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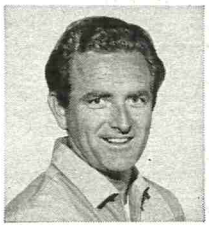

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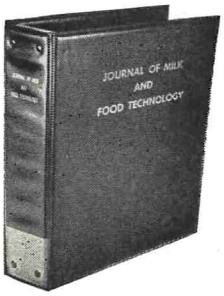

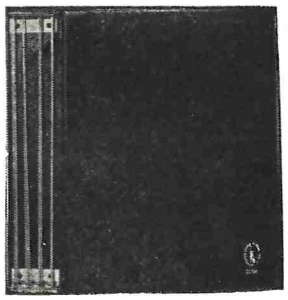

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SANITATION IN MEAT AND POULTRY PROCESSING PLANTS[1]

R. S. Geister and A. C. Maack

Swift & Company,
115 W. Jackson Blvd.,
Chicago, Illinois 60604

One fact to be emphasized in this paper is the great extent to which the modern packing-house industry goes in the area of environmental health. It is disturbing that there is a general lack of knowledge in this area by a great many people who should know and be aware of industry's endeavors and accomplishments.

As an example, one of the authors of this paper recently heard a presentation given by an assistant professor from the food science field in a large university. The purpose of his talk was to "suggest ways to clean up present meat processing methods". It was painfully obvious during his presentation that he was lacking even elementary knowledge of the procedures involved in modern meat processing.

Again, a government health inspector with many years of experience in another environment, was transferred to one of our poultry plants. He approached the plant the first morning with trepidation, expecting a long, hard job ahead. He observed all day. He observed long into the night. The next morning his first act was a phone call to his superior with a sort of complaint, "What am I supposed to do here?"

Basic Reasons for a Sanitation Program

We want to give here a brief review of the actual environmental health program of a major producer of meats, ice cream, poultry, cheese, and allied foods.

The "why" of our sanitation program at Swift and Company can perhaps be stated as four stimuli. The first is provided by the following governmental inspection services which have jurisdiction over and constantly observe our operations: USDA Meat Inspection Service (Packing plants); USDA Agricultural Marketing Service (Poultry plants); Food & Drug Administration (All plants); USDA Consumer Marketing Service (All products); State Health Departments; County Health Departments; and City Health Departments.

Allied to these official environmental health inspections are these activities which affect us:

1. The Food & Drug and Public Heath Service are beginning to coordinate activities of all organizations concerned in the bacteriology of foods.
2. In the past four years there have been six national and international conferences whose stated purpose was to set microbiological standards for food.
3. The National Research Council has published articles regarding the public health hazard aspect of foods on today's market.
4. The Association of Food & Drug Officials of the United States is developing procedures for the bacteriological sampling of foods.
5. Federal inspectors are now using with increased frequency that portion of the F & D Law which states: "A food is adulterated if it has been prepared, packed or held under conditions whereby it *may have* become contaminated."

All of these well-publicized activities have developed "a public consciousness that in addition to protection of his health the consumer has the right to protection against practices violating hygienic decency—practices that are offenses only to his aesthetic sense." Food inspectors are now reflecting this public attitude in their inspections at our plants.

Industry Recognizes the Value of a Good Program

The above are the "legal" or "group-pressure" reasons for a strongly effective sanitation program. A second stimulus is modern technology—rapid and mass production in central locations, wide dissemination of products through fast transportation, new types of packages, new pre-cooked or pre-prepared convenience foods, new chemical additives of all types and above all the public demand for less severely processed and more "natural" foods. All these facets require an increased emphasis on and modern techniques in sanitation procedures. Without an up-to-date sanitation program few, if any, of the new technologies could be utilized.

The third "why" of our sanitation program is simply one of economics. The increased cost of labor time today simply means that effective clean-up must be accomplished in a minimum of time. This, of course, demands modern cleaning equipment and we

[1]Presented at the 53rd Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians, Inc., in Minneapolis, Minnesota, August 15-18, 1966.

will explore this phase a little more later.

The fourth "why" of our sanitation program is the entire organization's awareness and desire to give the customer a premium quality product. This consciousness of responsibility may be called pride if you will; but it must be, and is, present throughout the company. Swift does not, and this may be unique, separate quality control functions from sanitation activities. We sincerely believe that this feeling of responsibility to the consuming public transcends our responsibilities to the Food & Drug laws, the MIS and AMS regulations. Quite often our activities in the field of environmental health greatly exceed that required by these various regulatory groups. It is on this basis that our program has developed.

ORGANIZATION OF A PROGRAM

The first formally organized sanitation program in Swift & Company was started by Mr. Harold B. Richie in the early thirties. Harold, now retired, was long a member of IAMFES and was widely known. One of the authors, Dr. A. C. Maack, and Mr. George E. Brissey became active in developing and placing a regularly-reported program at plant level 22 years ago. Today, Mr. Brissey is General Manager of the Quality Assurance Department of Swift & Company. This department not only develops and administers a comprehensive statistical quality control program but also administers the Technical Sanitation program throughout the company. This follows our belief that quality and sanitation cannot be separated.

The Quality Assurance Department reports directly to a Vice-President, Dr. J. F. Murphy. It is interesting to note that Dr. Murphy's degree is in microbiology. At packing plant level the Quality Assurance Department manager reports directly to both his local plant manager and to the Quality Assurance General Department manager, Mr. Brissey. The Quality Assurance managers at plant level have under them both trained sanitation inspectors and quality control inspectors. Often, the local plant Quality Assurance manager has a microbiological and sanitation background himself.

Thus, from an organizational standpoint, reports on the sanitation aspects of plants have a direct route to a company vice-president who understands them and the sanitation inspectors are not responsible to, or work under, production or product personnel.

Swift and Company has fifteen analytical bacteriological laboratories scattered zone-wise around the U. S. and Canada that are equipped to run any of the numerous types of analyses that may be required.

DETAILED PLANT SURVEYS AND INSPECTIONS

All plants undergo periodic full-scale detailed sanitation inspections, the frequency depending upon the size of the plant, conditions found at the last inspection or other circumstances. The conditions found are placed in a written report to the operating department which is responsible for actually carrying out all sanitation procedures. Copies of the reports go to the plant manager and to the General Quality Assurance Department at the main office in Chicago. In between formal inspections, whenever a Quality Assurance Inspector or manager finds any item out of line or questionable he immediately contacts the General Quality Assurance Department for action or a ruling.

Typical coverage for a regular sanitation survey at a Swift packing plant will last two days and one night and will include:

1. Microbiological samples of products, raw materials, swabbings of equipment and scrapings from container surfaces. Exposure plates are utilized and resamples are taken of any of above if the initial sample was suspect. The number of samples may be between 50 and 100.
2. Inspection of clean-up procedures both during and after clean-up will include checking the temperatures of cleaning water, type of detergent used, sanitizing agent used, equipment used and thoroughness of the job. These checks are made during the day to see if the prescribed periodicity of clean-up is followed. Sometimes a clean-up is required every two hours. Checks also are made during night time clean-up periods.
3. Insect and rodent control inspections are made several hours after a department has ceased operations. This, of course, is usually late at night or early morning. The inspection is made by flashlight to better spot the pests if present.
4. Inspection of physical facilities and housekeeping covers trash accumulation, rust, paint needed, window screens needing repair, loose door, excess condensate, etc.
5. A review of temperature and handling practices is considered a highly important part of the sanitation inspection to determine whether or not food items are maintained at the proper temperature during processing—either at a carefully prescribed minimum elevated temperature or at a definitely prescribed maximum low temperature. The time allotted at these temperatures is also checked.

The results of a sanitation survey are placed in a written report which fully describes each violation found. We do not use a stereotyped check list form. Results of the laboratory analyses on the samples accompanies each report. The plant superintendent is later required to make a written report stating the corrective action taken where needed for each item in the sanitation report.

BACTERIAL STANDARDS ESTABLISHED

Through years of accumulated experience and data, through recommendations by many technical organizations and through information in published reports, Swift & Company has developed bacteriological standards for all raw materials, products and for processing equipment. The microbiological count standards for products are necessarily low to allow for possible bacteriological development during the time spent in the normal distribution channels, often by mis-handling at the local store level. The bacteriological standards for raw materials and equipment are based on preventing excess numbers of organisms from entering the plant and, of course, preventing contamination during processing. The analytical results of every sample taken during a sanitation inspection is compared with these standards on a graduated scale basis and remedial action with follow-up samples is immediate if any result is elevated toward the maximum allowed. The routine bacteriological standards include total count, coliform, coagulase positive staph and anaerobic spore-formers. Other bacteriological analyses are made as the occasion may require.

USE OF TECHNICAL SANITATION INSTRUCTIONS

The cleaning and sanitizing instructions to plant operating personnel are designated as "Technical Sanitation Instructions". This is to emphasize that they *are* technical in nature and not simply janitorial procedures. These instructions are painstakingly written in complete detail and cover many hundreds of pages. They are constantly under revision as new sanitizing agents, detergents and cleaning equipment come on the market. Every new food product or process also will require a revised clean-up instruction.

The Technical Sanitation Instructions are prepared by Dr. Maack, approved by the general product operating department and by the engineering department, and then issued to the plants as a mandatory instruction. Dr. Maack has the position of Sanitarian in the General Superintendent's Office in Chicago and also advises the product operating people as to the time intervals and temperatures allowable during processing. These recommended times and temperatures during handling become part of the operating instructions for making each individual product.

We wish to emphasize that Swift's written Technical Sanitation Instructions cover every single phase, operation and piece of equipment in our plants, practically on an individual basis. They stipulate exactly what detergent or sanitizing agent to use, in what concentration, at what temperature, how to use it, what cleaning equipment to use, when to use it, how long to use it, temperature of rinse, problems that may arise, results to expect, when to repeat the cleansing, when to vary the procedure, etc., etc.

The Technical Sanitation Instructions may sound unnecessarily cumbersome and detailed. They *are* detailed, but this is required when you consider that normally the cleaning personnel are at the bottom of the seniority list in any plant and the turnover of help is quite large. However, we do have a very effective sanitation cost-reduction program in our packing plants. The goal, of course, is to improve cleaning at a lower cost by mechanization and by use of modern, more efficient cleansing and sanitizing agents for each job.

COST REDUCTION AN IMPORTANT PART OF PROGRAM

A cost reduction program is implemented by either Dr. Maack or by Mr. C. L. Lohner, Engineer on the General Superintendent's Office Chicago staff. An initial survey at plant level is made where plans are developed for modernizing cleanup when needed in particular areas. We make a complete economic evaluation analysis to compare total cost with estimated savings. The savings on labor and supplies must pay for the new proposed equipment within two years. After approval is obtained, the next step is the purchase and installation of the recommended equipment. Dr. Maack then returns to the plant to check installation of the equipment, train personnel, and make sure the equipment and cleaning agents are being used as prescribed.

The last year for which we have figures available show that cleanup expenses amounted to 3.3% of the total plant labor expenses for our company. Our goal at Swift is to reduce overall cleaning costs 10% with an added bonus of a better job. We have found in several instances some spectacular reductions in total cleaning costs with better results, e.g., as much as 45 to 72% reductions in costs.

SPECIAL ATTENTION TO CERTAIN PRODUCTS

We have been talking so far about the routine and general sanitation program in our company—what we do, have been doing and will continue to do for

the bulk of our products. There are, however, many places where extra care and extra procedures must be followed to produce a top quality product. Let us cite a few.

Whenever we stuff dressing into turkeys (and this holds true for other stuffed poultry), we have a separate special bacteriological laboratory that handles samples from this product only. The bacteriological standards are extremely low and rigid for staphylococci, coliform and total count. Here is a list of bacteriological samples taken from every lot of stuffed turkeys:

1. Hourly swabs from the internal body cavity of turkeys prior to stuffing.
2. Two samples of every 100 lbs. of freshly made stuffing.
3. Two samples every hour of chilled stuffing prior to using (stuffing is rapidly chilled in thin layers in covered containers after preparation and before using).
4. Two samples every hour of stuffing from a turkey after packaging but prior to freezing.
5. One sample from every two hours production of stuffed, frozen final product. These samples of stuffing are aseptically drilled from the frozen turkey.

In addition to the above production samples, the following precautions are taken:

1. All raw materials entering the stuffing must meet the same rigid bacteriological requirements when received at the plant.
2. All raw materials are visually inspected for various characteristics, including presence of foreign material, and must undergo certain chemical analyses in some cases.
3. All spices are flowing-steam treated before use to reduce the normally high bacteriological level of spices.
4. All equipment, floors, walls and ceilings of the stuffing preparation room and stuffing room are washed with detergent and sprayed with hypocholorite (200 ppm) before starting in morning, at noon and at end of daily operations.
5. Every two hours during stuffing operations, equipment such as aprons, tables, pans, utensils, belts, stuffers, etc., are detergent washed and sanitized with hypochlorite.
6. All personnel wear rubber gloves and aprons which are rinsed in hypochlorite after stuffing one turkey and prior to stuffing the next.
7. The stuffing preparation room and stuffing operation room are closed to *all* personnel except operators and laboratory or Quality Assurance inspectors.
8. All lots are held until all bacteriological analyses are completed and found to meet standards (three days).

In the case of frozen dinners and pies and like items, Dr. R. A. Greenberg, Swift & Company's Chief Microbiologist, was instrumental in aiding the Military in setting their standards of 100,000 total count, less than 100 coliform bacteria and negative E. coli. Remember that here we are talking about not only meat items such as sausage or steak and gravy, but also raw vegetables such as peas, carrots and potatoes. To meet these standards on a high speed production line requires a very high degree of sanitary handling and again a special bacteriological laboratory.

MEETING 30 DAY MARKETING STANDARDS

In order to obtain a 30 day shelf line for frankfurters and sliced Table-Ready Meats, it is necessary to stop production every two hours and completely clean the equipment which the product contacts as follows: Rinse with water under pressure and at 140 F, scrub with brush and a detergent at 160 F, rinse with water under pressure at 140 F, flood equipment with 100 ppm chlorine, and rinse just prior to use but at least 5 minutes later. Many of the people handling product wear sanitized rubber gloves, and the room temperature must be below 50 F at all times. Remember that we are here producing a cooked meat product to last 30 days, which means very simply that the level of sanitation must be better than you and I practice at home.

Most of you here are very familiar with the very high level of sanitation found in ice cream plants and creameries. You know the off flavor and bacteriological problems that arise at the slightest break in sanitary procedures. Know then that the identical problems are present in our margarine plants. These plants must practice the same rigid sanitary and control procedures as are found in the best creameries.

The above are only a few examples of the special sanitary requirements that are followed by Swift and Company. As with all progress, the "special" requirements of today become the routine practices we talked about earlier.

In conclusion, we hope you now have some idea of the great extent to which a modern meat and poultry processor can and will go to assure a sanitary product. The program outlined here is not just a sanitation program, it is a comprehensive environmental health program. It is a program that is combined with and an integral part of our overall quality control process. It is administered at a high level independently from operating or product personnel authority.

COMPARISON OF METHODS FOR GRADING MILK INTENDED FOR MANUFACTURING PURPOSES[1,2]

ROGER DABBAH[3], SITA RAMAYYA TATINI AND J. C. OLSON, JR.

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(Received for publication August 21, 1966)

SUMMARY

Samples of milk intended for manufacturing purposes were obtained once each season from randomly selected dairy farms in three widely separated geographical locations. Samples (3873) were analyzed by standard plate count (SPC-32 C), direct microscopic clump count (DMCC), methylene blue (MBRT) and resazurin (RRT), (5P 7/4) tests. Correlations for SPC vs. DMCC, MBRT, and RRT were r = 0.78, −0.82 and −0.79, respectively; DMCC vs. MBRT, RRT, r = −0.75 and −0.68, respectively; MBRT vs. RRT, r = 0.86. Prediction of DMCC, MBRT, and RRT on the basis of their regressions with SPC were influenced significantly (99% level of significance) by the geographical source of samples, the type of milk handling on the farm (can or farm bulk tank) and season. On the basis of equivalents (determined by regression) between classifying tests, new standards were developed. The percentage of samples classed the same by the four methods using these new calculated classifications or the classification recommended by the United States Department of Agriculture (USDA) was approximately 50% of all samples. Agreement between the four methods of classifying samples was not close enough to warrant the interchangeable use of the four tests.

Results from calculated classifications varied considerably with geographical location and with the method of handling milk on the farm. Although the use of calculated classifications would give better agreement among the four methods when applied to the supplies from which they were derived, multiplicity of tests methods, their application and interpretation would cause much confusion. Use of the RRT with a 5P 7/4 Munsell color end-point with separate procedures, one for can supplies (RRT: > 2 1/2, ≤ 2 1/2, and ≤ 1 1/2 hr for Class 1, 2, and 3, respectively) and one for farm bulk tank supplies (RRT: > 3 1/2, ≤ 3 1/2, and ≤ 2 1/2 for Class 1, 2, and 3, respectively) resulted in grading milk, intended for manufacturing purposes, more uniformly than either use of the four classification methods interchangeably or even use of a single RRT standard based on all samples regardless of type of milk handling on the farm (can or bulk tanks).

