AFFECTING MAN

Objectives

To study problems related to those diseases communicable to man through the consumption of foods, including milk and milk products, meat, poultry, and shellfish, and to recommend specific measures that can be taken by the sanitarian to control such diseases.

Members

Dr. Raymond J. Helvig, *Chairman*, Asst. Chief, Milk and Food Program, Div. of Sanitary Engineering Services, U. S. Public Health Service, Washington 25, D. C.

John Andrews, Sanitary Engineering Division, State Board of Health, Raleigh, North Carolina.

Dr. H. L. Bryson, Director, Environmental Sanitation Division, Vancouver Health Dept., Vancouver, British Columbia, Canada.

Dr. Raymond Fagan, D. V. M., Research Laboratory at Radnor, Wyeth Institute for Medical Research, Philadelphia 1, Pennsylvania.

John H. Fritz, Chief, Food and Public Health Inspection, Bureau of Food and Public Health Engineering, D. C. Dept. of Public Health, 300 Indiana Avenue, N. W., Washington 1, D. C.

Dr. Stanley L. Hendricks, D. V. M., Asst. Director, Preventable Disease Division, State Dept. of Health, State Office Building, Des Moines 19, Iowa.

Dr. Dwight D. Lichty, Public Health Veterinarian, Palm Beach Health Dept., West Palm Beach, Florida.

Dr. E. R. Price, D. V. M., Public Health Veterinarian, Missouri Division of Health, Bureau of Communicable Diseases, Jefferson City, Missouri.

T. E. Sullivan, Director of Food and Drugs, State Board of Health, 1330 West Michigan Street, Indianapolis, Indiana.

COMMITTEE ON DAIRY FARM METHODS

Objectives

To study dairy farm methods and procedures, to determine the sanitary problems involved, and to make recommendations for the solution of such sanitary problems, and for the improvement of dairy farm methods which have a relationship to the sanitary quality of milk.

MEMBERS

Dr. R. W. Metzger, *Chairman*, Dairymen's League Co-operative Ass'n., Inc., 402 Park Street, Syracuse, N. Y.

Dr. George D. Coffee, D. V. M., Chief, Milk and Veterinary Div., Dist. of Columbia Dept. of Public Health, 300 Indiana Ave., N. W. Washington 1, D. C.

J. C. Flake, Sanitary Standards, Evaporated Milk Ass'n, 228 N. LaSalle Street, Chicago 1, Illinois.

H. Clifford Goslee, Dairy Consultant, 256 Palm Street, Hartford, Connecticut.

Dr. Richard S. Guthrie, Veterinary-at-large, State Mastitis Control Program, State Veterinary College, Cornell University, Ithaca, N. Y.

Harold Y. Heiskell, 1125 Front Street, Sacramento 10, California.

Milton E. Held, Milk & Food Consultant, U. S. Public Health Service, Dept. Health Education & Welfare, Region VI, 911 Walnut Street, Kansas City 6, Missouri.

M. W. Jefferson, Chief, Dairy Products, Sanitation Section, 1308 E. Franklin Street, Richmond 19, Virginia.

Robert M. Keown, Milk Sanitarian, Inter-City Milk Control Council, Inc., Municipal Building, Elkhorn, Wisconsin.

Elmer Kihlstrum, Johnson & Johnson, Filter Products Division, 4949 W. 65 Street, Chicago 38, Illinois.

J. L. Littlefield, Ass't. Chief, Dairy Division, State Dept. of Agriculture, Lansing, Michigan.

R. P. March, Associate Professor, Dairy Industry Dept., New York State College of Agriculture, Cornell University, Ithaca, N. Y.

Mike O'Conner, Seattle-King County Milk Div., 425 South Garden, Bellingham, Washington.

Russell R. Palmer, Head Health Inspector (Milk), Detroit Dept. of Health, Detroit 26, Michigan.

I. E. Parkin, Dairy Specialist, Div. of Agriculture Ext., College of Agriculture, The Pennsylvania State University, University Park, Pa.

Dr. R. M. Parry, D. V. M., Dairy Division, Dept. of Agriculture, State of Connecticut, Hartford 15, Connecticut.

C. W. Pegram, Chief, Dairy Div., State Dept. of Agriculture, Raleigh, N. C.

A. K. Saunders, Hgr., Farm Products Div., The Diversey Corp., 1820 Roscoe St., Chicago 13, Illinois.

Alex G. Shaw, Director, Milk & Cream Div., State Dept. of Agriculture, P. O. Box 163, Gainseville, Florida.

Harry F. Stone, Milk Control Sec., Dept. of Public Welfare, St. Louis 3, Missouri.

William Trobaugh, Milk Sanitation Sec., City & County Dept. of Health & Hospitals, W. 6th Ave. & Cherokee St., Denver 4, Colorado.

