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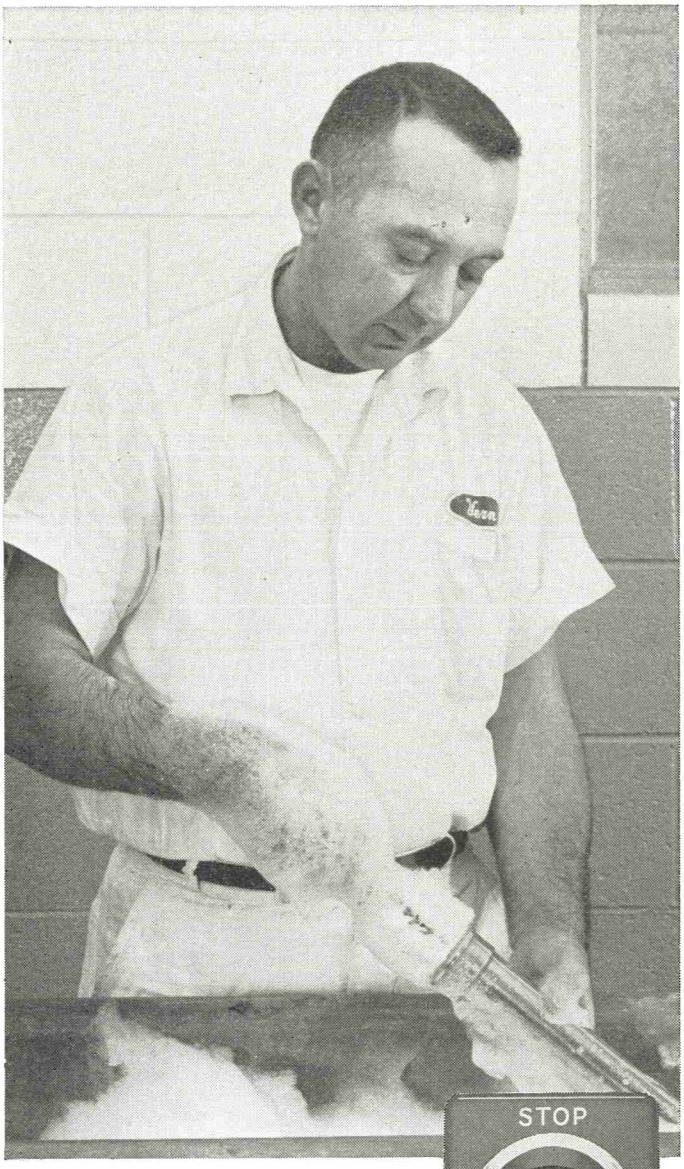

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EDITORIAL

Is Self-Inspection The Answer?

With the ever increasing cost of inspection of farms, food plants, restaurants, hotels, etc., regulatory agencies are hard-pressed to obtain the necessary funds to carry on their duties adequately. It is probably time to have a hard look at the facts and try to determine if self-inspection by industry can be an aid in reducing duplication and costs.

Before any thought can be given to self-inspection, we must remember that no official agency can abandon its legally appointed duty to protect the public health. However, this does not mean they must do all of the routine work themselves. Regulatory agencies could look upon themselves as supervisors for industry inspection. This would free many men from the routine of regular inspections, routine sample collecting and laboratory work and put them in their true position — one of regulating and supervising.

We must remember that a vast majority of the food industry is vitally interested in the improvement of product quality and safety. Similarly, eating establishments are, in general, interested in providing good facilities and healthful surroundings as a matter of good business practice. Toward this end the industry spends vast sums of money on fieldmen, plant supervisors, sanitation consultants, laboratories, etc. It would seem that by working together, regulatory agencies could make use of this information to keep informed on the day-to-day operations of industry. Most of their time could be devoted to a supervisory activity to see that industry is doing the proper work and aid them in improving their skill. Spot checks, similar to the United States Public Health Service rating surveys, could assure the regulatory agencies that the proper job is being done.

Before self-inspection can be implemented, a few basic ideas must be agreed upon and accepted by all. First, regulatory agencies must have confidence in the majority of the industry under their control and the willingness to enforce compliance on that minor segment of the industry that will not do a satisfactory job. Second, self-inspection must have the whole-hearted support of top management in the industry. Industry sponsored inspection must fulfill all requirements of the regulatory agencies and, in addition, should endeavor to make use of this inspection in an attempt to upgrade all of their operations. Management must be prepared to make decisions in the field of enforcement that may prove unpopular to stockholders, producers, or others directly effected by any such decisions. In this regard, the regulatory agencies can provide vigorous support to desirable decisions that may prove unpopular and, in so doing, aid management in doing a better job. Third, the primary purpose of regulatory inspection in the field of sanitation is the protection of public health. If inspections and programs do not provide adequate safeguards to the public health or are extended beyond the realm of public health, there is a serious question about the desirability of using tax funds for them. A vigorous health department program can do much to stimulate good products and methods, but it should not be the function of a health department to provide service and help beyond that necessary to insure the public health.

Many of our health departments have grown far beyond the stage of guardian of the public health and have become service agencies, consultants, and, in some cases, even laborers. Undoubtedly much of this has been done in a sincere attempt to help industry do the job required, but the time has come for industry to face up to their responsibility for producing goods and service that will need a minimum of inspection and that will not require extensive service by the regulatory agency.

The dairy industry has done more than many other industries in providing some measure of self-inspection. Could it do more? I believe it can. For example: It is conceivable that a dairy plant fieldman could be an unpaid deputy health inspector. In the course of routine farm calls, a farm inspector could make a health department inspection along with his routine call and file a report with the health department. Similarly, the plant superintendent could be the plant inspector, filing a regular report along with laboratory reports from a certified laboratory. Occasional spot checks of farms, plants and laboratory findings would enable the health department to evaluate the reliability of the reports. They will very quickly get to know which people are capable of self-inspection and which ones require special attention. A reduction in time spent with the former and the corresponding increase in time spent with the latter could result in a net gain in over-all quality. It seems quite uneconomical to devote as much time to supervising a person or organization that is doing a good job as one that is doing a poor job.

The use of self-inspection not only frees the regulatory official from routine activity, but also upgrades his prestige and should enable official agencies to attract higher caliber men. This release from routine inspection will also enable health departments to concentrate on the ever increasing demand for attention to such areas as air pollution, radiation hazard, etc., that are now in their infancy.

In conclusion, I believe the answer to the editorial question, "Is Self-Inspection the Answer?" must be that it is not a complete answer, but it is one that certainly can be used to advantage much more extensively than at present.

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EFFECT OF PIPELINE MILKING AND BULK HANDLING ON THE ACID DEGREE OF RAW MILK[1]

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(Received for publication March 8, 1961)

Composite samples of milk taken at several stages in the milk-pipeline and bulk handling system were tested for acid degree. It was apparent that a large part of the rancidity induced by the system studied had its origin in the plastic milk hose between the milking unit and the pipeline. This influence was compounded when a milk-metering device was placed in the line, possibly as a result of the additional length of milk hose required by its installation. The data further show that handling after the pipeline operation has no influence in the development of the rancid flavor beyond that already initiated in the pipeline itself or spontaneously present in the milk.

With the increased use of pipeline milkers and bulk handling of milk during the past few years, the problem of rancidity in milk has been growing in importance. The general problems of rancidity, lipolysis, and lipase action in milk have been reviewed by Herrington *(4, 5)* and are generally understood by workers in the dairy industry. When milk is drawn from the udder and held warm, the lipase remains relatively inactive *(3, 9);* but agitation of the warm milk rapidly increases lipase activity. On the other hand, lipase activity is accelerated in cooled milk; although agitation of cooled milk produces less change in the activity *(2)*. Other workers *(1, 7, 8, 11)* report that rancidity is initiated by foaming, turbulence, and agitation while milk is warm and the fat is in a liquid state. More complete studies *(6, 10)* of hydrolytic rancidity in pipeline milkers and bulk tanks show that acid degree is increased by the number and height of risers, length of line, excessive air intake causing foaming, continuous operation of starved milk pumps, and lack of full lines. With few exceptions, bulk cooling tanks and transport tanks can be eliminated as being the cause of hydrolytic rancidity in milk.