Recently a "Minimum Standards for Milk for Manufacturing Purposes and its Production and Processing recommended for adoption by State Regulatory Agencies" was prepared by the United States Department of Agriculture (USDA). These recommendations were published on June 26, 1963 in the *Federal Register (24)*. Included in these recommended standards is a classification of milk supplies based upon bacteriological quality. One of four tests—standard plate count (SPC), direct microscopic clump count (DMCC), methylene blue reduction test (MBRT), and resazurin reduction test (RRT) with a 5P 7/4 Munsell color end-point *(21)* may be selected and used, at the option of the user, as the basis of a quality-maintenance program. It was not recommended that the four methods be used alternately because agreement between the four testing methods has been shown repeatedly to be influenced by the quality of milk supplies under study *(5, 7, 8, 17, 20)*. In general, supplies with a relatively large proportion of individual samples or poor quality show better agreement among the classification methods than those with a relatively large proportion of individual samples of good quality. Furthermore, the type of microflora in milk also has been shown to be a probable factor in the agreement among the four grading methods *(12, 13, 14)*.

In view of the possible extensive application of classifications recommended by the USDA throughout the country, this study was undertaken primarily to determine the extent to which milk produced under different conditions in various parts of the country would be classed uniformly by the four methods of testing. Furthermore, a pertinent statistical basis for the setting of equivalent classes among the grading tests was desired. Other investigators *(1, 2, 3, 4, 9, 10, 11, 15, 16, 22)* have studied the problem of agreement between the test methods, but because of the regional character of the supplies and/or the limited number of samples investigated, extrapolation of their conclusions to more extended regions and supplies did not seem to be warranted.

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[1]Data taken from a thesis by Roger Dabbah in partial fulfillment of the requirements for the M.S. degree, University of Minnesota, April 1965.

[2]This work was done under United States Department of Agriculture Contract 12-25-010-5318. Scientific Journal Series Paper No. 6166, Minnesota Agricultural Experiment Station.

[3]Present Address: Market Quality Research Division, Agricultural Research Service, U. S. Department of Agriculture, Plant Industry Station, Beltsville, Md.

TABLE 1 LINEAR CORRELATIONS BETWEEN MILK CLASSIFICATION METHODS ALL SAMPLES — 3,873

	DMCC	MBRT	RRT
SPC	0.78	−0.82	−0.79
DMCC		−0.75	−0.68
MBRT			0.86

TABLE 2. MULTIPLE CORRELATION COEFFICIENTS BETWEEN MILK CLASSIFICATION METHODS AS INFLUENCED BY THE INTRODUCTION OF VARIOUS FACTORS AS INDEPENDENT VARIABLES

Independent variable (s) introduced	Correlation between the following variables: DMCC[a] vs. SPC	MBRT[a] vs. SPC	RRT[a] vs. SPC
1. None	0.784	0.822	0.790
2. Method of handling	0.784	0.840	0.827
3. Location	0.814	0.835	0.793
4. Season	0.787	0.824	0.792
5. 2, 3 and 4	0.817	0.853	0.831

[a]Dependent variable.

EXPERIMENTAL PROCEDURES

Source of samples.

In an attempt to obtain samples representative of the supplies from several heavy milk producing areas of the United States, samples were obtained as follows: *(a)* three widely separated geographical areas were selected within which a variety of milking practices existed: *(b)* within each area, several plants representative of those engaged in the processing of milk supplies intended for manufacturing purposes were selected; *(c)* producers from each plant within each geographical location were randomly selected from dairy farm load lists of each plant; and *(d)* each selected dairy farm was sampled (with few exceptions) once each season of the year. Sampling was done from winter, 1963 to fall, 1964.

Milk from can shippers was sampled at the weigh-tank in the plant while farm bulk-tank supplies were sampled on the farms. Samples were cooled immediately in ice water, then imbedded in ice in a sample-transport case. On arrival at the laboratory, they were refrigerated below 40 F until analyzed on the following day. The interval between sampling and analysis was not greater than 24 hours.

Statistical procedures for analysis of data.

The corresponding logarithmic values of the bacterial counts were punched on IBM cards. Furthermore, reduction times and other pertinent information relative to each individual sample were punched on the same IBM cards. Linear correlation coefficients and regression equations for the four classification methods were calculated. In order to assess the significance of the influence of factors such as type of milk handling, season, and geographical location of sampling on the statistical relationships between the test methods, multiple regression analysis and equations were determined using these factors as independent variables. Statistical analysis was performed on a Control Data Corporation 1604 computer using an "UMSTAT"-50 program *(18)*.

Methods of analysis.

The SPC[4] (incubation at 32 C), DMCC, MBRT and RRT were performed according to Standard Methods for the Examination of Dairy Products *(23)*; however, some minor modifications were made in the MBRT and RRT as indicated below. All equipment and material necessary for the study were transported from one location to another with the exception of incubators used for plate counts. The Levowitz-Weber modification of the Newman-Lampert stain No. 2 *(23)* was used for the DMCC. In order to minimize variations introduced by different analysts, all SPC's were plated and counted by the same analyst, and all DMCC's were done by another analyst throughout the duration of the investigation. For MBRT, a supplementary reading was made after 1 hour's incubation; the RRT was read every 15 minutes, with inversion every hour after the readings.

RESULTS AND DISCUSSION

A total of 3,873 samples (can, 2,756; farm bulk-tank, 1,117) from approximately 970 producers from 20 processing plants located in 7 states was collected and analyzed by the four test methods. The 7 states were grouped into three widely separated geographical locations.

Correlations.

The linear correlations between the test methods are shown in Table 1. They ranged from −0.68 for DMCC and RRT to 0.86 for MBRT and RRT. Factors such as the type of milk handling (can or farm bulk-tank), geographical location of the supplies, and season of the year modified in various degrees the correlations between the test methods (see Table 2). The method of handling did not modify the correlation between DMCC and SPC, whereas, the season factor generally modified the correlations between the methods to a lesser degree than the other factors.

Comparison of Data and USDA-Recommended Classification.

On the basis of data from all samples and using the appropriate regression equations, a system of evaluating quality levels was established using the SPC, as a reference, at the two levels recommended

[4]Two lots of plate count agar (Difco) were used throughout the study, Control No. 451711 and 463939. The former had a productivity equal to or higher than a lot identified as Control No. 445770 (Difco) which previously had been certified during media certification studies done at the Minneapolis-St. Paul Quality Control Laboratory and sponsored by the Media Certification Commission [see "Standard Methods" *(23)* p. 59.] The second lot, Control No. 463939, was compared in our laboratories with lot 451711 and was found to be equal in productivity.

TABLE 3. USDA[a] AND CALCULATED[b] MILK CLASSIFICATIONS

(A) USDA Classifications

Class	SPC	Method DMCC	MBRT	RRT(5P 7/4)
1	≤ 500,000	≤ 500,000	> 4.5 hr.	> 2.25 hr.
2	≤ 3 millions	≤ 3 millions	≤ 4.5 hr.	≤ 2.25 hr.
3	> 3 millions	> 3 millions	≤ 2.5 hr.	≤ 1.5 hr.

(B) Calculated Classifications

1	≤ 500,000	≤ 500,000	> 5.5 hr.	> 2.75 hr.
2	≤ 3 millions	≤ 1.2 millions	≤ 5.5 hr.	≤ 2.75 hr.
3	> 3 millions	> 1.2 millions	≤ 4.5 hr.	≤ 1.75 hr.

[a]Federal Register, June 26, 1963.
[b]Calculated on the basis of regression equations with SPC as an independent variable.

by the USDA: 500,000 and 3,000,000 per ml. All the samples were classified according to the USDA Classification (Table 3, A) and according to the calculated classification based on all samples (Table 3, B). The application of the USDA classifications to all samples (Table 4, column 2) resulted in variations in the percentages of samples placed in Class 1, 2, or 3 depending on the test used. Similar variations were evident when the calculated classifications (based on all samples) were applied to all samples (Table 4, column 3). With USDA classification, percent samples in Class 3 was highest for RRT, followed in decreasing order by SPC, MBRT, and DMCC. With calculated classification, percent samples in Class 3 was highest for MBRT, followed in decreasing order by RRT, SPC, and DMCC. The mean of the differences between the percentage of samples in each class was approximately 7 percent with extremes of 0% for Class 1 milk by DMCC to 19% for Class 3 milk by MBRT.

When the calculated classifications (based on all samples) were applied to all farm bulk-tank supplies, uniformity of classification by the four tests definitely improved over that found when the USDA classifications were applied to the same supplies (Table 4, columns 4, 5). When these same calculated classifications were applied to all can supplies, agreement between the tests did not improve appreciably (Table 4, columns 6, 7).

The percentage of all samples classified the same by all four tests was approximately 50% regardless of the system of classification applied. Some of the disagreement may be the result of the variability of the individual test method. Furthermore, segregation of samples on the basis of their method of handling (can or farm bulk-tank) did not improve appreciably the agreement between the two systems of classification (see Table 5).

Effect of Milk Handling Practices and Geographical Source on Comparisons.

In an attempt to determine the effect of type of milk handling and of geographical source of supplies on the values of DMCC, MBRT and RRT equivalent to SPC (predicted on the basis of regression equations), separate classifications based on data from samples grouped according to method of handling and/or geographical source of supplies were established (see Tables 6, 7, and 8). Differences in reduction times, MBRT and RRT, between can supplies and farm bulk-tank supplies are shown in Tables 6 and 8. For example, the two reduction time standards (MBRT and RRT) consistently differed by 1 hour for the two types of supplies. As shown in Table 7, equivalent values varied for supplies from the three different geographical locations. For example, the Class 1 MBRT standard for locations A, B, and C would be > 6 1/2, >4 1/2, and >7 1/2, respectively.

TABLE 4. PERCENT MILK SAMPLES FALLING IN EACH CLASS WHEN GRADED BY USDA AND CALCULATED CLASSIFICATION (BASED ON ALL SAMPLES)

Class	All samples USDA	All samples Calculated	Farm Bulk-tank supplies USDA	Farm Bulk-tank supplies Calculated	Can samples USDA	Can samples Calculated
	(%)	(%)	(%)	(%)	(%)	(%)
			Standard plate count			
1	44.9	same	58.2	same	39.4	same
2	24.3	as	21.2	as	25.4	as
3	30.8	USDA	20.6	USDA	35.2	USDA
			Direct microscopic clump count			
1	56.7	56.7	68.8	68.8	51.5	51.5
2	22.0	16.0	17.0	12.2	25.2	17.6
3	21.3	27.3	14.2	19.0	23.3	30.9
			Methylene blue reduction test			
1	52.2	41.6	77.4	66.3	41.8	31.1
2	20.1	11.7	11.0	10.7	23.6	12.2
3	27.7	46.7	11.6	23.0	34.6	56.7
			Resazurin reduction test			
1	45.2	38.7	70.9	65.5	34.6	27.3
2	17.2	18.0	11.0	14.3	17.2	19.6
3	37.6	43.3	18.1	20.2	48.2	53.1

TABLE 5. RELATIVE AGREEMENT BETWEEN MILK CLASSIFICATION METHODS USING THE USDA LEVELS (SEE TABLE 3, A) AND THE CALCULATED LEVELS (SEE TABLE 3, B).

Category of samples	No. of samples[a]	% of samples in each category classed the same by SPC, DMC, MBRT, and RRT using: USDA class	Calculated class
All samples	3873	48.8	49.7
Class 1	1734	72.6	61.0
Class 2	939	6.3	4.0
Class 3	1200	47.8	69.2
All bulk tank samples	1149	61.6	62.9
Class 1	680	87.6	83.5
Class 2	239	5.4	8.4
Class 3	230	43.0	58.7
All can samples	2724	43.4	44.2
Class 1	1054	62.9	46.5
Class 2	700	6.6	2.6
Class 3	970	49.0	71.6

[a]Number of samples in each class category was established by SPC.

Separate classifications based on data from samples grouped according to geographical source of supplies, season of the year, and method of handling were established. The difference of about 1 hour between MBRT and RRT depending on the type of handling also was observed (data not shown).

The prediction, by regression, of values of DMCC, MBRT, and RRT in function of SPC was shown to be affected significantly (99% level of probability) by geographical source of supplies, type of handling and season of the year. Application of calculated classifications and of the USDA classifications showed that the factors mentioned above should not be ignored, although the season factor does not seem to introduce a difference of practical importance.

The difference in reducing activity of farm bulk-tank supplies as compared to can supplies, especially when the geographical factor and the seasonal factor were removed, strongly suggested the presence of a different type of microflora in each type of supply. Farm bulk-tank supplies were in general picked up every other day (4 milkings). Ninety percent (90%) of the individual suppliers maintained their bulk tanks at 40 F or below, while about 99.8% were maintained below 50 F. The presence of psychrophilic bacteria in raw milk, coupled with storage at low temperatures for rather extended periods, would cause preferential growth of the psychrophilic bacteria, while the growth of other types of bacteria would not be appreciable. Furthermore, due to the temperature (37 C) of incubation used in MBRT and RRT, the reducing activity of such bacteria probably would be much lower than that of a flora consisting of a high proportion of non-psychrophilic type. With can-milk supplies, where every-day pick up was generally practiced, 60% of all samples were, at time of receipt at the plant, above 50 F. Furthermore, several hours often elapsed between milking time and delivery at the plant. This would enable growth of microorganisms of a non-psychrophilic nature. Such a flora likely to be more diversified than that of bulk tank supplies would be more reactive to the reduction tests than the microflora of farm bulk-

TABLE 6. CLASS BASED ON DATA FROM MILK SAMPLES ACCORDING TO METHOD OF HANDLING (CAN OR FARM BULK-TANK)

Class	SPC	DMCC (Can or Bulk)	Calculated Classification: MBRT Can	MBRT Bulk	RRT Can	RRT Bulk
1	≤ 500,000	≤ 500,000	> 5 1/2	> 6 1/2	> 2 1/2	> 3 1/2
2	≤ 3,000,000	≤ 1,200,000	≤ 5 1/2	≤ 6 1/2	≤ 2 1/2	≤ 3 1/2
3	> 3,000,000	> 1,200,000	≤ 3 1/2	≤ 4 1/2	≤ 1 1/2	≤ 2 1/2

TABLE 7. CLASSIFICATION LEVELS BASED ON DATA FROM MILK SAMPLES SEGREGATED ACCORDING TO GEOGRAPHICAL SOURCE OF SAMPLES

		Calculated standards							
		DMCC		MBRT			RRT		
Class	SPC	A & C	B	A	B	C	A	B	C
1	≤ 500,000	≤ 100,000	≤ 1,400,000	> 6 1/2	> 4 1/2	> 7 1/2	> 3	> 2 1/4	> 3 1/4
2	≤ 3,000,000	≤ 250,000	≤ 3,500,000	≤ 6 1/2	≤ 4 1/2	≤ 7 1/2	≤ 3	≤ 2 1/4	≤ 3 1/4
2	> 3,000,000	> 250,000	> 3,500,000	≤ 5 1/2	≤ 3 1/2	≤ 5 1/2	≤ 2	≤ 1 1/4	≤ 2 1/4

TABLE 8. CLASSIFICATION LEVELS BASED ON DATA FROM MILK SAMPLES IN LOCATION A SEGREGATED ACCORDING TO METHOD OF HANDLING

	Calculated standards					
		DMCC	MBRT		RRT	
Class	SPC	Can or Bulk	Can	Bulk	Can	Bulk
1	≤ 500,000	≤ 100,000	> 6 1/2	> 7 1/2	> 2 1/2	> 3 1/2
2	≤ 3,000,000	≤ 250,000	≤ 6 1/2	≤ 7 1/2	≤ 2 1/2	≤ 3 1/2
3	> 3,000,000	> 250,000	≤ 4 1/2	≤ 5 1/2	≤ 1 1/2	≤ 2 1/2

TABLE 9. RELATIONSHIP BETWEEN VARIOUS RRT LEVELS AND THE SPC LEVEL

				Calculated RRT based on	
Class	SPC/ml	USDA RRT/hr	Calculated RRT based on all samples	Can	Bulk Tank
1	≤ 500,000	> 2 1/4	> 2 3/4	> 2 1/2	> 3 1/2
2	≤ 3,000,000	≤ 2 1/4	≤ 2 3/4	≤ 2 1/2	≤ 3 1/2
3	> 3,000,000	≤ 1 1/2	≤ 1 3/4	≤ 1 1/2	≤ 2 1/2

tank supplies.

The use of the four tests interchangeably might be applicable if separate standards for each type of milk handling and/or separate standards for each geographical location were established. On the other hand, the use of a single test and exclusion of all other tests in order to achieve a more uniform classification of all milk supplies might be applicable and certainly would be more desirable. A reduction test has a better chance of acceptance than a direct measure of the viable bacterial population in milk (SPC), because few manufacturing milk plants are geared to use the SPC as a routine test. The use of DMCC, at least in its present form, in view of the large differences between analysts and between laboratories would not, in our opinion, be conducive to the uniform grading of milk. The use of other types of stains with a standardization of the counting might improve direct microscopic counting *(6, 19)*. The use of MBRT would, however, neccesitate establishing geographical type of classification as well as separate classification for can and for farm bulk-tank supplies. The RRT was not appreciably affected by the geographical source of supplies, especially when the supplies were segregated on the basis of method of handling. On the basis of these observations, separate RRT classifications, one for can supplies (based on data from all can supplies) and one for farm bulk-tank supplies (based on data from all farm bulk-tank supplies) were determined by the calculation of the values of RRT equivalent to the two SPC levels: 500,000 and 3,000,000 per ml. (see Table 9).