L. O. Tucker, Advisory Milk Sanitarian, State Dept. of Health, Smith Tower, Seattle 4, Washington.

COMMITTEE ON EDUCATIONAL AND PROFESSIONAL DEVELOPMENT

OBJECTIVES

First, to develop plans and to devise methods whereby the Sanitarian can more fully gain recognition as a professional worker in public health, and secondly, to recommend standards of education, training and experience designed to establish desirable professional qualifications to the end that the title Sanitarian will denote adequate preparation for professional work and attainment.

MEMBERS

W. Howard Brown, *Chairman*, 940 Main St., Jacksonville, Florida.

Russell B. Cunningham, Dept. of Public Health, La Porte, Indiana.

Karl K. Jones, Retail Food Section, Div. of Foods & Drugs, Indiana State Board of Health, 1330 West Michigan St., Indianapolis, Indiana.

Gilbert L. Kelso, University of North Carolina, School of Public Health, Chapel Hill, North Carolina.

Dr. Samuel A. Lear, Assoc. Prof., Dept. of Dairy Industry, Agricultural Experiment Station, Rutgers University, Nichol Ave., New Brunswick, New Jersey.

Thomas McLaughlin, Mgr., Institutions Div., Klenzade Products, Inc., P. O. Box 1020, Beloit, Wisconsin.

Richard Mansfield, 125 Woodmont Circle, Clinton, Tennessee.

Elmer E. Ninman, Oklahoma State Dept. of Health, 3400 N. Eastern, Oklahoma City 5, Oklahoma.

Guy P. Stevens, Supervisor of Dairying, State Dept. of Agriculture, Salt Lake City, Utah.

Raymond Summerlin, P. O. Box 595, Swainsboro, Georgia.

Haynes Wright, City Health Dept., Bristol, Virginia.

COMMITTEE ON FOOD EQUIPMENT

OBJECTIVES

To participate with other health organizations and industries in the formulation of sanitary standards for food equipment. Specifically, the functions of this committee include: (1) co-operation with other health agencies and industry, under the auspices of the National Sanitation Foundation, in the joint development of NSF Standards for Food Service Equipment; (2) when directed by the Executive Board, to cooperate with other health groups and industry in the development of sanitary standards for food equipment; and (3) to present to the membership at the annual meeting those standards which the Committee recommends be endorsed or approved by the Association.

MEMBERS

John H. Fritz, *Chairman*, Food & Public Health Inspection, Bur. of Food & Public Health Engineering, District of Columbia Dept. of Public Health, 300 Indiana Ave., N. W., Washington, D. C.

James W. Bell, National Canners Association, 1133 20th St., N. W., Washington 6, D. C.

Col. F. H. Downs, Jr., 3786 Norman Bridge Road, Montgomery 6, Alabama.

D. R. Gooden, LCDR, MSC, USN, Retired, Allegheny County Health Dept., Bur. of Environmental Health, 620 City-County Bldg., Pittsburgh 19, Pennsylvania.

Karl K. Jones, Div. of Foods & Drugs, State Board of Health, 1330 W. Michigan St., Indianapolis, Indiana.

Gene McClyea, Ass't. Chief, Food Section, Bur. of Food & Drug, Jefferson City, Missouri.

J. Schoenberger, New York City Dept. of Health, 125 Worth St., New York 13, New York.

James W. Smith, Tourist Establishment Sanitation, State Dept. of Health, Richmond 19, Virginia.

Jerome Trichter, Environmental Sanitation, City Dept. of Health, 125 Worth St., New York 13, New York.

James A. Westbrook, Milk & Food Consultant, Public Health Service, U. S. Dept. of Health, Education & Welfare, Region III, 700 East Jefferson St., Charlottesville, Virginia.

COMMITTEE ON FROZEN FOOD SANITATION

OBJECTIVES

To study conditions and practices within the frozen food industry, to determine the sanitary problems involved which might contribute to a public health hazard, and to make recommendations for the solution of such problems.

MEMBERS

Frank E. Fisher, *Chairman*, c/o Food & Drug Div., Indiana State Board of Health, 1330 W. Michigan St., Indianapolis, Indiana.

W. P. Boylston, Div. of Sanitary Engineering, State Board of Health, Columbia 1, South Carolina.

O. A. Ghiggoile, Bureau of Dairy Service, State Dept. of Agriculture, 1220 N. Street, Sacramento 14, California.

G. L. Hays, Bacteriological Group, American Can Co., Central Div., 11th Ave. and St. Charles Road, Maywood, Illinois.

Wm. C. Miller, Jr., Milk and Food Program, Div. of Sanitary Engineering Services, U. S. Public Health Service, Washington 25, D. C.

Raymond Summerlin, Immanuel County Health Dept., P. O. Box 595, Swainsboro, Georgia.

Dr. K. G. Weckel, Dept. of Dairy & Food Industries, College of Agriculture, University of Wisconsin, Madison 6, Wisconsin.

COMMITTEE ON MEMBERSHIP

OBJECTIVES

To make every effort to increase the membership of the organization by bringing to the attention of all qualified persons the advantages of belonging to the International Association of Milk and Food Sanitarians, Inc., and to interest State milk and food sanitarians' organizations in the advantages of affiliation with the Association.

