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Official Publication

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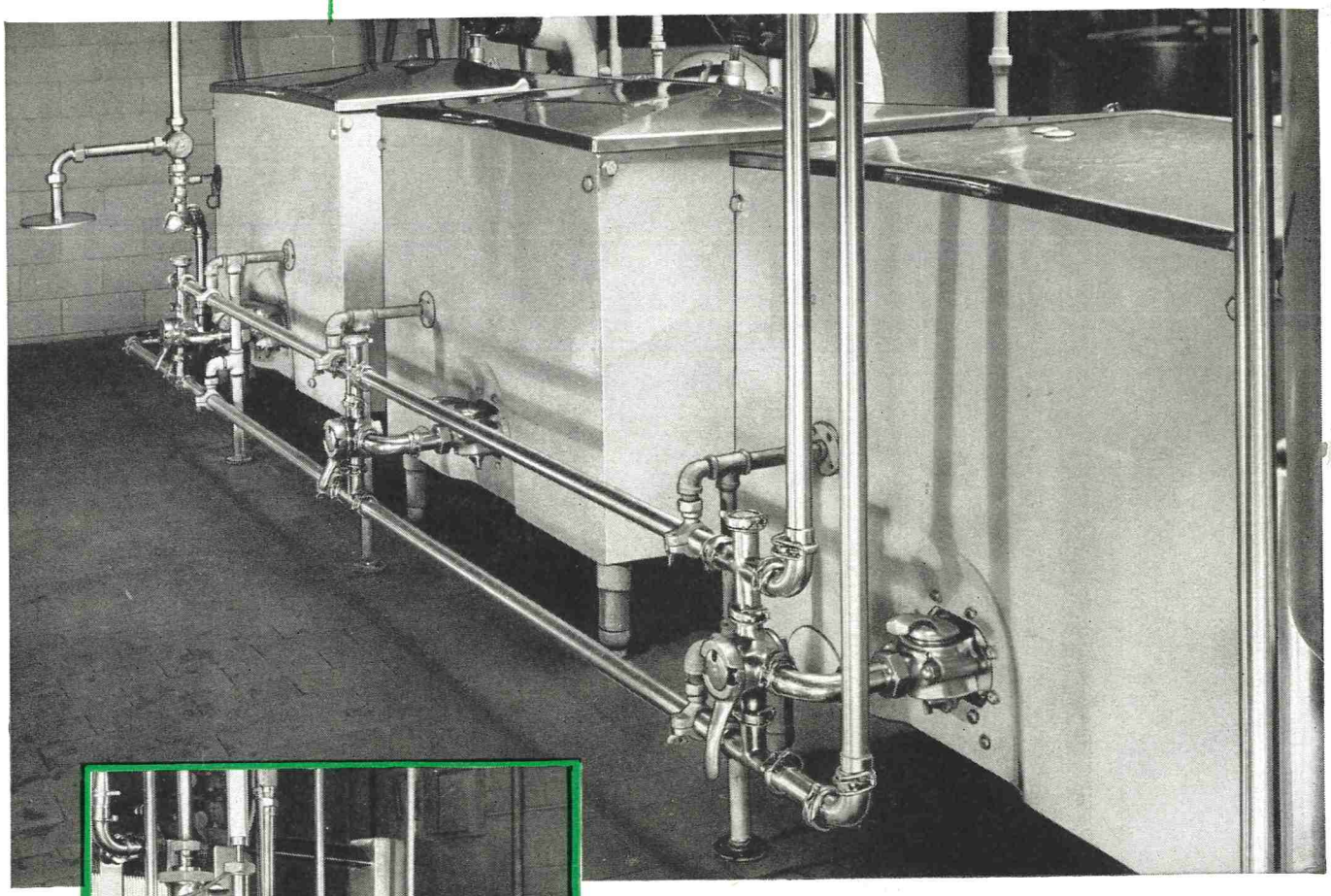

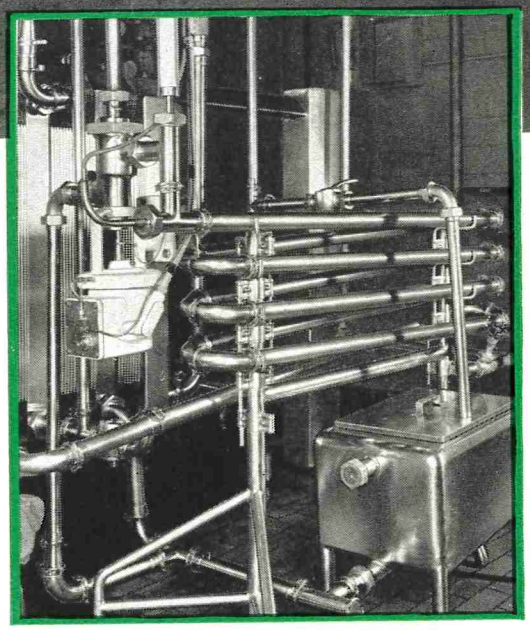

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5	Yes	No
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Vol. 23 June No. 6

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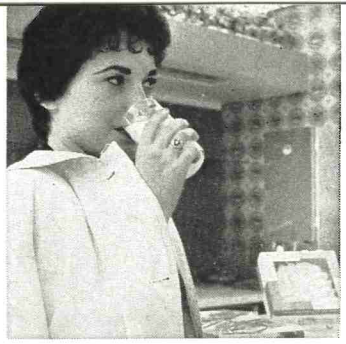

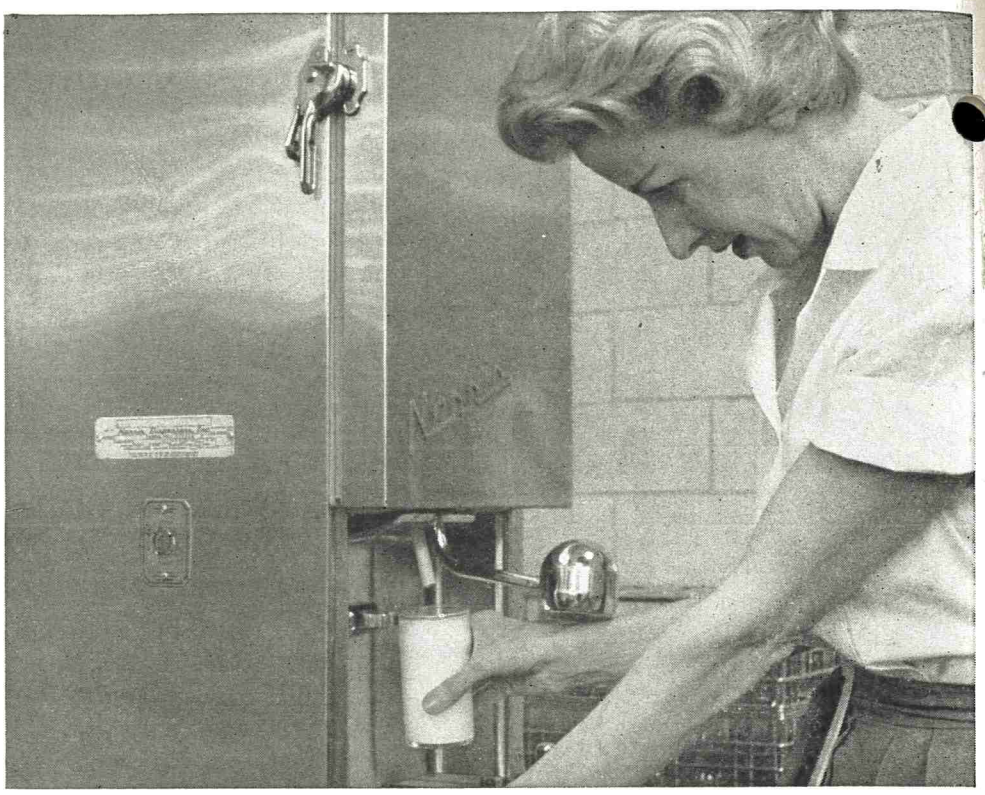

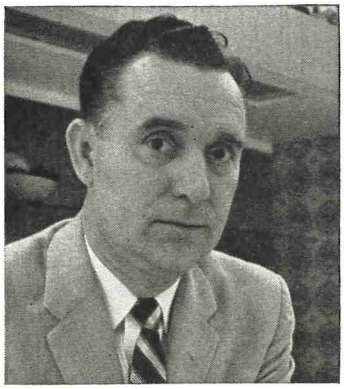

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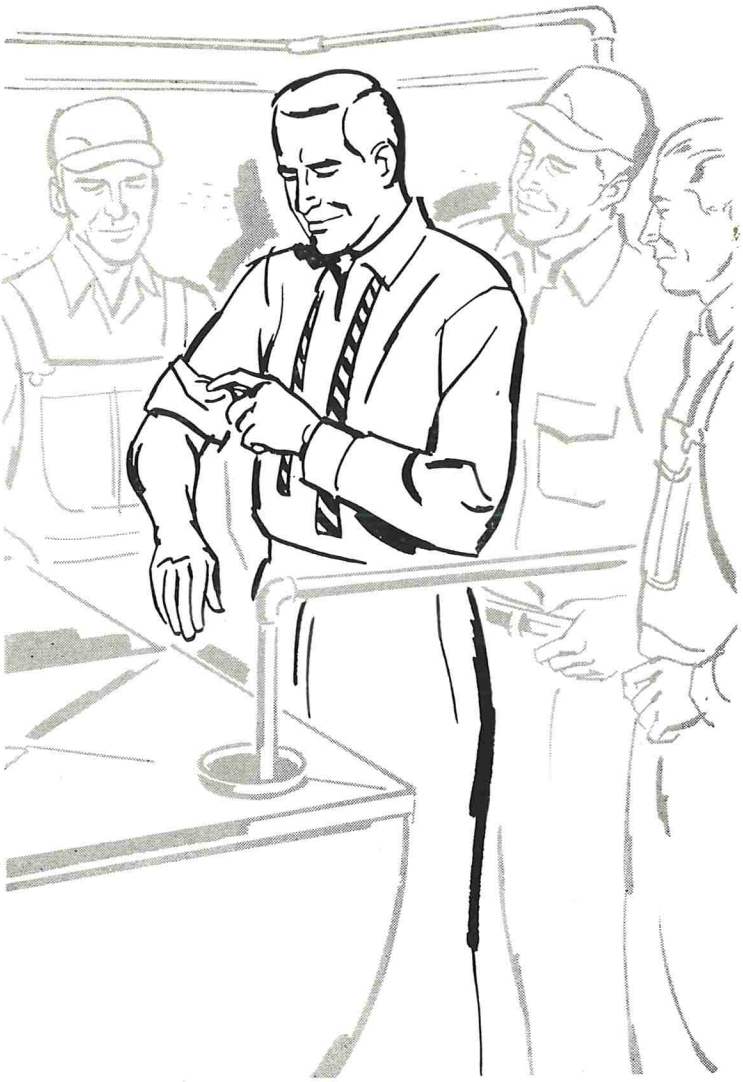

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A PLATE LOOP METHOD FOR DETERMINING VIABLE COUNTS OF RAW MILK[1]

D. I. THOMPSON

Wisconsin State Laboratory of Hygiene, Madison, Wisconsin

C. B. DONNELLY AND L. A. BLACK

Robert A. Taft Sanitary Engineering Center,

Public Health Service, Cincinnati, Ohio

(Received for publication March 1, 1960)

A plate loop count method for determining viable counts of raw milk has been described. The technique uses a 0.001 ml calibrated loop attached to a continuous volume syringe for rinsing the sample into a standard petri dish prior to pouring with agar. Results with this method compare closely with the standard plate count performed simultaneously on the same sample.

The rapid conversion to efficient bulk tank cooling on farms and the general improvement in milk quality has led to the need for more sensitive methods for determining the bacterial quality of Grade "A" producers samples. The direct microscopic count and methylene blue and resazurin reduction tests have been found to be insufficiently accurate for grading low count milk. The standard plate count is relatively accurate but it is time consuming and more expensive.

Rydzewski (*4*) was among the first to describe the use of the loop for making a streak plate to determine the bacterial quality of raw milk. Myers and Pence (*2*) used a calibrated loop to inoculate oval test tubes containing tempered sterile agar to determine counts of laboratory pasteurized samples. Donnelly, Black, and Lewis (*1*) showed that the oval tube method with the 0.001 ml calibrated loop compared closely with the standard plate count in the examination of raw milk.

The use of the calibrated loop to inoculate an agar pour plate will be described in this paper and compared with the standard plate count.

MATERIALS

The special apparatus required for the plate loop count (PLC) consists of a 0.001 ml loop attached to a Cornwall continuous pipetting outfit as shown in Figures 1 and 2. This 0.001 ml transfer and measuring instrument is assembled from the following parts:

(a.) Loop, true circle 0.001 ml welded platinum-rhodium[1] attached to a 50 mm wire shank. (Arthur H. Thomas Co. Cat. No. 7433-C or equivalent.) Inside diameter 1.45 mm ± .06 mm. Loop fits over No. 54 but not over No. 53 twist drill or preferably check dimension with taper gauge (*3*). A 30° (approximate) bend is made 3-4 mm from loop with the loop opening toward the hub. The opposite end of the wire is kinked in several places as shown in Figure 1.

(b.) Luer-lok hypodermic needle (No. 13 gauge) sawed off 24-26 mm from point where barrel enters hub.

(c.) Cornwall continuous pipetting outfit, adjustable, 2 ml capacity. Becton, Dickinson No. 1251. (The rubber tubing supplied with the outfit may be replaced with a longer tube if greater mobility is desired. Repeated autoclaving causes rubber to deteriorate so a supply of tubing should be kept on hand).

The above parts are assembled in the following manner:

(a.) The kinked end of the wire shank is inserted into the sawed off hypodermic needle to a point where the bend is about 12-14 mm from the end of the barrel as shown in Figure 1.

(b.) The luer-lok hub is attached to the luer-lok fitting on the sterile Cornwall continuous pipetting outfit. This apparatus and other parts are sterilized, preferably by autoclaving for 15 minutes at 121°C. However, practical sterilization may be achieved by submerging parts in boiling water for 10 minutes. The loop and shank may be flame sterilized.

[1]Iridium or ruthenium may be substituted for rhodium.

EXPERIMENTAL PROCEDURE

Figure 2 shows the assembled 0.001 ml transfer and measuring instrument ready for use. The end of the rubber supply tube attached to the syringe is placed in a bottle of sterile, phosphate buffered dilution water (*5*). The syringe plunger is depressed rapidly several times to pump the water into glass syringe. The syringe is adjusted to deliver 1 ml of

[1]Work on this project was initiated while the senior author was on active duty as an army reserve officer at the Robert A. Taft Sanitary Engineering Center. The experiments were completed at the Wisconsin State Laboratory of Hygiene, Madison.

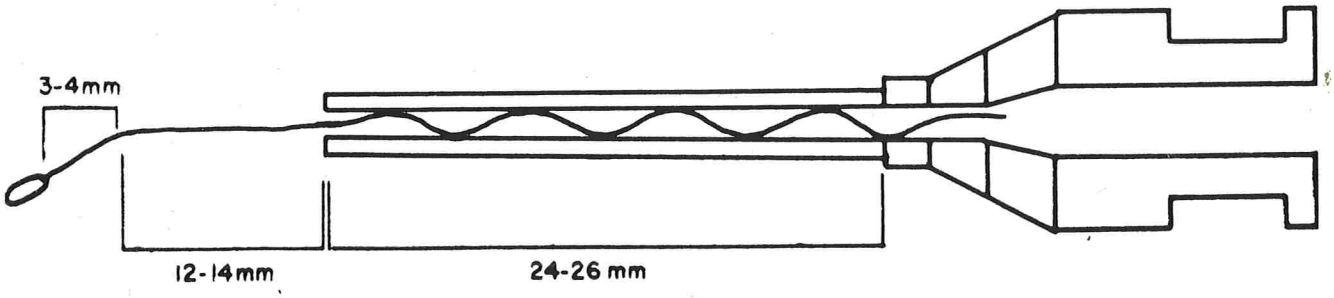

Figure 1. Diagram Showing 0.001 ml. Loop and Wire Shank Attached to the Sawed Off No. 13 Gauge Hypodermic Needle. Wire Shank is Held in Place by Spring Tension.

sterile buffered rinse water with each depression of the plunger.

In examining a series of samples and before initial transfer is made the loop is briefly flamed preferably in a clean, high temperature gas flame and allowed to cool 15 seconds or more. The loop is carefully dipped into the milk sample (avoiding foam) to the bend in the shank and then withdrawn vertically from the surface of the sample. The bend serves as a graduation mark and also permits removing the loop vertically (see Figure 3). Wide mouth sample bottles and good illumination facilitate the inoculation of plates. Figure 4 shows the plunger being depressed causing the dilution water to flow across the charged loop washing the 0.001 ml of sample into the petri dish. Care must be exercised not to depress the plunger so rapidly that the water fails to follow the shank and flow across the loop.

Duplicate plates were poured with 12-15 ml of agar and incubated 48 hours at 35°C. Plates were counted and the count per sample reported as 1000 X the average number of colonies per plate. Samples from plates having an average of 2 colonies or less were reported as less than 3,000/ml.