This study was undertaken to determine where changes in acid degree might occur in the handling of raw milk through a conventional pipeline and bulk handling system.

Experimental Procedure

Samples of raw milk were collected at the University Dairy Farm and the University Plant. These samples were analyzed for acid-degree values (ADV) using the Simplified Method for Hydrolytic Rancidity in milk developed by Thomas *et al. (12)*. This method expresses the rancidity in terms of acid-degree value (ADV) where milk with a value of 1.3 is considered as turning rancid and a value of 2.3 as definitely rancid. Herrington and Krukovsky *(3)* report that several procedures are in use for measuring acid-degree values; all yield essentially the same results, though there are small differences.

Samples for analysis were collected at the various stages throughout the milk-handling procedure as follows:

1. Composite sample of milk from all cows before milking machine was attached.
2. Composite sample taken after milk had passed through milk-metering device.
3. Composite sample taken after milk had passed through the pipeline system and before it entered the cooling tank (end of pipeline).
4. Sample of milk from the cooling tank, after cooling and storage for 10 hours (morning milk only).
5. Sample from transport tank after night storage and before hauling to dairy plant (morning and evening milk).
6. Sample from tank after transportation to the plant and before milk was pumped into pasteurizing vat.
7. Sample from pasteurizing vat before heating.
8. Sample of pasteurized milk.

Samples were taken for a period of 18 months. During the first 10 months of the experiment, the samples were taken once a month and analyzed for ADV within one to two hours after sampling. For the last eight months, samples were taken twice a month and held for 12-16 hours at 38°F. before analysis. A 1½-in. glass line carried milk to the receiving jar from inlet valves located 30 ft. to 48 ft. distant in the milking parlor. There were two 90° and two 45° elbows, but no risers in the line. A continuously operated diaphragm pump was used. An 8-ft. plastic milk hose carried milk from the teat-cup assembly to the pipeline located 6 ft. above the cowstall floor. When the milk-metering device was used, an extra 5 ft. of milk hose was used, making a total of 13 ft. of milk hose from cow to pipeline. The milk was cooled to within 38° to 40°F in an ice-bank-type cooling tank within an hour after milking was completed.

[1]Published with approval of the Director, Wyoming Agricultural Experiment Station, as Journal Paper No. 167.

TABLE 1. AVERAGE ACID DEGREE VALUES OF MILK SAMPLES TAKEN AT VARIOUS STAGES OF THE BULK HANDLING SYSTEM

Description	No. Trials	Composite (Cow)	Metering device	End of pipeline	Bulk tank prior to P.M. Milking	Transport tank Farm	Transport tank Plant	Past. Vat	Past. Milk
				Part I[a]					
Pipeline only	7	0.54±.05[b]	- -	0.84±.18	1.13±.16	1.08±.15	1.14±.15	1.15±.16	1.20±.14
Milk metering device + pipeline	3	0.47±.09	0.68±.04	0.84±.15	N. S.	1.61±.49	1.73±.55	1.69±.53	1.89±.46
				Part II[c]					
Milk carried to bulk tank	5	0.55±.08	- -	- -	0.60±.11	0.65±.08	0.64±.11	0.66±.10	0.79±.10
Pipeline only	5	0.55±.09	- -	0.86±.18	1.02±.23	1.00±.22	1.00±.18	1.02±.19	1.03±.22
Milk metering device + pipeline	9	0.56±.03	0.99±.16	1.16±.20	1.51±.33	1.63±.46	1.63±.40	1.64±.41	1.71±.44

[a]Samples analyzed after collection
[b]Values after ± signs indicated standard deviation
[c]Samples held 12-16 hr. prior to analysis

RESULTS AND DISCUSSION

Average acid-degree values of milk samples taken at various stages of the bulk-handling system are presented in Table 1.

During the first phase of the experiment, duplicate composite samples were taken both morning and night from cows, from the milk-metering device, and from the end of pipeline. One sample of each was cooled immediately to 38°F, while the other was not cooled and remained at room temperature until analyzed, one to two hours after sampling. When the acid-degree values were tested statistically by the analysis of variance, there was no significant difference between morning and evening milk or between warm and cooled samples at each of the above points of sampling. Therefore, values for all four samples were used in computing the average values in Part I of Table 1.

The increase in ADV between the cow and the pasteurized product was considerably greater when the milk passed through the pipeline than when it was hand-carried to the bulk tank. This increase was magnified when a milk-metering device was placed in the line. Examination of the ADV of samples taken at various stages in the handling process reveals that these differences can be traced directly to the agitation of milk occurring in the hose between the milking machine and the pipeline. The added effect of the presence of the milk-metering device is believed to be a result of the additional five-foot length of hose it introduces into the system, rather than the mechanics of the device itself. By observation through plastic hoses, there appeared to be more agitation, churning action, and foaming in the hose from the outlet hose of the milk-metering device to the pipeline than in the hose from the cow to the pipeline or metering device. Irvin *(8)* states that air agitation tends to induce rancidity more than does mechanical agitation. Only a slight increase in ADV could be traced to agitation of the milk in the bulk tank or tank truck or during plant handling.

Table 2. AVERAGE INCREASE IN ACID DEGREE VALUE BETWEEN SAMPLING POINTS[a]

	Cow - metering device	Cow - end of pipeline	Cow - bulk tank	Cow - past. milk	End of pipeline - bulk tank	Bulk tank - past. milk
Milk carried	- -	- -	0.05	0.24	- -	0.19
Pipeline only	- -	0.31	0.47	0.48	0.16	0.01
Milk metering device + pipeline	0.43	0.60	0.95	1.15	0.35	0.20

[a]Data from Part II of Table 1 used

Table 2 shows the average increase in ADV between sampling points and, for the most part, is self-explanatory. The data show that, when milk is cooled rapidly and held at a low temperature, near 38 F, the increase in ADV is directly related to the amount of agitation. Holding the cooled milk an additional 12 to 16 hours (bulk tank to pasteurized milk) did not appreciably increase the ADV. These differences, when tested statistically, using the *t* test, were found to be non-significant.

Results indicate that induced rancidity of milk could be reduced by installing pipeline systems at a lower level and thereby eliminating long milk hoses. The data also agree with a previous report *(8)* that, with few exceptions, agitation of cold milk in bulk cooling and transport tanks can be eliminated as being the cause of hydrolytic rancidity in milk.

Variations in the degree of rancidity due to season and stage of lactation are not considered in this study. However, data obtained in a limited number of trials suggest that milk from cows in late stages of lactation is more susceptible to induced rancidity than milk from cows in the early months of lactation. Such a possibility is worthy of further study.

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COOLING CUSTARDS AND PUDDINGS WITH COLD-TUBE AGITATION[1]

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This investigation is concerned with the cooling of 4-gal batches of custards and puddings from an initial temperature of 140°F to a final temperature of 60°F, using a rotating cold tube agitator. Variables were: (a) level of egg, (b) level of cornstarch, (c) level of sugar, and (d) rate of cold-tube agitation. Total cooling time decreased as the rate of agitation increased. All but one of the forty-eight mixtures cooled within 3 hr when agitated at 18 rev/min; all but five cooled within 5½ hr. when agitated at 6 rev/min. As the level of egg in the mixture increased the total cooling time decreased. As the level of sugar increased the total cooling time also increased, but the increase in total time was not in proportion to the increase in the level of sugar. In each instance, agitation at 18 rev/min produced a greater increase in radius of spread. Cornstarch was the most significant factor influencing the change in density of the mixtures. There was a greater increase in density value in the mixtures made with the high level of cornstarch than in the mixtures made with the low level of cornstarch. As the level of egg in the mixtures increased, the differences in density value also increased.