MEMBERS

Harold Wainess, *Chairman*, Wainess and Associates, 510 N. Dearborn St., Chicago 10, Illinois.

D. C. Cleveland, Director, Sanitation Section, Oklahoma City-County Board of Health, 505 Municipal Bldg., Oklahoma City, Oklahoma.

Dr. L. K. Crowe, Professor, Dept. of Dairy Husbandry, University of Nebraska, College of Agriculture, Lincoln 3, Nebraska.

Mel H. Herspring, Chief, Bureau of Milk Sanitation, Alameda County Health Dept., 15000 Foothill Blvd., San Leandro, California.

Dr. C. K. Johns, Officer-in-charge, Dairy Technology, Canada Dept. of Agriculture, Science Service Bldg., Ottawa, Ontario, Canada.

Howard H. Johnston, Division of Milk Sanitation, Bureau of Foods and Chemistry, State Dept. of Agriculture, Harrisburg, Pennsylvania.

Kenneth L. Pool, State Sanitarian Supervisor, Engineering and Sanitation Section, Idaho Dept. of Health, Statehouse, Boise, Idaho.

L. O. Tucker, State Dept. of Health, Smith Tower, Seattle 4, Washington.

Secretary-Treasurers of Affiliates

Arizona
Hiram Shouse, Room 430 State Office Bldg., Phoenix, Arizona.

California
L. E. Groff, Los Angeles City Health Dept., Los Angeles, California.

Del-Mar-Va Penninsula
Richard J. Weaver, 422 Wheeler Blvd., Oxford, Pennsylvania.

Florida
Ben J. Northrup, 4835 Burlington Ave., St. Petersburg, Florida.

Idaho
C. P. Maughan, 240 S. Second St., Preston, Idaho.

Illinois
P. Edward Riley, Ill. Dept. of Public Health, 1615 Seward St., Evanston, Illinois.

Indiana
Karl K. Jones, 1330 W. Michigan St., Indianapolis, Indiana.

Iowa
Ray Belknap, State Health Dept., Des Moines, Iowa.

Kansas
Frank L. Kelley, Kansas State Board of Health, Topeka, Kansas.

Michigan
Robert Lyons, Lansing-Ingham Co. Health Dept., City Hall, Room 207, Lansing, Michigan.

Minnesota
G. H. Steele, Minnesota Dept. of Agri., 515 State Office Bldg., St. Paul, Minnesota.

Missouri
Charles P. Orr, Missouri Div. of Health, Jefferson City, Missouri.

New York
R. P. March, 118 Stocking Hall, Cornell University, Ithaca, New York.

North Dakota
John E. Lobb, 317 Griffin, Bismark, North Dakota.

Oregon
Archie Miner, P. O. Box 1068, Eugene, Oregon.

Pennsylvania
Homer Young, 202 Willett Road, Glenshaw, Pennsylvania.

Rocky Mountain
Joe Mason, Dairy Division Denver Dept., Health Hospitals, Denver, Colo.

South Carolina
John C. Brown, State Board of Health, Columbia, South Carolina.

South Dakota
Robert P. Hayward, South Dakota Dept. of Health, Pierre, South Dakota.

Virginia
J. F. Pace, Virginia State Health Dept., Room 518 Blanton Bldg., Richmond, Virginia.

Washington
Frank W. Logan, City Health Dept., Public Safety Bldg., Seattle, Wash.

Wisconsin
L. Wayne Brown, 421 Chemistry Bldg., University of Wisconsin, Madison, Wisconsin.

Note Appointments not yet confirmed for: American Indian, Connecticut, Georgia, Idaho, Kentucky, Rhode Island, Texas and Tennessee Affiliates.

COMMITTEE ON ORDINANCES AND REGULATIONS PERTAINING TO MILK AND DAIRY PRODUCTS

OBJECTIVES

To review and study the provision of sanitary ordinances and regulations pertaining to milk, milk products, and frozen desserts, to evaluate data on research findings relative to the sanitary and public health significance of the specific requirements of ordinances and regulations, and to prepare for submission to the members of the Association recommendations for changes in existing ordinances and regulations.

MEMBERS

Donald H. Race, *Chairman,* Dairy Products Improvement Inst., Inc., 302 State St., Ithaca, New York.

Harold J. Barnum, Chief, Milk Sanitation Services, Dept. Health & Hospitals, City & County of Denver, 659 Cherokee St., Denver 4, Colorado.

C. V. Christiansen, Dir. of Laboratories, Bowman Dairy Co., 140 W. Ontario St., Chicago, Illinois.

J. C. Flake, Sanitary Standards, Evaporated Milk Association, 228 N. La Salle St., Chicago 1, Illinois.

A. B. Freeman, Milk & Food Consult., Public Health Service, U. S. Dept. of Health, Education and Welfare, Region II, 42 Broadway, New York 5, N. Y.