The standard plate counts were made by plating 1/100 and 1/1000 dilutions of the samples in dupli-

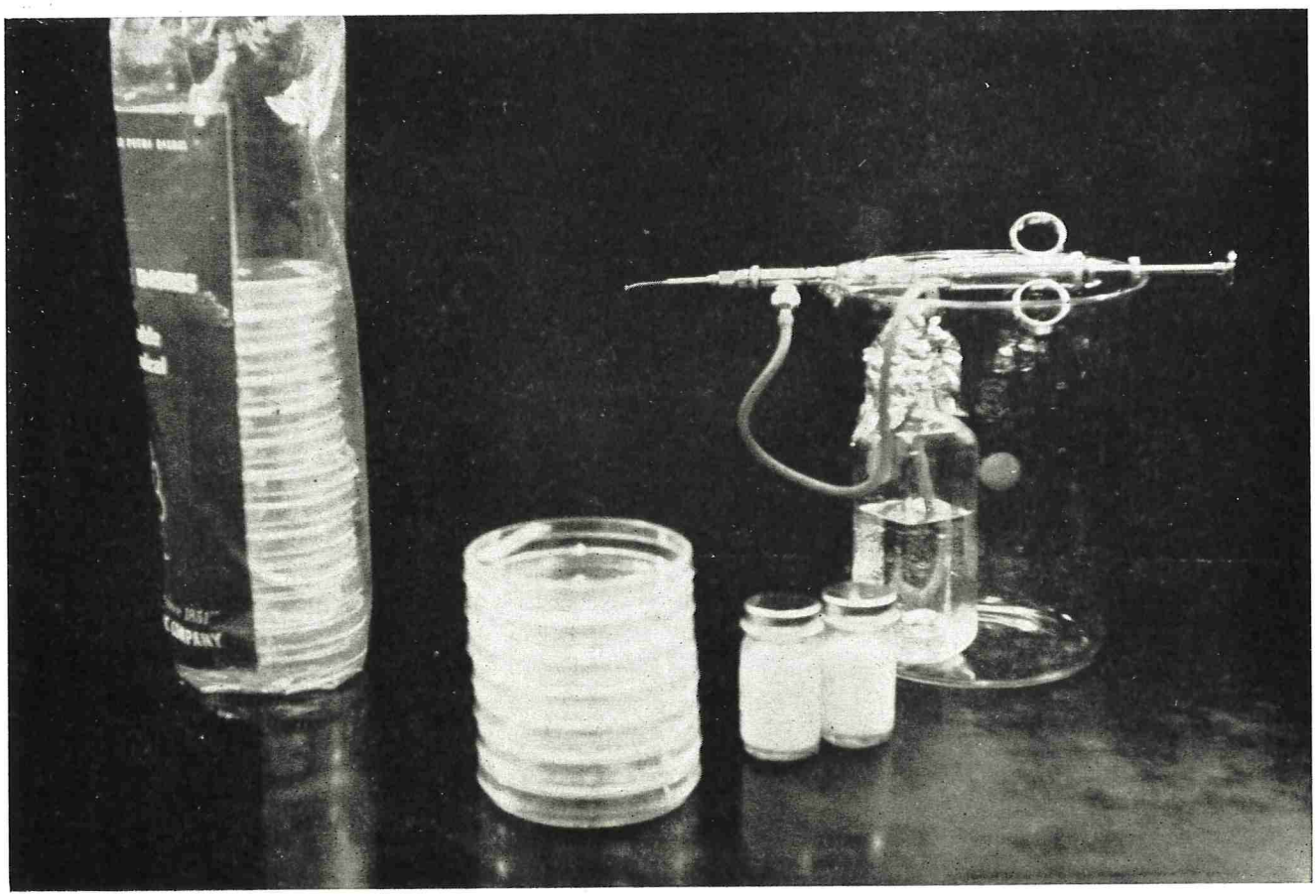

Figure 2. The 0.001 ml Transfer and Measuring Instrument Assembled and Ready for Use.

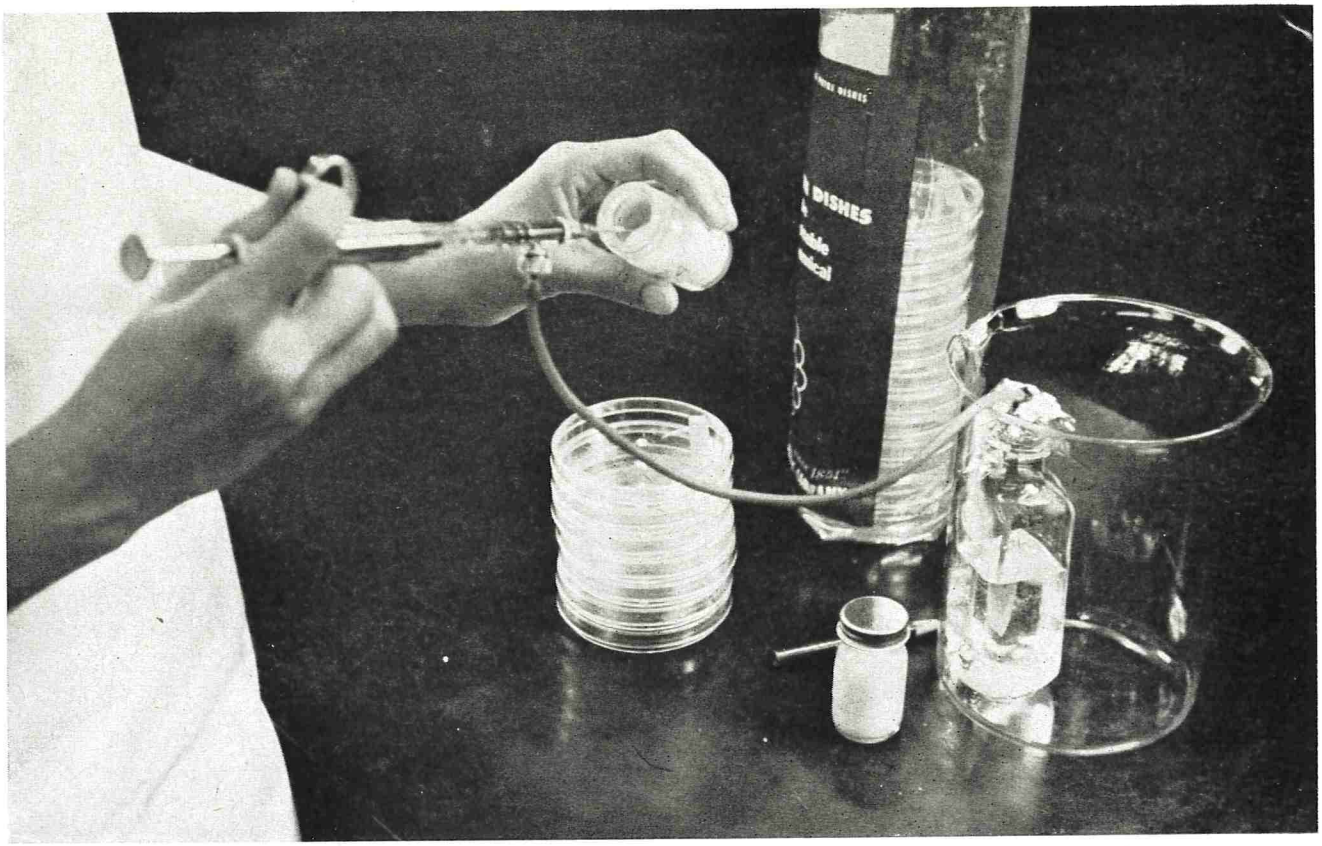

Figure 3. Shows the Loop Being Dipped into the Milk. Good Illumination and Wide Mouth Sample Bottles are Necessary.

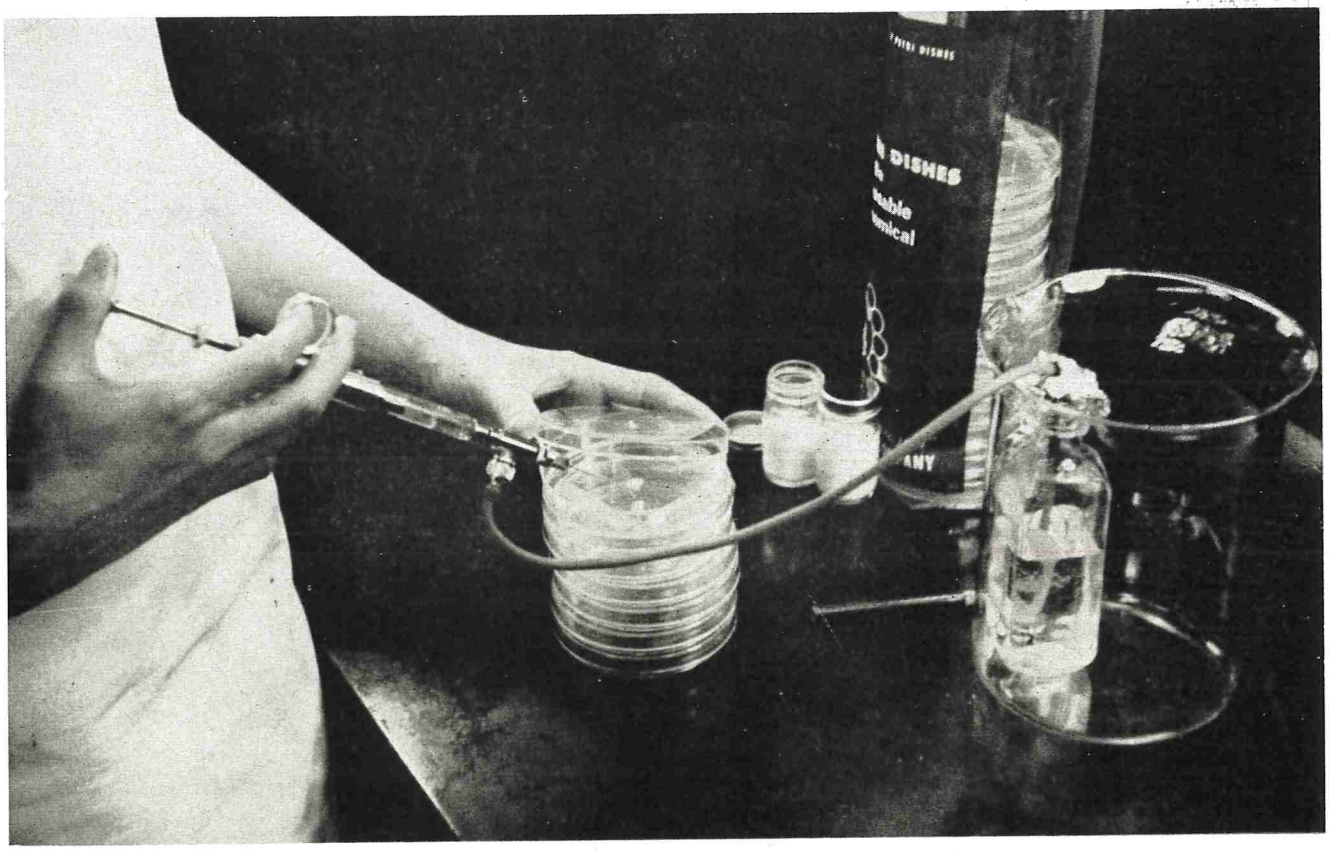

Figure 4. The Plunger is Depressed Washing the 0.001 ml Milk Sample into the Petri Dish.

TABLE 1—RESULTS OF STANDARD PLATE COUNTS AND PLATE LOOP COUNTS ON SAMPLES OF RAW MILK. LOOP WAS FLAMED BETWEEN SAMPLES (EXPERIMENT 1).

Sample No.	SPC/ml 35°C.	PLC/ml 35°C.
1	5,500	4,000
2	720,000	290,000
3	44,000	39,000
4	190,000	160,000
5	33,000	31,000
6	210,000	210,000
7	7,900	11,000
8	32,000	32,000
9	24,000	30,000
10	37,000	38,000
11	5,500	4,000
12	9,600	8,000
13	130,000	130,000
14	36,000	37,000
15	9,200	9,000
16	11,000	17,000
17	65,000	76,000
Log average	34,000	32,000

cate. Duplicate pipettes were used on the dilutions and duplicate dilution bottles were used. Incubation was at 35°C. and Plate Count Agar (Difco) was used in all experiments.

RESULTS

Experiments 1 through 4 were run on separate days over a period of several weeks. A different source of samples was used for each experiment. For the above experiments the loop was flamed over a high temperature Bunsen burner and cooled 15 seconds or more between samples.

The counts on individual samples (Experiment 1) are shown in Table 1. Other than the unusual variation between the two counts in Sample 2 the other samples show close comparisons typical of the results obtained in all experiments. It is conceivable that the wide variation in the results of Sample 2 could be attributed to the increased break up of clumps during the dilution and agitation in the standard plate count.

The results of experiments 2, 3, and 4 are summarized in Table 2. The range of counts and the log averages indicate the degree of comparison between the two methods.

TABLE 3—RESULTS OF STANDARD PLATE COUNTS AND PLATE LOOP COUNTS SAMPLES OF RAW MILK. LOOP WAS NOT FLAMED BETWEEN SAMPLES (EXPERIMENT 5)

Sample No.	SPC/ml 35°C.	PLC/ml 35°C.	Colonies on rinse control plate[a]
69	14,000	19,000	0
70	74,000	80,000	0
71	110,000	120,000	1
72	13,000	10,000	0
73	6,500	6,000	0
74	<3,000	<3,000	0
75	13,000	11,000	0
76	630,000	620,000	1
77	10,000	12,000	0
78	350,000	330,000	0
79	50,000	66,000	0
80	3,600	4,500	0
81	79,000	49,000	0
82	470,000	420,000	0
83	16,000	18,000	0
84	190,000	150,000	1
85	16,000	22,000	0
Log average	36,000	36,000	

[a]Prepared by discharging 1 ml of sterile rinse water (buffered dilution water) across shank and loop after discharging sample into petri dish.

TABLE 2—SUMMARY OF RESULTS OF STANDARD PLATE COUNTS AND PLATE LOOP COUNTS OF EXPERIMENTS 2, 3, AND 4.

Experiment number	No. of samples	Range of counts at 35°C.		Log averages	
		SPC/ml	PLC/ml	SPC/ml	PLC/ml
2	18	3,600-300,000	3,000-290,000	15,500	15,500
3	17	<3,000-260,000	<3,000-260,000	26,000	28,000
4	16	3,500-280,000	4,500-280,000	22,500	25,500

Variations between the standard plate count and the plate loop count on the same sample are usually of the same order of magnitude as variations in replicate platings of the same sample with the standard plate count.

Table 3 (Experiment 5) shows the comparison of counts between the 2 methods on 17 samples of raw milk. In this experiment the loop was flamed initially as was done in Experiments 1 through 4 but the loop was not flamed between samples. However, the loop was rinsed off in the samples by moving it back and forth just below the surface of the milk at least 5 times before submerging the loop to the bend and withdrawing vertically. The 0.001 ml sample was discharged into the petri dish as previously described. The control plate was made by flushing off the discharged loop and shank into a sterile petri dish with the 1-ml volume of sterile rinse water. These results indicate that the residual remaining on the loop after discharging the sample is not significant. However, this should be determined for each loop by running a series of control plates. Small imperfections in the welding of the loop or in the smoothness of the metal surface could cause incomplete rinsing. If the loop is determined to be free rinsing the method employing no flaming between samples is recommended as the normal procedure with the plate loop count technique.

DISCUSSION

The plate loop count described here compares closely with the standard plate count. It can be satisfactorily carried out without flaming the loop between samples. In addition the plate loop count requires a minimum investment in new laboratory apparatus. The standard petri plates are readily counted in the Quebec colony counter. The rapid pipetting procedure at least doubles the number of samples each person can plate as compared with the standard plate count. Milk plants that have minimum laboratory facilities may use pre-sterilized plastic petri dishes that are disposable and relatively inexpensive.

REFERENCES

1. Donnelly, C. B., Black, L. A., and Lewis, K. H. An Evaluation of Simplified Methods for Determining Viable Counts of Raw Milk. In Press.

2. Myers, R. P., and Pence, J. A. A Simplified Procedure for the Laboratory Examination of Raw Milk Supplies. J. Milk Technol., **4**: 18-25. 1941.

3. Robertson, A. H., Hynds, C. E., and Durham, H. L. Specifications for Babcock and Certain Other Volumetric Determinations. J. Milk and Food Technol., **21**: 309-317. 1958.

4. Rydzewski, G. S. A New Practical Qualitative Milk Test. The Rydzewski Standard Loop Colony Count. The Milk Dealer, **26**, (6): 42-44. 1937.

5. *Standard Methods for the Examination of Dairy Products*, 10th Ed. Am. Public Health Assoc., Inc., New York, N. Y. 1953.

3-A SANITARY STANDARDS FOR FARM MILK COOLING AND HOLDING TANKS – REVISED

(Originally Published July 16, 1953)

Serial #1301

Formulated by

International Association of Milk and Food Sanitarians

U. S. Public Health Service

The Dairy Industry Committee

It is the purpose of the IAMFS, USPHS, and DIC in connection with the development of 3-A Sanitary Standards, to allow and encourage full freedom for inventive genius of new developments. Farm Milk Cooling and Holding Tanks which are developed which so differ in technique, design, material and construction, or otherwise, so as not to conform to the following standards, but which are, in the opinion of the manufacturer or fabricator, equivalent or better, may be submitted at any time for consideration by IAMFS, USPHS and DIC.

SCOPE

These sanitary standards pertain to the material, design and fabrication of tanks in which bulk milk is cooled and stored on dairy farms. They do not apply to tanks which fall into the category of "Storage Tanks for Milk and Milk Products."

Tanks as defined above shall be considered to meet the 3-A Sanitary Standards when they comply with the following requirements in A—MATERIAL, B—FABRICATION, and C—COOLING.

A—MATERIAL

1. All portions and parts in contact with milk and all surfaces from which milk or condensate may drain or drop into the tank, except those identified in A 6 and A 7 (a) to (h) inclusive, shall consist of 18-8 stainless steel, with carbon content not exceeding 0.12 percent. The weld areas and the deposited weld material shall be substantially as corrosion-resistant as the parent material.

2. *Lining*: The lining shall be made of at least 18 U. S. Standard Gauge Material.