The need for cooling large batches of food prior to their refrigeration has been emphasized *(3)*. Hammer *(1)* reported studies on the cooling of cornstarch puddings at room temperature, by agitation using a kitchen mixer. In this laboratory, starch-thickened food items were precooled using cold-tube agitation; the results indicated that efficient cooling of white sauces can be obtained by this method without objectionable changes in consistency *(2)*.

The present investigation is concerned with the cooling of large batches of custards and puddings using the rotating cold-tube agitator described in the earlier publication *(2)*. The aim was to gain information on the heat transfer from mixtures cooled in this manner, and to observe certain quality characteristics of the mixtures which might be affected by this method of cooling.

VARIABLES

Stirred custards and cream puddings were cooled using a rotating cold tube as agitator; refrigerated water flowed through the tube. During the cooling period temperatures were recorded in specified locations within the mixtures and in the surrounding air. Relative viscosity and density measurements were taken on the mixtures before and after cooling to determine possible changes in quality attributable to this method of cooling. The variables were:

1. The level of egg in the mixture (6, 9.5, 13, and 16.5 oz/gal milk).
2. The level of cornstarch in the mixture (3 and 6 oz/gal milk).
3. The level of sugar in the mixture (0, 8, and 16 oz/gal milk).
4. The rate of agitation of the cold tube (6 and 18 rev/min).

Forty-eight experiments were carried out. For each experiment the level of reconstituted egg, the level of cornstarch, the level of sugar, and the rate of agitation were varying factors.

EXPERIMENTAL PROCEDURE

Four-gal batches of the mixtures were prepared using the level of ingredients stated above. A 2-step method was used to combine the ingredients. The milk and one half of the sugar were heated to 88°C (190.4°F). The remaining half of the sugar and the cornstarch were sifted together and combined with the egg using no. 2 speed on the mixer[2]. The egg-cornstarch mixture was then added to the heated milk using approximately 50 brisk strokes. The mixture was cooked for 45 min, with occasional stirring until the raw starch flavor disappeared and the radius of spread measured approximately 25 to 35 mm for the 3-oz cornstarch mixtures, and 12 to 16 mm for the 6-oz cornstarch mixture. After cooking, 4 gal of the mixture were first cooled in a water bath[3] to 140°F and thoroughly blended before the agitator was inserted. The mixture was cooled under constant agitation to a final temperature of 60°F. Aliquots were removed from the mixture for specific tests before and after the cooling period.

The equipment and objective measurements of relative viscosity and density used in the present investigation were the same as described in the previous publication *(2)*.

RESULTS, ANALYSIS, AND DISCUSSION

The total times necessary for the custards and puddings to cool from an initial temperature of 140°F to a final temperature of 60°F, and the radius of

[1]This is part of a larger project titled "Heat Transfer in Foods Prepared and Cooled in Quantity."

[2]Hobart, Model A-200.

[3]The sauces were agitated at 15-min intervals while cooling in a flowing cold water bath (42°F); water flowed in at a rate of 0.6 ft³ per min.

TABLE 1—THE TOTAL COOLING TIME, AND THE RADIUS OF SPREAD (RELATIVE VISCOSITY) AND DENSITY DETERMINED IN CUSTARDS AND PUDDINGS BEFORE AND AFTER COOLING WITH THE COLD-TUBE AGITATOR.

Amount[a] of			Agitation rate	Total cooling time	Radius of Spread[b] (relative viscosity)		Density[c]	
Egg	Cornstarch	Sugar			Before cooling	After cooling	Before cooling	After cooling
(oz)	(oz)	(oz)	(rev/min)	(min)	(mm)	(mm)		
6	3	0	6	290	33.6	34.1	1.177	1.174
			18	130	31.1	36.1	1.166	1.172
		8	6	180	38.3	38.4	1.225	1.194
			18	120	38.9	42.1	1.207	1.191
		16	6	330	31.8	34.8	1.219	1.217
			18	130	30.4	35.6	1.222	1.218
	6	0	6	410	16.0	18.8	1.152	1.181
			18	130	17.4	18.9	1.165	1.173
		8	6	235	12.6	16.9	1.168	1.190
			18	180	14.1	19.4	1.198	1.200
		16	6	390	17.0	17.1	1.195	1.215
			18	160	19.0	25.3	1.189	1.207
9.5	3	0	6	270	27.8	28.8	1.161	1.176
			18	110	28.9	33.4	1.173	1.177
		8	6	300	25.8	29.4	1.199	1.193
			18	105	25.6	27.9	1.199	1.195
		16	6	340	26.6	28.5	1.192	1.209
			18	130	28.5	33.9	1.215	1.216
	6	0	6	270	16.6	17.8	1.161	1.163
			18	210	16.0	20.5	1.162	1.166
		8	6	305	12.0	16.8	1.178	1.193
			18	160	12.5	19.4	1.179	1.202
		16	6	370	18.8	20.6	1.196	1.199
			18	170	18.1	22.3	1.194	1.205
13	3	0	6	320	25.3	26.8	1.153	1.165
			18	110	24.5	29.0	1.159	1.166
		8	6	240	24.6	25.5	1.172	1.197
			18	105	25.3	30.4	1.202	1.206
		16	6	340	26.0	29.3	1.199	1.211
			18	170	25.9	28.5	1.193	1.191
	6	0	6	300	14.9	17.1	1.151	1.163
			18	115	14.8	18.5	1.149	1.168
		8	6	215	11.8	16.1	1.181	1.200
			18	125	15.8	19.5	1.180	1.182
		16	6	210	18.4	20.6	1.181	1.192
			18	180	14.8	21.5	1.179	1.207
16.5	3	0	6	250	18.6	19.5	1.167	1.181
			18	135	20.6	25.4	1.161	1.170
		8	6	260	22.1	22.3	1.181	1.187
			18	100	20.4	24.4	1.185	1.187
		16	6	270	18.6	27.0	1.210	1.216
			18	150	22.6	27.0	1.211	1.212
	6	0	6	310	14.5	17.4	1.161	1.163
			18	125	12.3	19.4	1.170	1.171
		8	6	265	10.5	14.3	1.169	1.202
			18	95	13.6	17.4	1.181	1.198
		16	6	300	9.3	15.9	1.186	1.223
			18	120	11.0	15.3	1.201	1.211

[a]Ounces per gal. of milk.
[b]Figures were carried to 3 decimal places for statistical analysis.
[c]Figures were carried to 5 decimal places for statistical analysis.

TABLE 2—MEAN SQUARES AND F VALUES FOR THE SOURCES OF VARIATION.