O. A. Ghiggoile, Bur. Dairy Service, State Dept. Agr., 1220 N. Street, Sacramento, California.

K. A. Harvey, Dist. Supvsg. Sanitarian, South Central District Health Dept., 309 Second Ave. East, Twin Falls, Idaho.

C. H. Holcombe, Agricultural Products Inspection, State Dept. Agriculture, 515 State Office Bldg., St. Paul, Minnesota.

Dr. Howard K. Johnston, Principal Sanitarian, Div. of Milk Sanitation, Bur. of Foods & Chemistry, Dept. of Agriculture, Commonwealth of Pennsylvania, P. O. Box 108, Harrisburg, Pennsylvania.

Dr. R. M. Parry, Chief ,Dairy Div., Dept. of Agriculture, State of Connecticut, Hartford 15, Connecticut.

John M. Richman, National Dairy Products Corp., 260 Madison Ave., New York 16, N. Y.

Ed. Small, Standardization & Program Development Br., Agriculture Marketing Service, U. S. Dept. of Agriculture, Washington 25, D. C.

John F. Speer, Jr., International Association of Ice Cream Mfgrs., 1105 Barr Building, 910 - 17th Street, N. W., Washington 6, D. C.

Stephen J. Wolff, Pevely Dairy Co., 1001 S. Grand Blvd., St. Louis 4, Missouri.

COMMITTEE ON RECOGNITION AND AWARDS

OBJECTIVES

This committee is charged with the responsibility of implementing those objectives of the Association concerned with (1) recognition of individual milk and food sanitarians whose achievements have contributed greatly to the public health and welfare of their communities, and (2) recognition of those members of the Association who have, through distinguished service, contributed greatly to the professional advancement and growth and reputation of the International Association of Milk and Food Sanitarians, Inc.

The Committee receives and reviews nominations for the annual Sanitarian's Award, and has full responsibility for the selection of the recipient. The Committee also receives and reviews recommendations on candidates for the annual Citation Awards, and counsels with the Executive Board relative to the selection of the recipients. It is also responsible for handling all matters pertaining to the presentation of awards, publicity and other related items.

MEMBERS

Paul Corash, *Chairman,* New York City Dept. of Health, 125 Worth Street, New York 13, N. Y.

Cameron S. Adams, State Dept. of Agriculture, Old Capital Building, Olympia, Washington.

James M. Doughty, Jr., Division of Foods & Drugs, State Dept. of Health, Austin, Texas.

Dr. Robert Holland, Dept. of Dairy Industry, Cornell University, Ithaca, N. Y.

Richard S. Mansfield, 125 Woodmont Circle, Clinton, Tennessee.

H. B. Robinson, Milk and Food Program, Div. Sanitary Eng. Services, U. S. Public Health Service, Room 2425 Tempo. R Bldg., Washington 25, D. C.

COMMITTEE ON RESEARCH NEEDS AND APPLICATIONS

OBJECTIVES

The objectives of this committee are: (1) to serve the field sanitarian as a clearing house for new ideas and practices which would enable a more efficient discharge of their duties: (2) to coordinate its activities with those of a similar committee of the American Public Health Association (Engineering & Sanitation Section); (3) to ascertain the needs of the membership for specific information on given problems and to find the best method of disseminating information obtained by the committee.

MEMBERS

Dr. Samuel H. Hopper, *Chairman,* Dept. of Public Health, Indiana University Medical Center, Indianapolis, Indiana.

H. J. Barnum, Dept. of Health & Hospitals, W. Sixth Ave. & Cherokee St., Denver 4, Colorado.

F. C. Baselt, Research & Technical Dept., American Can Co., 100 Park Ave., New York, N. Y.

Howard Froiland, Dairy & Food Dept., City of Aberdeen, South Dakota.

John E. Guinn, Dept. of Public Health, State Office Bldg., Cheyenne, Wyoming.

Dr. C. K. Johns, Dairy Technology Research, Dept. of Agriculture, Ottawa, Ontario, Canada.

Dr. W. C. Lawton, Quality Control Committee, 2274 Como Avenue West, St. Paul 8, Minnesota.

Dr. Keith H. Lewis, Milk & Food Research, Dept. of Health, Education & Welfare, 4676 Columbia Parkway, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio.

Dr. Warren Litsky, Dept. of Bacteriology & Public Health, University of Massachusetts, Amherst, Massachusetts.

Dr. K. G. Weckel, Dept. of Dairy & Food Industries, University of Wisconsin, Madison, Wisconsin.

COMMITTEE ON SANITARY PROCEDURES

OBJECTIVES

To participate jointly with the Sanitary Standards Subcommittee of the Dairy Industry Committee and the Milk and Food Branch, U. S. Public Health Service, in the formulation of 3A Sanitary Standards for Dairy Equipment. Specifically,

the functions of this committee are: (1) to receive, consider, and comment on proposed sanitation standards for dairy equipment submitted by the Sanitary Standards Subcommittee; (2) to bring to the attention of the Sanitary Standards Subcommittee items of dairy industry equipment and methods for which formulation of sanitary standards appear desirable; and (3) to cooperate with the Dairy Industry Committee, the U. S. Public Health Service, and health officials in attaining universal acceptance of the sanitary standards upon which mutual agreement has been reached.