3. *Insulation*: The insulation of the tank shall be of a nature and thickness to prevent a temperature increase greater than 5 degrees Fahrenheit in 12 hours, with the tank filled to capacity with water, and when the temperature differential between water and that of the atmosphere is 50 degrees Fahrenheit. The water shall be agitated before temperature readings are taken. Power must be off during the 12-hour test period.

4. *Outer Shell*: The outer shell or that portion of the material covering the exterior of the insulation or heat exchange jacket, and all other external surfaces, shall be of a metal or other waterproof material which is smooth, nonabsorbent and durable.

5. *Legs*: Tank supporting legs, if used, shall be of metal, with relatively smooth outer surfaces on portions which are to be exposed above the floor, upon installation.

6. *Outlet Valve*: The outlet valve shall be made of material or materials prescribed in the 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment And Used On Sanitary Lines Conducting Milk And Milk Products" and Supplements thereto.

7. *Other Parts*: The following parts having contact with milk or having surfaces from which milk may drain or drop into the tank, if not of 18-8 stainless steel, shall be made of material that is nontoxic, relatively stable, relatively nonabsorbent, corrosion-resistant, and capable of withstanding cleaning and bactericidal treatment, and shall have smooth surfaces:

(a) Measuring device, other than submersion-type rod.
(b) Slinger or drip shield.
(c) Agitator seal, on vacuum tanks.
(d) Agitator bearing.
(e) Protective cap for sanitary tube or fitting.
(f) "O" rings, seals and gaskets.
(g) Sight and light glasses.
(h) Moisture trap on vacuum line, when provided.

B—FABRICATION

All milk contact surfaces shall be visible, easily accessible, and readily cleanable when in operating position, or, if not, when disassembled. The surfaces

of the stainless steel parts shall be at least as smooth as No. 4 mill finish on stainless steel sheets, or 120 grit finish properly applied. The measuring device, if of stainless steel, may have a dull finish to facilitate reading.

All permanent joints in milk contact surfaces shall be welded, and all weld areas shall be ground smooth and polished to a finish at least as smooth as the adjoining surfaces.

1. *Lining*: The lining shall remain in relatively fixed position within the outer shell or body of the tank, and shall be so constructed that it does not sag, buckle, or become distorted from any condition of normal use. If designed for use on a vacuum system, the construction shall be such that the lining shall not be distorted when the internal pressure is equivalent to a vacuum of 20 inches of mercury.

The bottom of the lining shall be pitched to the outlet, to effect complete drainage when the tank has been leveled to calibrated operating position. All corners of the lining having inside angles of less than 135 degrees shall have radii of not less than ½ inch. All accessories, bridges, or appurtenances which are welded to the lining, and which have an inside angle of less than 135 degrees, shall have minimum radii of ¼ inch where planes intersect.

2. *Breast*: The breast, or that portion of the metal used to join the lining to the outer shell, shall be integral with or welded to the lining, and shall be sloped or so arranged that all drainage is away from the lining of the tank.

3. *Outer Shell*: The outer shell shall effectively be sealed against moisture and vermin at all joints and at junctions with the breast, manhole flares, outlets, and other openings. The surfaces of the outer shell may be rendered corrosion-resistant by a protective coating, such as paint. Surfaces to be painted shall effectively be prepared for painting, and the paint used shall adhere, be relatively nonabsorbent, and shall provide a smooth, cleanable, and durable surface.

4. *Insulation*: The insulation shall be installed so that it cannot shift nor develop voids under normal conditions to which the tank is subjected.

5. *Openings*:

(a) *Tanks designed to be operated under atmospheric pressure.* The edges of all openings in the covers and the bridge shall be flanged upward at least ⅜ inch. Unless a pipeline connection or opening is provided, an opening or openings shall be provided to support securely a strainer or strainers of sufficient size and number to insure that a volume of milk equal to one-half the capacity of the tank, if designed for every day pickup, and one-fourth the capacity of the tank, if designed for every-other-day pickup, may be strained into the tank during a period not to exceed 90 minutes.

When a pipeline connection is provided, it may be located in the bridge, a fixed cover, main cover, or in a strainer opening cover. The pipe connection or opening shall accommodate at least a 1-½ inch tube or fitting conforming to 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment And Used On Sanitary Lines Conducting Milk And Milk Products."

Each opening in the bridge, (except that for the agitator shaft) or in a fixed or main cover or strainer opening cover, shall be provided with a lift-off cover which is designed to make closure contact at flange or cover surface, and to remain in position on the opening flange when the main cover is in the maintained open position. Lift-off covers shall be self-draining to outside edges, shall have a downward flange of not less than ¼ inch, and shall be provided with durable handles of sanitary design.

The main opening or openings shall be of sufficient number, adequate in size, and so located that all milk-contact surfaces of the tank are easily accessible and, except for the milk-contact surfaces of those parts which are designed to be removed for cleaning, can be inspected visually without completely entering the tank.

(b) *Tanks designed to be operated under vacuum.* The metal used to join the lining and the outer shell at all openings in the top, sides or ends of the tank shall be integral with or welded to the lining, and shall extend upward or outward at least ⅜ inch above or beyond the outer shell or exterior surface, and the outer shell shall be sloped away from the raised rims of openings so as to provide drainage away from the openings. Openings of the tank shall be of such construction that milk-contact surfaces drain inward; and, if exterior flares or flanges are incorporated, accumulation of liquids is prevented, and adjacent surfaces are free draining.

The main opening or openings shall be of sufficient number, adequate in size, and so located that all milk-contact surfaces of the tank are easily accessible and, except for the milk-contact surfaces of those parts which are designed to be removed for cleaning, can be inspected visually without completely entering the tank. Means for straining milk into a tank designed for operation under vacuum, but which is operated without vacuum, shall be made available. If special covers with strainer openings are made available, they shall comply with B 5 (a).

The vacuum connection shall consist of standard stainless steel tubing, not less than 1 inch in diameter and not longer than 4 inches. (See Appendix—A).

Sight or light openings, when provided, shall conform in design and construction to the provisions in the first paragraph of B 5 (b), and the glasses shall be demountable for cleaning. The diameters of such openings shall be not less than 4 inches.

Gaskets for covers for openings, manholes, and sight and light openings shall be removable. A gasket groove or gasket retaining groove shall be no deeper than its width. The minimum radius of any internal angle in a gasket groove or gasket retaining groove shall be not less than ⅛ inch.

(c) *Tanks requiring complete entry for manual cleaning and/or inspection.*

The requirements of B 5 (a) and B 5 (b) pertaining to openings for accessibility and visual inspection without entering the tank may be waived in the case of tanks having such dimensions that the milk-contact surfaces are not readily accessible from the exterior, and the tank must be completely entered for manual cleaning and/or inspection. Such a tank shall be provided with a manhole(s) or an opening(s) having dimensions of not less than 18 inches diameter, 15 x 20 inches oval, or 12 x 27 inches elliptical. In such a tank, the maximum and the minimum vertical dimensions of the tank interior shall be 96 inches and 42 inches, respectively.

6. *Main Covers and Bridges:*

(a) The top surfaces of covers in the closed position shall be self-draining, and, unless gasketed, shall be provided with a ⅜ inch minimum flange on all edges. Covers, unless gasketed, shall be fitted with a maximum clearance between designed contact closure surfaces of 3/32-inch, shall contact only stainless steel or corrosion-resistant surfaces. If gasketed, they shall be gasketed in such a manner that the gasket(s) has a minimum of milk contact surface. All interior angles of 135 degrees or less on covers shall have ¼-inch minimum radii.

A main cover, without provisions for maintaining it in the open position, shall be easily removable and shall not exceed 24 x 30 inches, or 30 inches in diameter, and shall be designed to prevent drainage or fall of liquid or other contamination from outside of the cover into the milk compartment when the cover is in the closed position.

Main covers, which are designed to be cleaned and inspected without removal from the tank, shall be of a type which can be opened and maintained in an open position which provides space sufficient to permit cleaning and inspection of all milk-contact surfaces, including the underside of any fixed cover or bridge. When covers are in any open position, liquid from the exterior top surface shall not drain into the milk compartment. When the covers are in their fully opened position the drops of condensate, formed on the undersides of the covers, shall not drain into the milk compartment. Covers shall be provided with adequate, conveniently located, and durable handles of sanitary design, which are welded in place or formed into the cover material.

The covers of openings so located that they will be retained in position by gravity, or by vacuum, may be of the lift-off type, and may be provided with clamps or another device to maintain them in position. Lift-off covers shall be self-draining to the outside edge(s), and each shall be provided with a durable handle of sanitary design.

Hinged covers for openings in the ends or sides of tanks shall be of the inside or outside-swing type. If the cover swings inside, it shall also swing outside, away from the opening, for disassembly and cleaning. No threads nor ball joints shall be employed within the tank interior to attach the cover and its appendages. Hinged covers and appendages shall be removable without tools.

(b) Generally horizontal fixed covers, located at ends or sides of a tank (or segments of cylindrical tanks) with generally vertical side walls, shall not extend more than 12 inches over the surface of the milk, shall be pitched to an outside edge of the tank for complete drainage, and shall have a flange of not less than ⅜-inch where the edge meets the main cover.

Generally horizontal fixed covers shall be so installed that the undersides are visible and easily accessible for cleaning and inspection, without completely entering the tank.

(c) The bridge shall not exceed 24 inches in width, shall be pitched to the outside edge(s) of the tank for complete drainage, and shall have a raised flange of not less than ⅜-inch where edges meet main covers. The bridge shall be so installed that the underside is visible and easily accessible for cleaning and inspection.

(d) The sides and end walls of the lining may extend upward and inward in a generally curved fashion closing the top, in lieu of fixed covers or bridges. A tank of this type shall have sufficient openings to comply with B 5.

(e) The water compartment on a tank designed for refrigerated water cooling shall be covered. The cover shall be fitted with a maximum clearance between designed contact closure surfaces of 1/16-inch.

7. *Thermometer*: Each farm tank shall be provided with an indicating thermometer having a minimal range of 32 degrees Fahrenheit to 80 degrees Fahrenheit, with scale divisions of not less than 1/16-inch per 2 degrees Fahrenheit. The thermometer shall be accurate to plus or minus 2 degrees Fahrenheit at 50 degrees Fahrenheit, and shall be protected to withstand temperatures of 0 degrees to 212 degrees Fah-

renheit, without loss of accuracy, and the bulb shall be located or installed so as to permit registering the temperature of the milk when the tank contains no more than 20 percent of its calibrated capacity.

The thermometer shall be one of the two following types:

(a) Bulb securely fastened to the outer surface of lining to indicate the milk temperature only.

(b) Cover or bridge inserted type the connection of which conforms to the 3A3 Umbrella Flange in the 3-A "Sanitary Standards For Thermometer Fittings And Connections Used On Milk And Milk Products Equipment."

8. *Outlets*: A milk outlet is defined as the opening in the lining, and the passage for milk to the exterior of the tank. This outlet shall be of sanitary construction and all welded (except that a rolled-on ferrule or flange beyond the outer shell may be used), shall be readily cleanable, and shall have an outside diameter equal to or larger than that of standard 1-½ inch stainless steel tubing having an inside diameter of not less than 1.25 inch. The exterior end of the milk outlet passage shall not extend more than 2-inches beyond the outer shell of the tank or the outside face of an alcove.

The milk outlet passage shall terminate outside the outer shell and shall be fitted with a rolled-on or welded ferrule, or shall be fitted with a rolled-on or welded flange for a flanged type close-coupled valve. In no case shall the ferrule or flange be located under the exterior tank bottom. When the outlet is fitted with a valve, the sealing surface of the valve shall not be more than 4-¾ inches beyond the exterior wall of the tank. The distance from the lowest interior surface of the outlet conection to the floor shall not be less than 4 inches.

Every tank shall be furnished with an outlet of one of the following types:

(a) *Horizontal type*: A horizontal type outlet is defined as consisting of an opening in the lining, at its lowest point and through an end or side wall of the tank, and a generally horizontal milk passage to the exterior of the tank. The lower surface of the milk passage shall be level with or below the surface of the lining bottom. The milk passage shall pass through the space between the lining and the outer shell, and shall be pitched for drainage.

(b) *Vertical type*: The vertical centerline of a vertical type outlet shall be as close as practical to an adjacent wall. The milk passage shall be a generally horizontal extension of an elbow which is integral with or welded to the opening in the lining, and shall follow the shortest possible course to the exterior of the tank, except that no part thereof shall pass through the bottom of the outer shell of the tank, when milk is to be held in the passage.

(c) *Withdrawal-tube type*: A withdrawal-tube type of milk outlet is one by which milk is removed from the tank, by means other than gravity, through a generally vertical section of sanitary tubing which passes through a cover, bridge or the jacket.

The withdrawal-tube shall be removable, but shall be firmly positioned at the top of the tank by means of an appropriate fitting, so that the bottom end of the tube will be located in a suitable well in the bottom of the lining. The well shall not be more than 4-inches from an end or a side wall of the lining, with an outlet for wash solution, as described in B 8 (a), except that the lower surface of the wash solution outlet shall be level with or below the bottom surface of the well and shall be pitched for drainage. The withdrawal-tube shall be provided with a cap at its upper end, conforming to 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment and Used On Sanitary Lines Conducting Milk And Milk Products." Drawing No. 3A-100-11; or with a cap of sanitary construction made of material identified in A 7.

9. *Outlet Valve*: Except as provided for in (a) below, the outlet valve and the cap for the threaded terminal of the valve shall conform to 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment And Used On Sanitary Lines Conducting Milk And Milk Products" and Supplements thereto; however, a cap of sanitary construction made of materials identified in A 7 may be provided. The additional provisions described below shall apply to the following types:

(a) *Compression type*: A compression type valve with metal to metal or rubber or rubber-like material to metal seat, shall be readily demountable and easily cleanable. An "O" ring groove shall have a radius of not less than one-half the diameter of the "O" ring or 1/16 inch, whichever is greater. When a compression type valve is within the tank or the milk passage, and the seat is an integral part of the tank lining or milk passage, an exception may be made to the requirement for conformity with 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment And Used On Sanitary Lines Conducting Milk And Milk Products" and Supplements thereto.

The handle or valve operating rod of a compression type valve, if within the milk compartment, shall extend above the bridge or the main cover, or the handle shall be located outside the outer shell.

(b) *Flanged type*: When a flanged type close-coupled plug valve is used, the outlet passage of the tank shall be welded to the lining of the tank in

such a manner that contamination from inside the jacket or exterior wall of tank cannot enter the milk passage, and it shall be designed so that the valve body can be mounted on the flange with a multiple-use gasket or a single-service gasket. (The use of mastic or gum-like material is not acceptable). The outlet passage and the valve bore shall be of the same inside diameter, and concentric.

10. *Distributors*: A distributor, if installed for spreading milk in a film over the cooling surface of a tank, shall be readily removable, or shall be an integral part of the cooling surface. Internal angles of less than 135 degrees shall have radii of not less than ¼ inch. Holes for spreading milk shall be chamfered and finished as smooth as the parent metal. The distributor shall be of sufficiently rigid construction to resist distortion in the normal method of removing, washing, and replacing. Supports shall be so designed that the distributor is in contact with the cooling surface throughout its entire length, except for necessary milk flow space; that a uniform milk level is assured throughout its entire length; and that it cannot rock or tilt so as to prevent milk from being directed against the cooling surface.

If removable, the distributor shall be readily removable by one individual. If integral with the tank lining, the distributor shall be readily accessible, easily cleanable, and all areas shall be visible for inspection.

11. *Tank Supports*:

(a) *Legs*: Adjustable legs, when used, shall be of sufficient number and strength and so spaced that the filled tank will be adequately supported. Legs shall have closed bases. Exteriors of legs and leg sockets shall be corrosion-resistant, or shall be rendered corrosion-resistant, and shall be readily cleanable. (Paint on non-wearing surfaces is considered acceptable.) Legs shall be of such a length that a 6 inch minimum clearance will be provided between the floor and the bottom of a tank 72 inches or less in diameter or width, except in the case of a V-bottom or a rounded bottom tank of which the outer shell slopes continually upward from the outlet centerline, in which case the minimum clearance may be 4 inches if it increases to 6 inches within a horizontal distance of not more than 12 inches on each side of this centerline. On a tank more than 72 inches in diameter or width, the minimum clearance shall be 8 inches. (Where Weights and Measures Codes require that a seal be placed on the legs to detect height adjustment after the tank has been leveled or calibrated, the holes for the seals shall be designed and located, or sealed, to prevent entrance of moisture into the legs.)

(b) *Islands*: (See Appendix–B)

12. *Means of Agitation*: An agitator(s) shall be provided that will result in homogeneity of the milk with the agitator in operation for not more than five minutes. Testing for homogeneity shall be conducted under normal operating conditions, with the tank filled to not less than 25 percent nor more than 100 percent of its rated capacity, and with the temperature of the milk at 40 degrees Fahrenheit.

The milk in a tank shall be considered homogeneous when the fat content determinations on samples from different levels in the tank, and at extreme distances from the source of agitation, do not vary more than plus or minus 0.1 of one per cent. Agitation of the milk shall be possible when the tank contains 15 per cent of the tank's rated capacity.

Mechanical agitator assemblies shall consist of the following components:

(a) *Driving mechanism*: The driving mechanism shall be securely mounted in a position that will provide a minimum distance of 4 inches measured from the base of the agitator shaft opening flange to the bottom of the drive housing, excluding bearing bosses and mounting bosses; and in such a manner that all surfaces of the tank under or adjacent to the driving mechanism shall be readily accessible for cleaning and inspection.

(b) *Coupling, shield and seal*: The coupling between the drive mechanism shaft and the agitator shaft shall be above the bridge, the cover, or the top of the tank, as well as above the shield or rotary seal.

A diverting shield of durable construction shall be provided to protect against the entrance into the tank of splash, condensation, oil, insects and other contaminants through the annular space around the agitator shaft. If the diverting shield is part of the coupling, it shall be readily removable for cleaning. The diverting shield shall be constructed and positioned to provide a maximum clearance of 3/32 inch from the shield to the adjacent portion of the bridge, the cover, or the flanged protection around the agitator shaft, whichever applies.