Application of separate classifications, based on respective type of milk handling (see Table 10, last two columns), to each respective type of supply resulted in both cases in a test more severe than SPC. RRT placed 10.5% more farm bulk-tank samples in Class 3 than SPC and placed 13% more can samples in Class 3 than SPC. When a RRT classification, calculated on the basis of all samples was applied to each type of supply (can and farm bulk-tank), RRT placed 18% more can samples in Class 3 than SPC, while it placed approximately the same number of farm bulk-tank samples in Class 3 as SPC; on the other hand, RRT placed 7.3% more farm bulk-tank samples in Class 1 than the SPC.

CONCLUSIONS

The results of four bacterial estimation tests, [SPC, DMCC, MBRT and RRT (5P 7/4)] used for the classification of 3,873 samples of raw milk, intended for manufacturing purposes, from various widely separated geographical locations and from producers handling milk in farm bulk tanks or in cans were compared. The use of four tests caused a number of samples to be upgraded or downgraded, depending on the test used, when either the classification levels proposed by the USDA, or calculated classification levels based on data from all samples analyzed, were applied.

If classification of milk is to be uniform, separate regional standards should be used for can and farm bulk-tank supples; the differences among standards,

TABLE 10. CLASSIFICATION OF FARM BULK-TANK MILK AND CAN-MILK SAMPLES ACCORDING TO LEVELS GIVEN IN TABLE 8

	% distribution of class indicated							
	SPC		USDA RRT		Calculated RRT based on all samples		Calculated RRT based on: Can	Calculated RRT based on: Bulk Tank
Class	Can	Bulk	Can	Bulk	Can	Bulk	Can	Bulk
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1	39.4	58.2	34.6	70.9	27.3	65.5	31.6	53.1
2	25.4	21.2	17.2	11.0	19.6	14.3	20.2	15.8
3	35.2	20.6	48.2	18.1	53.1	20.2	48.2	31.1

their application, and their interpretation, however, could cause confusion among geographic areas. Possibly use of a single test, such as RRT (5P 7/4), with separate classification levels for can supplies and for farm bulk-tank supplies would be conducive to more uniform classification of milk supplies regardless of their geographical source.

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SUGGESTIONS FOR UPGRADING LEVELS OF SANITATION IN THE FOOD-SERVICE INDUSTRY[1]

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State, county and local health agencies in the state of Pennsylvania are currently spending over $1,000,000 annually on a program of licensure and enforcement to obtain satisfactory levels of sanitation in food-service establishments. Despite this expenditure, a review of inspection reports and surveys filed by trained sanitarians employed by the Pennsylvania State Health Department indicates that the general level of sanitation in public eating and drinking establishments is displaying little improvement. The degree of compliance with acceptable standards varies greatly from one operation to the next and from time to time in any given operation. The present methods of securing compliance, although sometimes wishfully thought to be educational, are primarily by enforcement.

With the preceding in mind over fifteen hundred respondents were asked for suggestions for upgrading levels of sanitation in the food-service industry in a research study on sanitation conducted at The Pennsylvania State University. The respondents represented the primary groups of people that are directly concerned with sanitation in restaurants and taverns. These included: *(a)* 1,010 food-service personnel (805 owners or operators and 205 employees) randomly selected from 41,135 establishments in the state according to a predetermined proportional sampling. (These were further subdivided into Urban Large, Urban Small, Rural Large and Rural Small based on size of community and number of meals served daily. An urban community was arbitrarily established as one with a population of 5,000 or more.); *(b)* 500 patrons from the four major socio economic groups selected on a limited quota schedule from areas represented by food-service personnel; and *(c)* 50 public health supervisory and field sanitarians selected from three distinct types of employment agencies, state (20), county (15), and local (15).

Data were collected by a trained staff of graduate students in psychology utilizing focused interviews. All interviews were tape recorded in their entirety and then transcribed verbatim for analysis.

SUGGESTIONS FOR UPGRADING LEVELS OF SANITATION

As indicated by analyzing the data, (Table 1) almost one-half of the suggestions enumerated for upgrading sanitation levels were concerned with the enforcement of regulations or some aspect of enforcement such as more frequent inspection, more stringent penalities, etc. Surprisingly, owners and operators mentioned enforcement more frequently than employees, patrons and public health officials. Urban Small owners and Urban Large employees agreed most frequently to this method of upgrading levels of sanitation.

Food-service personnel in a number of instances present a paradox when discussing reasons for hostility and methods of upgrading levels of sanitation. Many indicated that attitudes of health officials concerning strict enforcement bring on hostility, then later in the interviews some of the same people indicated that strict enforcement is needed and is the only way to insure compliance. Evidently most of the owners advocating enforcement feel that it should be in the "other fellows" place where strict enforcement should be carried out and not in "my establishment." These people appear to assume that levels of sanitation in their establishments are adequate. In some cases this may well be, but according to public health officials, compliance with proper levels of sanitation is generally not as high as health officials believe it should be.

Among the employees, Urban Large respondents presented most numerous claims promulgating enforcement as the most efficient method of raising levels of sanitation. An analysis of patron solutions concerning enforcement signifies that Urban B people are the most pro-enforcement inclined, whereas Urban A are the least vociferous in supporting this approach.

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TABLE 1. SUGGESTIONS FOR UPGRADING LEVELS OF SANITATION (IN PER CENT)

Suggestions	By class of respondent, size of community and establishment															
	Owners-operators				Employees				Patrons				Sanitarians			Grand total
	UL	US	RL	RS	UL	US	RL	RS	A	B	C	D	S	C	L	
	(%)				(%)				(%)				(%)			
Enforcement	41	54	51	46	58	49	19	31	33	51	39	42	37	25	24	45
Depends on Individual	19	14	26	13	23	12	24	33	11	5	29	10	2	0	0	16
Inform the Public	7	4	1	5	2	9	24	10	19	17	13	22	29	41	33	11
Change the Regulations	3	2	1	6	2	1	5	0	2	3	1	2	0	0	5	2
Educate Owners-Operators	17	11	10	12	8	9	19	15	23	16	5	10	31	34	29	13
Can't–high costs	1	2	0	2	0	4	0	0	2	0	1	0	0	0	10	1
Higher Salary for Employees	1	1	0	0	0	1	0	0	0	0	1	2	0	0	0	1
Other	1	2	3	0+	2	2	10	0	9	4	6	2	2	0	0	3
Don't Know	11	11	8	10	4	13	0	10	1	5	6	11	0	0	0	8
Total %	101	101	100	99	99	100	101	99	100	101	101	101	101	100	101	100
Total N (Responses)	199	393	77	241	48	144	21	39	93	194	278	205	49	32	21	2034
Total N (Respondents)	147	343	62	210	39	116	13	25	56	137	203	134	18	15	12	1530

A = relatively prosperous people of a community; B = the upper middle class of a community; C = the lower middle class of a community; D = the poor class of a community. S = sanitarians employed by a state; C = sanitarians employed by a county; L = sanitarians employed by a municipality.

Food-service personnel and patrons repeatedly indicated that owners or operators have to be "pushed" and that penalties should be increased for violations. An increase in the authority of the sanitarian in invoking penalties was also periodically listed by many respondents.

In advocating enforcement some respondents indicated that they were making this recommendation simply because, for a small percentage of operators, there is no other method to obtain compliance as these people refuse to comply with existing regulations. The respondents specifying this approach feel that operations of this type will never upgrade standards unless the state utilizes stricter enforcement methods or closes these establishments completely. The apparent ability of many of these places to compete successfully is a constant source of irritation to the conscientious owners who strive for maximum compliance. Aside from ridding the state of a possible dangerous source of food-borne disease, the elimination of these establishments for a few days or permanently may serve as an additional source of motivation to owners and operators of the penalized places and to those who are complying but are resentful of others believed to be "getting away with something."

A number of respondents also emphasized that many people who conscientiously do comply have a tendency to become lax at various times; therefore, the possible presence of a sanitarian to conduct an inspection serves as an added incentive for the owner to comply with regulations. Several owners indicated that the sanitarian "keeps us on our toes."

The two major constructive suggestions pertaining to upgrading levels of sanitation aside from comments referring to enforcement are: *(a)* informing the public, and *(b)* educating food-service personnel.

A number of the proposals enumerated appertained to informing and educating the public with the supposition that eventually the patron would bring pressure to bear on food-service personnel to effect better levels of sanitation. A public relations campaign utilizing radio, newspaper, and television resources was listed frequently by many interviewees as a means of stimulating public reaction to unsanitary conditions in restaurants or taverns. Supposedly, this would give the public a better understanding of what they have a right to expect in any establishment. Many patrons also expressly inferred an interest in having the Health Department publish a list of suitable eating establishments in each community.

It is discernible in viewing the data that all strata of respondents attach significance in varying degrees to the process of informing the public as an effective

method in combating lapses in sanitation procedures. It is not surprising that owners displayed far less enthusiasm in specifying this procedure than employees, patrons and public health officials.

The D patrons were more concerned with the dispensing of information to the public than the remaining three groups of patrons. This may be partially accounted for by the fact that D patrons appear to be the most familiar with activities in food-service establishments, as greater percentages of these people had been employed in food-service operations. Supporting this theory by the patrons were proposals advocating the publishing of sanitation articles in the newspaper and continual publicity through all media of communication to make the public aware of good sanitation conditions.

As a group, public health officials were more in accord with informing the public as a method of upgrading sanitation than all other respondents. County officials submitted this proposal more frequently than State or Local health personnel. Many public health officials imparted the contention that a public relations program concerning the fundamentals of good sanitation in food-service establishments would arouse the public to a point where operators would be forced to comply as a result of public pressure.

The sanitation personnel also strongly supported the suggestion that the education of food-service personnel was critical in attaining greater levels of sanitation. Sanitation seminars and meetings which would include the appropriate use of audio-visual materials to assist in educating food-service personnel were listed frequently by health personnel. The sanitation people implied that education of food-service personnel would make a much stronger and lasting impression than enforcement. Several officials indicated that fines were soon forgotten and the money lost was usually regained in a few days by selling the same type of unsanitary food.

Food-service personnel were not as strong as health officials in supporting the education of people in the industry as a method of upgrading sanitation levels. Most owners seemed to feel that they were qualified to conduct their operation in a sanitary manner. The large general turnover of help in the industry appears to discourage owners from training or sending personnel to be trained for work in the industry. Also effecting the training of employees are economic considerations. Many owners are reluctant to give time off to workers to attend training sessions. Among the owners who advocated the education of food-service personnel, the strongest supporters were Urban Large operators. For the workers, the Rural Large groups were most in agreement with this suggestion as were the A groups among the patrons.

A number of owners felt that literature on sanitation dispersed periodically by the state would be beneficial. Although some did indicate reluctance in sending personnel to training sessions, others averred that annual schools for food-service personnel would be worthwhile.

In continuing a study of suggestions for upgrading sanitation levels it was found that a number of respondents from the food-service personnel and the general public proposed membership in organizations with resulting self-evaluations as possible solutions to the sanitation problem. These people indicated that associations could assist in upgrading sanitation levels through literature and informal and formal association meetings.

The issue of membership in organizations was proposed to the majority of owners and operators. According to the responses, less than 30 per cent of those who replied are members of food-service or related organizations. However, this is greater than the percentage (10-15 per cent) indicated by association personnel as belonging to such groups. Membership is more common among the large operators in this study than among small establishments.

According to owners in the study who belonged to an organization, membership predominated in tavern associations. Benefits, according to respondents, are primarily legislative in nature from both organizations. It was also noted by some members of the restaurant association that essential information pertinent to equipment and helpful suggestions in conducting restaurant operations were also occasionally dispersed by the association either through the journal or at meetings.

CONCLUSION

Respondents interviewed in the study had varying suggestions for upgrading levels of sanitation. Predominant among these were: *(a)* enforcement, *(b)* education of food-service personnel, and *(c)* informing the public to create a consciousness of sanitation. All of these appear to have merit, depending upon the circumstances. Significantly, many respondents from each group in the study indicated that as far as they were concerned very little has been attempted in their specific areas with these particular recommendations. This also includes enforcement, a theory that is partially supported by sanitarians who acknowledge that many establishments may be operating with standards well below the minimal.

The results of this study indicate that supervisors and field sanitarians should evaluate their programs

periodically to insure that specific programs and objectives are being formulated and attained. Experimental areas should be established where research data may be utilized on an experimental basis. The upgrading of sanitation levels in the food-service industry must be a continuous process, and calls for maximum cooperation and effort from all associated with this vital industry.

FOOD CHEMICALS CODEX

The National Academy of Sciences–National Research Council has published the Food Chemicals Codex which defines standards of identity and purity for more than 500 food additives now in common use. The Codex will provide chemical manufacturers and food processors with uniform release, procurement, and acceptance specifications comparable to those that have long been available for drugs through the U. S. Pharmacopeia and the National Formulary.

Publication of the first edition of the Codex culminates a five-year effort, initiated by the Food Protection Committee of the NAS-NRC Food and Nutrition Board, in which scientists from government, industry, universities, and private research organizations have cooperated. Prior to this time, certain sections of the Codex were issued in loose-leaf form. The Commissioner of Food and Drugs, Dr. James L. Goddard, has declared that the Food and Drug Administration will regard specifications in the Food Chemicals Codex as defining chemicals of "an appropriate food grade" within the meaning of relevant sections of the Food Additive Amendment to the Food, Drug, and Cosmetic Act of 1938.

Among the many classes of food additives covered in the Codex are flavoring agents; antioxidants; preservatives; sequestrants; nutrient supplements; and emulsifying, stabilizing and thickening agents. These include such common ingredients as salt, baking powder, citric acid, and monosodium glutamate, but exclude sugar and starch which are usually regarded as basic nutrients.

Specifications for the Codex were prepared by a committee under the chairmanship of Henry Fischbach, Director of the Division of Food Chemistry in the Food and Drug Administration's Bureau of Scientific Research. Funds for the project were provided by the U. S. Public Health Service, supplemented by grants from more than 100 organizations involved in the manufacture of food chemicals and their application in food processing.

The need for an authoritative book of standards for food chemicals that would promote greater uniformity of quality and thus provide added assurance of safety has long been recognized, the Committee states in a preface to the Codex. Although the government has by regulation and informal statements established quality requirements for about 575 food chemicals "generally recognized as safe" and set use tolerances for others, these requirements are not always sufficiently detailed to serve as procurement and release specifications for industry. Consequently, food processors, when ordering chemicals from primary manufacturers, have needed a single source of standards accepted by manufacturers, government regulatory agencies and purchasers, which the Codex is expected to provide.

The Codex is printed in monograph form, each monograph providing the name, description, endorsed purity standards and test methods for determining the purity of the subject chemical. Specifications are, in most instances, more rigid and more definitive than those published in USP and NF compendia. As a result, new methods have had to be developed especially for determinations at Codex purity levels. The methods, described in a special technical section, include tests for melting range, loss on drying, distillation range, specific gravity, and procedures for determining such impurities as arsenic, heavy metals, and lead which are present in many natural foods, and can be perfectly safe in trace amounts.

Specifications and analytical procedures required for the Codex were adapted from documents devoted to standards for chemicals, from original scientific literature sources, and from data supplied by chemical manufacturers and food processors. Frequently, where procedures required further laboratory study, the work was done by industry as a service to the Codex project.

The Codex at $25.00 per copy is available from the Printing and Publishing Office, National Academy of Sciences–National Research Council, 2101 Constitution Avenue, N.W., Washington, D. C. 20418.

SANITARIAN MEETINGS NEED IMPROVING–ONE MAN'S OPINION

VINCENT T. FOLEY

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The problem of routine, drab, inadequate and frequently boresome programs that are presented to sanitarians has long been a matter of concern. The purpose of the various seminars, educational conferences, annual meetings or whatever terminology you care to use for these get togethers, is to enlighten and educate the sanitarians, presumably making him better able to cope with the myriad problems confronting him today. No one can argue against the purposes of these meetings; however, the manner in which they are presented often leaves a great deal to be desired.

In a great many meetings sanitarians are often bored and actually and literally put to sleep by the so-called speakers and are subjected to much repetitive rehashing of old problems. To support these contentions a few actual experiences will be cited.

In one case a high government official was asked to give his views on a proposed ordinance of interest to sanitarians. He accepted the invitation but shortly before the conference was to convene he informed the program committee that he was sending a subordinate to talk on his subject. The subordinate, however, did not present his own views but read a paper prepared by the original speaker. The paper was long and dry. After finishing the paper the reader announced that he could not answer any questions on the subject since he had not prepared the paper and promptly sat down.

In this case, if the original speaker had not intended to appear personally he should have so informed the committee when he was asked to speak. For five cents the original speaker could have mailed his paper to the committee, saving his department and the taxpayers several hundred dollars in expenses that his substitute incurred. His paper could have been mimeographed and presented to the sanitarians to read at their pleasure or a local man could have read it–probably in a more interesting manner.

On another occasion a speaker had been obtained who was intimately associated with a particular piece of restaurant equipment. This man knew the innermost workings and the function of every part in the machine yet could not orally present his views. He stumbled through five minutes of a scheduled 30-minute talk and then asked for questions from the floor. Personally, he was a wonderful man–but a public speaker, he was not.

Then, there was the chart speaker who had a great number of charts and graphs typewritten which were unreadable when projected on the screen. Another so-called speaker who was selected supposedly for his knowledge of the subject stated in his first sentence that he should not be considered an authority on his subject. After listening to him talk for 45 minutes the sanitarians were convinced he was right in his first sentence.