MEMBERS

C. A. Abele, *Chairman*, 2617 Hartzell St., Evanston, Illinois.

John Andrews, Sanitary Engineering Div., State Board of Health, Raleigh, North Carolina.

D. C. Cleveland, Sanitation Sec., City-County Board of Health, 505 Municipal Bldg., Oklahoma City, Oklahoma.

Paul Corash, Milk Div., City Dept. of Health, 125 Worth St., New York 13, N. Y.

Milton R. Fisher, Milk Control Sec., Dept. of Public Welfare, St. Louis 3, Missouri.

Mark D. Howlett, Jr., City Health Dept., 111 East 1st., Ios Angeles 12, California.

Dr. William K. Jordan, Dept. of Dairy Industry, Cornell University, Ithaca, N. Y.

J. L. Littlefield, Dairy Div., State Dept. of Agriculture, Lansing 13, Michigan.

C. K. Luchterhand, State Board of Health, State Office Bldg., Madison 2, Wisconsin.

Samuel O. Noles, State Board of Health, Bureau of Preventable Diseases, Box 210, Jacksonville, Florida.

I. E. Parkin, Dairy Specialist, College of Agriculture, Pennsylvania State University, University Park, Pennsylvania.

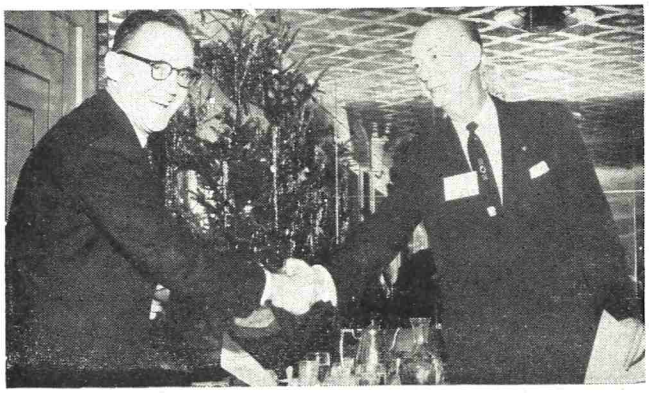
Wilbur C. Parkinson, Div. of Food and Sanitary Eng., City Board of Health, 115 S. State Street, Salt Lake City 11, Utah.

Dr. R. M. Parry, Chief, Dairy Div., Department of Agriculture, State of Connecticut, Hartford 15, Connecticut.

George H. Steele, State Dept. of Agriculture, 515 State Office Bldg., St. Paul, Minnesota.

H. L. Thomasson, Exec. Sec., International Association of Milk & Food Sanitarians, Inc., P. O. Box 437, Shelbyville, Indiana.

D. B. Whitehead (Klenzade Products, Inc.), 4886 Woodmont Drive, Jackson, Mississippi.



Mr. Hubert Garrecht (left) President of the Milk Industry Foundation presents award to H. L. Thomasson.

RED THOMASSON HONORED BY MILK INDUSTRY FOUNDATION

Our genial and capable Executive Secretary and Managing Editor of the Journal, received a singular honor recently during the 21st Dairy Industries Exposition. He was presented with a citation award by the Milk Industry Foundation.

The Citation read as follows: "To Mr. H. L. Thomasson, Managing Editor, Journal of Milk and Food Technology, in recognition of his maintenance of the highest standards of technical journalism in the editing of an essential periodical for the dairy industry, and in appreciation for his contributions toward the advancement of the milk industry."

The award was presented by Mr. Hubert Garrecht, President of the Foundation at a dinner honoring dairy and food trade press editors during the golden anniversary convention of the Foundation at Chicago.

Members of International and Red's many friends in the dairy and public health fields, extend congratulations for the award and for the deserved recognition it brings.

H. S. Adams, Past President

LETTER TO THE EDITOR

Mr. Joe Olson
University of Minnesota
Institute of Agriculture
St. Paul 1, Minnesota

Dear Joe:

Recently an incident occurred relative to an off flavor in milk that we thought might be of interest to other readers of the Journal. It is as follows:

Our department received a complaint from a Minneapolis high school that the milk sold in their lunchroom was not palatable. The students complained that the milk was not fresh. Samples were immediately obtained, tested in our laboratory and found to be satisfactory, bacteriologically and chemically. The milk did develop an unpleasant taste eight to twelve hours after being bottled. The milk was bottled at 5:00 a. m. and delivered at 8:00 a. m., but still the students complained. Bacteriological and chemical tests continued to indicate excellent milk from these two standpoints.