Source of variation	Degrees of freedom	Total cooling time		Change in Radius of spread relative (viscosity)		Change in density	
		Mean square	F value	Mean square	F value	Mean square	F value
E[a]	3						
E_L	1	6161.1	7.99*	7.0881	2.02	3045.938	7.24*
E_Q	1	216.8	<1	.6522	<1	285.188	<1
E_C	1	1643.3	2.13	1.1711	<1	440.104	1.05
C[b]	1	4563.0	5.92	7.0879	2.02	12903.521	30.67**
S[c]	2						
S_L	1	2363.3	3.07	10.0072	2.86	148.781	<1
S_Q	1	16511.3	21.42**	.0339	<1	326.344	<1
R[d]	1	286443.0	371.62**	46.3249	13.22*	2173.521	5.17
EC							
E_LC	1	5860.8	7.60*	.2670	<1	1876.004	4.46
E_QC	1	1727.9	2.24	.0377	<1	3553.521	8.45*
E_CC	1	2926.0	3.80	.0100	<1	297.038	<1
ER	3						
E_LR	1	390.1	<1	3.9540	1.13	964.004	2.29
E_QR	1	341.3	<1	.2633	<1	150.521	<1
E_CR	1	660.0	<1	.1300	<1	28.704	<1
ES	6						
E_LS_L	1	213.9	<1	.6194	<1	514.806	1.22
E_QS_L	1	569.5	<1	1.9776	<1	38.281	<1
E_CS_L	1	406.4	<1	.0044	<1	200.256	<1
E_LS_Q	1	1119.4	1.45	7.3124	2.09	2985.019	7.10*
E_QS_Q	1	645.8	<1	6.9580	1.99	348.844	<1
E_CS_Q	1	2345.3	3.04	.2514	<1	348.502	<1
CS	2						
CS_L	1	1444.5	1.87	.8272	<1	2432.531	5.78
CS_Q	1	27.1	<1	11.0399	3.15	2450.260	5.82
CR	1	140.1	<1	.6086	<1	28.521	<1
SR	2						
S_LR	1	7.0	<1	3.9235	1.12	81.281	<1
S_QR	1	4662.1	6.05*	.8261	<1	25.010	<1
ECS	6						
E_LCS_L	1	113.9	<1	.9310	<1	1282.556	3.05
E_QCS_L	1	94.5	<1	2.3680	<1	520.031	1.24
E_CCS_L	1	262.7	<1	2.2884	<1	41.006	<1
E_LCS_Q	1	0.6	<1	4.6031	1.31	174.002	<1
E_QCS_Q	1	102.1	<1	.2704	<1	276.760	<1
E_CCS_Q	1	722.8	<1	1.0797	<1	5247.019	12.47*
ECR	3						
E_LCR	1	13.1	<1	.0176	<1	781.204	1.86
E_QCR	1	9020.2	11.70*	1.0784	<1	7178.521	17.06**
E_CCR	1	91.2	<1	.5386	<1	42.504	<1
ESR	6						
E_LS_LR	1	787.7	1.02	21.2030	6.05*	644.006	1.53
E_QS_LR	1	0.8	<1	1.8264	<1	116.281	<1
E_CS_LR	1	8482.7	11.01*	2.7602	<1	85.556	<1
E_LS_QR	1	7704.0	9.99*	3.4265	<1	840.052	2.00
E_QS_QR	1	2390.0	3.10	2.5204	<1	388.010	<1
E_CS_QR	1	3472.3	4.50	.8263	<1	2021.302	4.80
CSR	2						
CS_LR	1	488.3	<1	8.4615	2.41	331.531	<1
CS_QR	1	333.7	<1	3.3171	<1	1433.760	3.41
ECSR	6	770.8		3.50475		420.701	

**Significant at the 1% level.
*Significant at the 5% level.

[a] Egg
[b] Cornstarch
[c] Sugar
[d] Rate of Agitation

spread and density measurements taken on the mixtures before and after cooling by agitation, are presented in Table 1. An analysis of variance was carried out on the total cooling times and also on the radius of spread and density values, each value representing the difference in measurements taken on the mixtures before and after cooling (Table 2).

Total Cooling Time

In all the custards and puddings prepared, the total cooling time decreased as the rate of agitation increased. The mixtures agitated at 18 rev/min cooled in less than one half the time necessary to cool the mixtures agitated at 6 rev/min in all but eight instances, four of which were mixtures made with the 8-oz level of sugar. All but one of the 48 mixtures cooled within 3 hr when agitated at 18 rev/min. All but five of the mixtures cooled within 5 1/2 hr when agitated at 6 rev/min (Table 1).

In the analysis of variance, rate of agitation (R) was the most significant factor influencing the total cooling time. The effect of sugar (S), although significant, was not linear; that is, as the level of sugar increased the total cooling time also increased, but the increase in total time was not in proportion to the increase in the level of sugar. The egg (E) affected cooling time significantly; as the level of egg in the mixture increased the cooling time decreased linearly. There were several 2- and 3-factor interactions, as shown in Table 2.

This method of cooling pudding resulted in shorter cooling times than the method reported by Hammer *(1)* who cooled 100 portions (less than 2 gal.) of a cornstarch pudding at room temperature by beating in a kitchen mixer. Her data showed that 1 3/4 hr were required to cool these puddings from 142°F to 77°F. In the present study, the same length of time was sufficient to cool batches of pudding twice as large by cold tube agitation. To make this comparison, the cooling times of batches made with a formula similar to that used by Hammer, were used (9.5 oz. egg, 16 oz. sugar, and 6 oz. cornstarch).

Quality Characteristics

Relative viscosity. Since the relative viscosity was measured as radius of spread in millimeters, an increase in radius of spread denotes a decrease in relative viscosity and a thinner consistency.

The radius of spread was influenced by rate of agitation. In each instance, a greater increase in radius of spread was noted in the mixtures agitated at 18 rev/min than in the mixtures agitated at 6 rev/min; the increase being one and one-half times as great in the mixtures agitated at the faster rate (Table 1). In the analysis of variance, rate of agitation (R) was the only main effect affecting relative viscosity (Table 2).

Density. The density was determined by the weight of the mixture compared to the weight of an equal volume (50 ml) of water, the density of water being 1.0 at 39.2°F (4°C).

In every case the density of the mixtures was greater than that of water, before and after cooling by agitation. Cornstarch (C) was the most significant factor influencing the change in density. There was a greater increase in density value observed in the mixtures made using a 6-oz level of cornstarch than in the mixtures made using a 3-oz level of cornstarch. Level of egg (E) was also a significant factor; as the level of egg in the mixtures increased the differences in density value attributable to cooling by agitation increased.

Observations. Observations on consistency and texture were made on the majority of the mixtures by six members of the Department of Institution Management staff; not included were batches made with the 8 oz level of sugar and the 16.5 oz level of egg. In general, the mixtures were judged to be smoother and glossier after agitation; this observation is in accord with the results reported by Hammer *(1)*. Although there was a change in radius of spread attributable to agitation, this change in the consistency of the custards and puddings was acceptable for service.

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TECHNOLOGY OF CRABMEAT PRODUCTION – A BIBLIOGRAPHY

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A bibliography dealing with food and food technology aspects of the body and leg muscles of crabs, has been unavailable. Such a compilation would be valuable to give logical direction to research and point-up individual problems that require study. The collection contained herein, was prepared to serve these needs.

In attempting to gather the pertinent literature, ministries, laboratories and libraries around the world were solicited. These inquiries elicited a gratifying response, producing several previously unknown publications and at the same time, indicating the striking paucity of literature in this area. It was firmly established that only six species of five genera are fished on a commercially profitable scale. Interestingly enough, published papers deal only with these same six forms.

While the stone crab, *Menippe mercenaria*, is fished in the south Atlantic coastal areas of the United States, it is of little commercial value; material dealing with its development technologically, have not been published. A similar situation exists with respect to *Portunus pelagicus*, of Austrialian waters.

It appears that some of the crab resources of South America particularly *Callinectes*, are not utilized and that additional fishing grounds may be discovered by exploring the inshore waters. Although the rock crab, *Cancer irroratus*, seems to be present along the eastern coast of the United States in numbers to justify a fishery, little study has been made of methods of meat removal; a problem that can easily mean the difference between profit and loss to a producer.

While *Portunus pelagicus* is caught by Australian crabbers, information is yet too meager to encourage speculation regarding its future potentialities. A similar condition exists in The Philippines, the inshore waters of India, Egypt, Israel and West and South Africa. It may well be that exploratory studies of the abundance of other genera and those already known could lead to additional sources of low-cost high-quality food. With rapidily expanding populations such increases in the food supply will be welcome.