We are all familiar with speakers who, having presented their talks, will not support the views they have just expressed when questioned from the floor. No matter how asinine the statement from the floor might be they always reply that they "suppose this could be so" or that "they have learned something new" even if the floor statements do not agree with their own statements.

While the problem of uninteresting programs and poor speakers exists even in the annual meetings of our largest sanitarian's associations, it increases as we approach area meetings and intensifies in our state and local meetings. Many intelligent, objective sanitarians will agree that in the great majority of our programs, poor speakers and uninteresting topics are presented. Certainly, the program chairman and the program committee did not plan it this way. Then, why does it occur?

In my opinion it occurs because of three principal reasons. In the first place the program chairman usually has only a small amount of money or more likely no money to spend in arranging the meeting. Consequently, he and his committee have two strikes on them before they start setting up the program. The program itself is doomed to mediocrity or worse before it is even conceived.

Without money the committee is limited to speakers from governmental agencies, principally federal and state, or from certain industry or educational institutions. The one underlining requirement is that the proposed speaker have his expenses paid by his company or by the agency employing him. The fact that he is a poor speaker or not an authority on the subject is of secondary importance.

A second reason for poor programs is the unwritten, yet often strictly adhered to, law that certain federal, state or local officials should be invited to speak because of their supervisory position in these agencies. Such officials do not, as a rule, attain their positions without having had a great many years' experience in their respective organizations, primarily in an ad-

ministrative role. While they are able administrators and have an excellent general knowledge they often are lacking in actual inspectional experience. If they have had inspection experience it was many years ago and they are unfamiliar with today's problems. Some may even hold the position through political appointment.

Some members of the program committees who are employed by federal, state or city governments tend to perpetuate the custom of inviting their bosses to speak regardless of speaking ability or qualifications. The result is that we have the same speakers and the same subjects year after year until it becomes "old hat" to the sanitarians.

A third reason for poor programs is what could be called "speaker immunity." It is general practice not to question the speaker other than politely and innocuously about his statements, even though he has presented only his own views of a controversial subject. The speaker is protected from inquiring or embarrassing questions because he didn't cost the association a dime and the association may want to use him again. Meanwhile, the sanitarians are expected to accept the speaker's one-sided statements as "gospel."

Program committees are often blamed for selecting uninteresting subjects when actually the fault lies not in the subject but rather in not detailing to the invited speaker exactly what his subject is to be. Too many times the speaker is asked to talk "on" a particular subject, or is allowed to select his own subject perhaps not of much interest to the audience.

There are other points such as accoustical problems, inadequate public address systems, lack of proper room ventilation, and faulty microphone delivery by the speaker that could easily be improved. It might be that all speakers should be required to use a lavaliere or so-called neck microphone. This would be of particular value in a panel discussion or when the speaker is away from his "mike" using an illuminated screen or slides.

Admittedly, serving on a program planning committee is a thankless job. However, until such time as the committee can circumvent the "expense account" limitation, can avoid paying homage to bosses, can discard speaker immunity in discussions and can secure excellent qualified speakers on interesting subjects, sanitarian meetings will continue to be merely social gatherings of little educational value to the sanitarians.

THE PHILOSOPHY OF REGULATIONS[1]

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Our complex society prevents us as individuals to independently insure the safety of our water supply, milk supply, food, lodging, or any other of a number of public health related items. As individuals we neither have the time or money to independently pursue such activities. Yet, if our society is to exist, the quality of our foods, water, and other health services must be insured to preserve our own survival.

Since we can't do this as individuals, we have learned that we can do it as a group—a community—and we accomplish it by using tax pennies to establish a health department. For all practical purposes, we hire trained individuals to do this job for us.

These hired experts have found that such controls can be achieved through an instrument known as regulations. In the development of regulations, government must apply indicated scientific findings toward the solution of practical problems. In evaluating the scientific approach to the problem, we find that scientists are thorough and therefore provide ideal answers toward the solution of a specific problem. Scientists may list all of the needed activities in order to accomplish the indicated controls. They provide the scientific method—or the ideal method.

Yet government, much as it would like to endorse all the ideal measures, must seek practical methods and, consequently, must adopt only such scientific findings that are absolutely necessary toward the solution of practical problems in order to permit society to live in reasonable comfort and with reasonable security, and it still must be possible to at-

[1]Presented as a "chalk talk" at the 16th Annual Meeting of the Indiana Association of Sanitarians, Indianapolis, Indiana, October 4-6, 1966. Blackboard diagram used have been omitted.

tain reasonable compliance.

This transition of the scientific ideal to reasonable accomplishment becomes known as a regulation. Therefore, a regulation is a calculated compromise between the ideal and what is reasonable yet designed to provide reasonable comfort and reasonable security. For all practical purposes, regulations then become standards acceptable by society. Regulations, then, are nothing more than a bridge between science and government.

So far we have discussed science and government. We implied that there is a "user" of these regulations but we have not defined this factor specifically. The user seems to be an isolated entity—not tied in to science or government. Yet regulations were developed for the benefit of the user and society and, therefore, the user must be tied into the complex somehow.

The tie-in of the user lies in the philosophy and use of regulation by government officials. If one develops the philosophy that regulations are instructional tools—to accomplish reasonable comfort and reasonable safety rather than inspection check procedures, then one promptly demonstrates a method whereby the user becomes involved. This fundamental concept of regulations, therefore, accepts them as an instructional tool eventually to provide reasonable comfort and safety of those citizens deriving benefits from these regulations. But, as time goes on, thought must also be given toward upgrading these services in reasonable increments. Remember, these are now but minimal standards.

Simple inspection procedure will not generally lead to upgrading and will only lead to forced perpetual compliance with existing minimum standards. To provide for improvement it is evident that the user must be helped to assume responsibility in developing these areas: *(a)* Continued in-service education, *(b)* Institution of needed control measures, *(c)* Continued evaluation of present practices and *(d)* Planning for the future.

The instrument whereby the "user" is brought into proper perspective with science and government is the field staff member. This individual forms the bridge between government and the user and aids the user in accomplishing the four activities just described, as forming the foundation for continued development of the user.

The field staff member, therefore, uses the concept of regulations as a tool whereby he may work with the "user" in developing the techniques of useful education, control, evaluation, and planning procedures. In a sense, regulations then become guides for determining the present practical means of achieving the task at hand. Regulations become a guide in subject matter and a guide in methodology. By guide in methodology, I use the word "guide" as in "museum guide" or "tour guide" where the activity is basically that of informing, assisting and explaining and only occasionally in the saying "This isn't permitted."

Broadly, then, regulations do not become performance standards or "go and no go" gauges. If used solely in this sense, no change would occur for, at best, society could only hope to achieve and then maintain existing minimum standards. Rather, regulations can become a vehicle whereby government can assist the user in improving the service through the medium of consultation, demonstrations and aid and also meeting existing standards.

In practice, then, we should all continually be aware of the broader uses of regulations than simply as a performance check list. Regulations are a tool and as a tool they can be used differently by different individuals to produce a desired functional structure.

I know the end result of meeting standards is a license and that reasonable compliance must be achieved. However, I am of the opinion that both can be achieved by keeping the broader objectives of regulations in mind. I further believe that achievement would be accomplished with greater ease and with less friction if all parties concerned understand this philosophy of regulations. The user is now aware that regulations are an expression of society's minimum desires and needs rather than an arbitrary demand by a government agency. Equally the scientist is aware that regulations reflect a compromise between what is ideal and what is reasonable.

This concept produces a pleasant workable climate. It produces sunshine over the bridge connecting government and the user and the attendant mental tranquility associated with sunshine. The climate will depend on how well government and the user understand, accept, and implement their respective responsibilities. Part of this responsibility is yours as a field staff member. Keep it sunny over your bridge!

MINIMUM STANDARDS FOR MILK FOR MANUFACTURING AND ITS PRODUCTION AND PROCESSING RECOMMENDED FOR ADOPTION BY STATE REGULATORY AGENCIES[1]

F. E. Fenton

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Consumer and Marketing Service, U. S. Department of Agriculture

Summary

Slightly more than 35 billion pounds of manufacturing grade milk was delivered to plants and dealers in 1965. This was about 31% of the volume of milk delivered. Manufactured dairy products continue to be an important segment of the dairy industry. However, the adoption by state regulatory agencies of recommended uniform minimum standards for milk for manufacturing purposes and its production and processing has been slow. Reasons are given for a joint effort by industry and state agencies to aggressively deal with the problem of variable quality of milk used in manufactured dairy products. The program suggests: *(a)* a realistic standard, *(b)* adequate and efficient enforcement, and *(c)* industry cooperation.

"Manufacturing milk"—too often in the past this classification of milk has been regarded as the stepchild of the industry. Most of the emphasis of our State laws and field service by the industry has been put on fluid milk for bottling purposes. What time was left over, if any, was used in the manufactured products area. This does not mean that nothing was done toward quality improvement of manufacturing grade milk, however, this area has not received the attention that it should have had.

There are several likely reasons for this inattention. An important one, that comes immediately to the fore, is strictly one of economics. The manufactured products portion of the industry has traditionally paid less for milk used for making cheese, butter, dry milk, evaporated milk than it has for that used for bottling purposes. Whether the price structure of the bottled milk industry was due to higher sanitary requirements and thus higher costs or due to a generally better class market which could bear a higher price will not be discussed here. The fact remains, the different price structure exists. This lower price for manufacturing milk has tended to make it more difficult for producers to provide better facilities such as milk houses and adequate cooling equipment. In addition, it was only natural that with the possibility of a market for his milk at a higher price, as bottled milk, the producer kept looking to the time when he could get the better market price. Consequently, when he could attain the higher market he took it.

Unfortunately, this situation has deterred many plant operators from encouraging improvement for fear of losing the shipper. Everyone close to the situation knows the impact this situation has had on efforts to improve quality in manufacturing milk.

Another important factor has been the relative cost of field service. Manufacturing milk shippers are often small shippers. It takes as much time to instruct them and inspect their facilities as a large shipper. Consequently, field service expenditures for manufacturing milk shippers have been kept to a minimum. Too often, field men assigned to manufactured milk producers have been procurement and public relations men rather than sanitarians and instructors for improved quality.

Another factor has been volume hungry plants. These operators have been more concerned with keeping the plant running at capacity than in providing adequate field service. They have been willing to leave the milk quality problem to an understaffed state regulatory agency.

There is no need to dwell longer on the past or restate reasons or excuses for what faces us. However, as we face new challenges, it helps to better understand the possibilities of the future if past events are remembered.

One Grade of Milk?

Recently a number of people, including some leading economists, have talked about one grade of milk. They predict that in a relatively short time, all milk will be Grade "A" and there will no longer be any manufacturing grade milk. Many people said the same thing in 1957, when work on standards for manufacturing milk began. At that time approximately 37% of the milk delivered to plants and dealers was manufacturing grade. Even so, some felt that the standards would be out of date before they could be published; and, therefore, it was a waste of time to prepare them. The standards were published by USDA's Consumer and Marketing Service, in June 1963, as recommendations for adoption by the State regulatory agencies.

In 1965, approximately 31 percent of the milk, or about 35 billion pounds, delivered to plants was manufacturing grade milk. A very important segment of the dairy industry still receives and uses

[1]Presented at the 53rd Annual Meeting of the International Association of Milk, Food and Environmental Sanitarians, Inc., August 15-18, 1967, at Minneapolis, Minnesota.

manufacturing grade milk in the manufacture of various dairy products. It appears, that even though economists and others predict there will be only one grade of milk, it will be some time yet before this happens completely. In the meantime, the problem of quality of milk used in manufactured dairy products must be dealt with more aggressively.

When the standards were prepared and published, their purpose was to provide a guide for those states who lacked specific laws relating to manufacturing milk and a recommendation to other states where the laws, in our opinion, needed strengthening as to content and specificity. Above all it was the intent to provide uniformity among the states. As plants continue to get larger and draw milk from wider areas and across State lines, uniformity of laws and regulations between states is very important.

Progress in the use of the standards and adoption of the standards by states has been slower than expected. But in another sense progress has been made. The standards have served to focus attention on the need for better standards in the area of manufactured milk products, and eight or nine states have changed their laws or regulations along the lines of our recommended standards.

It is interesting that there has been more willingness to accept or adopt the provisions of the standards relating to the plant requirements than those provisions relating to the farm requirements, particularly those paragraphs relating to the bacterial quality of the milk from the producer. The reason for this seems to be tied to those factors of inattention mentioned earlier. Also it is more difficult to put across an educational program aimed at a large number of producers than a program designed for a few plants. Therefore the easier job of providing standards for the plant was done first and the more difficult task delayed. This is unfortunate. The crux of the problem will not be met, and the effectiveness of the standards will not be fully realized until the problem of milk quality is met at the farm level and the bacterial level lowered substantially.

The bacterial level of 3,000,000 or a 2½ hr. methylene blue reduction time seems liberal enough. But we still have industry codes, and some states that feel it is necessary to accept higher count milk. This attitude does not seem fair to the good shippers who consistently do a good job of producing high quality milk. Their good milk is downgraded by mixing it with the poorer quality milk. Uniform procedures for grading milk are needed.

TEST METHODS AND APPLICATIONS

The recommended minimum standards for milk lists four methods for estimating bacterial quality in milk. They are: standard plate count, direct microscopic clump count, methylene blue test, and resazurin test. It was not intended that these four methods be considered as interchangable. It was not intended to imply that these four tests are equally responsive to the detection of bacteria. However, it was intended to encourage the adoption of some recognized basis for classification of raw milk. It was also intended that these grading methods could be used as the basis for supervising uniform inspections by the dairy plants. These grading methods and respective levels of classifying milk have been in general use for many years.

All of these tests for the classification of milk according to an estimate of bacterial population are considered to be acceptable by the dairy industry because each test is comparatively economical, easy to run, and fairly rapid. Each test has its proponents and its opponents. Unfortunately, none of these tests have the exact accuracy, reliability, or precision that more sophisticated space-age equipment of the future may have. This improvement in the testing method is something to work for.

Dr. J. C. Olson, Jr. and his associates at the University of Minnesota completed a comprehensive study in 1965, of these four methods of classifying raw milk. This study sponsored by USDA, reconfirmed the widely-held belief that the four methods cannot be used interchangably, that is, using the "direct count" one month and next month the "methylene blue". In addition the study developed the possibility, and later studies have shown, that microflora in milk are influenced by geographical location, handling practices, and the season of the year. In view of these facts it is most important that the advantages and disadvantages of the different methods of classifying milk should be thoroughly understood by the users.

These and other studies indicate that the following trends could be expected if the four methods were used by a qualified technician to classify a supply of raw milk.

The standard plate count would tend to classify more of the milk as class 2 or 3 than the average and more in class 2 than 3.

The direct microscopic clump count would tend to classify more milk as class 1 or 2 than the average and more class 1 than 2.

The methylene blue reduction test would tend to classify more as class 1, especially if the milk supply were from bulk tanks and less of the milk as class 2 and 3 than the average.

The resazurin reduction test would classify more of the bulk tank milk as class 1 but less of the can milk as class 1. However, the method of handling

would not effect the classification of the rest of the supply. The amount classified as class 2 would be less, but the amount classed as 3 would be more than the average.

The difference between the number in each class would be approximately four percent, with extremes of eight percent to one percent difference. Nevertheless, any of the tests conscientiously used, can be the basis for a good "quality" maintenance program". The secret is uniform application and interpretation of the test method, trained personnel, and follow-up help for the producer. This follow-up is particularly important.

Dr. J. G. Davis said in the March 1963 issue of the Journal of the Society of Dairy Technology, "When bacteriological tests are used to assess the cleanliness of production or processing, or the general microbiological condition of the product, regular testing is of greater importance than the selection of an elaborate tests for which fictitious accuracy may be claimed. For example, arguments over the relative value or accuracy of the plate count, coli, methylene blue, resazurin and clot-on-boiling tests for producer's milks are secondary to the systematic use of any one test. All these tests are capable of placing a milk in one of three grades, and this is all that is required for either grading or advisory work.

"Systematic testing, intelligent interpretation of the results based on fundamental knowledge and experience, and immediate 'follow-up' of unsatisfactory results constitute the basis of food microbiological control in industry."

It appears that producers will respond to information and will cooperate if they are fully aware of what is needed. A producer cannot be blamed for being lax in his milk production methods if he doesn't see a regular report on the quality of his milk. Neither is he apt to be concerned if the plant accepts his milk day after day without telling him if he handles it carefully or carelessly. Also producer contacts are important because the plant operator has an obligation to the producer and the producer has a right to know whether he is producing the kind of milk that the consumer expects and will yield him the higher price in the market. Unless he is kept informed by the plant buying his milk, how else is he to know? It is important that he should get good reports as well as poor reports. A good shipper can be kept good by being encouraged with good reports. It is not good public relations, in any circle of business, to tell a person only when he is doing poorly. He needs to know when he is doing well too. Silence leaves a vacuum to be filled with discouragement.

Actually liberal bacterial levels such as those covered in the standards, and even the sediment standards have little significance when proper sanitary methods are employed at the farm. If the equipment is kept clean and sanitized, and the milk is cooled promptly and protected until it reaches the plant, the testing only serves as an index of how well these methods are being followed. Proper handling will produce milk of significantly lower counts than those shown in the standards. When test results rise significantly above that norm then is the time to follow-up and get things corrected. Poor quality should not be allowed to become the norm and then have action taken after the milk reaches the probationary or cut off period. An alert laboratory and an aggressive field staff are the backbone of a milk quality program.