The plant manager made every effort to discover the cause of the trouble. He considered the possibility that the carton filler steam defoamer was imparting a taste to the milk from the use of excessive amounts of boiler compound. Elimination of the use of boiler compound did not improve the taste. Further investigation by the plant manager disclosed that when a different shipment of solid wax was used to wax the paper cartons the objectionable flavor did not develop. Samples of the wax were obtained and examined in our laboratory. When the wax was heated to above its melting point objectionable odors were noted. We immediately contacted the wax suppliers and informed them of the defective wax. The officials at the wax company were very cooperative. After investigation by them, their findings indicated that the microwax used to keep the carton wax ductile, and which prevents the wax from cracking, had not been manufactured properly. The crude oil and carbon had not been completely removed. The unsatisfactory wax was darker than the

usual wax used. The manufacturer of the wax located all remaining defective wax and assured us that it would not be used for food purposes. The pasteurizing plant manager and our department were very glad that this unusual problem had been solved. The students now enjoy their milk.

We received the following information from the wax company regarding carton wax which may be of interest to others:

1. Liquid wax is more apt to develop rancidity than solid wax.
2. Liquid wax holding tanks should be thoroughly cleaned each time the tank is empty.
3. Liquid wax tanks should not be used longer than two months without being thoroughly cleaned.
4. The wax heating section of the carton forming machine must always be kept clean.

The manufacture of carton wax is under federal inspection and must meet United States Pharmaceutical standards. Wax meeting the U.S.P. standards, used with the above precautions, will not cause off flavors nor objectionable odors.

With best regards,

Leonard Sinton, Supervisor
Milk Sanitation Division
Minneapolis Health Department

THE SANITARIAN'S JOINT COUNCIL*

The Sanitarian's Joint Council was formally organized in November 1956 at the annual APHA meeting held that year in Atlantic City, N. J. Preliminary discussions had been held a year earlier when APHA met in Kansas City, Missouri.

The Council is composed, currently, of two delegates and an alternate from each of three organizations; APHA (Engineering and Sanitation Section), The National Association of Sanitarians and the International Association of Milk and Food Sanitarians, Inc. Those who initiated the formation of the Council felt there was a real need for cooperative and collaborative action among the organizations listed above. Each has a direct interest in the Sanitarian from a number of viewpoints; his professional development in particular.

As will be shown later, the Council serves mainly as an exploratory group with no powers of direct action unless so granted by the three parent organizations. This of course is as it should be. Delegates bring to the parent organization those suggestions and plans which seem feasible and in line with Council objectives. It is only through affirmative action of parent organizations that any such plans can be implemented. And even within the Council itself, there must be complete agreement on proposals before these are presented to each of the three organizations.

The rules of organization and operation agreed upon at the 1956 meeting called for the election of a Chairman and a Secretary. H. S. Adams representing International was appointed Chairman, pro-tem at the 1956 meeting and elected chairman at the 1957 meeting. The Secretary, E. Russell Jackson of the National Association of Sanitarian's was appointed Secretary in 1957, the position he now holds with the Council.

To set forth further and in more detail the agreed upon operating protocol of the Council, the following statements are presented.

OBJECTIVES AND PURPOSES

The objectives and purposes of the Sanitarian's Joint Council shall be to consider ways and means of solving important problems of mutual interest to sanitarian's organizations which need unified action and which may be brought to the Council by any of its members.

Objectives and purposes of the Council shall also include:

A. Develop a uniform definition for Sanitarian
B. Promotion of the professional status of the Sanitarian
C. Development of a Sanitarian's specialty board
D. Development of a recommended uniform law for the registration of professional sanitarians.
E. Development and promotion of educational and other qualifications for sanitarians.

Membership

The Council shall consist of six (6) voting members and three alternate members. Two voting members and one alternate member shall be appointed by each participant.

A. Voting members — Each organization shall appoint from its membership, one voting member to serve on the Council for one year and one voting member to serve for two years. Each year thereafter there shall be appointed a voting member to serve for a period of three years.

B. Alternate members — Each organization shall appoint an alternate member to serve for a period of three years.

The Officers

The officers of the Council shall be the Chairman and the Secretary, elected annually from the voting members. The Chairmanship shall be rotated among the organizations represented on the Council.

The Chairman and the Secretary shall be from different organizations represented on the Council.

Voting Procedure

In conducting the business of the Council, the voting members of each organization represented on the Council shall vote as a unit except in the case of the election of officers.

Any proposal brought before the Council, with the exception of the election of officers, must be approved through unanimous vote of the voting members.

All proposals approved by the Council shall be submitted to each organization at its business meet-

ing. No proposals shall be put into effect by the Council without approval of the membership of each participant.

The Alternate member shall have voting privilege only in the absence of a voting member at meetings of the Council.

A. The application of other participants shall be received by the Council and admission, if granted, shall be recommended by unanimous consent of the Council.

It is readily apparent from a study of the operating rules as given above that there are adequate checks and balances within the structure of the Council. In the final analysis, the parent organization must be fully informed concerning any program of action recommended by the Council. The parent organization can reject, accept or amend the proposal as it may determine. This procedure, because of its nature, does place a definite time limitation upon the Council in the matter of programs it feels should be initiated. Each organization represented has an annual meeting and it is only at this meeting that the members assembled may hear the report of its Council delegates and determine what action it desires to take.