A rotary seal for the agitator shaft shall be provided on tanks designed to be operated under vacuum. The seal shall be of a packless type, sanitary in design, with all parts readily accessible for cleaning.

(c) *Shaft opening*: The opening for the agitator shaft, located in the cover, bridge, or the top of the tank, shall be of sufficient diameter to provide a 1-inch minimum annular cleaning space for agitator assembly.

(d) *Agitator assembly*: When the agitator assembly is designed to be removed from the tank for cleaning, it shall be constructed so that it can readily be disassembled and assembled, and when a lower

bearing is furnished, permits cleaning and visual inspection of the bearing. An agitator assembly that is designed for removal for cleaning and inspection may have a space less than 1″ between the agitator blades and the closest point of the lining.

When the agitator assembly is not designed for removal from the tank for cleaning, it shall be constructed so that all milk contact surfaces are accessible for cleaning and for visual inspection in the operating position. An agitator assembly which is not designed for removal for cleaning shall have a 1-inch minimum space between the agitator blades and the closest point of the lining, unless the agitator assembly is mounted on a swing-up type cover. A bottom shaft bearing shall not be used when the agitator assembly is not designed for removal from the tank for cleaning.

All interior angles of the portions of the agitator assembly having milk-contact surfaces shall have ¼ inch minimum radii. The bottom guide bearing shall be readily removable, shall be of sanitary design, and shall permit quick and easy accessibility to all surfaces for inspection and cleaning. The welded guide bearing-support shall be so positioned as not to interfere with drainage.

13. *Measuring Device*: The immersion type measuring rod or the surface level gauge, shall comply with the requirements of The National Bureau of Standards Handbook 44 - Second Edition, 1955, on Farm Tanks (pages 103 to 108 inclusive), and with the following added specifications:

(a) *Immersion type*: An immersion type measuring rod shall have graduation marks not less than .005 inch in width and not exceeding .008 inch in depth. The handle and the measuring rod supporting-device shall be welded to the measuring rod, with welds ground smooth. The handle shall extend above the bridge or main cover, or shall be located outside of the outershell. The opening through which the measuring rod extends shall be protected against contamination entering the tank from that portion of the measuring rod outside of the tank. The tank serial number stamped or etched on the rod shall be located as high on the rod as is practicable.

(b) *Surface gauge type*: The bottom cap of the surface gauge type of measuring device, with integral surface contact points, shall be readily and easily cleanable; and, if used with a transparent tube, shall be attached to the tube in such a manner that the joint can easily be cleaned, as a unit or when separated. The opening through which the measuring device extends shall be protected against contamination entering the tank.

C–COOLING

Tanks shall be capable of cooling milk as follows:

1. *First Milking*:

(a) A tank designed for every day pickup shall cool 50 percent of the rated volume of the tank containing raw milk, from 90 degrees Fahrenheit to 50 degrees Fahrenheit within one hour after the tank has been filled to 50 percent of its rated capacity, with the cooling system in operation during the filling period. The cooling system shall then cool the above volume of raw milk from 50 degrees Fahrenheit to 40 degrees Fahrenheit within the next hour.

(b) A tank designed for every-other-day pickup shall cool 25 percent of the rated volume of the tank containing raw milk from 90 degrees to 50 degrees Fahrenheit within one hour after the tank has been filled to 25 percent of its rated capacity, with the cooling system in operation during the filling period. The cooling system shall then cool the above volume of raw milk from 50 degrees Fahrenheit to 40 degrees Fahrenheit within the next hour.

2. *Second or Subsequent Milkings*:

The cooling systems of tanks, whether designed for every day or for every-other-day pickup, shall be capable of preventing the blend temperature of the milk in the tank from rising above 50 degrees Fahrenheit at any time during the addition of the second or subsequent milkings.

3. *Test Procedure*:

The capability of a farm cooling tank to meet the cooling requirements specified in C 1 and C 2 above, within the periods of time allowed, shall be determined by the following test procedure:

(a) Tests of all equipment shall be conducted at 90 degrees Fahrenheit ambient temperature. When water cooled condensors are used the refrigerant condensing temperature shall be not less than 103 degrees Fahrenheit. For test purposes 90 degrees Fahrenheit water may be substituted for milk.

(b) The total amount of milk or water to be added to simulate each milking shall be divided into 18 equal pourings with a pouring taking place every 5 minutes (total filling period 1½ hours).

(c) The cooling system shall be in operation at the start of the filling period.

(d) The condensing unit shall be allowed to operate and automatically shut off before the addition of the second or subsequent simulated milking(s). (Tank must be capable of meeting the cooling requirements specified in C 2 above when tested once every twelve hours.)

(e) Before the addition of the second or subsequent simulated milkings, the water or milk in the tank shall be cooled to 37 degrees Fahrenheit.

(f) The temperature measurement shall be taken immediately prior to each pouring and at 5 minutes after the last pouring.

4. *Cooling System*:

(a) When the condensing unit is an integral part of the tank it shall have sufficient capacity to supply the refrigeration required to meet the provisions of C 1 and C 2.

(b) When the condensing unit is not an integral part of the tank, the tank shall have clearly and permanently indicated thereon the following information which shall be based upon the size of the condensing unit required to meet the provision of C 1 and C 2.

Minimum condensing unit capacity required for (specify E.D. and/or E.O.D.) operation is *_____E.D.; *_____ E.O.D. Btu/hr at *_____°F. saturated suction temperature.

*The Btu capacity specified is to be at the saturated suction temperature designated by the manufacturer.

(c) The tank shall be clearly and permanently identified as to whether it is designed for every day or every-other-day pickup.

(d) The tank shall be provided with an automatic refrigeration control capable of functioning at a differential of not more than plus or minus 2 degrees Fahrenheit at 37 degrees Fahrenheit.

Appendix

A. The vacuum line and moisture trap prescribed in B 5 (b) is generally furnished by another manufacturer or dealer.

When vacuum piping is provided, the stainless steel piping downstream from the ell connected to the tank should slope downward and away from the tank, with a pitch of not less than 1 inch in the first 12 inches, to a moisture trap.

B. When a tank is designed to be installed on an island, the dimensions of the island should be such that the tank will extend beyond the island at least one inch in all horizontal directions, to prevent liquid from the outer shell seeping under the tank. Such tanks should be constructed so that legs, as described in B 11 (a), can readily be installed at any time. The island supporting the tank should be of sufficient height that the bottom surface of the horizontal milk outlet connection is not less than 4 inches above the floor. The surface of the island should be coated with a thick layer of waterproof mastic material, which will harden without cracking, to seal the bottom of the outer shell of the tank from air and moisture after the tank has been leveled or calibrated. The junction of the outer shell of the tank and the island should be sealed.

C. When compressed air is used for agitation of the milk, the air shall be processed to remove dust, insects and extraneous material. The air piping installation used to convey the air shall be designed to prevent siphoning or backflow of milk into the air piping outside of the tank. The air tubing within the tank shall conform to the provisions for tubing in the 3-A "Sanitary Standards For Fittings Used On Milk And Milk Products Equipment And Used On Sanitary Lines Conducting Milk And Milk Products," and shall be readily and easily removable for cleaning outside the tank. Threaded fittings shall not be used in the milk zone. Walls of holes in air distributor piping shall be chamfered for easy cleaning and all burrs shall be removed.

Oil-free air may be produced by one of the following known methods or its equivalent:

(1) Use of carbon ring piston compressor.

(2) Use of oil-lubricated compressor with effective provision for removal of any oil vapor by cooling.

(3) High pressure water-lubricated or non-lubricated blowers.

When 3-A Sanitary Standards for air for agitation are adopted they shall supersede the recommendation in Appendix C.

* * * *

Effective date: These standards shall become effective September 1, 1960, at which time 3-A Sanitary Standards For Farm Holding And/Or Cooling Tanks, as published in the July-August 1953 Journal of Milk and Food Technology, are thereby superseded.

REPORTS OF COMMITTEES–1959

REPORT OF THE COMMITTEE ON BAKING INDUSTRY EQUIPMENT

The objective and primary functions of the Baking Industry Equipment Committee of the International Association of Milk and Food Sanitarians is to co-operate with and assist the baking industry in the formation of workable standards for baking equipment.

The baking industry, working through the Baking Industry Sanitation Standards Committee better known as BISSC, and with the assistance of this Committee, representatives from other health organizations, the Federal Food and Drug Administration and the United States Public Health Service have to date published sixteen standards. Twenty-six standards are nearing completion, in task committee or in constituting committee. Of the twenty-six, nine are in an advanced stage and nearing completion.

The baking industry has progressed to such an extent that the standards approved by BISSC in its earlier days are no longer current. This committee was aware of this, and so reported last year that the earlier standards should be reviewed and revised.

We are happy to report that BISSC concurred with this opinion and has reconstituted the committee that developed the Flour Handling Equipment Standard which was Standard No. 1 published in 1952. This standard will be reviewed, redrafted and submitted for reconsideration. Other standards in need of revision will be treated in like manner.

The importance of standards in general to official sanitarians cannot be over emphasized. Sanitarians have worked for many years in developing and using standards of many kinds. The results have been of great benefit to the sanitarians, to industry, and to the general public.

The committee's consultants to BISSC are constantly striving for simplification of design in machinery and equipment, trying whenever possible to eliminate or minimize the need for arduous cleaning. The increasingly high lever of sanitation found in today's modern bakeries can be attributed to a large extend to the activities of BISSC.

Working with BISSC, a great many executives of the baking industry have received a liberal education in basic and advanced sanitation through contact with the consultants. The consultants, in turn, have a better insight into manufacturing and production problems. The results of this co-operative effort between industry and the sanitarians is clearly evident in the quality of the published standards.

This committee will continue to co-operate with BISSC in this important and necessary function.

Vincent T. Foley, *Chairman*, Missouri
A. E. Abrahamson, New York
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REPORT OF THE COMMITTEE ON COMMUNICABLE DISEASES AFFECTING MAN — 1959

As a follow-up to publication of the "Procedure for the Investigation of Foodborne Disease Outbreaks," the Committee on Communicable Diseases Affecting Man, International Association of Milk and Food Sanitarians, conducted a survey to determine as accurately as possible (1) the total number of foodborne disease outbreaks which occur annually in the United States and Canada, (2) foods most commonly involved, (3) the types of establishments in which most outbreaks occur, (4) the causative agents most frequently encountered, and (5) the usual sources of contamination and the factors which most frequently contributed to such outbreaks.

The final report on this study should be particularly valuable to health officers, epidemiologists, and milk and food sanitarians at both State and local levels since it will provide valuable information and increased knowledge of the extent of the problem, and thereby provide a basis for a practical approach to the reduction in the number of outbreaks in the future.

A survey form[1] was sent to key individuals who have a professional interest in milk and food sanitation activities, in each of the States and Territories of the United States and the Provinces of Canada. In most instances the survey forms were forwarded to 4 or 5 key individuals in local health units for completion. This procedure was followed in order to obtain representative statistics of the number of recorded outbreaks which occur in a given unit of population. This figure can then be used to estimate how many outbreaks of foodborne disease occur annually in the United States and Canada.

The following explanation of terms used in the headings of the columns in the survey form was attached to each copy of the form in order to attain as much uniformity as possible in interpretation of the information desired.

1. *Foodborne disease outbreaks*—Illnesses in which there is reasonable evidence that it was caused by the ingestion of any food, including dairy products.

2. *Type of establishment*—Restaurant, smorgasbord, delicatessen, school lunch, picnic, private home, hospital, mobile catering truck, etc.

3. *Food involved*—Specific food which contained the causative agent, i.e. egg salad sandwiches, baked ham, chicken pot pie, and cream custard filled pastries.

4. *Incubation period*—Average time between ingestion of food and onset of symptoms.

5. *Source of contamination*—Person, animal, raw food product, special ingredient or foreign substance, which introduced the causative agent.

6. *Contributing factors*—A situation or condition in the suspected establishment that was conducive or contributed to the outbreak, such as, insufficient heating or *refrigeration* of foods, poor food handling practices, lack of adequate controls on processing equipment, presence of vermin, inadequate cleaning and bactericidal treatment of equipment, soiled hands, illness among *food handlers,* etc.

7. *Known or suspected causative agent*—Specific organism, toxin or other chemical agent suspected or determined by either *laboratory examination* or epidemiological study to have caused the outbreak.

The response to the survey was excellent. Reports were received from 32 States and one Territory of the United States and 8 Provinces of Canada. A large amount of valuable information was collected and is still being received. Although there has not been sufficient time to make a com-

[1]Copy available upon request to Committee Chairman.

prehensive evaluation of this data, it is assumed that next year the Committee will make such an evaluation and prepare a complete report in the form of a paper for presentation at the annual meeting of the Association and for publication in the Journal.

On the basis of a preliminary review of the data in hand, it is quite obvious that well over 1,000 foodborne disease outbreaks are investigated annually and included in State or local health department records. The data indicates than an average community having a population of 125,000 could be expected to investigate and prepare a report on at least one foodborne disease outbreak each year causing illness in about 30 persons. Unfortunately it will not be possible to calculate, or even estimate with any reasonable degree of accuracy, the number of outbreaks which actually occur each year but are not investigated or made a matter of record.

The Committee is very gratified with the type and amount of information received in this survey and wishes to take this opportunity to thank all who so kindly participated. We hope you will join us in looking forward to completion of the final report.

Committee Members:

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E. R. Price, Missouri Association
T. E. Sullivan, Indiana Association

REPORT OF THE COMMITTEE ON DAIRY FARM METHODS - 1959

This year the Dairy Farm Methods Committee of the International Association of Milk and Food Sanitarians considered four major projects. Each of the projects, including the report of the appropriate Task Committee, is presented in this report.

CLEANING-IN-PLACE OF RIGID PIPELINE MILKER SYSTEMS

The major project of the Dairy Farm Methods Committee in 1958 was the study of the cleaning-in-place of rigid farm pipeline milker systems. This year a Task Committee under the chairmanship of Kelly Saunders has, by means of a questionnaire which was sent to all members of the Dairy Farm Methods Committee, received certain aspects of the study and, as a result, several changes have been incorporated into the report. The revised report of the Task Committee with the new material underscored, follows:

1. An approved installation of a CIP pipeline system is most important to the successful operation of such a system. The seller of the CIP pipeline system should be required to provide *drawings for approval by the local Health Department officials. After such drawings have been approved, then the seller should provide competent personnel for the installation of such systems so that the following problems will be solved*:

a. All CIP pipeline installations should have sufficient slope to insure adequate drainage. *This should be at least 1" for each 10' of pipeline.*

b. Installation should be planned to eliminate risers, if possible. If risers are positively necessary, they should be installed to hold to a minimum turbulence. *All CIP installations should, in the planning stages, be planned so that the CIP line itself whenever possible be at the cow udder level or lower. Good planning will eliminate risers to safeguard the milk from turbulence and to maintain proper milking vacuum.*

c. *Suspension should be solid, permanently fixed and adjustable.*

d. All parts of a CIP pipeline system should be designed for cleaning in place. All installations should be as short as possible, using as few joints, elbows, etc. as possible.

e. There should be no dead ends.

f. All parts of CIP pipeline installations should be so designed that they can be cleaned manually in case of emergency and readily disassembled for inspection.

g. *Moisture traps should be so installed that they will be cleaned as a part of the CIP milker system. They also should be so installed that they will not interfere with the cleaning of the milker vacuum line. One moisture trap should be installed between the CIP milker line and the milker vacuum line and should not be part of either one. This moisture trap should be well below the level of the milk receiving jar.*

h. All prospective buyers should be informed by the dealer in regard to the care and the methods which are necessary to insure the proper operation of a cleaned-in-place pipeline system.

i. *All CIP pipeline system users should have an indicating thermometer.*

j. *All CIP pipeline system users should have suitable brushes in good condition.*

k. *All CIP milker system installations should be approved by the local sanitarian before the final payment is made by the producer.*

2. The successful operation of a properly installed CIP pipeline milker system depends upon the proper education of the user.

a. A dealer's representatives should attend schools put on by agencies qualified to instruct in the operation of CIP pipelines as it pertains to milk sanitation.

b. Diary Fieldmen and Milk Sanitarians should be uniform in instructions for operation of CIP milker systems given to dairy producers. Schools by qualified agencies should be held to gain this point.

c. Each CIP pipeline milker user, at the time of purchase and installation, should be fully instructed as to the proper operational directions for the particular system. To insure proper operation, the following instructions should be given to all CIP pipeline users:

(1.) When milking, always start using the part of the milker line nearest the milkhouse so that the pipeline will be kept wet with milk.

(2.) *Keep all conections, including milk cocks, tight to eliminate air leaks.*

(3.) Maintain proper vacuum. *The vacuum gauge should be so located to be visable to the milker at all times. Vacuum at all parts of the CIP milker system should be tested periodically.*

(4.) Keep all parts in a workable condition.

(5.) *An approved written procedure of operating, cleaning and sanitizing should be installed in a conspicuous location in the milkhouse by the installer of the CIP milker system.*

3. In addition to the proper installation of a milker system, the following recommendations should be followed to insure proper operation:

a. Have adequate volume of hot and cold running water available in the milkhouse. *To determine the adequacy of available hot water, both the recovery rate and heater capacity should be considered.*

b. Have adequate drainage to accommodate the amount of water necessary for proper cleaning and sanitizing of the milker line.

c. All CIP pipeline milker system users should be required to follow the proper recommended procedure for washing and sanitizing the system after each milking.

d. All users should be cautioned to use proper pipeline cleaners and sanitizers in accordance with the manufacturers' directions.

e. All CIP pipeline milker users should be aware of the following:

(1.) No "short cuts" should be taken in the cleaning cycle.