REVIEW OF STANDARDS

It is not the intention of this paper to mention all the specifics included in the standards, these can be read at your own descretion. A quick review of a few of the broad categories seems desirable. First there is an enabling act to be used by those states which might need such legislation to put the standards into effect. There is a brief statement of introduction covering the intent and use of the standards, The first section covers the definition of terms used, the next the minimum quality standards for the milk, which have already been mentioned briefly.

The third section deals with farm certification and sets out the basis for granting permission to a producer to supply milk for manufacturing. This section includes the health of the herd as to TB, Brucellosis testing, and reference is made to mastitis treatment and control of drug residues. Also in this section milking facilities and procedures are covered. Provision is made for a farm rating system using a farm certification report form.

The next section deals with requirements for the dairy manufacturing plant including the usual building, facilities, equipment, personnel health, transportation of milk, and plant operating methods and housekeeping.

The procedure for inspection and certification of the farm is advised in a separate section. The prime responsibility for certification and field service is placed on the plant field service with spot checking and monitoring to be done by the state regulatory agency. Provision is also made for the control of producers who transfer from one plant to another to escape quality requirements. As a control on the qualification and performance of the field men, milk producers, and bulk milk collectors, provision is made for licensing them by regulatory agency. The milk grading procedure is outlined including provisions for rejection and exclusion of milk. Supervision of the entire program and responsibility for its enforce-

ment and effectiveness would be in the hands of the State regulatory agency. Other than recommending adoption of these regulations USDA has no further part except as a State may solicit assistance and advice.

ESSENTIAL ELEMENTS

It should be kept in mind, however, that there are three items that go together to make the program complete and effective. These are:

1. *A realistic blue-print or standard.* One that is not too rigid but strict enough to upgrade the general level of quality to what could be expected from a clean and sanitary operation.
2. *Adequate and efficient enforcement.* Such a program is most effective when coupled with a service and educational program.
3. *Industry cooperation.* Unless the industry is willing to support the program wholehartedly, the best set of standards and enforcement will not be fully effective.

It is believed that the standards as recommended provide these items at a minimum cost. If the State regulatory agencies will implement the program and follow through with its enforcement and the Industry will lend its support, great progress through improved quality of manufactured dairy products can be shown.

It will be a long and difficult struggle to bring the quality level of manufacturing milk up to where each one interested in quality would like to see it. A good start has been made. Several states have put various facets of the standards into effect. Each segment of industry and government needs to accept the responsibility within the scope of his own effort and push it forward. It will then succeed.

AMENDMENT TO 3-A SANITARY STANDARDS FOR MULTIPLE-USE PLASTIC MATERIALS USED AS PRODUCT CONTACT SURFACES FOR DAIRY EQUIPMENT

Serial #2001

Formulated by
International Association of Milk, Food and Environmental Sanitarians
United States Public Health Service
The Dairy Industry Committee

The "3-A Sanitary Standards for Multiple-Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment, Serial #2000," are hereby amended as indicated in the following:

Section I. Standards For Acceptability

Sub-paragraph (2) — Add the following material to the list of Generic Classes of Plastics under the class, Nylon:

Nylon Type 6	2.00	3.00	8.00

This amendment shall become effective Aug. 1, 1967.

In addition, the following item which was omitted from the Journal of Milk and Food Technology preprint of April, 1964 should be added

Section I. Standards for Acceptability

Sub-paragraph (2) — Generic Classes:

Chlorinated polyether	0.05	0.05	0.05

HOLDERS OF 3-A SYMBOL COUNCIL AUTHORIZATIONS ON FEBRUARY 20, 1967

0101 Storage Tanks for Milk and Milk Products, as Amended

97 Beseler Steel Products, Inc. (3/24/58)
417 East 29th, Marshfield, Wisconsin

116 Jacob Brenner Company, Inc. (10/ 8/59)
450 Arlington, Fond du Lac, Wisconsin

28 Cherry-Burrell Corporation (10/ 3/56)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

102 Chester-Jensen Company, Inc. (6/ 6/58)
5th & Tilgham Streets, Chester, Pennsylvania

1 Chicago Stainless Equipment Corp. (5/ 1/56)
5001 No. Elston Avenue, Chicago 30, Illinois

2 CP Division, St. Regis (5/ 1/56)
1243 W. Washington Blvd., Chicago 7, Illinois

117 Dairy Craft, Inc. (10/28/59)
Holdingford, Minnesota

76 Damrow Brothers Company (10/31/57)
196 Western Avenue, Fond du Lac, Wisconsin

115 DeLaval Company, Ltd. (9/28/59)
113 Park Street, So., Peterborough, Ont., Canada

109 Girton Manufacturing Company (9/30/58)
Millville, Pennsylvania

21 The J. A. Gosselin Co., Ltd. (9/20/56)
P. O. Box 280, Drummondville, Quebec, Can.

44 The Heil Company (10/26/56)
3000 W. Montana Street, Milwaukee, Wisconsin

114 C. E. Howard Corporation (9/21/59)
9001 Rayo Avenue, South Gate, California

127 Paul Mueller Company (6/29/60)
1616 W. Phelps Street, Springfield, Missouri

143 Portersville Stainless Equipment Div., (5/16/63)
Gibson Industries, Inc.
Portersville (Butler County), Pennsylvania

39 Stainless & Steel Products Co. (10/20/56)
1000 Berry Avenue, St. Paul 14, Minnesota

31 Walker Stainless Equipment Co. (10/ 4/56)
Elroy, Wisconsin

0204 Pumps for Milk and Milk Products, Revised, as Amended

29R Cherry-Burrell Corporation (10/ 3/56)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

147R R. S. Corcoran Co. (1/ 8/64)
500 Old Hickory Road, New Lenox, Ill.

63R CP Division, St. Regis (4/29/57)
1243 W. Washington Blvd., Chicago 7, Illinois

180R The DeLaval Separater Co. (5/ 5/66)
Poughkeepsie, N. Y.

65R G & H Products Corporation (5/22/57)
5718 52nd Street, Kenosha, Wisconsin

145R ITT Jabsco, Incorporated (11/20/63)
1485 Dale Way, Costa Mesa, Calif.

26R Ladish Co., Tri-Clover Division (9/29/56)
2809 60th Street, Kenosha, Wisconsin

148R Robbins & Myers, Inc. (4/22/64)
Moyno Pump Division
1895 Jefferson Street, Springfield, Missouri

163R Sta-Rite Products, Inc. (5/ 5/65)
234 South 8th Street, Delavan, Wisconsin

72R L. C. Thomsen & Sons, Inc. (8/15/57)
1303 53rd Street, Kenosha, Wisconsin

183R Ulrich Mfg. Co. (5/20/66)
204 W. Husseman St., Roanoke, Ill.

175R Universal Milking Machine Div., (10/26/65)
National Cooperatives, Inc.
First Avenue at College, Albert Lea, Minnesota

52R Viking Pump Company (12/31/56)
406 State Street, Cedar Falls, Iowa

5R Waukesha, Foundry Company (7/ 6/56)
Waukesha, Wisconsin

0402 Homogenizers and High Pressure Pumps of the Plunger Type, As Amended

87 Cherry-Burrell Corporation (12/20/57)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

37 CP Division, St. Regis (10/19/56)
1243 W. Washington Blvd., Chicago 7, Illinois

75 Manton-Gaulin Mfg. Co., Inc. (9/26/57)
44 Garden Street, Everett 49, Massachusetts

0506 Stainless Steel Automotive Milk Transportation for Bulk Delivery and/or Farm Pick-up Service, As Amended

131 Almont Welding Works, Inc. (9/ 3/60)
4091 Van Dyke Road, Almont, Michigan

98 Beseler Steel Products, Inc. (3/24/58)
417 East 29th, Marshfield, Wisconsin

70 Jacob Brenner Company (8/ 5/57)
450 Arlington, Fond du Lac, Wisconsin

118 Dairy Craft, Inc. (10/28/59)
Holdingford, Minnesota

66 Dairy Equipment Company (5/29/57)
1919 So. Stoughton Road, Madison 14, Wisconsin

123 DeLaval Company, Ltd. (12/31/59)
113 Park Street, South, Peterborough, Ont., Can.

190 Eastern Industries, Limited (11/18/66)
830 Blvd. Lemire, Drummondville, Quebec

121 The J. A. Gosselin Co., Ltd. (12/ 9/59)
P. O. Box 280, Drummondville, Quebec, Canada

45 The Heil Company (10/26/56)
3000 W. Montana Street, Milwaukee 1, Wisconsin

93 Pennsylvania Furnace & Iron Co. (2/ 6/58)
316 Pine Street, Warren, Pennsylvania

85 Polar Manufacturing Company (12/20/57)
Holdingford, Minnesota

144 Portersville Stainless Equipment Div., (5/16/63)
Gibson Industries, Inc.
Portersville (Butler County), Pennsylvania

71 Progress Industries, Inc. (8/ 8/57)
400 E. Progress Street, Arthur, Illinois

80 C. Richardson & Company, Ltd. (11/24/57)
Wellington Street, So., St. Marys, Ont., Canada

40 Stainless & Steel Products Company (10/20/56)
1000 Berry Avenue, St. Paul 14, Minnesota

47 Standard Steel Works, Inc. (11/ 2/56)
16th & Howell Streets, North Kansas City 16, Mo.

189 A. & L. Tougas, Ltée, (10/ 3/66)
1 Tougas St., Iberville, Quebec, Canada.

25 Walker Stainless Equipment Co. (9/28/56)
New Lisbon, Wisconsin

0800-07 Fittings Used on Milk and Milk Products Equipment, and Used on Sanitary Lines Conducting Milk and Milk Products and Supplements 2, 3, 4, 5, and 6, As Amended

79 Alloy Products Corporation (11/23/57)
1045 Perkins Avenue, Waukesha, Wisconsin

138 A.P.V. (Canada) Equipment, Ltd. (12/17/62)
103 Rivalda Rd., Weston, Ont., Canada

82 Cherry-Burrell Corporation (12/11/57)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

124 DeLaval Company, Ltd. (2/18/60)
113 Park Street, South, Peterborough, Ont., Canada

184 The DeLaval Separator Co. (8/ 9/66)
Poughkeepsie, New York

67 G & H Products Corporation (6/10/57)
5718 52nd Street, Kenosha, Wisconsin

105 Girton Manufacturing Company (7/25/58)
Millville, Pennsylvania

89 Burton Klemp Corporation (3/24/60)
6613 28th Avenue, Kenosha, Wisconsin

34 Ladish Co., Tri-Clover Division (10/15/56)
2809 60th St., Kenosha, Wisconsin

149 Q Controls (5/18/64)
Occidental, California

73 L. C. Thomsen & Sons, Inc. (8/31/57)
1303 43rd Street, Kenosha, Wisconsin

151 Tubular Components, Inc. (11/18/64)
Butternut Drive, East Syracuse, New York

89 Waukesha Specialty Company (12/20/57)
Walworth, Wisconsin

0902 Thermometer Fittings and Connections Used on Milk and Milk Products Equipment and Supplement 1, As Amended

32 Taylor Instrument Companies (10/ 4/56)
95 Ames Street, Rochester 1, New York

1001 Milk and Milk Products Filters Using Disposable Filter Media, As Amended

35 Ladish Co., Tri-Clover Division (10/15/56)
2809 60th Street, Kenosha, Wisconsin

1102 Plate-Type Heat Exchangers for Milk and Milk Products, As Amended

20 A.P.V. Company, Inc. (9/ 4/56)
137 Arthur Street, Buffalo 7, New York

30 Cherry-Burrell Corporation (10/ 1/56)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

14 Chester-Jensen Co., Inc. (8/15/56)
5th & Tilgham Streets, Chester, Pennsylvania

38 CP Division, St. Regis (10/19/56)
1243 W. Washington Blvd., Chicago 7, Illinois

120 DeLaval Company, Ltd. (12/ 3/59)
113 Park Street, South, Peterborough, Ont., Can.

17 The Delaval Separator Company (8/30/56)
Poughkeepsie, New York

15 Kusel Dairy Equipment Company (8/15/56)
100 W. Milwaukee Street, Watertown, Wisconsin

1202 Internal Return Tubular Heat Exchangers, As Amended

103 Chester-Jensen Company, Inc. (6/ 6/58)
5th & Tilgham Street, Chester, Pennsylvania

96 C. E. Rogers Company (3/31/64)
8731 Witt Street, Detroit 9, Michigan

152 Sanitary Processing Equipment Corporation (11/18/64)
Butternut Drive, East Syracuse, New York

1303 Farm Milk Cooling and Holding Tanks—Revised, As Amended

99R Henry C. Bergmann, Inc. (3/28/58)
4350 W. Artesia St., Fullerton, California

19R Brown Equipment Mfg. Company (9/ 1/56)
418 Kearns Bldg., Salt Lake City, Utah

11R CP Division, St. Regis (7/25/56)
1243 W. Washington Street, Chicago 7, Illinois

119R Dairy Craft, Inc. (10/28/59)
Holdingford, Minnesota

4R Dairy Equipment Company (6/15/56)
1919 S. Stoughton Road, Madison 14, Wisconsin

92R Delaval Company, Ltd. (12/27/57)
113 Park Street, South
Peterborough, Ontario, Canada

49R The Delaval Separator Company (12/ 5/56)
Poughkeepsie, New York

94R Esco Cabinet Company (2/ 6/58)
West Chester, Pennsylvania

10R Girton Manufacturing Company (7/25/56)
Millville, Pennsylvania

95R Globe Fabricators, Inc. (3/14/58)
7744 Madison Street, Paramont, California

179R Heavy Duty Products (Preston), Ltd. (3/ 8/66)
635 Laurel St., Preston, Ont., Canada

51R C. E. Howard Corporation (12/20/56)
9001 Rayo Avenue, South Gate, California

61R James Mfg. Co., Sani-Kool Division (4/ 2/57)
104 W. Milwaukee Avenue, Fort Atkinson. Wisconsin

41R Mojonnier Bros. Company (10/22/56)
4601 W. Ohio Street, Chicago 44, Illinois

12R Paul Mueller Company (7/31/56)
1616 W. Phelps Street, Springfield, Missouri

58R Schweitzer's Metal Fabricators, Inc. (2/25/57)
806 No. Todd Avenue, Azusa, California

50R Emil Steinhorst & Sons, Inc. (12/20/56)
612-616 South Street, Utica 3, New York

134R Universal Milking Machine Division (5/19/61)
National Co-operatives, Inc.
First Avenue at College, Albert Lea, Minnesota

182R Vacooler Co. (5/20/66)
700 Gaylord Ave., Elyria, Ohio

42R VanVetter, Inc. (10/22/56)
2130 Harbor Avenue S. W., Seattle, Washington

18R Whirlpool Corporation, St. Paul Division (9/20/56)
850 Arcade Street, St. Paul 6, Minnesota

55R John Wood Company, (1/23/57)
Superior Metalware Division
509 Front Avenue, St. Paul 17, Minnesota

170R The W. C. Wood Co., Ltd. (8/ 9/65)
5 Arthur Street, South, Guelph, Ont., Canada

16R Zero Manufacturing Company (8/27/56)
Washington, Missouri

1400 Inlet and Outlet Leak Protector Plug Valves for Batch Pasteurizers

122 Cherry-Burrell Corporation (12/11/59)
2400 Sixth Street, S.W., Cedar Rapids, Iowa

69 G & H Products Corporation (6/10/57)
5718 52nd Street, Kenosha, Wisconsin

27 Ladish Co. - Tri-Clover Division (9/29/56)
2809 60th Street, Kenosha, Wisconsin
78 L. C. Thomson & Sons, Inc. (11/20/57)
1303 43rd Street, Kenosha, Wisconsin

1500 Manually-Operated Bulk Milk and Milk Products Dispensers, Multi-Service Milk Containers, and Dispensing Mechanisms

74 American Industries, Inc. (9/11/57)
Box 5580, Minneapolis, Minnesota
23 Monitor Dispenser Co., Inc. (9/27/56)
West Main Street, Stroudsburg, Pennslyvania
62 Norris Dispensers, Inc. (4/ 8/57)
2720 Lyndale Avenue, South, Minneapolis 8, Minnesota
108 Stevens-Lee Company (8/12/58)
822 W. 59-1/2 Street, Minneapolis 19, Minnesota

1602 Evaporators and Vacuum Pans, As Amended

132 A.P.V. Company, Inc. (10/26/60)
137 Arthur Street, Buffalo 7, New York
111 Blaw-Knox Company, (2/12/59)
Dairy Equipment Division
750 E. Perry, Buffalo, N. Y.
110 Arthur Harris & Company (11/10/58)
210-18 North Aberdeen Street, Chicago 7, Illinois
128 Mojonnier Bros. Co. (7/ 6/60)
4601 W. Ohio Street, Chicago 44, Illinois
164 Mora Industries, Inc. (4/25/65)
112 South Park Street, Mora, Minnesota
107 C. E. Rogers Company (8/ 1/58)
8731 Witt Street, Detroit 9, Michigan
186 Marriott Walker Corporation (9/ 6/66)
925 East Maple Road, Birmingham, Mich.