Even with the functional procedure that must be followed the Council progress has been good. For the 1958 meeting, held during the APHA meeting in St. Louis in October, a number of matters were accepted for referral to the parent organizations. Among these were the following:

1. A model law for the legal registration of sanitarians. This is not yet in final form since many changes and revisions were suggested and the Secretary is presently assembling them so the model may be in proper form for presentation to the parent organizat at their 1959 meetings.

2. The development of a SANITARIAN'S Specialty Board. While there are many details to be worked out, it was the feeling of the Council that there should be developed, a registry of professional sanitarians in this country. At this point in the Council's thinking it is believed that this registry should be professionally meaningful and should exceed many current requirements for licensing and registration. To start such a registry, finances will be needed and this presents a problem which will require some careful thought and planning. If each of the participants agrees to such a plan, funds from each will be necessary to make the plan a reality.

3. The Council was requested to review and comment upon a plan for the establishment of the professional sanitarian category in the U. S. Public Health Service. Considerable time was spent in dealing with this matter which is of importance to all professional sanitarians country-wide. In this case the Council acted in an unofficial advisory capacity since the Public Health Service was in no way committed to accept any recommendations made. It is noteworthy however, that the Service did recognize the Council in this matter. This is another example of how such a Council, representing Sanitarian's organizations may speak with a unified voice.

The limitations of space make it necessary to conclude this article except for two other points. The first, and of real interest to the reader, is the present composition of the Council. The following is a list of delegates and alternates.

Representing the American Public Health Association, Engineering and Sanitation Section:

A. Harry Bliss of California, Chairman, 1958-59
Karl M. Mason of Pennsylvania
Harold Rose of Massachusetts, Alternate

Representing the National Association of Sanitarians:

E. Russell Jackson of Florida, Secretary
Jerome Trichter of New York City
Walter Mangold of California, Alternate

Representing the International Association of Milk and Food Sanitarians, Inc.:

Harold S. Adams of Indiana
John D. Faulkner of Washington, D. C.
H. L. Thomasson of Indiana, Alternate

The second point to be made is one which involves the significance and the necessity for a common meeting ground for organizations whose interest is in the advancement and welfare of the Sanitarian. The Council admirably serves this purpose. Prior to the Council's creation there was little opportunity for forthright joint discussion of problems, plans and means whereby this objective might be approached. While each organization has its own plans and program, the Council serves as a place where representatives can exchange points of view and develop procedures which have a common denominator of interest. It is hoped, that over a period of time – the Council can bring to fruition some of the good things that need to be done.

* This article summarizes a presentation made by Adams on this subject before a Regional Meeting of the NAS held at the Statler Hotel, St. Louis, Missouri on October 29, 1958 during the annual meeting of the American Public Health Association. Mr. Adams served as Council Chairman for 1957 and 1958.

INDEX TO ADVERTISERS

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QUESTIONS AND ANSWERS

Note: Questions of technical nature may be submitted to the Editorial Office of the Journal. A question in your mind may be in the minds of many others. Send your questions in and we will attempt to answer them.

QUESTION:

How can a Health Department best evaluate sanitation programs?

ANSWER:

Evaluation methods for sanitation programs are inadequate at best. The reason being that we do not realize just what we have prevented. Some of the methods we can employ are as follows:

1. Adoption of a suitable code to identify programs and activities spent on various phases of each program.
2. Having surveys run by other qualified individuals on your programs to determine where greatest concentration i needed.
3. Analysis of inspection records and notation of improvements, or lack of improvements, made during a current period.
4. Analysis of disease reports occurring in your respective area and the probable cause of such diseases.

QUESTION:

What sources are available for obtaining information on sanitation subjects?

ANSWER:

1. U. S. Dept. of Health, Education, & Welfare — Public Health Services, Bureau of State Services, CDC, 50 Seventh St. N.E., Atlanta, Georgia.
2. National Academy of Sciences, National Research Council, 2101 Constitution Ave., Washington 25, D. C.
3. Periodical Publications Useful to the Sanitarian, by W. W. Sampson, Ph.D., City Health Department, Oakland, Calif. (This article lists 131 periodicals with addresses, cost, subjects and value to the sanitarians work.)
4. U. S. Dept. of Health, Education, & Welfare, Food and Drug Administration, Washington 25, D. C.
5. Helpful Information column which appears frequently in the Journal.

QUESTION::

What are the most effective methods for recording sanitation inspections?

ANSWER:

This may be considered a "sixty-four dollar question." There have been many systems attempted — some of which are suitable to a specific problem and some have their drawbacks.

There are two excellent systems which are currently in use and we suggest you obtain further information from:

1. City Department of Public Health, Division of Environmental Sanitation, Philadelphia, Pa., requesting information on "Methods for Recording Sanitation Inspections."
2. Vinson R. Oviatt, Engineering Consultant, Michigan Department of Health, Lansing, Michigan, requesting information on "The Marginal Punch Card System."

Both of these systems are suggestions from the U. S. Department of Health, Education and Welfare, Public Health Service Publication #612.

Information on these two systems can be obtained through the Journal of the American Public Health Association, Vol. 46, No. 7, pp 865-871 and pp 872-879.