(2.) Proper volume and temperature of water should be maintained at all times.

(3.) Proper velocity should be maintained.

(4.) Milk cocks should be hand brushed prior to CIP cleaning. (unless designed and approved to be cleaned-in-place).

(5.) The water used for rinsing and washing should contact all interior parts of the system.

(6.) *Detergents used for CIP cleaning should be balanced and compatible to the water supply with no foaming action.*

(7.) Weigh jars, vacuum tanks, vacuum releasers, milk pumps, etc. should be inspected periodically and manually washed periodically. (unless designed and approved to be cleaned-in-place).

(8.) Rubber parts which form a part of the CIP milker system should be periodically inspected and should receive the same special treatment as the rubber parts of a milking machine.

4. Cleanliness of the CIP pipeline milker system should be determined by:

a. Periodic visual inspection
b. Periodic bacterial analysis
c. Periodic swab tests
d. Rinse test
e. Use of ultra violet lamp

5. The qualities and characteristics of the detergent used for CIP milker systems are so varied that our committee feels that any report at this time on this subject would be premature. However, all were in accord that the detergent used should be *well balanced and compatible to the water supply, be free rinsing, and give the desired results.*

A Study of Various Types of Milking Parlors

A new project of the Dairy Farm Methods Committee this year has been a study of various types of milking parlors, including the gate, walk-through type, and herringbone type. A Task Committee under the Chairmanship of Milton E. Held has, by means of a questionnaire which was sent to all committee members, as well as to additional industry and enforcement people, made an extensive study of each of the three types of milking parlors. Consideration was given to the different problems which exist insofar as cow floor space, working space, lighting, ventilation, drain locations, etc., are involved.

The report of the Task Committee is as follows:

This initial report will confine itself specifically to the conventional two-level type, including a pipeline milker system without specific reference to the milk room and the holding, feeding, and resting areas. At the outset it is believed that a brief comparison of the milking parlors and the stanchion housing barn is indicated.

The following are the features of the milking parlor which were reported by the contributors:

1. The elevated stall confines the cow in such a position that better preparation of the cows udder and better milking procedures is made possible.

2. The elevated stall, small work area for operators, and the practicability of mechanized feeding of concentrates eliminates stooping, keeps walking to the minimum, and thus increases the operators capacity.

3. Pipeline milker systems readily can be installed and operated in a satisfactory manner at a minimum expenditure of money and time.

4. Milking parlors are more easily kept in a clean condition and free from odors, and fly-control is simplified.

5. The training and cleanliness of cows may present problems, and concentrates must generally be eaten in a relatively short period.

6. Cold temperatures may complicate parlor heating as well as cattle injury hazards from slipping on ice. Chapping or freezing of teats may also be a problem.

7. Provisions must be made for handling and disposal of the large amounts of water and other accumulations involved.

8. Milking parlors and associated facilities often are too poorly designed, improperly installed, operated, and cleaned.

Following are distinctive features of the stanchion housing barn, as reported:

1. Utilization of these facilities is a simpler routine and may be more adaptable to some types of hired help.

2. Cows can be kept cleaner by brushing and show off better which may be important to those such as purebred breeders.

3. The housing barn can usually be easily kept warm under cold weather conditions.

4. Concentrates and roughage may be fed on an individual basis, and cows can be more easily checked and treated if necessary.

5. More stooping and walking is required in the handling, feeding, and preparation of the cows as well as during the milking process which limits the capacity of the operator.

6. Pipeline milker systems will be expensive and may be difficult to operate and clean satisfactorily or economically.

7. Barns are difficult to clean and objectionable odors are apt to be present. Control of flies may be difficult to obtain.

8. Expansion of milking herd size is limited as compared to the milking parlor.

The following are distinctive features of the different types of stalls insofar as cow arrangement and floor area per cow is concerned:

1. *Gate stall*

a. When rear gate is closed, the cow is positioned so that individual attention can be easily given to each cow.

b. Slow milking or eating cows can be accommodated without holding up cows ready to be released.

c. Based on four stalls, approximately 100 square feet of floor area is required per cow.

d. A milker unit is generally placed for each stall. Unit stands idle while cow is being prepared for milking.

e. Cows may tend to move in more slowly on an individual basis which, combined with necessary gate operation, may slow milking capacity of operator.

2. *Walk-through stall*

a. Movement of cows through parlor is good, as two or three cows will move into position and leave the parlor almost as rapidly as will one cow. Group movement also facilitates cow training.

b. One milk unit is provided for each two opposing stalls, which allows preparation of cows on one side while those on the other side are being milked.

c. Based upon four stalls, approximately 60 square feet of floor area is required per cow.

d. Slow milking cows can slow down release of other cows in the same line.

e. A heifer or small cow may be difficult to position correctly in a stall built to accommodate the larger cows.

f. Movable feeders complicate the provision of tight feed conduits.

3. *Herringbone stall*

a. Group movement of cows facilitates filling and emptying the stalls although an occasional boss cow may be a problem. Cows in close contact appear to be more at ease, and heads-away position may also lessen possible distractions.

b. Based on eight stalls, as this system is adapted best to larger herds, approximately 45 square feet of floor area is required per cow. This, combined with simpler equipment, results in lower construction cost per cow.

c. One milker unit is placed for each two opposing stall positions.

d. Cows udders are close together resulting in less walking by operator.

e. Slow milking cows can slow the milking operation.

f. Identification of cows for production feeding purposes is complicated unless paint or leg band identification is utilized.

g. Manure and liquid splash may complicate milking procedures.

h. There has been a tendency to over stress large volume capacity with possible accompanying inadequate milking and sanitation procedures.

Features of the different types with respect to lighting and ventilization are as follows:

1. *Gate stalls*

a. This system is excellent for provision of both natural light and ventilation.

b. Artificial ventilation may not be necessary if the windows are properly located.

c. In a single line installation, artificial light is needed at each stall.

2. *Walk-through stalls*

a. With the usual two line installation in which cows stand close to walls, side windows should be located high and low.

b. Artificial ventilation may not be necessary if the windows are properly located.

c. Artificial light is needed at each two opposing stalls.

3. *Herringbone Stalls*

a. Sidewall space for windows is very limited, but windows may be located high on sides or on ends.

b. Artificial lighting properly distributed is very important.

c. Mechanical ventilation, preferably in the form of a large capacity exhaust fan, is necessary.

There appear to be no major differences between the gate, walk-through, and herringbone types relative to cow preparation and milking methods. All stalls are elevated, and the udders are in excellent position for washing and inspection prior to attaching the milker units. Conditions are ideal for observation of milking procedures, machine stripping, and teat sanitization after milking. The major limiting factor is the operator who must have a knowledge of proper sanitary milking procedures and must be allowed to take the time necessary to perform all these operations. It is believed that the walk-through and herringbone types require a higher order of operator ability than does the gate type.

The optimum number of stalls per milker unit and the number of milker units per operator is subject to a number of variables, including the ability of the operator, the type of parlor, and the degree of emphasis given to sanitary practices in the milking operation. It was generally accepted that in all double line operations one milker unit should be provided for each two opposing stalls or cow positions. Recommendations, of those reporting, as to the number of milker units per operator ranged from two to five, with the majority being in the two to four range, depending upon parlor type and design and operator capability. The majority favored the one operator parlor with provisions of multiple one operator parlors if additional milking capacity is desired. This opinion is based upon the results of studies which show that two operators in the same parlor usually do not produce twice as much as one operator. The gate and walk-through parlors appear to be better suited for smaller herds, and the herringbone type appears to be suited for larger herds (40 cows and more). When considering the family sized dairy unit as opposed to the commercial type, many feel that the parlor should be so sized as to allow the dairy farmer to milk his herd in approximately one hour with a cleanup time allowance of another hour. Prolonged milking periods are apt to stimulate carelessness on the part of the dairyman or farmer who must also carry on other farming activities.

A well located, designed, and constructed milking parlor operated by a capable, informed, and interested operator will result in an efficient, trouble-free operation. Some interest has developed in lowering the milk pipelines near the stall floor level, particularly where it is possible to provide a milk room at a lower level than the operator pit floor. Such a design should minimize turbulence of the milk, and in most cases would allow shortening of milker tube assemblies.

TRANSPORT MILKER SYSTEMS

Another new project of the Committee this year has been the study of plastic piping and transport milkers. A Task Committee under the Chairmanship of Professor Richard P. March has prepared a report which describes several types of transfer units. The report of the Task Committee is as follows:

Introduction

There are many types of equipment for conveying milk from a dump tank in the barn to the bulk tank in the milk house. Those that consist of a dump tank and a pipeline (rigid or flexible) to convey the milk to the bulk tank are of three types:

1. One that uses a pump to draw the milk from the dump tank and push it through the pipeline to the bulk tank.
2. One that employs vacuum to move the milk and a releaser in conjunction with the conventional types of open bulk tank.
3. One that employs vacuum to move the milk directly to a vacuum tank with no releaser required.

Task Committee Objectives

1. To survey the various types of transfer systems[1] available.
2. To consider the practicability of these units.
3. To observe the methods used in cleaning these systems.

These three objectives are discussed simultaneously in outline form in this report.

Types Of Units

1. Dump Tank with Pump and Rigid Pipeline
   a. 1-inch size is probably sufficient.
   b. Pump shuts off automatically when milk flow ceases,

[1]The term transfer systems as used in this report means any mechanical device which will convey milk to the bulk tank when conventional bucket milkers are used.

to prevent excessive agitation of warm raw milk which may cause rancidity.

c. Usually a double pipeline is used so that circulation cleaning can be accomplished by using the milk pump.

d. There are a number of 1 inch CIP joints available and as with other CIP joints, most are not entirely satisfactory.

e. Rigid pipes are mounted so that they slide easily horizontally in their brackets.

f. Suspension brackets are easily adjusted to allow pipe to maintain proper uniform slope.

g. Pipe should slope as much as possible for best drainage.

h. Some trouble has been encountered with proper drainage in 1-inch glass pipe.

i. Milk valves should be as short and as simple as possible to permit proper in-place cleaning.

j. Return pipeline (wash line) slopes upwards toward milk house so that any milk that gets over into this line will drain back into the milkline; or the milk inlet valves should be so designed that the milk is directed toward the milk house so that no milk can back up into the return line.

k. Dump tanks need to be hand washed but it would be to the farmer's advantage if they could be designed for in-place cleaning.

l. Pumps are frequently not kept too clean and usually are not self draining.

2. Dump Tank With 1½-inch Rigid Single Line

a. Milk is drawn by vacuum to bulk tank.

b. Releaser is needed with open type of bulk tank.

c. Line is washed by reverse flush (vacuum gravity) method.

d. 1-inch diameter is probably sufficient.

e. Dump tank requires hand washing.

f. Releaser also usually requires hand washing but should be designed for CIP.

3. Dump Tank and Pump With Flexible Tubing Rather Than Rigid Pipe

a. Pump operation should be controlled as described in Section 1. (b).

b. Size of tubing varies as described under component parts and varies in price from about $0.65 to $1.50 per foot. The smaller sizes will no doubt have adequate carrying capacity for most operations. They will be less expensive and require less wash water and detergent than the larger sizes.

c. No milk inlet valves are necessary because end of tubing is connected directly to the bulk tank.

d. Compressed air or vacuum is usually used to help drain the line.

e. A single line in the barn can still be cleaned by circulation because of the flexibility of the hose.

f. The life of the tubing is unknown.

g. Tubing becomes opaque by absorbing small quantities of moisture. This is not objectionable in itself except that it makes it exceedingly difficult to inspect. A solution to the inspection problem has been proposed by the Farm Practices Committee of the New York State Association of Milk Sanitarians. It is as follows:

> "Opaque tubing must be rendered transparent for inspections. Physical treatment may restore some opaque plastics to transparency. Such plastic, if its surfaces are apparently essentially smooth and free from crevices, shall be acceptable. If transparency cannot be restored and/or the inside surfaces are visibly cracked, roughened, softened, or coated, the tubing shall not be used to transport milk. Tubing is considered transparent when the outline of a pencil or other small object can be clearly discerned through the diameter of the tubing."

4. Dump Tank Plus Vacuum Releaser and Long Flexible Tubing

a. This unit employs a vacuum releaser in place of the pump.

b. It is cleaned by recirculation.

c. Dump tank requires hand brushing.

5. Dump Tank Plus Short Lengths of Flexible Tubing to Vacuum Tank

a. Usually tubing lengths are limited to 4 to 8 feet. They can be coupled with stainless steel tubing as friction fittings.

b. Tubing must be disassembled for hand brushing or connected to automatic reverse flush washer.

c. Dump tank is washed by hand.

6. Transfer Tanks

It is expected that the committee, in continuing its study of transport milker systems, will interest itself in the development of new types of such systems.

Since we are faced with the fact that these systems are being installed in scattered areas, we would appreciate the cooperation of the Committee on Sanitary Procedures in studying these installations in cooperation with the manufacturers of this type of equipment.

STANDARD PROCEDURES FOR TANK TRUCK DRIVERS

As reported in 1958 a Task Committee has been established, under the Chairmanship of Professor Ivan E. Parkin, to study standard procedures for tank truck drivers including licensing, pick-up and handling of bulk tank milk on the farm, etc. The project was continued this year and Professor Parkin advises that some of the bulk tank regulations of the various states have been collected and it is expected that a Task Committee report will be submitted to the Farm Methods Committee for consideration prior to the 1960 annual meeting.

FUTURE PROJECTS

In view of the considerable interest in milk transfer systems, a Task Committee will be appointed to study and evaluate the various types of milk transfer units.

Dr. R. W. Metzger, *Chairman*
Chester F. Bletch
Dr. George D. Coffee
J. C. Flake
H. Clifford Goslee
Dr. Richard S. Guthrie
Harold Y. Heiskell
Milton E. Held
M. W. Jefferson
Robert M. Keown
Elmer Kihlstrum
R. P. March
Mike O'Conner
Russell R. Palmer
I. E. Parkin
Dr. R. M. Parry
C. W. Pegram
A. K. Saunders
Alex G. Shaw
Harry F. Stone
William Trobaugh
L. O. Tucker

REPORT OF THE COMMITTEE ON EDUCATIONAL AND PROFESSIONAL DEVELOPMENT—1959

The work of the committee during the past year was accomplished through the use of subcommittees. They were namely (*a*) Subcommittee on Scholarship, (*b*) Subcommittee on Curricula, (*c*) Subcommittee on Professional Standards and Registration.

REPORT OF THE SUBCOMMITTEE ON SCHOLARSHIP

Scholarship Announcement

The announcements of the William B. Palmer Scholarship award were sent to the following eighteen universities and colleges where undergraduate courses of study leading to a degree in sanitary science or public health are offered:

University of Michigan, Ann Arbor, Michigan
Southern Illinois University, Carsondale, Illinois
Utah State Agricultural College, Logan, Utah
University of Denver, Denver, Colorado
University of Washington, Seattle, Washington
Rutgers University, New Brunswick, New Jersey
State College of Washington, Pullman, Washington
University of Florida, Gainesville, Florida
University of Oklahoma, Norman, Oklahoma
San Jose College, San Jose, California
Florida State University, Tallahassee, Florida
University of California, Los Angeles, California
University of Massachusetts, Amherst, Massachusetts
Tulane University of Louisiana, New Orleans, Louisiana
University of California, Berkeley, California
University of North Carolina, Chapel Hill, North Carolina
New York University, New York, New York
Indiana University, Bloomington, Indiana

Scholarship Applications

Four applications were received. This year, for the first time, applications were received from women. The applications were processed and the recommendation has been made to the Executive Board.

Scholarship Fund Contributions

The following affiliates have contributed to the scholarship fund as indicated:

12-5-55—Tenn.	$ 15.00
4-2-56—Florida	25.00
6-20-56—Indiana	46.25
7-13-56—Kentucky	8.75
12-10-56—South Dakota	8.00
2-2-57—Illinois	25.00
4-18-57—Georgia	21.75
9-23-57—Wisconsin	67.00
1-29-58—Illinois	35.00
2-5-58—South Dakota	7.25
4-11-58—Virginia	25.00
7-14-58—Florida	50.00
12-16-58—Rhode Island	25.00
9-1-58—Wisconsin	67.75
	$426.75

Subcommittee Membership

Elmer E. Ninman, a member of this subcommittee submitted his resignation on April 1, 1959. Mr. Ninman is no longer a member of IAMFS and is not now engaged in milk and food work.

Evaluation of Scholarship Award

A questionnaire designed to determine the number of undergraduate students majoring in sanitary science or public health was sent to each of the schools listed above. Only five were returned and of these five only one supplied all of the information requested. The low percentage of the returns and the incomplete information made it impossible to draw any valid conclusions.

One university (Michigan) had discontinued the undergraduate program in sanitary science "until some time in the future when prospects appear brighter for recruiting reasonable quotas of promising students." Another university (University of Florida) reported that they have not had any students enrolled in the sanitary science course. A third university (New York) reported only students of civil engineering take a "sanitary option."

SUBCOMMITTEE ON CURRICULA

Curriculum for Master of Science Degree in Sanitary Science

The following program is suggested which would lead to a Master of Science Degree in Sanitary Science. It is based on the assumptions: (*a*) that a person would have a background equal or equivalent to the "Four Year College Curriculum For Sanitarians" previously recommended to IAMFS by this committee; and (*b*) that the person would ultimately be in an administrative position.

SANITARY SCIENCE

FALL SEMESTER	CREDITS
Principles of Public Health, Organization and Administration[1a]	3
Public Health Education[2]	3
Public Health Statistics[3]	3
Electives[6]	6
SPRING SEMESTER	
Principles of Public Health, Organization and Administration[1b]	3
Applied Epidemiology[4]	3
Public Health Problems[5]	3
Electives[6]	6
Total	30

1a-1b. *Principles of Public Health Organization and Administration.*

A systematic study of organization and administration and of their application to public health practice.