Industry may find it profitable to investigate the possibilities of expanding operations to encompass markets more distant than present storage-transportation facilities allow. In the United States for example, pasteurization[2] of crabmeat in sealed double-seamed cans has increased the cold-storage life of meat of the atlantic blue crab. This technique is already beginning to increase the market areas for this product.

Other technological investigations are worthy of study; utilization of scrap waste for by-product development and automatic picking methods to increase yield and reduce production costs, to mention but two. Few papers actually deal with handling, cooking and storage of the meat. Only one paper dealing with the blue crab, *Callinectes sapidus* (Rathbun), treats of removal of meat from the shell, yet this is a major consideration in any appraisal of yield. These have been neglected areas of investigation. The outstanding lack however is the subject of nutrition. A definitive study of the vitamin, amino acid and mineral content of any of the crabmeats is unknown to the author. With the study of diet and dietetics so important these days, such an investigation would fill a wide gap in our knowledge and supply needed information. Review of this bibliography may suggest additional areas for study.

[1]Present address: Vita Food Products, Inc., Chestertown, Maryland.

[2]170°F for 1 minute internal temperature at geometric center of the can, is minimum for storage at below 43°F, to achieve a year of preservation.

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COMMITTEE REPORTS

REPORT OF THE COMMITTEE ON SANITARY PROCEDURE—1960

The 1959 Annual Report of this Committee, presented at the Glenwood Springs Meeting, included coverage of the results of the meeting of the 3-A Sanitary Standards Committees held on August 23-26, just prior to the Annual Meeting of the Association. Only one meeting of the 3-A Sanitary Standards Committees has been held since the 1959 Annual Meeting of the Association. That meeting was held at the Continuing Education (Kellogg) Center at the University of Georgia, Athens, Georgia, on February 29 and March 1 and 2, 1960.

That meeting was attended by nine members[1], the ex-officio member, and the chairman, of a total of sixteen. Caucuses of the Sanitarians were attended by seven representatives of the Milk and Food Program of the USPHS, all of whom are members or officers of this Association, and, intermittently, by President Wm. V. Hickey and by several other members connected with other committees.

The two accomplishments of the Athens meeting of immediate interest to milk sanitarians were *(a)* the final and official approval of the 3-A Sanitary Standards for Farm Milk Cooling and Holding Tanks — Revised, (J. Milk and Food Technol., **23**: 172-178. 1960) and which became effective on September 1, 1960, and *(b)* the adoption of an amendment to Subsection D(4) of the 3-A Sanitary Standards for Stainless Steel Automotive Milk Transportation Tanks for Bulk Delivery and/or Farm Pick-up Service, to permit a maximum interior length of 38′ 6″ for tanks with one manhole. This amendment became effective on July 5, 1960.

Of the four tentative sanitary standards reviewed during the Meeting the most progress toward completion was made in those covering Automatic Bulk Milk and Milk Products Vending Machines. The comments of the caucus of Sanitarians have been made available to the Task Committee, and a revised draft of these sanitary standards should be available for consideration at the next Meeting of the Committees.

A screening test, consisting of exposure to normal washing and bactericidal materials and procedures, for Plastic Materials as Product-Contact Surfaces, in Multiple Use, for Dairy Processing Equipment, was reviewed, and suggestions for minor modifications in the procedure were submitted to the Task Committee.

The determination of the desirable and essential physical properties and characteristics of plastics and rubber and rubber-like materials, within relatively narrow ranges of instrument measurement or chemical assay, for specialized applications in dairy equipment, requires a degree of technology which few, if any, sanitarians are in position to provide. Therefore, in the fixing of the limits for ranges of physical properties of these materials, for specific uses, members of the Committee on Sanitary Procedure are compelled to defer to the recommendations of the manufacturers of these materials, and the experience of fabricators who use parts made of them, or to research and experimental investigations performed by Government agencies and educational institutions, in agreeing to the limits proposed. It is obvious that sanitarians will not be in position to verify physical properties of such materials, either in the field or at an office desk. And it is equally obvious that some of the physical limitations ultimately agreed upon, such as the specific degrees of hardness or resilience, are principally of concern to fabricators. Sanitarians — and the users of the equipment — are primarily concerned with absorption of butterfat, water, detergent and sanitizing solutions, the stability of these materials with respect to cracking or disintegration, and the migration of components — especially those which may, from time to time, be declared toxic or carcinogenic — into the products processed.

Limits to absorption can be agreed upon, and fixed, although the frequency of tests in the field is extremely questionable. Everyone desires that the rubber parts of equipment last for a reasonable number of uses without displaying

[1]The names of the signatories of this Report who attended the Athens Meeting are indicated by astericks.

visible evidence of deterioration; but, it would be impractical to fix, in sanitary standards, a minimum use-life.

The criterion "relatively stable," which appears in the 3-A Sanitary Standards for Storage Tanks and for Automotive Transportation Tanks has served for over thirteen and nearly eleven years, respectively, without posing serious problems to regulatory sanitarians nor creating recognizable hazards to the health of milk consumers; nevertheless, the Committee will endeavor to fix upon a somewhat more specific provision.

With respect to the composition and toxicity of these materials, although gaskets and milking machine inflations, of compositions which, until the first 3-A Sanitary Standards were published — in 1946 — were unrestricted, have been in use for years without recognizable deleterious effect upon the health of consumers of dairy products, the Committee has no alternative to support of the inclusion of a provision that the composition of gasket, and similar—use material, *must* be free of carcinogens and other toxic components. It is to be hoped that Food and Drug Administration exemptions will include all of the components currently used in the compounding of rubber for parts used in dairy equipment, by the time the 3-A Sanitary Standards for Rubber and Rubber-like Maaterials become effective.

A meeting of an ad hoc committee on the Tentative Sanitary Standards for Rubber and Rubber-like Materials was held in Chicago on June 29. At this meeting most of the misconceptions of both sanitarians and Task Committee members were clarified. A revised draft of these Tentative Sanitary Standards is now in course of preparation.

The other Tentative Sanitary Standard reviewed by the Sanitarians were those pertaining to Batch and Continuous Freezers of Ice Cream, Ices, and Similarly Frozen Foods. The intended interpretation of the title of these sanitary standards is that they shall apply only to factory-type freezers. However, a number of features of freezer design and construction are virtually identical, whether the freezer be used seasonably to make frozen custard or soft ice cream, or around the calendar to make thousands of gallons of ice cream for wholesale distribution. Nevertheless, the National Sanitation Foundation has already, by abrogating an understanding with the 3-A Sanitary Standards Committees, formulated and published sanitary standards for counter or soft-serve freezers.

In a number of States and larger municipalities the same department and personnel exercise sanitation supervision over frozen custard stands, counter freezer installations, *and* ice cream manufacturing plants. This situation makes it desirable — it obviously is most logical — that the NSF and the 3-A Sanitary Standards for Freezers be analogous with respect to identical features — not necessarily in text, but at least in principle. Whether the adoption of such 3-A Sanitary Standards, applicable to all types of freezers, would offend those who formulated the N.S.F. Sanitary Standards, or those who apply them is, of course, debatable. However, the International Association of Ice Cream Manufacturers, i.e., the users of factory freezers, have made it clear that they will not support the adoption of Sanitary Standards applying to all types of freezers.

In these circumstances progress toward the development of sanitary standards has been somewhat less rapid than is desirable. However, a meeting of Sanitarians with the DISA Task Committee on Freezers has been scheduled for October 29, 1960.