1702 Fillers and Sealers of Single Service Containers, As Amended

192 Cherry-Burrell Corporation, (1/ 3/67)
2400 Sixth St., S.W., Cedar Rapids, Iowa
139 Exact Weight Scale Company (4/15/68)
538 East Town Street, Columbus 15, Ohio
137 Ex-Cell-O Corporation (10/17/62)
P. O. Box 386, Detroit 32, Michigan
140 General Films, Inc. (4/23/63)
Covington, Ohio
153 Mantes Scale Co. (1/ 6/65)
489 Sixth Street, San Francisco, California
142 Polygal Company (4/15/63)
Div. of Inland Container Corp.
6343 E. Westfield Blvd., Indianapolis, Indiana

1901 Batch and Continous Freezers, As Amended

141 CP Division, St. Regis (4/15/63)
1243 W. Washington Blvd., Chicago 7, Illinois
146 Cherry-Burrell Corporation (12/10/63)
2400 Sixth Street. S.W., Cedar Rapids, Iowa

2200 Silo-Type Storage Tanks for Milk and Milk Products

168 Cherry-Burrell Corporation (6/16/65)
2400 Sixth Street, S.W., Cedar Rapids, Iowa
154 CP Division, St. Regis (2/10/65)
1243 W. Washington Blvd., Chicago 7, Illinois
160 Dairy Craft, Inc. (4/ 5/65)
Holdingford, Minnesota
181 Damrow Brothers Company (5/18/66)
196 Western Ave., Fond du Lac, Wisconsin
156 C. E. Howard Corporation (3/ 9/65)
9001 Rayo Avenue, South Gate, California
155 Paul Mueller Co. (2/10/65)
1616 W. Phelps Street, Springfield, Missouri
165 Walker Stainless Equipment, Co. (4/26/65)
New Lisbon, Wisconsin

2300 Equipment for Packaging Frozen Desserts, Cottage Cheese and Milk Products Similar to Cottage Cheese in Single Service Containers

174 Anderson Bros. Mfg. Co (9/28/65)
1303 Samuelson Road, Rockford, Illinois
178 John A. Carrier Corporation (2/18/66)
Middlesex Turnpike, Burlington, Iowa
193 Triangle Package Machinery Co., (1/31/67)
6655 West Diversey Ave., Chicago, Illinois

2400 Non-Coil Type Batch Pasteurizers

161 Cherry-Burrell Corporation (4/ 5/65)
2400 Sixth Street, S.W., Cedar Rapids, Iowa
158 CP Division, St. Regis (3/24/65)
1243 W. Washington Blvd., Chicago 7, Illinois
187 Dairy Craft, Inc., (9/26/66)
Holdingford, Minneapolis
177 Girton Manufacturing Co. (2/18/66)
Millville, Pennsylvania
166 Paul Mueller Co. (4/26/65)
1616 W. Phelps Street, Springfield, Missouri

2500 Non-Coil Type Batch Processors for Milk and Milk Products

162 Cherry-Burrell Corporation (4/ 5/65)
2400 Sixth Street, S. W., Cedar Rapids, Iowa
159 CP Division, St. Regis (3/24/65)
1243 W. Washington Blvd., Chicago 7, Illinois
188 Dairy Craft, Inc., (9/26/66)
Holdingford, Minneapolis
167 Paul Mueller Co. (4/26/65)
1616 W. Phelps Street, Springfield, Missouri

2600 Sifters for Dry Milk and Dry Milk Products

171 Entoleter, Inc. (9/ 1/65)
Subsidiary of American Mfg. Co.
1187 Dixwell Avenue, Hamden, Connecticut
173 Food & Chemical Equipment Div. (9/20/65)
Blaw-Knox Company
1325 S. Cicero Avenue, Chicago, Illinois
185 The Orville-Simpson Co. (8/10/66)
1230 Knowlton St., Cincinnati, Ohio
172 Southwestern Engineering Co. (9/ 1/65)
6111 E. Bandini Blvd., Los Angeles, California
176 Sprout, Waldron & Co., Inc. (1/ 4/66)
Munsy, Pennsylvania

SOME EXPERIENCES WITH MOBILE CATERING OF FOOD FOR IMMEDIATE CONSUMPTION[1]

MELVIN LYNCH

Topeka-Shawnee County Health Department
1615 W. 8th St.
Topeka, Kansas, 66606

Over a period of years there have been a number of attempts to set up in Topeka a business of mobile catering of food for immediate consumption. The idea was to vend or dispense sandwiches and hot and cold drinks from a truck on the street in front of certain commercial or industrial establishments. Our experiences from the standpoint of insuring public health safeguards and sanitary minimums have been quite interesting and we have assembled some pertinant information which should be valuable in our further programs.

The first two "would be" operators who approached the Health Department undertook to set up mobile equipment according to our recommendations at the time but neither was successful to the point of getting into operation. After a lapse of time a gentleman came into the office to secure permission to start a mobile catering business. He had two trucks designed for transporting and vending some foods and drinks. Ice was used for a refrigerant. He set up and equipped a supply commissary, similar to the restaurant kitchens we had in town, and this commissary was to be used to prepare sandwiches and other foods. Of course, the coffee and the soft drink dispensers were built into the truck. Bake goods were purchased at one of the local bakeries.

This operation had all the appearances of a going concern and as we had gained no information from the other two operators that had attempted to start before, we decided after some deliberation to concentrate our efforts securing the following information:

1. Temperatures that foods were being held at in the truck. (Both hot and cold temperatures.)
2. The time the truck was out of the commissary making sales.

We also kept in mind the general cleanliness of the truck. I place these in the order that I felt they were important to our investigation. The only way for us to get this information was through a series of routine checks.

While we were gathering this information on the catering company, it had run into difficulty with the local restaurant people. The mobile caterer would park in front of certain offices and establishments and the minute the nearby restaurant operator became aware of this happening in his area he made every effort to seal off their parking spaces. This ended up to be quite a scramble between the restaurant operator and the caterer every morning. Soon the police department was brought into the picture because of a city ordinance. There is a law in the ordinance books which states that any selling of this type had to be off the streets, so it could not be done on the public streets. This meant that the caterer had to either drive into the place or they had to have a vacant lot or some similar space near the place they were servicing.

While all the sparing between the local restaurant operators and the caterer were going on, we were collecting the information we wanted on this business (temperatures and the time the truck was out). Things were not smooth along this route either. The caterer did not want to stop long enough for us to check temperatures, we were accused of ruining his sales by holding him up, he had a time table to keep and so on.

One of the things that caused us some difficulty in controlling mobile caterers is that the license to operate is issued by the city treasurer. Licenses or permits cost $10.00 per truck.

The menu on these trucks consisted of the following types of sandwiches: ham salad tuna salad, chicken salad, egg salad, and assorted meat sandwiches; also pies, rolls, creme filled pastries and milk. The foods that were kept hot were not of much concern because they were preserved type foods. We found that the average temperature ran about 58 degrees, and on some occasions we found that the temperature outside was colder than that in the food display compartment of the truck. Also, we found that the truck would be out of the commissary any where from two to eight hours.

During the time we were gathering this information the company had changed ownership and before the year was up it had changed managers and in a short lapse of time had changed ownership again.

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[1]Based on a paper presented at the 37th Annual Meeting of the Kansas Association of Public Health Sanitarians, Manhattan, Kansas, October 26-28, 1966.

The business was not flourishing because our community does not have a great number of large industries that do not have inplant feeding of some kind or another. The caterer had to depend on small sales at each place. An average was ten cent sales in seven miles. It became apparent to us that it was impossible to maintain safe temperatures on these trucks with ice. We asked the company to improve their refrigeration by installing mechanical refrigeration. Before they could get this done the financial condition of the company had caught up with it and they were out of business.

Soon another company came and wanted to start a catering business. We asked for mechanical refrigeration on the truck and their statement was that they would check the cost of this installation and if it could be done they would return. But we never heard from them again.

This past summer a catering company from a neighboring town came in and wanted to start their catering operation. These trucks also used only ice for refrigeration with a blower to circulate the air. We asked the owner if he could guarantee that the temperature would remain below 50 degrees at all times. He stated that it could not always be done with ice so we refused to recommend that he be issued a permit to operate.

Since then a former operator has returned. He has a truck with mechanical refrigeration. We have checked the temperature in the food display compartment of his truck on two occasions and the temperature has always been below 50 degrees. Whether or not this will always be the case we do not know but we will continue to make checks and gather information.

In conclusion, it is my feeling that until such a time that caterers can maintain safe temperatures of 50 degrees or below on these trucks, potentially hazardous foods should be eliminated from being a part of their menu. Also, I feel that any mobile catering company that is using ice as a refrigerant should not be given permission to operate anywhere unless they can successfully demonstrate that they can maintain adequate and safe temperatures for all foods being offered for sale.

PUBLICATIONS OF INTEREST

Editorial Note: Listed below are books, pamphlets and reprints on a variety of subjects considered to be of interest. Requests for material should be addressed to the source indicated. Note cost of books and certain items.

Free-stall dairy system for 101 cows. Plan No. 5985. A publication of the U. S. Dept. of Agriculture, Washington, D. C. 5 c.

Publications available from Clearinghouse, U. S. Department of Commerce, Springfield, Va. 22151. (Order by document stock number and title).

PB-169 677/SZZ—Selected Methods for the Measurement of Air Pollutants. May, 1965. $3.00.

PB-169 678/SZZ—Waste Stabilization Pond Study. May, 1964. A study of the Lebanon, Ohio, ponds performance during each of four seasons of the year. $3.00.

PB-169 680/SZZ—Influence of Impoundments on Water Quality. Jan. 1966. A review of 600 literature references and statement of research needs. $3.00.

PB-169 384/SZZ—Pollution and the Life in Water. Aquatic organisms as related to water supply and water pollution. Oct. 1964. $1.60.

PB-169 810/QZZ—A Technique for Estimating Average Airborne Contaminant Concentrations. Feb. 1966. $1.00.

ORNL-3962—Abstracts of Papers: Water Desalination Information Meeting, May, 1966. Oak Ridge National Laboratory, Tenn. $3.00.

TID-22833—Study of Irradiated-Pasteurized Fishery Products. A comprehensive report on seafood irradiation-pasteurization research. $5.00.

CONF-650552—Radiation Preservation of Foods. Six papers presented at Annual Meeting of IFT. May 1966. $1.25.

Publications available from Public Inquiries Branch, Public Health Service, Washington, D. C. 20201. Sample copies available as free stocks permit. (Use identification number and title in ordering.)

PHSP 999 AP-19. The Trend of Suspended Particulates in Urban Air.

PHSP 999 WP-28. Feasibility of Granular, Activated-Carbon Adsorption for Waste-Water Renovation.

PHSP 999 RH-17—Radionuclide Analysis of Large Numbers of Food and Water Samples.

PHSP 999 WP-30—Symposium of Steamflow Regulation for Quality Control.

PHSP 1440—Symposium on Environmental Lead Contamination.

PHSP 393—Handbook on Sanitation of Vessel Construction. 1965 Revision.

PHSP 1046—Procedures Governing the Cooperative State-PHS Program for Certification of Interstate Milk Shippers. 1965 Revision.

Publications Available from Superintendant of Documents, U. S. Government Printing Office, Washington, D. C. 20402. (Order by catalogue number and title indicated).

Cat. No. I 27.34-31—Ground-Water Movement. Analyzes a variety of ground water problems. 1966. 50c.

Cat. No. C 13.20:188-66.—Cast Iron Soil Pipe and Fittings. Establishes standards covering material, dimensions, etc. L966. 40c.

Cat. No. FS 1.2:H 34/9—Training Health Service Workers. Proceedings of Conf. on Job Development and Training for Workers 1966. 60c.

Cat. No. FS 2.2:C 52—Proceedings of Joint Sanitation Seminar on North Pacific Clams. 1965. 30c.

ASSOCIATION AFFAIRS

NOMINATIONS FOR OFFICES OF IAMFES, INC.–1967-1968

FOR SECOND VICE-PRESIDENT AND SECRETARY-TREASURER

DICK B. WHITEHEAD

Dick B. Whitehead received his B.S. in Agriculture 1935, University of Missouri, majoring in Dairy Bacteriology, special work in food bacteriology.

Following graduation he spent approximately five years in industry, (milk and ice cream) in production management.

Returned to University of Missouri twice for graduate study and received his graduate degree (1946) bacteriology (food, water sewage). During this period study was done in Sanitary Engineering and Bacteriology in medical bacteriology department.

The years between 1942-46 were spent on active duty in World War II as an armored officer, serving oversea duty in Europe.

The years 1939-1946 were spent in Food and Milk Control Division of Sanitary Engineering, Mississippi State Board of Health. Most of his years there were in the capacity of Supervisor of Food and Milk Control.

He was instrumental in the establishment of the National Conference on Interstate milk shipment, serving on the Dry Milk Standards Committee; was active on the advisory committee on Milk Regulations and Ordinances; member of Committee on Sanitary Procedures (IAMFES) 3-A Committees, and for the past several years has served as Chairman of this Committee.

He developed Sanitary Standard for School Lunch Program and assisted the Department of Education in developing and conducting Food Service work shops each year at Ole Miss., Mississippi Southern College and Jackson State College for Managers (food service) and workers.

In 1956 left the Mississippi State Board of Health to go into private business as Vice President, later President of Klenzade Southern, Inc. In 1964 this franchise was sold to the parent organization and Mr. Whitehead became a District Manager for Klenzade Products, Division of Economics Laboratory, Inc.

He has striven diligently to improve the professional status of the Sanitarian throughout his tenure in the Milk and Food Industry and by this means to develop a good and productive working relation between Industry and the Regulatory.

He is an Elder in the Presbyterian Church, member Kiwanis International and Colonel in U.S.A.R. (32 years A D and U.S.A.R.). Married to Ruth Ann same number of years (32), but only Pfc. at home.

SHELBY JOHNSON

Shelby is a native Kentuckian and has lived in Kentucky for 43 years minus 4 years and 2 months spent overseas during World War II, 3½ years of which was spent as a Japanese Prisoner of War in the Phillipines and Japan. He graduated from Western Kentucky State College in 1950 with a B.S. Degree in Agriculture. From 1950 to 1954 he taught

Vocational Agriculture and during this time, through short courses at the University of Kentucky, secured 27 graduate hours in Agricultural Education.

He joined the Food and Drug Program of the Kentucky State Department of Health as a food inspector in January 1954, and remained in this capacity until 1956 when he was granted a leave of absence to attend the University of North Carolina at Chapel Hill. Completing his Master of Public Health, he returned to his old position in 1957 and remained until 1959 when he became Director of the Food and Drug Program of the Kentucky State Department of Health.

The Food and Drug Control Program in Kentucky consists of 5 separate programs: 1) Grade A Milk Inspection and Certification, 2) Meat Inspection Program, 3) Milk for Manufacturing Program, 4) Food Manufacturing Program, and 5) Drug Control Program, all of which are charged with the enforcement of the Kentucky Food, Drug, and Cosmetic Act and rules and regulations dully adopted by the State Board of Health, based on this act.

He is immediate past-president of the Central States Association of Food and Drug Officials, past-president of the Kentucky Association of Milk, Food, and Environmental Sanitarians, Vice Chairman—National Labeling Committee, Milk and Dairy Products, member Executive Board Interstate Milk Shippers Conference, member of the AFDOUS Committee on Food Standards Labeling and Advertising of Foods and Uniformity if Interpretation, and member of the Advisory Panel to the United States Public Health Service in Development of the 1965 Grade A Milk Ordinance.

SECRETARY-TREASURER

KARL K. JONES

Karl K. Jones, Public Health Sanitarian, was formerly Chief of the Retail Food Section of the Division of Food and Drugs, Indiana State Board of Health. Recently he was appointed Director of Sanitation Student Health Services, Purdue University, West Lafayette, Indiana. Mr. Jones attended public schools in Indiana and Indiana University where he received a B.S.P.H. in 1950 with an option in Sanitary Science.

Mr. Jones has been in public health work for 15 years, beginning as a regional sanitarian in the Southwestern area of Indiana. He then served as the State Retail Survey Officer from 1952 to 1957 at which time he was appointed to the position of Chief of the Retail Food Section.

For a number of years, Mr. Jones has been active in professional and technical organizations. He is a member of the International Association of Milk, Food, and Environmental Sanitarians, Inc., Charter member of the Indiana Association of Sanitarians, a member of the American Public Health Association and the Indiana Public Health Association. He is also a member of the Indiana State Board of Registration for Professional Sanitarians and has been active for several years in developing information and standards for sanitarians; and in 1958, a paper by Mr. Jones on the "Current Status of Sanitarian Registration Legislation in the United States" was published in the Journal of Milk and Food Technology.

Mr. Jones is married and lives in Indianapolis, Indiana.

NOMINATING COMMITTEE

Ben Luce, Chairman	W. J. Dixon
Ray Belknap	Art Parker
Orlowe Osten	J. J. Jezeski
K. G. Weckel	

CONNECTICUT ASSOCIATION ELECTS OFFICERS FOR 1967

At its 41st Annual Meeting on January 11 the Connecticut Association of Dairy and Food Sanitarians elected Philip R. Vozzola of West Granby as its President for 1967. Earl Kellerson of Warehouse Point was elected Vice-President. Reelected for another term were Richard M. Parry as Secretary, Raymond Anderson as Treasurer and Carl Jekanowski as Assistant Treasurer. All are Hartford residents. Hold-over members of the Board of Governors are W. W. Buckingham, Lynn R. Glazier, Joseph M. Guida, Kenneth W. Crane, and Robert Weis. Newly elected Board members are L. Hawkins, A. Pulling and C. Whiting.