2. *Public Health Education.*

A course designed to give an understanding of how to (a) organize a community for health education, (b) method of public health education and (c) to solve problems in health education.

3. *Public Health Statistics.*

A course designed to give an understanding of the role of vital statistics in administration and how the statistical departments in the State function—For students who have had previous courses in statistics.

4. *Applied Epidemiology.*

A course designed to give an understanding of the principles of epidemiology, the study of the infection chains of certain types of diseases, methods of investigating epidemics, and the collection and analysis of data.

5. *Public Health Problems.*

The solving of a typical public health problem in the field of environmental sanitation under proper guidance and the writing of a report.

6. *Suggested Electives in Environmental Sanitation.*

(*a*) *Advanced Milk and Food Technology and Sanitation.*

Principles and practices in the supervision of milk and food supplies with special reference to equipment and technical problems in food processing and preservation from an administrative viewpoint.

(*b*) *Sanitation for Schools and Camps.*

The application of public health practices for schools and camps from an administrative viewpoint.

(*c*) *Radiological Health.*

Principles and methods of protection against radiation hazards.

(*d*) *Water and Sewage Treatment and Disposal.*

Practical laboratory and field techniques basic to sanitary

science used in water and sewage analysis, plant operation, and stream pollution investigations.

(*e*) *Industrial Health Problems.*

Studies of selected problems in this field, through field and laboratory work and conferences. The writing of reports. Subjects could include toxic gases, vapors, fumes and dusts, occupational diseases, illumination, adverse temperatures and humidities, exhaust ventilation and plant sanitation.

(*f*) *Seminars in Sanitation.*

(*g*) *Research in Environmental Health.*

(*h*) *Legal Enforcement Methods.*

A course designed to teach the sanitarian how to collect data in case of a law suit and how to conduct himself in court.

SUBCOMMITTEE ON PROFESSIONAL STANDARDS AND REGISTRATION

Meeting of the National Health Council

A representative of our commitee attended the two meetings of the National Health Council. The "Conference on Recruitment for Personnel in the Health Field" held October 2-3, 1958 in New York was attended by Dr. Samuel Lear. Mr. Karl Jones attended the conference on "Manpower Shortage in the Field of Health" held in St. Louis, Missouri on October 30, 1958.

Current Status of Sanitarian Registration Legislation

During 1959, five more states enacted legislation to establish legal procedures for registering sanitarians. They are North Carolina, Washington, Montana, New Mexico, and Florida. Prior to this year, twelve other states have enacted similar legislation and with comparable qualifications in most cases. They are California, Louisiana, Oklahoma, Oregon, Utah, West Virginia, Georgia, Arkansas, Colorado, Wisconsin, Massachusetts, and Hawaii. In addition, New Jersey has a state law requiring the licensing of health officers and sanitary inspectors.

Present education and experience qualifications for new sanitarians in states having legal registration are as follows:

Arkansas, 1955—MPH or BSPH degree in Sanitary Science plus pass an examination; or BS degree plus one year of experience as a sanitarian and pass an examination.

California, 1945, amended 1957—BS degree in Sanitary Science; BSSE degree; or BS degree and 1 year of full time experience in sanitation. All applicants must pass an examination.

Colorado, 1957—BS degree plus 2 years of full time experience in sanitation and pass a written and/or oral examination.

Florida, 1959—AB or BS degree plus pass a written and/or oral examination.

Georgia, 1957—BS degree plus 1 year of experience in sanitation and pass a written and/or oral examination.

Hawaii, 1959—Territorial legislature in 1955 granted the Hawaii Board of Health authority to register sanitarians. A regulation for establishing qualifications for sanitarians is presently under consideration by the Hawaii Attorney General.

Louisiana, 1954—BS degree in Sanitary Science; or AB or BS degree plus one year of experience in environmental sanitation and completion of an approved training course. All applicants must pass a written and oral examination.

Massachusetts, 1957—Qualifications unknown except applicant must pass a written and oral examination.

Montana, 1959—Qualifications unknown except applicant must pass an examination for Montana Sanitarian 1, or higher.

New Mexico, 1959—AB or BS degree plus one year of experience in environmental sanitation and pass a written examination.

North Carolina, 1959—BS degree plus three years of supervised experience in environmental sanitation or two years of experience in environmental sanitation and one year of graduate study in sanitary science. All applicants must pass a written and/or oral examination.

Oklahoma, 1954—BS degree plus at least two years of professional full time experience in the field of sanitation.

Oregon, 1951—AB or BS degree plus 1500 hours of properly supervised experience in environmental sanitation, or no degree and 3000 hours of properly supervised experience in environmental sanitation. All applicants must pass an examination.

Utah, 1951—BS degree or MSPH degree in Sanitary Science or Dairy Science; two years of college plus one year of experience in environmental sanitation; two years of college plus special training course and six months experience in environmental sanitation; high school graduate plus special training course and three years experience in environmental sanitation; or high school graduate or equivalent plus four years of experience in environmental sanitation. All applicants must pass an examination.

Washington, 1960—AB or BS degree plus six months full time employment as a sanitarian and pass an examination.

West Virginia, 1957—BS degree; 3 years of college plus six months of full time employment as a sanitarian; two years of college plus six months full time employment as a sanitarian; or six months of full time employment as a sanitarian and pass a merit system or civil service examination.

Wisconsin, 1957—BS degree in Sanitary Science plus 1 year of acceptable employment as a sanitarian; BS degree plus two years of acceptable employment as a sanitarian; AB degree plus three years of acceptable employment as a sanitarian; two years of college plus four years of acceptable employment as a sanitarian; or high school graduation plus six years of acceptable employment as a sanitarian.

Maryland, Arizona, Michigan, Texas, Delaware, Tennessee, North Dakota, Ohio, New York, Kentucky, Minnesota, Idaho, and Indiana have already had bills to register sanitarians considered by their respective legislatures or plan to introduce such legislation in the near future. It is an accepted fact that practically all present or contemplated state registration laws emphasize education and training of the sanitarian as essential to his professional development and acceptance by the public.

Three states, Ohio, Pennsylvania, and Indiana, have established voluntary plans to certify and register sanitarians. These voluntary plans also require educational and experience qualifications for sanitarians which are in most cases comparable to legal registration. These plans have certainly improved the professional standing of the sanitarians, but for maximum recognition, prestige and uniformity of standards, a good registration law in each state is needed to establish minimum standards for professional sanitarians.

Most of the persons answering a questionnaire used in obtaining current data on legal registration of sanitarians, indicated that high level qualifications and legal registration of all sanitarians would be a tremendous boost to the field of environmental sanitation in elevating the sanitarian profession to a truly professional status and in attracting competent persons.

Plans for National Recognition of the Sanitarians

The membership at the 1958 annual business meeting of our Association voted to submit a proposal to the Sanitarians Joint Council to establish a national registry of sanitarians. Also, it has been suggested that the IAMFS, Inc., discontinue work on a model bill. This is a reasonable request, as the significant sections of the bill developed by this committee last year have already been incorporated into a similar model bill currently recommended by the Council. In our opinion, the Council should be given an opportunity to prove its ability to cope with the problems associated with extending the professionalization of the sanitarian. Therefore, the sub-committee will relegate the area of model legislation and a national registry to the council and restrict its efforts to assisting the Council in initiating and conducting effective programs. However, if the Joint Council is unable to develop a working and active program within the next year, this committee will recommend to the Executive Board that the Association proceed in these areas.

W. Howard Brown, *Chairman,* Florida Association

The Subcommittee on Scholarship.
Gilbert L. Kelso, North Carolina Association
Haynes Wright, Virginia Association

The Subcommittee on Curricula.
Dr. Samuel A. Lear, New Jersey Association
Russell B. Cunningham, Indiana Association
Guy P. Stephens, Rocky Mountain Association

The Subcommittee on Professional Standards and Registration.
Karl K. Jones, Indiana Association
Thomas Laughlin, Wisconsin Association
Richard Mansfield, Tennessee Association
Raymond Summerlin, Georgia Association

REPORT OF THE COMMITTEE ON FOOD EQUIPMENT SANITARY STANDARDS—1959

For the past nine years this committee, although changed in scope, has been active with interested national groups in the development of standards for food equipment. It is interesting to note that two of the members have served throughout this entire period.

Since a separate committee was started two years ago to handle the standards program with the Baking Industry, this committee has continued to work with the National Sanitation Foundation (NSF) and the Automatic Merchandising Health-Industry Council (AMHIC) in deveoping new standards and revising old ones. It is expected these will be the two groups the Committee will work with during the coming year.

National Sanitation Foundation

On March 31, 1959 the National Sanitation Foundation's Joint Committee on Food Equipment Standards met in Ann Arbor, Michigan for its annual meeting. As in the past the Chairman represented the committee at this meeting. During this three day meeting, two major areas were discussed. They were; (*a*) suggested revisions of Standards 3 and 4, and (*b*) several new standards which were in working draft only.

Standard No. 3

The revisions in Standard No. 3 were the clarification of the definition of "Recirculated Rinse" to clearly distinguish it from "Pumped Rinse" which was then defined, and to require a six inch clearance between the machine and the floor for all dishmachines manufactured after January 1, 1960. This was a change which makes all models of machines comply rather than only those which are "newly designed or redesigned" as was provided for previously in the standard. Also, effective January 1, 1960 a more rigid requirement for legs and feet on dishmachines will go into effect.

Considerable discussion of the single tank conveyor machines was developed around the problem of maintaining 160°F. wash temperatures in these machines. The NSF staff is to review and re-evaluate the requirements for these machines and make recommendations to the Joint Committee.

Standard No. 4

Questions concerning the clarity of Items 5.00 "Alternate Installation" and 5.01 "Space Behind Unit," brought about a discussion of the proper installation of commercial cooking and warming equipment to assure the safe installation of such equipment. Changes in these items to secure this were proposed and sent to the committee members for comment.

Tentative drafts of the following proposed standards and changes in existing standards were presented by NSF to the Joint Committee with work on them to progress during the coming year:

1. Standard No. 2—Changes being proposed.
2. Commercial Hand and Powered Food Preparation Equipment.
3. Commercial Refrigerators and Freezers.

During the coming year the NSF staff is to work on a codification of all present standards to eliminate conflicts and secure uniformity of wording and requirements between them. This will be a most worthwhile project.

Automatic Merchandising Health-Industry Council (AMHIC)

The fourth annual meeting of the AMHIC of the National Automatic Merchandising Association (NAMA) was held in St. Louis, Missouri on November 4, 1958. The committee chairman serves, as do other public health representatives, in an advisory capacity to AMHIC.

One of the main items on the agenda was the revision of the forms used by NAMA in setting out the terms and conditions for acceptance of evaluating agencies, and the NAMA policy and program for machine evaluation. The Council made suggestions to NAMA in these areas. The most significant suggestion that they made was that NAMA proceed immediately to develop basic criteria for vending machines as was suggested last year. Their purpose would be to specify in more detail the criteria for machine evaluation in order to secure the highest possible uniformity between evaluation agencies. To implement this a meeting was scheduled for July 28, 1959. The chairman of this committee pointed out that as a representative of IAMFS with both NSF and AMHIC that no conflict between standards developed by these groups could be accepted.

It is anticipated that a great deal more work on the part of this committee will be needed in the next year to complete this work.

Summary

The past year has shown slightly increased committee activity which should continue at an increasing rate during the coming year.

Last year it was pointed out that the committee was proceeding carefully in those areas where it was working with both NSF and AMHIC on similar standards. The work with both groups is proceeding quite satisfactorily.

New Standards are developing more slowly than was anticipated last year. The coming year will bring about increased activity which is much to be desired.

The study of special problems which arise with some standards and the codification of all NSF standards are important activities in keeping standards current and usable.

With the acceptance of the committee recommendations from last year, the committee is continuing its work with AMHIC.

John H. Fritz, *Chairman*
James W. Bell
Co. F. H. Downs, Jr.
D. R. Gooden
Karl K. Jones
Gene McClyea
J. Schoenberger
James W. Smith
Jerome Trichter
James A. Westbrook

REPORT OF THE COMMITTEE ON SANITARY PROCEDURE—1959

Four new members—Dr. W. K. Jordan, of the Faculty of the Department of Dairy Industry, Cornell University, Dr. R. M. Parry, Chief, Dairy Division, Department of Agriculture, Hartford, Conn., Wilbur C. Parkinson, Chief Sanitarian, Salt Lake City Board of Health, and George H. Steele, Assistant Director, Agricultural Products Inspection, Department of Agriculture, St. Paul, Minn.—were appointed to the Committee by President Barber. Early in 1959, J. L. Littlefield, Assistant Chief, Diary Division, of the Michigan Department of Agriculture, resigned because of appointment to a position having no connection with or relation to dairy equipment sanitation. The current Committee roster, therefore, includes fourteen members, one ex-officio member, and the chairman.

Three meetings of the Committee have been held since the 1958 Annual Report was presented in New York City. The first of these meetings, held at the Pennsylvania State University, October 13 to 16, inclusive, 1958, marked an innovation in 3-A Sanitary Standards Committees procedure. The sole meeting item was to review and reach agreement on the provisions of the tentative revised text of the 3-A Sanitary Standards for Farm Holding and/or Cooling Tanks. Those participating were the D.I.S.A. Task Committee concerned, the U. S. Public Health Service representatives, and the Committee on Sanitary Procedure of the IAMFS. Eight members and the chairman attended this meeting.

The meeting procedure was for the caucus of Sanitarians to decide upon the modifications requested in the text of a certain number of pages of the mimeographed tentative revision, and to submit those pages to the Task Committee for consideration of the requests for change. When the Task Committee had reached its decision, the two groups met in joint conference, and either reached agreement, or elected to hold the final decision on a provision in abeyance for further consideration. As consideration of each page, whether accepted without change or if modified, was completed, it was signed by the chairman of each group as completed and crystallized, and subject to no subsequent change.

In two and a-half days and an evening, agreement was reached on all but four provisions of the Sections on Materials and Fabrication. The section on the function of farm tanks concerning cooling was not reached for detailed consideration; however, it was made clear to the Task Committee that this section must specify that the temperature of the blended milks of successive milkings may at no time exceed 50°F.

It was the concensus of those in attendance that a greater advance toward accord, on provisions on which views had been divergent, had been made in the Pennsylvania State University meeting than at any meeting previously held. Unfortunately, circumstances are not favorable to the holding of separate meetings for the consideration of each set of tentative Sanitary Standards readied by a Task Committee. Members of the Committee on Sanitary Procedure are not in position to devote the time and travel to the number of meetings annually which would be required to maintain the current rate of adoption of Sanitary Standards, slow as it is.

The second meeting of the Committee took place at The Georgian Hotel, Evanston, Illinois on February 24 to 26, inclusive, 1959. Twelve members, the ex-officio member, and the chairman, attended this meeting.

Discussion of the provisions of the tentative revision of the Sanitary Standards for Farm Tanks, on which agreement had not been reached at the meeting at Pennsylvania State University, was resumed at the Evanston meeting. Not only was agreement reached on these provisions, but, by insisting that no part of the revision of these 3-A Sanitary Standards be made public until the entire revision, including the amendments effected in the Section on Cooling, also could be published, the Sanitarians—this Committee and the U. S. Public Health Service representatives—succeeded in effecting desired changes with respect to the refrigeration capacity of farm bulk milk cooling tanks. The changes effected, in the last hour of the Evanston meeting, were to be subject to majority approval by members of the Task Committee not present at the meeting. Publication of the Revision has been delayed by various factors, including editorial polishing, and the discovery of a few conflicting or inconsistent provisions, for the removal of which Task Committee approval was necessary. These minor changes have been effected at this meeting.

An amendment to the Sanitary Standards for Fittings Used on Milk and Milk Products Equipment, and on Sanitary Lines Conducting Milk and Milk Products, to permit the fabrication of valve plugs, or plungers of compression-type valves, of rubber or rubber-like material, or to be covered therewith, was agreed upon. The restrictions on the moisture and fat absorption, cleanability, and toxicity of the material employed are identical with those in the Amended 3-A Sanitary Standards for Pumps for Milk and Milk Products, published in November, 1958. The need for editorial polishing has delayed the publication of this amendment.

Considerable advance toward agreement on the provisions in the tentative accepted practices for supplying air under pressure in contact with milk, milk products, and product contact surfaces was made during the Evanston meeting. Tentative Sanitary Standards for Automatic Bulk Fluid Milk and Fluid Milk Products Vending Machines, and for Batch and Continuous Freezers for Ice Cream, Ices, and similar Frozen Foods, were reviewed.

The third meeting of the Committee closed about 24 hours ago, and was attended by eleven members, the ex-officio member, and the chairman. Unfortunately, when meetings on 3-A Sanitary Standards occur just prior to an Association meeting, the services of members of the Committee who are also members of the Executive Board, are lost to the Committee during Executive Board sessions.

These data on member attendance at meetings of the Committee on Sanitary Procedure are acknowledged to be somewhat extraneous to a Report of this nature. They have been

included so that the Association membership may be in position to recognize and evaluate the devotion of these members to their assignment—frequently at a sacrifice of personal leisure and finances.

The Committee, with a feeling of elation, but, nevertheless with a deep sense of the significance of its achievement, reports the attainment of complete accord in the text of a major revision of the 3-A Sanitary Standards for Farm Holding and/or Cooling Tanks, which was begun before the ink of the reprints was completely dry. The Committee feels confident that most of the criticisms and dissatisfaction of practicing milk sanitarians concerning gaps in these 3-A Sanitary Standards will be met and removed by the Revision.

It is again necessary to report that the number of plastic materials which fabricators desire to use in the assembly of fillers and sealers of single service containers of milk and milk products, and which have cleared the U. S. Food and Drug Administration with respect to potential toxicity, is sufficient to warrant publication of 3-A Sanitary Standards for Fillers and Sealers, with an appendix in which cleared plastics are listed, by chemical composition, in the immediate future. It is anticipated, however, that this situation will soon be relieved.