The 1959-60 activities of this Committee have been outlined in detail for two reasons: *(a)* This is a Committee Report to the Association membership, which is entitled to full knowledge of the doings of the Committee and the progress of its program; and *(b)* to indicate the increasing difficulties which the Committee faces. The equipment now being covered by 3-A Sanitary Standards has passed beyond the simple units, such as storage tanks, can-type strainers, pumps, and such. In plastics and rubber, the Committee is dealing with materials far more complex than "18-8 stainless steel with a carbon content not in excess of 0.012 per cent." It may be charged by some that the Committee is prone to establish sanitary standards more rigid than necessary; but, in view of the current regulatory policies respecting food additives the term "rigid" takes on a relative sense.

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

REPORT OF THE COMMITTEE ON FROZEN FOOD SANITATION—1960

Because of the work being done by various agencies around the country concerning many of the facets of frozen food sanitation, your committee felt that it would be advisable to gather information concerning these projects and report to the association so that the membership would be informed of the developments in this field.

The growth of the frozen food business since World War II has been phenomenal. The volume of production of these foods has doubled each four years. New items are appearing on the market constantly and it becomes increasingly difficult to stay abreast of the manufacturing processes and equipment, and the freezing, transportation, and storage practices in the industry.

As is usual in any rapidly expanding industry, technology, equipment, and procedures lagged behind the increasing demand for more and more production. This frequently caused the industry to place relatively untried foods on the market. Outmoded or antiquated equipment often was used and attempts were made to modify other types of food processing equipment to do specific jobs in the frozen food industry. Furthermore, freezing and refrigerated storage and transportation facilities often were overburdened. A combination of these factors could produce serious results. A study conducted by this committee (J. Milk and Food Technol., **20**: 145-148. 1957) showed the presence of extremely high bacteria counts including coliforms, paracolons and other members of the gram negative enteric group in many samples of commercially frozen foods. Litsky *et al.* at Amherst and Abrahamson of New York City have shown similar results in published articles.

Several years ago, some regulatory officials throughout the country recommended to the Association of Food and Drug Officials of the United States (AFDOUS) that an empirical

bacteriological standard be established for frozen foods. After deliberation, the Association concluded that this would not be practical for several reasons. First, no work had been done to correlate the bacterial load in a given product with the sanitary conditions in the plant where the food was manufactured. Second, there was no evidence to show that a single bacteriological standard could reasonably apply to a multitude of different products. In addition, little was known as to the effects of varying conditions during transportation and storage on the bacterial load of a product at the point of retail sale. Therefore, AFDOUS decided that a study should be made of the problem to determine the advisability and practicability of setting bacterial standards for frozen foods. The committee soon discovered that this was not a simple undertaking and that much background information would have to be developed before the basic problem could be attacked.

When the industry learned of the activities of the committee, they immediately, through their trade organization — The National Association of Frozen Food Packers (NAFFP), approached AFDOUS and requested that they be permitted to assist in the study. They pledged the assistance and cooperation of the members of their trade organization and also offered some financial assistance. They proposed that a code, embracing not only the maintenance of temperatures, but standards of sanitation, performance, and maintenance of quality, be drafted for the frozen food industry. This code would be advisory to the members of the frozen food industry and would be used by regulatory people as the basis for state laws and regulations to provide uniform laws and regulations nationwide. AFDOUS accepted this proposal and a joint committee was established.

The joint committee decided that certain basic background information was needed and, using funds contributed by the NAFFP, retained Dr. G. M. Dack, Food Research Institute, to conduct a bacteriological study of several classes of frozen foods and attempt to correlate the sanitary conditions in manufacturing plants with the bacterial quality of the finished product. In addition, through the cooperation of state and local regulatory people, a nationwide survey was conducted to determine the conditions under which frozen foods were being handled at the retail level.

At the 1958 annual meeting of AFDOUS, it was decided that immediate steps should be taken to establish a code of sanitation, procedures, and performance for the frozen food industry. It was further decided that in order to expedite the work, the task be divided among several subcommittees. A Frozen Foods Standards Committee was appointed to study the problem of bacteriological standards for frozen foods. Three subcommittees also were appointed. A subcommittee was appointed on Procedures, Standards and Specifications for Frozen Food Processing Equipment which was chaired by A. E. Abrahamson, New York City Department of Health, who is also a member of IAMFS. A second subcommittee was concerned with the retail handling of frozen foods, including the standards and specifications for retail frozen food display cabinets. This committee was chaired by Harold Clark of Connecticut. The third subcommittee was charged with developing the section of the code having to do with in-plant freezing, transportation and storage of frozen foods. This subcommittee was chaired by Frank E. Fisher, who is also chairman of the Frozen Food Sanitation Committee of IAMFS. These committees were composed of members of both AFDOUS and NAFFP.

In 1959, at the annual meeting of AFDOUS in Boston, Massachusetts, these committees presented tentative reports on the following sections of the proposed code: retail handling and sale; warehousing; transportation; and recommendations for design and construction of frozen food processing equipment *(1)*. AFDOUS accepted these reports and charged the subcommittees to complete their work during the ensuing year.

In 1960, at the annual meeting held in Dallas, Texas, these subcommittees reported that all sections of the proposed code were complete except the bacterial standards for frozen foods. It was reported that additional scientific facts were needed before bacterial limits could be established for frozen foods. The proposed AFDOUS code calls for all frozen foods to be held at 0°F or lower, but allows temporary deviations up to 10°F for such operations as defrost cycles, loading and unloading, and other temporary conditions. However, frozen foods whose internal temperature has risen above 0°F must properly be returned to an internal temperature of 0°F or lower.

Just prior to the AFDOUS meeting in Dallas, Texas, an industry committee, known as the Frozen Foods All Industry Coordinating Committee, was formed to develop a "program of Education" and "an industrial self-policing program" for the frozen food industry. This committee suggested that the AFDOUS code be used only as a guide or a reference and not as a law, regulation, or ordinance by regulatory agencies. This committee asserted that until such time as an industry voluntary quality control program is demonstrated to be ineffective or fails to meet the desired objectives, the proposed code should be considered only as a stand-by enforcement potential, application of which will require mutual agreement between the committee and AFDOUS.

AFDOUS commended the over-all frozen food industry for its program to develop its own integrated standards of quality control practice and industrial self-policing program. The association stated it recognizes the value of such a program, but it could not agree to it as a substitute for an AFDOUS code. AFDOUS rejected industry's suggestion that the code be used only as a guide or reference and not as a law, regulation, or ordinance. AFDOUS accepted the report of the Frozen Foods Standards Committee *(2)* and recommended that the completed sections of the proposed AFDOUS code be forwarded to the Committee on Editing and Format in order that they may be put in final form for passage at the next meeting of the association.

Although NAFFP provided part of the impetus for the development of the AFDOUS frozen food code and many members of their association served on the committees and subcommittees involved, they have now withdrawn their support in favor of an industrial self-policing program. While AFDOUS recognizes the value of such a program, it cannot agree to it as a substitute for an AFDOUS code.

Reprints of the report of the Frozen Food Standards Committee *(2)*, which includes all of the completed sections of the proposed AFDOUS code, may be obtained from Joe F. Lakey, Texas State Department of Health, Austin 1, Texas.

Another project which has received much publicity is the Time-Temperature Tolerance of Frozen Foods by the Western Utilization Research and Development Division of the U. S. Department of Agriculture at Albany, California. Research in this project started as long ago as 1948 and has been carried on continuously. A major purpose of the Time-Temperature Tolerance project was to gain facts on changes in quality during transport, storage, and wholesale and retail selling of frozen foods which could be translated into improved techniques for better protection. A series of twenty-two articles have been published describing the procedures and tests used and the

results which were obtained. On May 12, 1960, the National Association of Frozen Food Packers issued a Technical Service Bulletin, No. 15, describing many of the results obtained in this series of tests. In addition, the U. S. Department of Agriculture, Agricultural Research Service, has issued a bulletin titled "Protect Frozen Foods From Temperature Damage" *(3)*. A number of the conclusions reached in these studies and reported in this bulletin follows.