3-A ACCEPTED PRACTICES FOR THE SANITARY CONSTRUCTION, INSTALLATION, TESTING AND OPERATION OF HIGH-TEMPERATURE SHORT-TIME PASTEURIZERS

Formulated by
International Association of Milk and Food Sanitarians, Inc.
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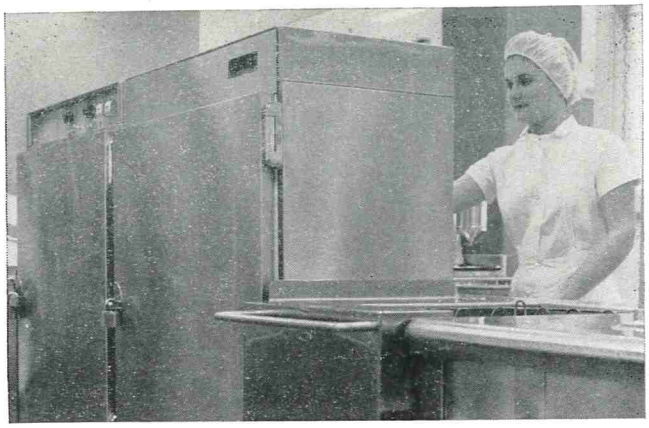
The Dairy Industry Committee

Price: — With Cover 50¢ each, Without Cover 45¢ each — 100 or more with cover 45¢ each, Without Cover 40¢ each.

Stainless Steel milk dispensers save $42 per week at drug company plant

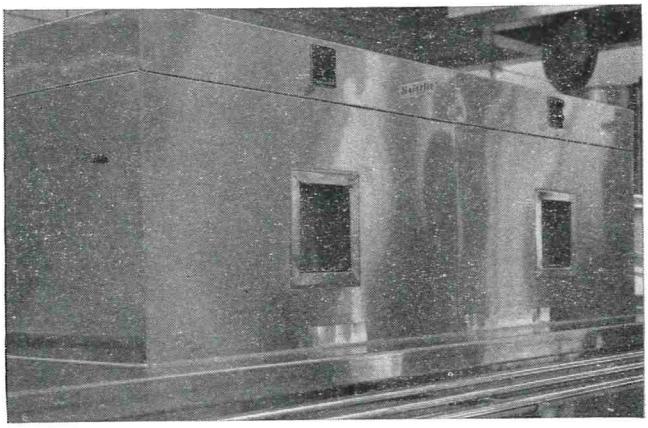
The Upjohn Company, Kalamazoo, Michigan serves about 2000 meals a day in its employee cafeterias which are under the general direction of L.V. McBride of the Personnel Division.

"We first installed Stainless Steel milk dispensers as a time-saving measure," says Mr. McBride. "We soon found out that they save a lot more than time. With the dispensers, we can now buy milk at the bulk price, instead of paying for it in individual containers. We save 4/5¢ on every ½-pint serving. Since we serve about 480 gallons of milk a week, those penny-fractions add up fast—to a savings of around $42 a week.



"Stainless Steel dispensers are more sanitary because they eliminate all the handling necessary with individual containers. The milk never has to sit out on the serving line . . . or in racks by our delivery door waiting to be stored away. We don't have to contend with empties.

"Milk is delivered in bulk cans that go right into the Stainless dispensers without delay. They keep the milk good and cold—all the time. We don't need refrigerated storage space. There's never any breakage, and little or no spillage.



"There never has been a question in our minds about the cleanliness of Stainless Steel."

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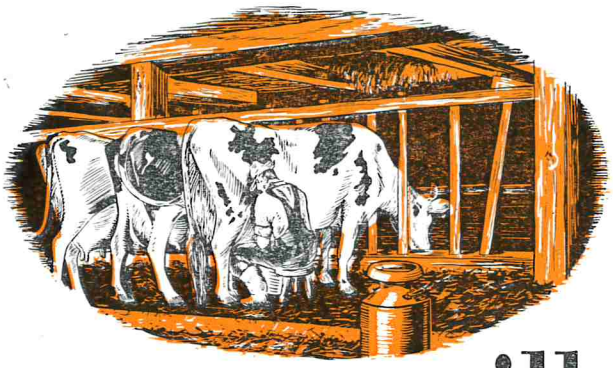

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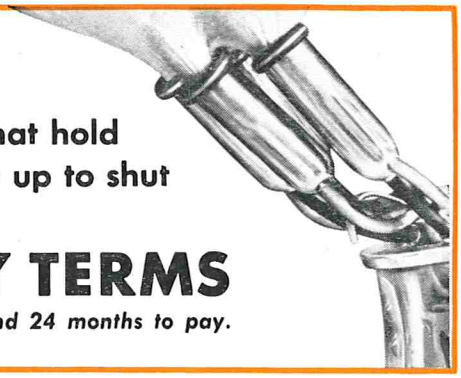
Don't get so excited about new ways to handle cows and easier ways to handle milk that you forget that good cow milking still comes first.



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