Parts of sessions not occupied with discussion related to the clearance of the Revision of the 3-A Sanitary Standards for Farm Holding and/or Cooling Tanks for eventual publication, and the continued withholding of Sanitary Standards for Fillers and Sealers from publication, were devoted to the normal advance of several tentative sanitary standards toward complete accord, and to the editorial amendment of one 3-A Sanitary Standard, which, however, will not be published until other proposed amendments are acted upon.

C. A. Abele, *Chairman*
John Andrews
D. C. Cleveland
Paul Corash
Dr. Milton R. Fisher
Mark D. Howlett, Jr.
C. K. Luchterhand
Jas. A. Meany
Sam O. Noles
Dr. W. K. Jordan
Ivan E. Parkin
Wilbur C. Parkinson
Dr. Richard M. Parry
George H. Steele
D. B. Whitehead
H. L. Thomasson, Ex-Off.

NEWS AND EVENTS

Chicago, May 10 — Presenting the Samuel J. Crumbine award to a health department for outstanding achievement in development of a program of eating and drinking sanitation is Mr. William C. Gibson (left), acting dean, School of Public Health, University of Michigan. Accepting the plaque, and also recipients of bronze medallions for their parts in the winning program are (left to right) Dr. Henry G. Nester, Director of Public Health, Marion County, Indiana, Alfred L. Klatte, Director, Bureau of Environmental Sanitation, and Siegel Osborn, Supervisor, Food Section. Award was made at the annual convention of the National Restaurant Association.

INDIANAPOLIS-MARION COUNTY HEALTH DEPARTMENT RECEIVES 1960 CRUMBINE AWARD

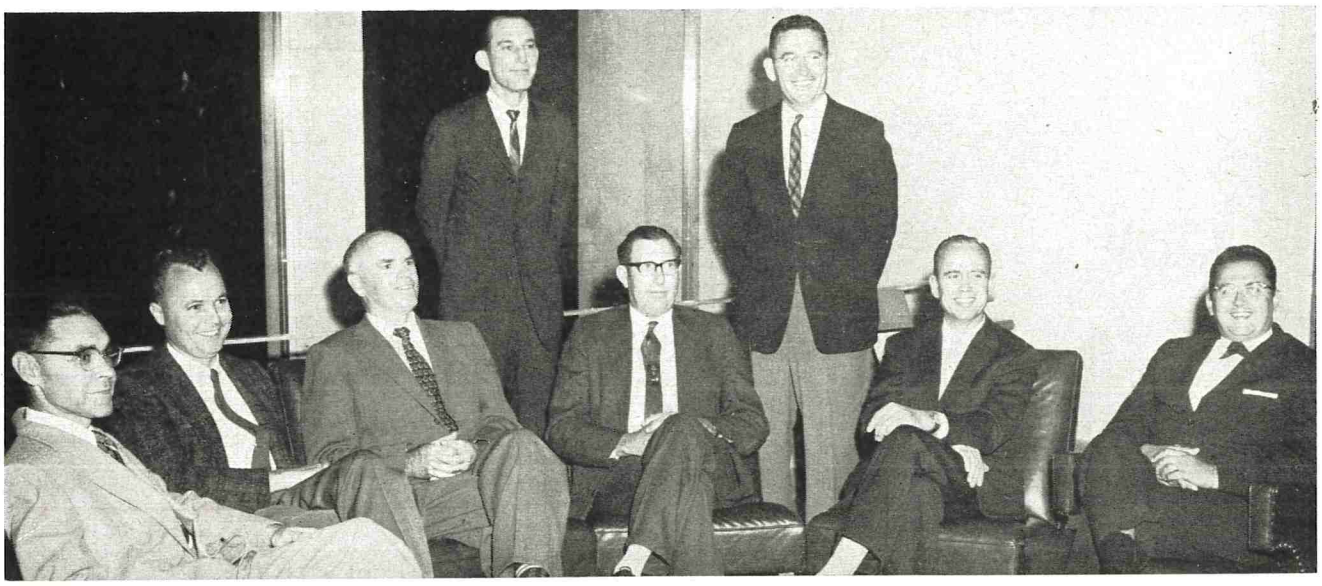
The Marion County Health Department, which includes the city of Indianapolis, received, on May 10, the highest award for a program of eating and drinking sanitation in a competition open to more than 1,200 local health departments throughout the nation. The presentation was made at the annual convention of the National Restaurant Association by Mr. William C. Gibson, Acting Dean, School of Public Health, University of Michigan.

The coveted honor was the Samuel J. Crumbine award for outstanding achievement in the development of a program of eating and drinking sanitation sponsored each year by the Public Health Committee of the Paper Cup and Container Institute.

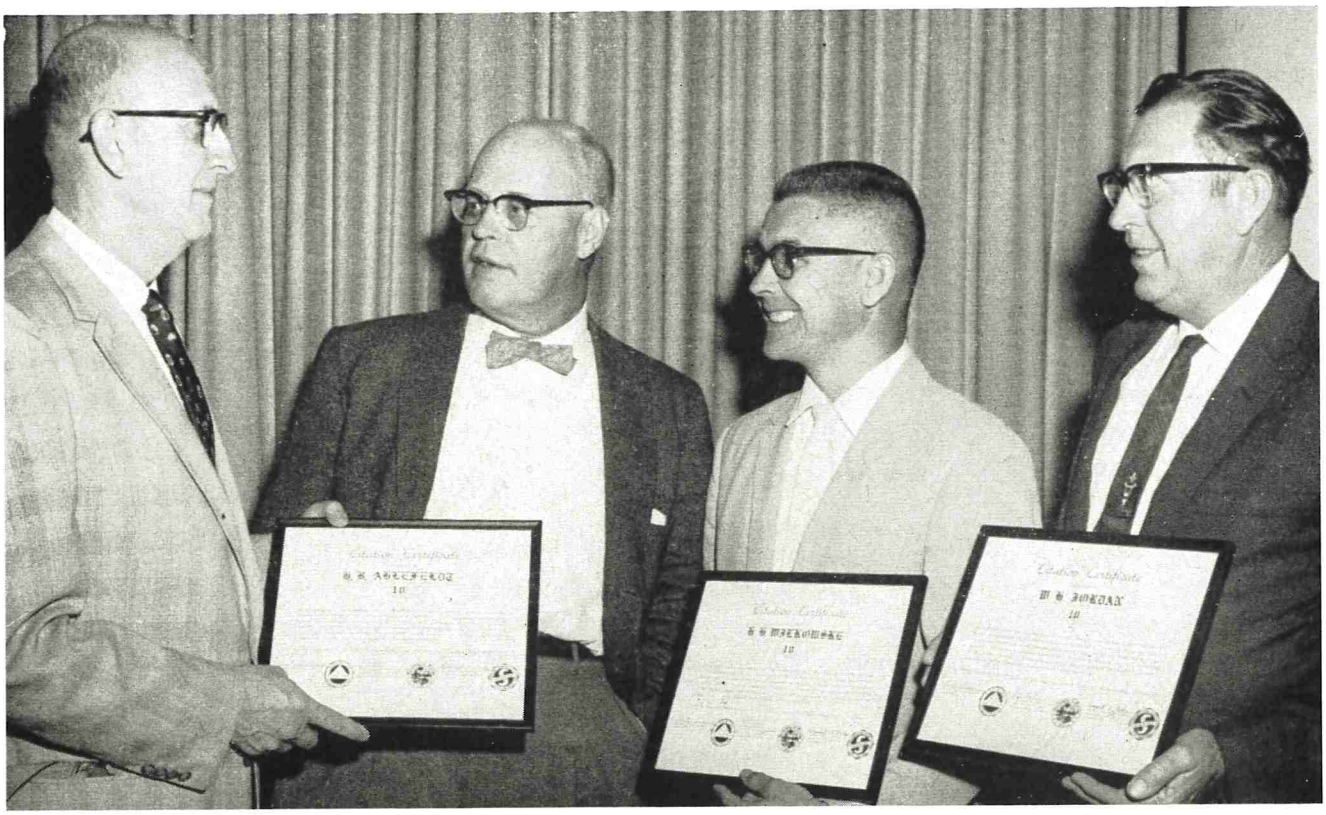
Mr. Gibson presented a plaque to Dr. Henry G. Nester, Director of Public Health in Marion County, for the achievement of his department. For personal leadership in the winning program, bronze medallions were awarded to Dr. Nester, to Alfred L. Klatte, Director, Bureau of Environmental Sanitation, and to Siegel Osborn, Supervisor, Food Section.

For many years the National Restaurant Association has had an active Public Health Committee whose aim has been to raise the standards of performance of the industry. Its annual meeting was selected as the location for the presentation of the award in recognition of its acceptance of responsibility for the health protection of its customers.

When accepting the award, Dr. Nester said: "Without the whole-hearted support and cooperation of the restaurant industry it would have been impossible for us to have brought our program to the high level for which we are being honored here today."

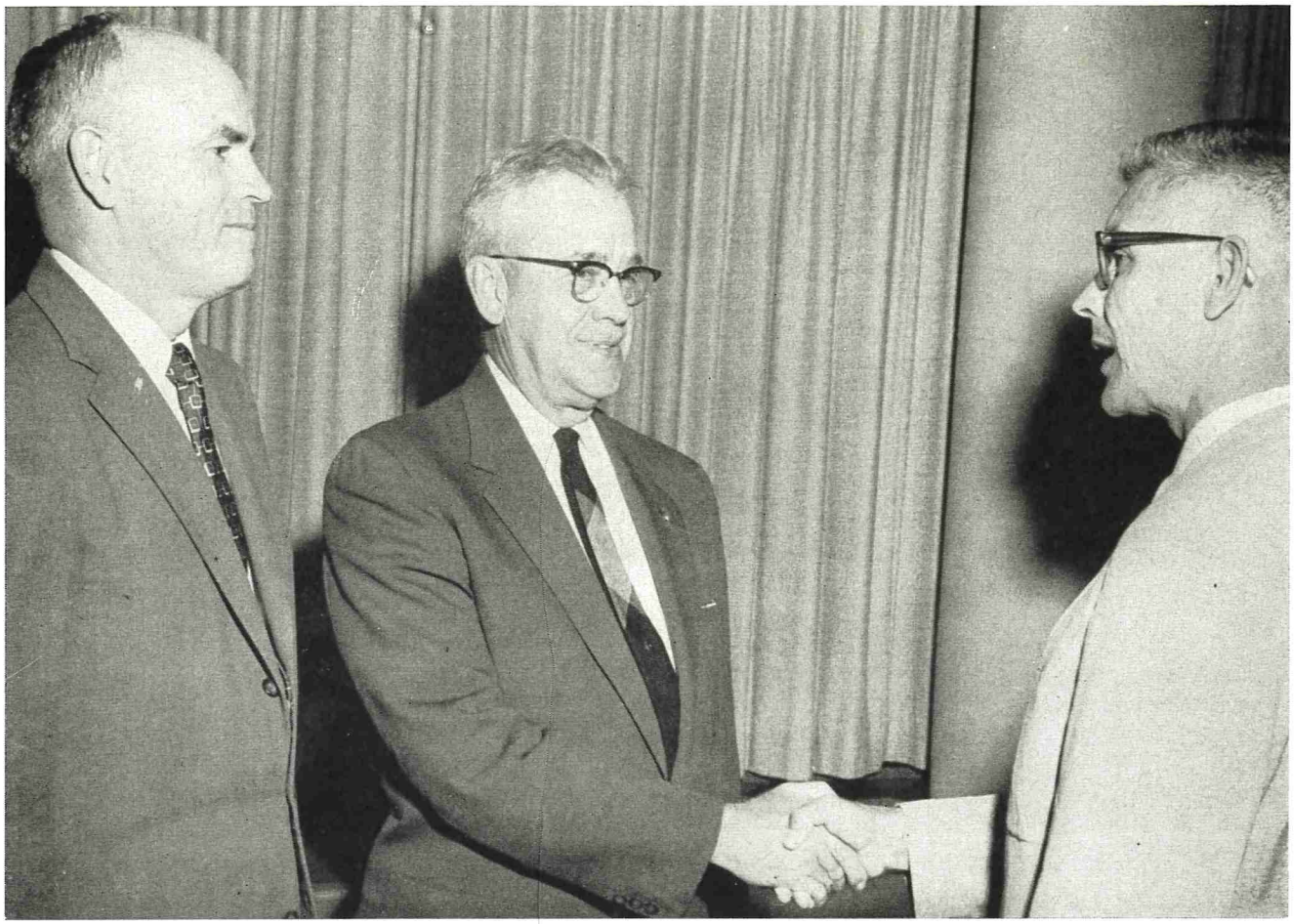


1960 Officers — Florida Association Milk & Food Sanitarians seated left to right. W. B. Richards St. Lucie County Health Dept., Lewis W. Willis, Milk Consultant, Florida State Board of Health, Directors: W. A. Krienke, Dept. of Dairy Science, University of Florida, Secretary; W. Harvey Jordan, Chief Dairy Supervisor, Dade County Health Dept., President; Leon W. Sheumaker, Supervisor Division of Sanitation, Leon County Health Dept., Vice President; Anthony F. Damanda, Bacteriologist, Florida State Board of Health, Chairman Laboratory Affiliate and Director; Standing, Howard B. Young, Asst. Extension Dairyman, Agri. Ext. Service, University of Florida and Stamie D. Williams, Jacksonville Health Dept., Directors. Not in picture—B. C. Pafford, Director of Sanitation, Alachua County Health Dept., Treasurer and P. J. Griffin, Borden Company, Tampa, Director.



The originator of the 10-year Awards of the Florida Association of Milk and Food Sanitarians has now joined the ranks of recipients of this award. He is Dr. H. H. Wilkowske, now Assistant Director, Florida Agricultural Experiment Station, second from right. Dr. Wilkowske was a member of the Dairy Science staff at the University of Florida and Secretary-Treasurer of the Florida Association of Milk and Food Sanitarians when he arranged for the first awards to be given 10 years ago.

The two other recipients are H. B. Ahlefeldt, Hendry and Glades Counties Milk Sanitarian, second from left and W. Harvey Jordan, Chief Dairy Supervisor, Dade County Health Department. Mr. Jordan is the 1960 President of the Florida Association. At the left making the presentation is Dr. E. L. Fouts, Head, Department of Dairy Science, University of Florida. The awards were a featured part of the annual meeting and conference held on the campus of the University of Florida in April.



Dr. P. H. Tracy, Dairy Industry Consultant, Deland, Florida is a new Honorary Member of the Florida Association of Milk and Food Sanitarians. Dr. Tracy, a retired professor of Dairy Manufactures of the University of Illinois is being congratulated by Dr. H. H. Wilkowske, Asst. Director, Florida Agricultural Experiment Station, past secretary-treasurer of the Florida Association of Milk and Food Sanitarians and also past secretary-treasurer of International Association of Milk and Food Sanitarians.

The Honorary Membership was approved by the Directors of the Association and was announced at the Annual Banquet, April 8, by Walter A. Krienke, Secretary. Dr. and Mrs. Tracy were guests of the Association.

EFFECTS OF PESTICIDES ON HUMAN HEALTH TO BE STUDIED

Stanford Research Institute has received a grant of $300,000 from The John A. Hartford Foundation, Inc., of New York to study the effects on human beings and animals of pesticides used on food crops. Announcement of the grant was made jointly by Ralph W. Burger, president of the Foundation, and E. Finley Carter, president of the Institute.

According to Dr. Dale M. Coulson, manager of the Institute's Analytical Chemistry Laboratories who will direct the study, there is a great need for diagnosis and treatment of illnesses resulting from pesticide problems. The Institute hopes to develop a method for rapid diagnosis of chronic pesticide poisoning in humans.

The use of organic pesticides and chemicals in connection with animal and human food production has increased tremendously in recent years, he added. While this has materially increased agricultural productivity, it has also developed a source of contamination of crops and animal tissue which is consumed by humans. Little is presently known about animal metabolism of pesticides and the indirect (absorption) contamination of crops and animal products used as human food. At present there are neither suitable rapid methods of analysis nor facilities to do the necessary pesticide studies in connection with those animal and human problems.

This project follows a two-year Stanford Research Institute study under a John A. Hartford Foundation grant of $202,000 which resulted in the development of an automatic analyzer for rapid screening of pesticide residues in food products.

With the Institute's analytical equipment, chemists can screen a variety of pesticides simultaneously. Normally, the screening can be completed within one hour using the automatic analyzer. Classical methods of analysis usually require eight hours or more to complete.

The Hartford Foundation was originally established by John A. Hartford to distribute his personal charitable donations. He left the bulk of his estate; and his brother, George L. Hartford, who died in 1957, left his entire estate to the Foundation. John A. Hartford was president of the Great Atlantic and Pacific Tea Company and George L. Hartford was chairman of the board.

The Missouri Association of Milk and Food Sanitarians held their annual conference on April 4, 5 and 6, 1960, at the University of Missouri, Columbia, Missouri. A total of 163 registered for the annual short course. Officers elected for the year 1960-1961, are from left to right: Floyd Copenhaver—2nd Vice-president. Chief-Dairy Section Kansas City, Missouri Health Department; Vincent T. Foley—Retiring President. Chief-Food Section Kansas City, Missouri Health Department; Leslie R. Miller—President. District Sanitarian, Missouri Division of Health, Poplar Bluff, Missouri; Robert B. Wehmer—1st. Vice-president. Dairy Sanitarian St. Louis Health Department. Willow Springs, Missouri; J. E. Edmondson—Secretary-Treasurer. Professor of Dairy Husbandry, University of Missouri, Columbia, Missouri.