"The chemical actions that result in quality loss accelerate as temperature rises from 0°F or lower level. At 15° changes occur several times as fast as at 0°, and at 25° several times as fast as at 15°F. But many products feel hard at 20°F. It is therefore erroneous to assume that a cold and hard package is adequately protected.

"An important fact is that temperature damage is retained indefinitely. Return to zero and lower does not correct it. As temperature rises or falls, losses move faster or slower. They never move in reverse."

"Of four fruits investigated, frozen peaches reveal damage most quickly. Brown slices often become apparent after total exposures of 1 to 2 days or less time at 30°, 2 weeks at 20°, 2 to 3 months at 10° or more than a year at 0°F. and lower temperature."

"Strawberries undergo flavor changes that become easily detectable within totals of 1 to 2 days at 30°, 6 to 12 days at 20°, or about 3 months at 10°F — but lose little quality in well over a year at 0°F and lower. Discoloration and loss of vitamin C (ascorbic acid) develop at the same time. Flavor loss develops early."

"Fruits contain important amounts of vitamin C. Top-quality strawberries are especially rich in this vitamin. Frozen peaches are commonly packed with added ascorbic acid to retard browning. Temperature abuse causes losses of this vitamin and the rate is related to rates of other losses."

"Those who handle frozen fruits, and also other products, may well remember this fact: Held a day at 20°F., they may not show damage — for example, peaches may not turn brown. The next handler, however, may expose the product to minor temperature hazards and find that the damage is conspicuous, and it can't be corrected."

"Temperature-tolerance studies on vegetables have supplied general descriptions of quality losses and measurements of rates. Temperature-damaged green snap beans, for example, first darken and later turn olive drab and eventually brown. Peas turn grayish-green and then yellowish as green color is lost."

"Losses of chlorophyll (green pigment) and vitamin C are useful measures of loss of quality. In effectively blanched green beans, chlorophyll is lost at the rate of about 10% per year at 0°F, which is not severe. At 10°, however, this rate triples. At 20° it is 16 times and at 30°F 60 times as fast as at 0°F. Improperly blanched beans will lose color even faster. Rates of loss of vitamin C vary similarly with temperature."

"The facts above emphasize the striking increases in rates as temperatures rise higher and higher above zero — and particularly as they reach temperature levels of 25°, 30°, and above. Long periods at lower temperatures above 0°F — without apparent thawing or softening — will result in the same sort of damage. Thus the following times and temperatures are approximately equivalent: 1 year at 0°, 6 months at 5°, 3 months at 10°, 6 weeks at 15°, 3 weeks at 20°, 10 days at 25°, and 5 days at 30°F."

The bulletin concludes with the following statement, "The technical results, which are reported in an extensive series of articles, contain information on processing as related to stability of the frozen foods during subsequent handling and other problems. These reports are available on request."

In one of the reports titled, "Relationship of Bacterial Population to Temperature," by Mishner, *et al. (4)*, it is stated, "At temperatures of −10° to 20° F bacterial growth never occurred, but large numbers of bacteria always survived prolonged storage. On a percentage basis, survival was extremely variable but averaged around 50% and only once fell below 10%. Flavor deterioration occurred in this temperature range and thus could not have been caused by bacterial growth."

"Bacterial growth always took place at temperatures of 25°F and above. The population doubled in one to 8 weeks at 25° and 30°F, and in less than a week at 40°F. Growth can continue to the point of bacterial spoilage at these temperatures. Off flavor was detected, however, before the bacterial count had increased significantly. Thus, initial development of off flavor appears to be unrelated to growth of bacteria."

Since it is generally recognized and is confirmed by the above time-temperature tolerance studies that temporary exposure for a small amount of time to a high temperature does not necessarily cause any damage to frozen foods and probably no danger to the public health, it would seem advisable that an indicating device of some type be developed which would provide a means of indicating any exposure to time and temperature which would result in damage to the frozen food. Such a device should probably be mechanical in nature rather than chemical because in some instances with a chemical indicator there would be a risk of product contamination. Since the proposed AFDOUS code will permit frozen foods to rise to a temperature not exceeding 10°F for short periods of time and since the time-tolerance studies indicate that little or no damage would occur in frozen foods under these conditions, these indicating devices should be built to indicate an unsafe condition when the product has reached a temperature of more than +10°F and has remained at that temperature for a period of exceeding possibly 10 or 12 hours. If the indicator tripped under those conditions, it would be an indication that the frozen food had been subjected to at least questionable conditions and suitable laboratory determinations could be made to determine the safety of the food. At least one such indicating device is presently available although scientific test data relating to the accuracy and reliability of the device have not been forthcoming. However, the frozen food industry seems to be reluctant to incorporate any type of indicating device in frozen food packages at this time. Certainly if some type of indicator were available which would reveal any time-temperature experience detrimental to the safety and quality of frozen foods, the problem of screening frozen foods would be greatly reduced for regulatory agencies.

Frank F. Fisher, *Chairman*, Indiana Association
O. A. Ghiggoile, California Association
G. L. Hays, Illinois Association
Wm. C. Miller, Jr., Washington, D. C.
Raymond Summerlin, Georgia Association
Kenneth G. Weckel, Wisconsin Association

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1. Quarterly Bulletin, Association of Food and Drug Officials of the United States **23** (4): October. 1959.

2. Quarterly Bulletin, Association of Food and Drug Officials of the United States, **24** (4): October. 1960.

3. Protect Frozen Foods from Temperature Damage. Publication ARS-74-9, Revised Sept. 1959, Agricultural Research Service, U. S. Dept. of Agr.

4. Michener, H. D., Thompson, P. A. and Dietrick, W. C. Food Technol., **14**: 290. 1960.

THE ORGANIZATION OF A NATIONAL PROGRAM TO REDUCE THE INCIDENCE OF MASTITIS[1]

R. W. METZGER

Dairymen's League Cooperative Association, Inc.
Syracuse, N. Y.

Mastitis is undoubtedly the most prevalent and costly disease of dairy cattle. It is of greater economic importance to the dairy industry than any other cattle disease with which we are confronted. Yet, there has been no country-wide organized program to combat mastitis, to study it, and to bring it under control.

According to the figures published in 1954 by the Agricultural Research Service in its report on "Losses in Agriculture," it was estimated that mastitis cost the dairy industry nearly 1/4 of a billion dollars, or 1/3 of the total dairy cattle losses in this country. Further analysis of mastitis loss estimates indicate that animal loss was 12% of total cattle disease losses and milk loss amounted to 71% of milk losses caused by all cattle diseases. That was 7 years ago. Today the figures are higher.

If we also take into consideration the cost of antibiotics, veterinary treatment, and the intangible losses in sales as a result of poor quality and possible adverse publicity, these figures would undoubtedly be even greater. While accurate figures are not available, present day estimates indicate that total losses from mastitis reach close to one half billion dollars.

In addition to the economic importance which alone should stimulate all segments of the industry to do more about research and control of mastitis, a number of problems dealing with regulatory policy as well as public health aspects of the disease exist:

1. All regulatory agencies require that milk shall be procured from disease-free animals and that abnormal milk shall be excluded. Mastitis, in its broad sense, is an inflammation of the udder and as such is a symptomatic condition resulting in the production of abnormal milk. As a physiologic disorder of the mammary gland, associated with various infective organisms, it may be classed as a disease transmissable from animal to animal. Since its incidence is extremely high, strict enforcement of existing regulations would have a tremendous impact on the dairy industry in loss of available milk supplies.

2. Unlike diseases where the causative agent is specific, such as tuberculosis and brucellosis, and can be more readily identified and controlled, mastitis has multi-character and form and is less readily controlled.

3. Treatment without proper methods and preventive measures is not the answer to mastitis control. It is apparent that extensive use of antibiotics has not solved the mastitis picture and has created public health problems relative to acceptability of milk.