The morning program was divided into two sections. In the Dairy Section discussions covered Single Service containers, a Report of a Study in Temperatures of Pasteurized Milk and the Evaluation of Methods in Making Leucocyte Counts in Milk. Food Section topics included Meat Inspection and Additives and Aerosol as a New Development in Food and Drug Packaging. The program at the combined afternoon session covered Salmonellosis and Its Relation to Food and also Air Pollution in Connecticut.

CAMPING FACILITIES AT THE ANNUAL MEETING

Rumor has it that a number of folks planning to attend the 54th Annual Meeting of IAMFES at Miami Beach, August 14-17, 1967, would be interested in camping accommodations adjacent to convention headquarters and elsewhere in Florida. Certainly there is an increasing number of people who have appropriate equipment and use an annual meeting trip as a good excuse to take along the family.

Sam Noles, IAMFES 1st Vice President and also a member of the host organization for the 1967 meeting, the Florida Association of Sanitarians, is responsible for the following information:

An official Florida Highway Map can be obtained from the State Road Department, Traffic and Planning, Tallahassee, Florida, 32304. This map lists facilities at publicly owned recreation areas in Florida. Along with the location, information is listed concerning facilities at these areas in respect to tent and trailer camping, swimming, boating, snacks, etc. There are also privately owned camping areas which can be used. A list of these can be secured from the Florida Development Commission, Tallahassee, Florida 32304, or directly from Florida Private Campground Owners' Association, P. O. Box 200-A, Trenton, Florida 32693.

Two camping areas which are located nearest to Miami Beach are:

(1) Dania Indian Reservation on U. S. 441 south of the Seminole Indian Arts and Crafts Center at Dania. Seminole Tribe of Florida, Inc., 6073 Stirling Road, Hollywood, Florida 33024.

(2) Mineral Springs and Lake Chekika 16 miles northwest of Homestead on U. S. 27 and west on SW 192nd Street. Mineral Springs Corporation, 716 Alhambra Circle, Coral Gables, Florida 33134.

Complete information on facilities and rates can be secured by writing directly to the individual area managers. The one item which will give the most information is the official 1966 Florida State Road Department Vacation Map.

Sam says, "We certainly hope that many families can take advantage of the facilities offered during their trip to the 54th Annual Convention."

REVISED HTST PRACTICES PUBLISHED BY 3-A GROUP

Revised 3-A HTST Accepted Practices which now extend to the pasteurization of ice cream mix and dry milk have been published by the 3-A Sanitary Standards Committees. These important Practices provide criteria for the sanitary construction, installation, testing and operation of HTST pasteurization systems. They took effect January 22, 1967.

Originally published in 1958, the Practices applied only to fluid milk processing. Last May, however, the 3-A groups approved revision of the HTST Accepted Practices to include flavor control devices, ice cream mix pasteurization, and pasteurization of milk and milk products for drying.

The Practices also include a revised salt conductivity test for timing of HTST pasteurizing controls. The original salt conductivity test method published in 1950 is superseded by these Revised Practices.

Copies of the Revised Practices, which represent a "package" guideline for administering the complex equipment and controls for HTST pasteurizers, have been distributed to the 3-A Standards Committees. Interested persons may obtain copies, at $1.00 per copy, from the *Journal of Milk and Food Technology*, Box 437, Shelbyville, Indiana 46176.

The 3-A program for dairy equipment is the result of cooperation among three groups: (1) dairy processors, the users of dairy equipment; (2) dairy industrial suppliers and equippers, the manufacturers and sellers of dairy equipment; and (3) public health officials and sanitarians, the regulatory officials under whose jurisdiction the equipment is installed and used.

The 3-A program, which is voluntarily supported by the national trade associations in the dairy processing industry has resulted in standards' being issued for 25 items of dairy industrial equipment. Equipment complying with the standards may carry the 3-A Symbol, provided its manufacturer received

authorization to do so from the 3-A Symbol Council.

The 3-A Committees also publish Accepted Practices. These operational guidelines cover installing and cleaning of permanent pipelines, the supply of air under pressure and now, the expanded HTST pasteurization practices.

Generally speaking, 3-A standards and practices are acceptable in public health jurisdictions in nearly every town, city or state in the United States. 3-A Sanitary Standards and Practices are cited in the recommended Grade "A" Pasteurized Milk Ordinance of the U. S. Public Health Service.

REPORT OF THE COMMITTEE ON SANITARY PROCEDURES-1966

The following is the full report of activities of the Committee on Sanitary Procedures from July 1, 1964 to July 1, 1966.

IAMFES Annual Meeting—Portland, Oregon—August 19, 20, 1964.

A regular report was given of CSP activities at this meeting and it is good to report that a great percentage of the committee was present at this meeting.

Dairy Tech meeting on 3-A sanitary standards committee activity—Durham and Hickory, North Carolina: Lansing, Michigan—September 2, 3, 1964.

Dick B. Whitehead presented two talks at this time on the why and wherefore of 3-A. About this same time C. A. Abele gave a talk at a short course in Lansing, Michigan on the same subject.

3-A Ad Hoc Meeting on dry milk fillers—Chicago, Illinois December 16, 17, 1964.

R. G. Semerad represented CSP-USDA on the Guidance Committee for this meeting. The intent of this meeting was to lay satisfactory ground work so that complete agreement between the Fabricators and Users could be made possible and tentative standard passed on to CSP-USPHS at the Kansas City 3-A Meeting.

3-A Ad Hoc meeting on welded lines—Chicago, Illinois—December 17, 1964

CSP-IAMFES were represented by Dick B. Whitehead, C. A. Abele, Harold Irvin, James Meany and H. L. Thomasson. The Ad Hoc group made a line by line review of the draft of the tentative agreement reached at the May 1964 3-A Meeting. Following this the Secretary was instructed to prepare the new 5th Revision for the agenda of the March 1965 3-A Meeting.

3-A Ad Hoc Meeting on cleanability—Washington, D. C.—February 17, 1965.

CSP-IAMFES were represented by Dick B. Whitehead. The purpose of the meeting was to explore with CSP-USPHS-USERS the basis of the acceptance toward which a simulated use test regimen for the evaluation of cleanability might be designed.

3-A Ad Hoc Meeting on HTST Pasteurization—Washington, D. C.—February 16, 1965.

CSP-IAMFES were represented by Dick B. Whitehead. The purpose of the meeting was to consider the preparation of either a series of amendments or revisions to the "3-A Sanitary Construction, Installation, Testing and Operation of High Temperature Short Time Pasteurizers." Task Members were given assignments for complete revision of this document.

3-A Sanitary Standards Committees meeting—Kansas City, Missouri March 30, 31,—April 1, 1965.

CSP-IAMFES was represented by C. A. Abele, Harold Irvin, W. M. Jordan, Joseph S. Karsh, C. K. Luchterhand, J. A. Meany, Frank Kelly, R. M. Parry, H. L. Thomasson and Dick B. Whiteland. Significant work was done on several tentative standards, but the most significant accomplishment was in the finalizing and making ready for editing and signature the following—"Tentative 3-A Accepted Practices for Permanently Installed Products Pipelines and Cleaning Systems. Tentative Amendment to 3-A Sanitary Standards for Pumps for Milk and Milk Products—Revised Serial No. 0203."

DFISA-HTST Committee Meeting on Vacuum Flavor Equipment—Washington, D. C.—June 7, 1965.

CSP-IAMFES was represented on the HTST Guidance Committee by Dick B. Whitehead. The purpose of the meeting was to prepare a section on vacuum flavor equipment for the current revision of the 1958 HTST Practices. Toward the end of this discussion there was a brief consideration of "Cleanability" for future task accomplishment.

DFISA Task Committee on HTST Pasteurization—Skiller Park, Illinois—September 20, 21, 1965.

CSP-IAMFES was represented on the HTST Guidance Committee by Dick B. Whitehead. The purpose of the meeting was to review the May 1965 draft of the revision. The first draft to be physically complete since work on the revision was initiated. A line by line review of this document followed—the two days work seemed quite fruitful.

DFISA HTST Task Committee—Subcommittee on System Timing Procedures—Washington, D. C.—October 11, 1965.

On this HTST Guidance Committee F. E. Fenton represented USDA and actually is a representative of CSP in this regard also.

3-A Ad Hoc Meeting on Farm Tanks—Milwaukee, Wisconsin November 30, 1965.

CSP-IAMFES were represented by Robert Anderson, Dick B. Whitehead and C. A. Abele. The purpose of the meeting was to explore possible approaches for considering proposed amendments to "3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks—Serial No. 1301." This meeting was called in response to action taken relative to farm tanks at the last two regular meetings of 3-A Sanitary Standards Committees. Seven items were discussed in quite some detail at this meeting and recommendations were passed on to Task Committee for future consideration.

3-A Ad Hoc Meeting on HTST Pasteurization—Milwaukee, Wisconsin February 15, 16, 1966.

CSP-IAMFES was represented by Harold Irvin, C. K. Luchterhand, Ward Peterson and Dick B. Whitehead. This meeting actually brought into final focus the many meetings that had been had on this subject. As the result of this meeting the Secretary was instructed to prepare a complete new 3rd Revision for the May 3-A Meeting under the terms of the Standard Operating Procedures.

3-A Sanitary Standards Committees Meeting—Oklahoma City, Oklahoma—May 10, 11, 12, 1966.

CSP-IAMFES was represented by C. A. Abele, D. C. Cleveland, D. J. Conner, Pat Dolan, Floyd Fenton, H. R. Irvin, W. M. Jordan, J. S. Karsh, C. K. Luchterhand, Sam O. Noles,

O. M. Osten, R. M. Parry, H. L. Thomasson and Dick B. Whitehead.

During three days of very productive work—Powder Fillers, Fitting Supplements, Plastic Admendments and HTST Revision were considerd. The following were put in final form and approval for signature: "Tentative Admendments to 3-A Sanitary Standards for Multiple Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment—Serial No. 2000. The initial draft—July 15, 1965."

This amendment adds two to No. 2000 a new generic class of plastics, nylon 6. The next, 3-A Accepted Practices for Sanitary Construction, Installation, Testing and the Operation of HTST Pasteurizers—June 1958, 3rd Revision February 15, 1966. The completion of these accepted practices was a real accomplishment and was a major step in upgrading. The Secretary was instructed to prepare the final revisions based on action taken in the meeting for official signing. As of this writing most of this has been completed and the final drafts are ready for signature.

There are two significant points that should be of vital interest to the membership at large—one of these is that the activity of Ad Hoc Committees has made possible the completion of standards and practices that otherwise would have been impossible to put in form and complete in regular 3-A Sanitary Standards Committee Meetings.

Second, it is believed that the participation of Guidance Committee Members to the DFISA Task Committees has also been helpful and has alleviated a lot of discussion that would of necessity have to be taken up at the regular meetings.

As Chairman of CSP it is with real pleasure that attention is called to the very full participation of the entire membership of this committee at regularly called meeting, as well as Ad Hoc Meetings. Two new members have been put to work on the Committee—those being D. J. Conner and O. M. Osten.

This report is respectfully submitted for approval on behalf of the efforts of a diligent, hard working and most productive committee.

MEMBERSHIP—COMMITTEE ON SANITARY PROCEDURES

Dick B. Whitehead, *Chairman*	C. K. Luchterhand
C. M. Abele	James A. Meany
D. C. Cleveland	Sam O. Noles
Kenneth Carl	Richard M. Parry
M. R. Fisher	George H. Steel
P. J. Dolan	H. L. Thomasson
Harold Irvin	F. E. Fenton
W. K. Jordan	O. M. Osten
Joseph J. Karsh	Dudley J. Conner

MINUTES OF THE 1966 AFFILIATE COUNCIL MEETING

O. M. Osten, Chairman of the Council, presided and Wayne Brown was appointed Acting Secretary for the meeting which was held in Minneapolis, Minnesota, August 15, 1966. The minutes are as follows:

Minutes of the 1965 meeting were read and adopted. A short review of the history and purpose of the Affiliate Council was presented by Chairman Osten. It was noted that there has been an increase interest among affiliates in IAMFES affairs and greater attendance at affiliate council meetings the past two years.

Mr. John H. Fritz, representing the IAMFES Executive Board, appeared before the council and reviewed the activities of the Executive Board relative to its representatives visiting 23 affiliate meetings during the past year. The following Executive Board recommendations were presented to the council by Mr. Fritz:

1. Continue a program to improve communications between the Executive Board and the Council. It was pointed out that there has been a lack of response from the Council in some cases.

2. It would be helpful if affiliates would provide more information relating to affiliate activities and meetings which could be carried in the Journal.

3. Executive Board recommends to the Council that a written Council report be submitted to the Board. This would be in addition to and confirm the Council Chairman's usual verbal report to the Executive Board.

A discussion followed as to other ways the Council could improve its effectiveness. A point was raised as to the desirability of obtaining, prior to the Council meeting, a summary of those items which the Executive Board would like the Council's opinion on. It was recommended that there be as much exchange of information between the Executive Board and Council as possible.

The need for a dues increase was again touched upon but there was general agreement that this problem had been properly resolved and would be finalized at the business meeting. Mr. Ben Luce, however, suggested the Association should pursue the possibility of additional revenue from (a) provision for commercial exhibit space at meetings and (b) sustaining memberships. It was pointed out that these possibilities have been considered by the Board in the past.

Dr. J. C. Olson, Jr., Editor of the Journal, made a plea for more Association activity information which could be published in the Journal. General opinion was expressed by Council members that there had been an improvement in the broader coverage of material by the Journal.

Mr. Erwin Gadd of the Missouri affiliate was elected Council Chairman for the coming year.

Meeting adjourned.

MEMBERS ATTENDING THE 1966 MEETING

NAME	AFFILIATE
O. M. Osten	Minnesota
Wayne Brown	Wisconsin
H. E. Hansen	Iowa
M. W. Jefferson	Virginia
R. M. Parry	Connecticut
Charles Walton	Rocky Mountain Association
Ben Luce	Washington
James Meany	Illinois
H. A. Boyes	Iowa
John M. Schlegel	Indiana
Leon Townsend	Kentucky
Gene Viets	Missouri
Erwin Gadd	Missouri
Harold Barnum	Rocky Mountain Association

REPORT OF THE 3-A SANITARY STANDARDS SYMBOL ADMINISTRATIVE COUNCIL—1966

The affairs of the 3-A Symbol Council have, for the past eleven months, been so uneventful that this report can be made quite brief.

The matter to which a major portion of the 1965 Report was devoted—the proposed registration of another symbol, the use of which on materials conforming to 3-A Sanitary Standards was to administered by the 3-A Symbol Council—appears about to be satisfactorily resolved. The plan now is to cover tubing, the principal dairy farm and milk plant equipment appurtenance the material of which is subject to question, by amendment of 3-A Sanitary Standards now in effect, or by adopting new ones for that purpose.

The suggestion of Mr. Fred H. Fischer, of the Erie County, New York, Department of Health, in a paper presented during the Hartford Annual Meeting and published in the April number of the Journal, to the effect that the names and addresses of concerns holding authorizations to use the 3-A symbol be published from time to time has been followed. Such a list, as of February 20, 1966, was published in the March number of the Journal. On July 31, less than four months after its publication, the list was incorrect, because three holders of authorizations had not renewed them upon expiration, or had been absorbed by another concern. During the interval between February 20 and July 31, slightly over five months, four new authorizations have been issued.

In order to make these rosters of holders of authorizations as meaningful as feasible, the Board of Trustees of the 3-A Symbol Council has instructed that an up-to-date roster be published semi-annually. Arrangements are being made for the second publication of the roster in the September or October number of the Journal, depending upon the availability of space.

A tabulation of the numbers of authorizations currently in effect is appended to this report, and will be published as part of it. In the eleven-month interval between the dates of the 1965 and 1966 data, five authorizations have been relinquished, and eleven were issued, bringing the total number of authorizations in effect to 141. Those who are inclined to check the tabulation of this report against the roster published last March, or to be published soon, are cautioned that February 20, July 31, and August 20 mark different dates.

The Board of Trustees of the 3-A Symbol Council has experienced several changes in personnel since the date of the last report. Former Chairman William A. Dean, Jr's connection with the Dairy and Food Industries Supply Association made him ineligible to represent the Dairy Industry Committee on the Council, and Mr. Rudolph P. Zelm, member of the staff of the American Dry Milk Association, has been appointed to succeed Mr. Dean. At the meeting of the Board of Trustees, in Oklahoma City, on May 9, Dr. K. G. Weckel, who has been serving as Vice-Chairman, was elected Chairman, and Mr. H. S. Christiansen, Assistant Chief Engineer of the Carnation Company, was elected Vice-Chairman.

The resignation of Dr. M. R. Fisher, as a Trustee of the 3-A Symbol Council, has been tendered because of his state of health. He succeeded Paul Corash as a trustee, following the 1962 Annual Meeting of the Association. The Board of Trustees does not meet frequently, and, because of his health Dr. Fisher attended only one meeting. However, much of the business of the Board of Trustees is conducted by mail. Milt was always prompt in replying to letters, and his views and positions were sound. His resignation creates a loss which will be felt. It now becomes the function of the President and Executive Board to appoint a successor to Dr. Fisher.

It has very recently been brought to the attention of the 3-A Symbol Council that used Farm Milk Cooling Tanks, which have been repossessed or have been traded for tanks of greater capacity, are in numerous instances being marketed, in milk sheds inaugurating bulk milk collection, with a minimum of reconditioning.