KLENZADE HOLDS TWENTY-SECOND EDUCATIONAL SANITATION SEMINAR

Beautiful Lake Placid Club, Essex County, New York, was the scene of the twenty-second annual Klenzade Educational Seminar conducted by Klenzade Products, Inc., Beloit, Wisconsin. The three day meeting held on April 27-29, 1960 was devoted to the dissemination of sanitation technology in the dairy and food industries. Over five hundred and forty guests, speakers, and staff members were present at what was conceded to be the most outstanding program in the long series of highly successful Seminars of the past.

General session, panel discussion, and consulting sessions covered sixty-eight sanitation subjects including sanitation microbiology, characteristics and

functions of cleaner ingredients, new developments in detergent chemistry, equipment design and construction, coliform control, psychrophilic bacteria in bulk tank operations, responsibilities of fieldmen and sanitarians, radioactive tracer techniques in studying corrosion, recirculation and spray cleaning, automation systems, cultured products manufacture, environmental sanitation, and many other related topics.

Ninety-nine visiting speakers and twenty Klenzade staff members conducted the various meetings which required an auditorium and ten separate convention halls plus the entire guest facilities of the renowned Lake Placid Club. The visiting speakers list represented many of today's most notable personages in the fields of science, technology, education, public health, and the various branches of the dairy industries. Among the guest speakers were Prof. H. S. Adams, Indiana University Medical Center; Dr. F. J. Babel, Prof. Dairy Bacteriology, Purdue; Paul Corash, Chief of Milk Division, New York City; Dr. W. J. Corbett, V. P., Dean Milk Company; W. A. Cordes, Sealtest Division, National Dairy Prod. Corp.; Dr. P. R. Elliker, Chairman, Department of Dairy Bacteriology, Oregon State College; Dr. I. A. Gould, Chairman, Department of Dairy Technology, Ohio State University; Dr. R. F. Holland, Head, Department of Dairy Industry, Cornell University; G. A. Houran, DeLaval Separator Company, Poughkeepsie, New York; E. M. Howe, Tri-Clover Division, Kenosha, Wisconsin; Dr. C. K. Johns, Director Research Branch, Canada Department of Agriculture, Ottawa, Ontario; Dr. D. V. Josephson, Head, Department of Dairy Science, Pennsylvania State University; Dr. J. D. Porterfield, Deputy Surgeon General, Department of Health, Education and Welfare, Washington, D. C.; Dr. H. L. Wildasin, Director of Laboratories and Quality Control; H. P. Hood and Sons, Boston, Massachusetts; Dr. K. G. Weckel, Prof. of Dairy and Food Industries, University of Wisconsin. The three day Seminar concluded on Friday, April 29th with a general sessions meeting at which Dr. C. K. Johns presided as toastmaster with Dr. J. D. Porterfield as principal speaker. Copies of the papers given at the Seminar will be available soon. A check list and request form may be had by writing to Klenzade Products, Inc., Beloit, Wisconsin.

MILK SANITATION ADMINISTRATION—SELECTED LECTURES NOW AVAILABLE

This volume is a collection of lectures delivered at the 1959 course on "Milk Sanitation Administration," conducted at the Communicable Disease Center, U. S. Public Health Service, Atlanta, Georgia.

Included are descriptions of the results of recent research in relation to the inactivation of pathogenic microorganisms in milk and milk products exposed to ultra-high temperatures. Other subjects covered are dairy plant sanitation; vector control procedures; milk-borne diseases, including those of animal origin; and the question of additives and foreign substances in milk. The possible relationship of milk and milk products to noninfectious disease is also explored.

Administrative programs of the Public Health Service are related to the State and local procedures for the milk industry are considered in detail. Other lectures deal with the operational program of the Public Health Service and with survey and laboratory certification procedures for interstate and intra-state shipments of milk and milk products.

The publication P. H. S. 723 can be purchased from the Superintendent of Documents, Washington 25, D. C., for $1.25 per copy.

CORNELL CHAPTER-ADA-MAKES AWARDS

A Nassau County health department official and three College of Agriculture students were honored May 18, by the Cornell Student Chapter of the American Dairy Association at its annual awards banquet held at Taughannock Farms Inn.

John H. Vorperian, senior sanitarian in Nassau County, received the Dairy Industry Award for his "lasting contribution to the dairy industry of New York State."

Alan H. Lish, a senior in dairy from Bronx, N. Y., was awarded a key and a $25 check for his interest and service to the dairy science club.

Allyn D. Smith of Ithaca and Kenneth Wetzel of Middle Village were each awarded $50 as co-winners of the Samuel L. Stewart Essay Contest for promoting the production and distribution of high quality milk.

Vorperian, chosen as the one individual in the State for recognition this year, received the B. S. from Cornell in 1929, and spent two more years as a special student. For a number of years he worked in the dairy industry. Since 1945 he has been with the Nassau County Health Dept.

He was cited for his work in promoting the production of high quality milk and training of personnel for the dairy industry. As chairman of the

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Nassau-Suffolk Milk Dealers' Educational Committee, he helped establish scholarships encouraging students to obtain a college education in dairy science. He was also praised for his attention to dairy equipment and informational help to milk and food sanitarians and dairy plant fieldmen.

UNIVERSITY OF MASS. TO OFFER NEW FOOD COURSE

A new course of instruction at the University of Massachusetts has been announced by Dr. Shannon McCune, Provost. Beginning with the fall term, a four year program in Food Distribution will be offered to train students for managerial positions in the food industry. "Growth and change in this industry are opening many new positions for young people with good training," said Provost McCune. The program at the University has been designed to equip graduates with the technical knowledge and managerial skills required for success in the food field. Students will combine studies in fields of food production and food technology with basic science, and with studies of business management and economics.

An advisory committee of executives of major food firms in the State has been working with the University in designing the program. The industry representatives advised the University that the new course of study should prepare students for managerial positions and should emphasize such subjects as personnel management, basic food technology, and marketing principles.

"We feel we are in a particularly strong position to offer such a program as this one," said Provost McCune. "The University, with its colleges of Arts and Sciences, and Agriculture and its School of Business, has excellent facilities for teaching a well-rounded, high-level series of courses. In addition, our location in New England provides us with the whole Boston area to use as a laboratory for practical study."

For the first two years, students in the new program will follow the basic course of study of the University and will, as do most other students, specialize in their last two years. A number of the major food firms in New England have heard of the plans for the new

course and have indicated an interest in employing its graduates.

Dr. McCune said that prospective students interested in the new program should communicate with the University Registrar at Amherst.

ANTIBIOTICS IN MILK

In the *Quarterly News Bulletin*, May 1960, issued by the Washington Milk Sanitarians Association, the following timely remarks were made by Lyall Searing of the Association.

"In all this talk about elimination of antibiotics in milk one fundamental factor in mastitis control is seldom mentioned. This is prevention of udder injury which is the reason for occurrence of antibiotics in milk. Some sanitarians have come to the conclusion that most dairymen exhibit an almost total ignorance of the principles and proper use of milking machines. The careless use of milking machines creates mastitis faster than antibiotics can cure it. Unless udder injury and infection is prevented, discontinuance of the use of antibiotics will result in more mastitis milk finding its way into the milk supply. Correction of this problem will require the combined educational efforts of all personnel in contact with the dairymen, county agents, veterinarians, fieldmen, milking machine salesmen and sanitarians."

20.2 PER CENT INCREASE IN FARM TANK INSTALLATIONS IN 1959 REVEALED IN SURVEY BY DAIRY SUPPLIERS-EQUIPPERS

The fifth annual Farm Milk Tank Survey, just completed by Dairy Industries Supply Association and National Association of Dairy Equipment Manufacturers, shows 140,793 farm milk tanks installed and in use in the United States as of January 1, 1960. This figure represents an increase of 23,690, or 20.2 per cent over the revised total of 117,103 tanks installed as of January 1, 1959.

Earlier annual figures were 91,096 on January 1, 1958; 57,386 on January 1, 1957; and 29,885 on January 1, 1956. The widespread adoption of the farm bulk system of milk handling has been one of the most rapid and revolutionary changes within the dairy industries in recent years.

Here is the state-by-state scoreboard on installations in the 12-months of 1959:

State	Installations as of 1/1/60	Installations as of 1/1/59	Increase	% of Increase
Alabama	1,122	899	223	25
Alaska	15	8	7	88
Arizona	540	470	70	15
Arkansas	685	515	170	33
California	4,689	4,384	305	7
Colorado	924	856	68	8
Connecticut	2,426	2,121	305	14
Delaware	250	125	125	100
Florida	997	972	25	3
Georgia	1,927	1,384	543	39
Hawaii	21	18	3	17
Idaho	840	746	194	11
Illinois	9,967	8,290	1,677	20
Indiana	4,650	3,158	1,492	47
Iowa	4,467	2,771	1,696	61
Kansas	1,785	1,481	304	21
Kentucky	2,728	2,541	187	7
Louisiana	2,500	2,250	250	11
Maine	1,509	1,263	246	19
Maryland	2,864	2,375	489	21
Massachusetts	1,311	1,141	170	15
Michigan	10,200	9,000	1,200	13

Minnesota	8,250	7,500	750	10
Mississippi	1,079	687	392	57
Missouri	3,272	2,651	621	23
Montana	562	472	90	19
Nebraska	1,861	1,737	124	7
Nevada	157	153	4	3
New Hampshire	679	419	260	62
New Jersey	1,028	857	171	20
New Mexico	610	382	228	60
New York	7,380	5,260	2,120	40
North Carolina	3,850	3,850	0	0
North Dakota	449	364	85	23
Ohio	9,200	7,750	1,450	19
Oklahoma	1,863	1,650	213	13
Oregon	1,195	1,194	1	.08
Pennsylvania	4,952	4,207	745	18
Rhode Island	280	267	13	5
South Carolina	656	611	45	7
South Dakota	1,360	976	384	39
Tennessee	2,307	1,325	982	74
Texas	4,775	4,525	250	6
Utah	1,100	937	163	17
Vermont	2,829	2,093	736	35
Virginia	2,525	2,225	300	13
Washington	4,000	3,587	413	12
West Virginia	196	61	135	221
Wisconsin	17,816	14,457	3,359	23
Wyoming	145	138	7	5
TOTAL	140,793	117,103	23,690	20.2

STEEL INDUSTRY GETS NEW PROCESS TO ELIMINATE STREAM POLLUTION

Nearly a billion gallons per year of polluting waste acid solutions used to pickle or clean steel — now dumped into streams and coastal waters by the steel industry — may be reclaimed using a new process just announced by Ionics, Inc. of Cambridge, Mass.

The process will not only eliminate the problem of water pollution from this source, but it also appears likely to save money for the users, according to Ionics' executive vice president, Dr. Walter Juda. Dissolved iron usually thrown away is recovered as well as the spent acid.

Millions of tons of steel sheet, wire and other products are consumed annually to make washing machines, automobiles, refrigerators and similar items for the U. S. consumer, he pointed out.

Dr. Juda backed his organization's previously confidential technical breakthrough with the first public demonstration of a small scale process unit today before the annual meeting of stockholders of American Research and Development Corporation.

He also provided cost figures showing that " . . . A typical steel plant now in daily operation and re-

quiring about 50 tons per day of sulfuric acid for steel pickling would eliminate about $500,000 per year for acid and waste disposal charges. Crediting the electrolytic iron recovered at only scrap value, costs for a reprocessing plant, including 20 per cent write-off per year plus all operating costs, would probably be significantly less," he said.

"In spite of the probable profit to be made, a break-even cost would be most welcome just to eliminate the water pollution problem," he emphasized.

Total capital investment required for the typical plant referenced by Dr. Juda was quoted as about $700,000. The overall picture shows a potential saving of about $20 million in the U. S. and an equal amount elsewhere in the western world, Dr. Juda stated.

Ionics has been working during recent months with the West German firm, Chemische Fabrik Budenheim, as a result of legislation passed last year by the free German government prohibiting water pollution of this type by steel mills. The new law threatens to shut down Germany's blossoming steel industry. The German firm is now negotiating a licensing agreement from Ionics covering the European Common Market countries, Dr. Juda indicated.

TRANSPARENCY SHOWING, DIAGRAMATICALLY, A PROCEDURE FOR DETECTION OF PENICILLIN IN MILK

The Baltimore Biological Laboratory, Inc., has prepared a transparency showing, diagramatically, a procedure for detection of penicillin in milk.

Copies of this 2″ x 2″ transparency may be obtained by writing to Balitmore Biological Laboratory, Inc., 2201 Aisquith St., Baltimore 18, Maryland.

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Laboratory Technician and Assistant Dairy Inspector, degree in dairy industry and sanitation or similiar field, required. Starting salary $4800.00 and up annually depending on experience. Paid vacation, sick leave, car allowance and other benefits. Pleasant working conditions in new air conditioned laboratory. Contact Ernest Haupt, Adams 4-5563 or write City Hall, Waterloo, Iowa.

Rockford, Illinois (population 130,000) SANITARY ENGINEER (Public Health) Minimum $7627 annual step increases to Maximum $9359. Minimum qualifications: Equivalent to M.S. degree in sanitary or public health engineering. (Experience will be considered in lieu of degree) Apply Personnel Director, Old City Hall, 126 South First Street, Rockford, Illinois.

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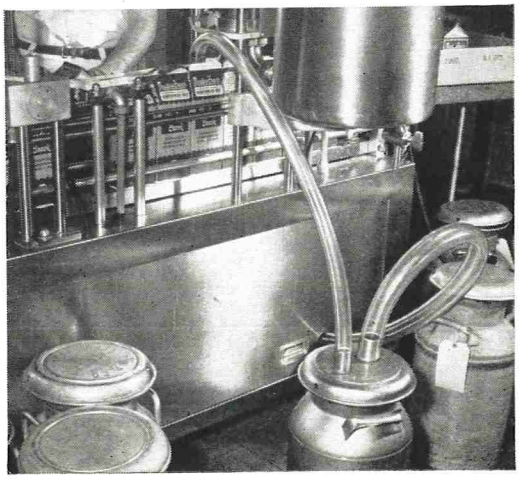

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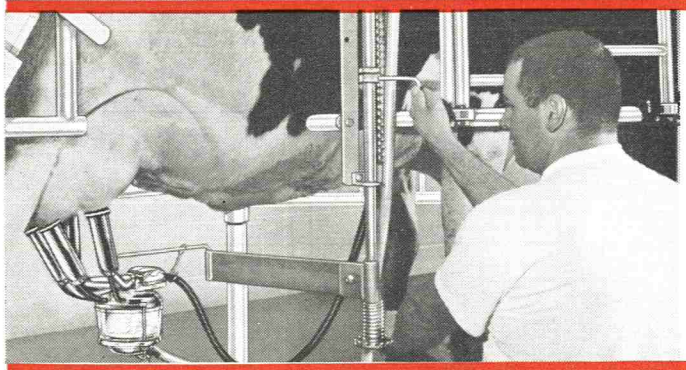

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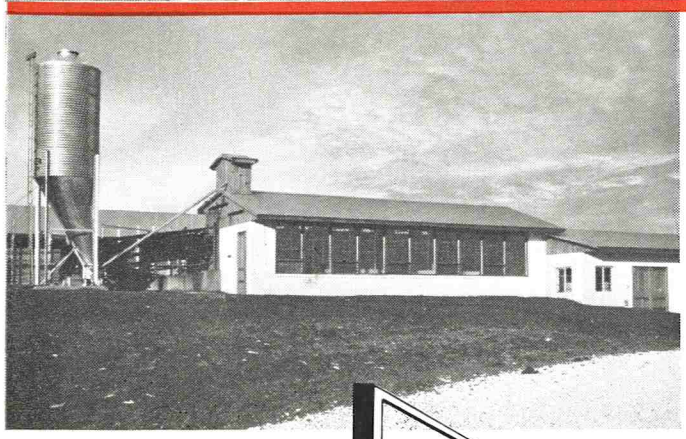

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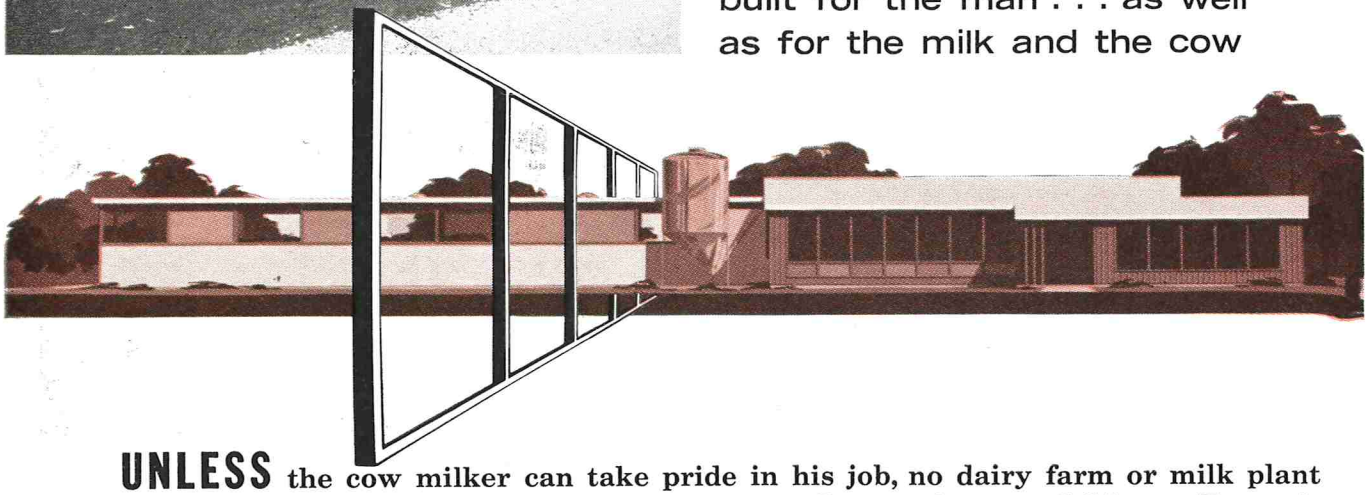

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