Traffic in used milk processing equipment is not a new development. It is, however, external to the field of activity envisioned for the 3-A Sanitary Standards Symbol Administrative Council when the latter was developed, and no formal proposal has been made that this traffic be subjected to its supervision with respect to the use of or removal of 3-A symbols. The 3-A Sanitary Standards in all cases apply to new equipment marketed on and after the published date of effect.

Information concerning the marketing of some unreconditioned used farm tanks having reached the Council, advantage is taken of this opportunity to acquaint the members of this audience and readers of this Report with the potentialities, and to point out that the benefits anticipated from a shift to bulk cooling of farm milk, in tanks the physical condition and cooling capacity of which are subject to serious question, may be quite disappointing. It would appear that the sanitarians involved in such a situation would necessarily be called upon to share in the responsibility for such a situation.

3-A SYMBOL COUNCIL AUTHORIZATIONS IN EFFECT

Standards Serial No.	Type of Equipment	Sept. 1, 1965	July 31, 1966
0102	Storage tanks	17	17
0204	Pumps	12	14
0300	Weigh cans	0	0
0402	Homogenizers	3	3
0506	Automotive tanks	17	17
0600	Electric motors	—	—
0700	Milk strainers	0	0
0807	Piping fittings	12	12
0902	Thermometer fittings	1	1
1001	In-line fitters	1	1
1102	Plate-type heat exchangers	7	7
1202	Tubular heat exchangers	3	3
1303	Farm milk tanks	25	25
1400	Leak defecto plug valves	4	4
1500	Manual milk dispensers	5	4
1602	Evaporators	6	6
1702	Fillers and sealers	6	5
1901	Freezers	2	2
2200	Silo-type storage tanks	6	7
2300	Cottage cheese packagers	0	2
2400	Batch-type pasteurizers	3	4
2500	Batch-type processors	3	3
2600	Dry milk sifters	2	4
		135	141

C. A. Abele, *Secretary*
Board of Trustees
3-A Symbol Council

NEWS AND EVENTS

DFISA ANNOUNCES NEW SEMINAR PROGRAM

A new seminar program specifically designed for sales managers of dairy and food suppliers has been announced by the Dairy and Food Industries Supply Association. Developed by DFISA's Market Organization Committee and Sub-Committee, the Sales Management Workshop is open to interested executives of DFISA member companies.

Four 2-day workshops are scheduled during 1967 for April, May, September and October to be held in the Chicago, New York City and Camden-Philadelphia areas. Each workshop will be conducted for the Association by Porter Henry and Company of New York, a management training organization. Limited to 25 persons, the workshops will feature individual and group participation.

A DFISA "pilot" workshop was conducted by Porter Henry himself last summer in Chicago. "Participants were so enthusiastic about the successful idea exchanges that the Association decided to continue similar seminars in 1967," stated Fred C. Messemer, Director of DFISA's Marketing Department. He added, "The forthcoming workshop program was developed on the basis of Association studies of membership needs and interests."

Each workshop, which is designed to give a sales manager new insight and practical training in management skills, will feature the same program. Such points as how to interview and select new salesmen, how to motivate an entire sales force, and how to improve sales meetings will be explored.

NEW PAMPHLET DISCUSSES TECHNIQUES TO MEASURE CONCENTRATION OF SOLUTIONS

Advanced Instruments, Inc., manufacturers of osmometers and other laboratory and medical instruments, has recently published an eight-page pamphlet on the several techniques which a scientist may employ to determine the concentration of solids in liquids. The paper, entitled "Physical Chemistry Review—Measuring the Concentration of Solutions," telegraphically discusses such techniques as determining freezing point, vapor pressure, osmotic pressure, and boiling point. A handy comparative chart of concentrative indices is also included. According to the authors, the pamphlet offers an excellent review for both the scientist and the student. Copies may be had at no charge by writing Mr. Robert Goldson, Advanced Instruments, Inc., 45 Kenneth Street, Newton Highlands, Massachusetts. Please request by title and number: "Physical Chemistry Review"—#0 & MC7-11.

A SHOCKING STORY ABOUT ORANGES

The following item is taken from *Service,* USDA's Report to Consumers, February, 1967: "Orange trees in California are getting the shock of their lives. Scientists of the U. S. Department of Agriculture—working with those at the University of California—are sending jolts of electricity through the trees to get them to drop their fruit. For years, oranges have had to be picked from ladders because the fruit does not readily fall. Now, the scientists find, a charge of electricity will knock off the mature fruit and leave the green oranges on the tree to ripen.

Use of electricity offers other interesting possibilities. For instance, tree growth may also be controlled by electricity—either speeded up or slowed down. But all this is far in the future, USDA researchers say. Considerable research will be needed before this process can be fully understood and employed in orchards".

MARKET MILK AND ICE CREAM CONFERENCES AT PURDUE

Two conferences which are annual affairs sponsored in cooperation with the Indiana Dairy Products Association were held in March at Purdue University, West Lafayette, Indiana. The Market Milk Conference was held on March 22 and the Ice Cream Conference on March 23.

The Market Milk Conference included discussions on What's Behind the Salmonella Headlines by F. J. Babel, Purdue; High Temperature Processing Techniques by Norb Miller, Cherry-Burrell; Properties of Dairy Products Subjected to High Temperature Processing by E. O. Herreid, University of Illinois; Control of Processing and Distribution Costs by Karl Kepner, Purdue; Improving the Flavor of Incoming Milk by E. L. Thomas, University of Minnesota; and Observations on Milko-Tester—Babcock Test Results by H. F. Ford, Purdue. The program was concluded with a milk and chocolate milk clinic.

The Ice Cream Conference featured discussions on What's Ahead for Ice Cream Processors by E. L. Thomas, University of Minnesota; A Recent Development in Frozen Dessert Technology by Carl Herald, F M C Corporation; Pros & Cons of Using Imported Ingredients by Don Merlin, Ice Cream Field; Pro-

ducing High Quality Vanilla Ice Cream by Robert Esdale of Chicago; and Reducing Distribution Costs and Labor by B. C. Waterman, Purdue. This program was concluded with a clinic on vanilla and chocolate ice cream submitted by the conference participants.

UNFRUITFUL FRUIT FLIES

Twenty million fruit flies, artifically reared and sterilized, have been released along the U. S.-Mexico border to mate with wild flies whose eggs will never hatch. This tricky maneuver, which cuts down considerably on the number of fruit flies hatched each year, is conducted jointly by the U. S. and Mexico Departments of Agriculture. It seeks to prevent infestations of the destructive fruit fly in this country. Before scientists developed the sterilization technique, annual insecticide treatments were applied to keep fruit flies out of the United States. This is the third year sterilized flies have been used.

From USDA's Report to Consumers. January, 1967.

PENN STATE CULTURED DAIRY PRODUCTS CONFERENCE

The Departments of Dairy Science and Dairy Science Extension, Pennsylvania State University, has scheduled its Cultured Dairy Products Conference for April 4-6, 1967, at University Park.

Subjects to be covered will include the nature and transferring of cultures for cultured dairy products, and problems encountered with cultures. The manufacture of buttermilk, sour cream, dips, and related products will be discussed in detail, including manufacturing by culturing methods and the use of acidulants. Demonstrations and evaluations of the products will be conducted.

For information write to Dr. Fred C. Snyder, Director of Short Courses in Agriculture, Room 208, Armsby Building, The Pennsylvania State University, University Park 16802.

IMPROVEMENTS IN POTATO CHIP MANUFACTURE

New micro-wave ovens for completing the frying of potato chips offer definite advantages according to a Cornell University potato specialist. Prof. Ora Smith, N. Y. State College of Agriculture at Cornell, states that a wider variety of potatoes can be used with microwave ovens. Also, potatoes can be stored at lower temperatures so there is less rot, less loss from trimming, and less disease and sprouting.

Reducing sugars become high in potatoes stored at low temperatures and this turns them a dark, undesirable color when made into chips. This problem of color in chips has been a most important factor in potato production. Microwave ovens finish the frying of potato chips without adding any color and therefore, potatoes with high sugar concentrations can be used without becoming too dark to merchandise.

Experiments have shown potatoes can be stored at 47 degree temperatures instead of 55. Though concentration of reducing sugars is higher, the chips are a desirable, light color when the microwave ovens are used. Chips are more tender, better flavored, flavor changes take place more slowly and shelf-life is increased.

USDA SCIENTIST HONORED FOR RESEARCH ON MILK PROTEINS

Dr. Marvin P. Thompson, whose research has contributed significantly to the chemistry of milk proteins and whose many publications and lectures have made him an authority in his field, has been honored by the U. S. Department of Agriculture. A research chemist at the Eastern utilization laboratory of USDA's Agricultural Research Service in Wyndmoor, Pa., he was presented with a certificate for his achievements January 20, 1967, by Dr. P. A. Wells, director of the Eastern Utilization Research and Development Division.

Dr. Thompson's special interest has been in the caseins of cow's milk. By analyzing the milk from individual cows of known lineage, he has been able to demonstrate that variations in one type of casein, known as alphas-casein, are genetically induced. This research, which has as its primary goal the ultimate improvement of milk products, has also produced results of great importance to the whole field of genetics.

Also of special interest to Dr. Thompson has been the correct identification of the many genetic types of milk caseins that have been discovered. He has collaborated with protein chemists in the United States, Great Britain, India, and other countries of the world to develop an internationally accepted procedure for the reproducible analysis of milk caseins and to adopt a system of nomenclature for their precise identification.

A native of Troy, New York, Dr. Thompson graduated from Kansas State University in 1957 and received his Ph.D. from Michigan State University in 1960. He has been at the Philadelphia laboratory since 1960, and also holds an adjunct professorship in

the Dairy Science Department of Pennsylvania State University. He is the author of over 30 publications, and has often been invited to present his research results in seminars at research institutions throughout the country.

McCORMICK PLACE FIRE FORCES TRADE SHOW CHANGES

Organizations which had scheduled 1967 trade shows and conventions in McCormick Place in Chicago have had to make other arrangements following the extensive destruction by fire of the famed establishment. Fortunately many shows will be able to find other accommodations in Chicago.

The National Restaurant Association has announced that its 48th Annual Convention and Educational Exposition, including the Midwest International Hotel-Motel Show, will be held at the Chicago International Amphitheatre May 22-25. Overwhelming demand for space from exhibitors in the manufacturing, marketing, supplier, food service and housing fields would indicate that its 1967 show will be one of NRA's greatest.

Similarly, the National Automatic Merchandizing Association has set its 1967 vending trade show for October 28-31 in the International Amphitheatre. Convention meetings will be held at the Conrad-Hilton Hotel as previously scheduled.

ANNUAL MEETING OF AMERICAN DRY MILK INSTITUTE

The American Dry Milk Institute will hold its 42nd Annual Meeting at Chicago April 20-21, 1967. Attendance at this year's session is expected to exceed 700 dry milk manufacturers and related industry personnel.

Included in the program will be discussions by eminently qualified speakers from industry, government, universities and Institute staff. Program topics will include matters of such vital interest as sales, utilization by markets, special quality of product considerations, production control, government programs, and other matters of national/international interest to dry milk manufacturers.

A special invitation is extended to all dry milk manufacturers and allied friends with interest in dry milk manufacturing and marketing to attend the 42nd Annual Meeting. Detailed information will be available from J. T. Walsh, Executive Director, American Dry Milk Institute, 130 N. Franklin St., Chicago, Ill. 60606.

TWENTY YEARS OF SCHOOL LUNCH

The National School Lunch Program administered by the U. S. Department of Agriculture observed its twentieth year, with a special recognition during National School Lunch Week. Lunch at school has become firmly established as part of the educational process in this country. It has become part of our way of life.

This is a major accomplishment of the National School Lunch Program over the past 20 years. School Lunch has a history in the U. S. dating back for more than a hundred years. But it was the enactment of the National School Lunch Act in 1946 that provided the foundations on which to build the nationwide program of today.

With the growth of the School Lunch Program has come the widespread and general recognition of just how important a good lunch is to the health and well-being of children. The benefits are both immediate and far-reaching. The lunch program is not only helping to build strong bodies and alert minds in today's youngsters—it is helping teach good food habits to tomorrow's adults. And so it is molding both the nation's health and the food markets of the future.

ONE DAY SEMINARS ON SOLID WASTES CONTROL

A program of one-day solid waste orientation seminars conducted jointly by State and Federal health authorities has been inaugurated by the Public Health Service, U. S. Department of Health, Education, and Welfare.

The seminars are for the purpose of familiarizing public officials and civic leaders with the magnitude of the problem of solid waste management and to stimulate interest in improved methods of handling solid wastes in the communities. Subjects covered include public health problems created by present day waste collection and disposal practices and the necessity to develop newer and more efficient methods of solid waste management.

The first seminar was conducted in Frankfort, Kentucky on January 18, 1966, as a cooperative effort of the Kentucky State Department of Health and the Public Health Service. The seminars are being conducted in conjunction with general training activities of the Public Health Service's program for nationwide solid waste management and control.

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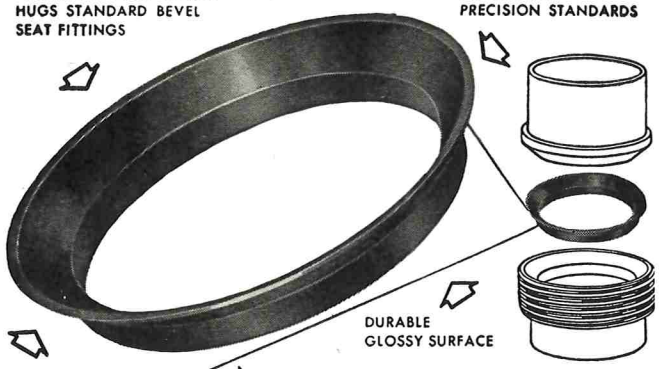

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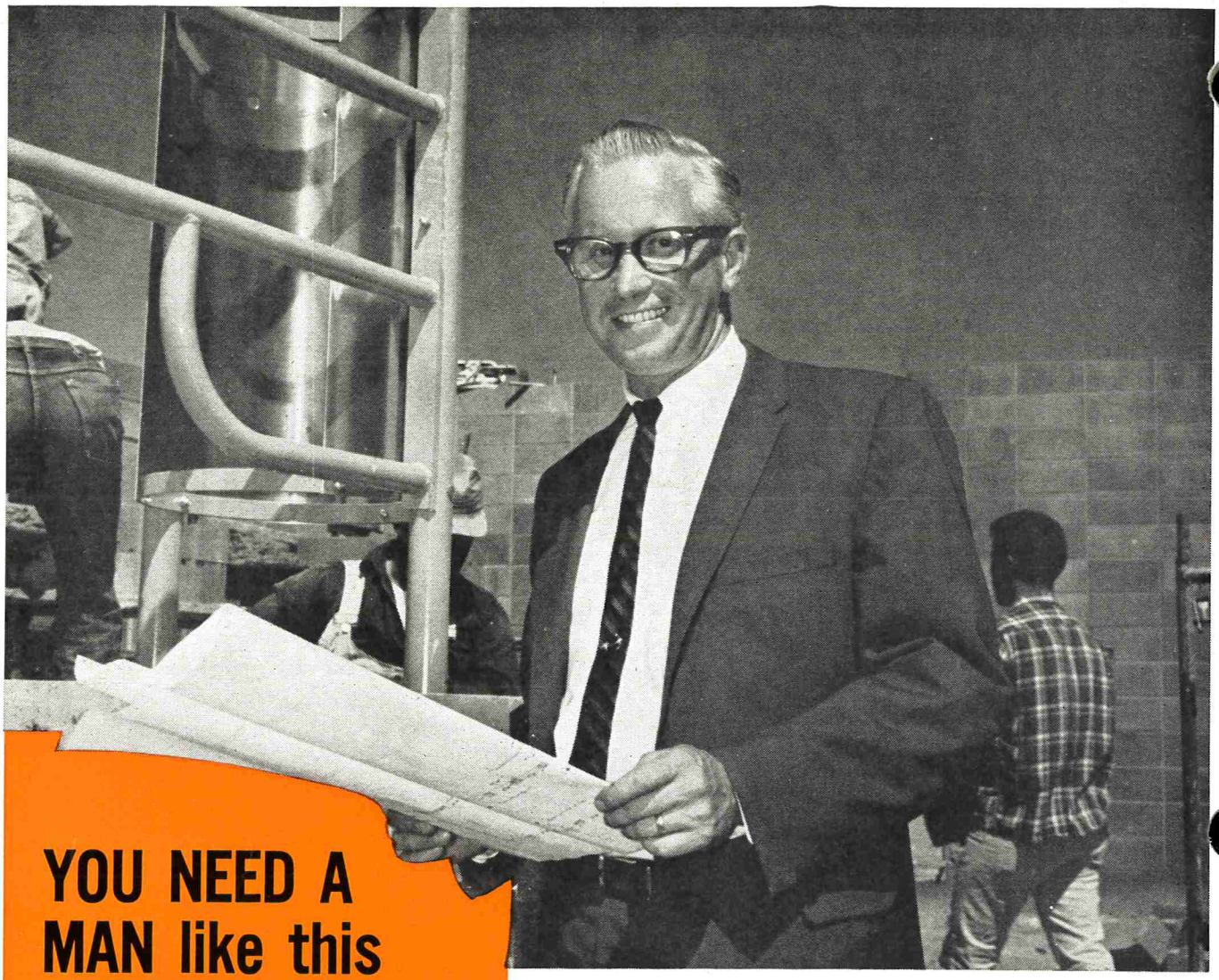

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