4. The regulatory sanitarian recognizes the failure of existing procedures, whatever they may be, to satisfactorily correct a problem which has existed over a long period of years.

Bearing these factors in mind the Executive Board of the International Association of Milk and Food Sanitarians had for some time considered the overall problem of the lack of progress in the control of mastitis. It was decided that the best efforts of the country should be marshalled toward a concerted action in getting preventive measures into greater use. In an initial attempt to consolidate action on a united front, the Board appointed a special committee to organize an invitational meeting for the purpose of presenting a review of the problem to interested dairy leaders in order to develop uniform national action toward control of this costly disease.

The original group, known as the Mastitis Action Committee, was composed of representatives of the American Veterinary Medical Association, the American Farm Bureau Federation, the National Milk Producers Federation, U. S. Department of Agriculture, U. S. Public Health Service, Dairy Trade Publications, Dairy Trade Associations and member of the Farm Methods Committee of the IAMFS.

This committee developed a conference program designed to establish an appraisal of:

1. The economic impact of mastitis on both producer and processor.

2. The public health aspect.

3. The status of research in terms of what is known and what needs to be known; and

4. Regulatory problems.

Over 200 representatives of producer, processor, regulatory, educational, medical and other interested segments of the dairy industry attended and participated in the work sessions of the October 29th Mastitis Action Conference for the purpose of developing a continuing organization to correlate available research and educational information and develop it

[1]Presented at Fourteenth Annual Meeting of the Dairy Products Improvement Institute, Inc., Hotel Governor Clinton, New York City, February 16, 1961.

into further useful material for use by industry groups; to encourage and give direction to further research on mastitis; to aid in the development of an effective regulatory control program; and to evaluate present programs and procedures and promote the development of local area voluntary control programs.

The best minds and talents available cooperated in discussing the respective areas of the mastitis picture covering the economic, bacteriologic, epidemiologic, research and educational, as well as the regulatory and control aspects of this disease. A very clear picture, establishing the need for action, was presented and resulted in a realization of the enormity of the task with which we are faced. All of the conferees were urged to participate in one or another of the five work sessions which were set up to develop a summary of:

1. Research problems and needs.
2. Educational problems and needs.
3. Regulatory problems and needs.
4. Means of developing the structure of a permanent organization to promote mastitis control; and
5. Recommendations for means of support of such an organization.

Most everyone in attendance contributed in some manner toward the organization of a national program through the recommendations which were drawn up by the various task groups and unanimously agreed upon at the business session of the conference.

As to the future of the program it was decided that a National Committee on Mastitis Action should be established, composed of from one to three representatives from a list of appropriate organizations. Although an initial list of such organizations was prepared, it was decided that membership on the national committee would be open to official representatives of any appropriate organization or association interested in the program.

The functions of the committee were to be:

1. To develop a continuing body to attack the problem of mastitis on a nation-wide basis.
2. To coordinate and promote research.
3. To coordinate, advise, and foster various efforts in the field of mastitis.
4. To promote educational programs.

The need for more research in specific areas of the mastitis syndrome was recognized and the requirements for adequate and reliable research data have been spelled out.

From the standpoint of education it was proposed that the national group appoint a subcommittee to develop basic subject matter, that is not controversial, for distribution on a national basis for use by all groups, on a state, county, or local level, desiring to educate the producer and develop a mastitis control program. Several good state programs are in effect which may serve as a source of experience for the type of educational material that will stimulate the greatest interest at the farm level.

It was also recommended that each state be encouraged by the national committee to appoint a state mastitis advisory committee comprised of representatives of all groups interested in the dairy industry. Such a group should develop a program suited to the special needs of the state and would make use of the basic educational material developed by the National Mastitis Action Committee.

The regulatory officials were in unanimous agreement that there is a need for uniform regulatory action in mastitis control. This group recommended that regulations be developed which will require that herds qualifying for the production of milk for human consumption shall be under an approved mastitis control program. In order to implement the development of a program of this type it was agreed that an effective test procedure to detect the presence of mastitic milk, and active industry participation, are necessary pre-requisites.

In the discussion on ways and means of support for a continuing program it was the unanimous recommendation that the National Mastitis Action program be a voluntary one, financed by producer groups, processor groups, equipment and supply organizations and any other interested associations. Representatives of such groups who were present, although not pledging their own organizations at that time, did express confidence of whole-hearted support for raising from within the industry the funds necessary to get the program under way.

To complete the development of the national program, the Farm Methods Committee of the International Milk Sanitarians Association was delegated the work of getting the new organization started by calling together a group of representatives from appropriate organizations to develop the permanent committee which would formulate its own plan and methods of action and determine its own plan for financing.

A meeting was called by the Farm Methods Committee for January 20, 1961 in Chicago for the purpose of carrying out the recommendations which were adopted at the original conference.

Delegates from eleven organizations associated with the dairy industry attended and expressed their willingness to become a part of the permanent group. Two other associations signified their intention to cooperate but were not represented at the meeting and several others were listed to receive invitations to participate in the work of the continuing committee.

Recognizing the position of governmental agencies in a project of this type, it was decided to invite the various branches of the U. S. Department of Agriculture and the U. S. Department of Health, Education, and Welfare to participate on a consultant basis rather than as a part of the policy making body. To date we have definite appointees from the Federal Extension Service, Agricultural Research Service, and U. S. Public Health Service as government consultants to the committee.

The structure of the permanent committee now consists of a Chairman, Executive Secretary, and Treasurer. Standing committees on finance, research, by-laws, education, and programs and procedures have been appointed. It was decided that the Executive Committee would be composed of the three officers and a designated representative of each of the standing committees. By unanimous vote it was agreed that the name of the permanent committee be: "The National Mastitis Action Committee" and that it be incorporated in Illinois as a non-profit organization.

The national mastitis effort is on its way with a fairly successful start. We must, however, caution those who in their enthusiasm anticipate immediate results, that we are dealing with an insidious disease which the industry has at best only managed to live with for many years. In the words of Bill Knox, in his keynote speech at the Chicago conference, "may we counsel tolerance and patience. Tolerance because there will be divergent views, many of them sincerely held. Patience because its lack leads to instability of the organization and its work."

The success of this program depends upon active participation and support of all who are interested.

PROGRAM

FORTY-EIGHTH ANNUAL MEETING

GOLDEN ANNIVERSARY (1911-1961)

INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC.

In Cooperation With

THE IOWA ASSOCIATION OF MILK SANITARIANS, INC.

AUGUST 13—17, 1961

HOTEL SAVERY — **DES MOINES, IOWA**

REGISTRATION

Monday, August 14—1:00 p.m.—8:00 p.m. Mezzanine, Hotel Savery
Tuesday, August 15—8:00 a.m.—6:00 p.m. Mezzanine, Hotel Savery
Women Activities—Mezzanine, Hotel Savery

Registration Fee—5.00

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Hale Hansen — Cal Bolton
Andy Hove — Jim Evers
Dick Stedman — Charles Yeager
C. B. Cunningham — Stanley Hendricks
Cy Sampson

SUNDAY, AUGUST 13, 1961

4:00 p.m.—Executive Board Meeting, East Room
6:00 p.m.—Dinner, Rocket Room
7:00 p.m.—Executive Board Meeting, East Room

MONDAY, AUGUST 14, 1961

8:00 a.m.—Executive Board Meeting, East Room
Executive Secretary
Journal Management Committee
Sanitarians Joint Council
Regular Agenda

12:00 Noon—Lunch, Rocket Room

2:00 p.m.—Executive Board Meeting, East Room
Local Arrangements Committee
Chairman — All Committees
Affiliate Council Chairman

5:00 p.m.—Cheese and Milk Bar, Mezzanine
(Courtesy of American Dairy Association of Iowa)

6:00 p.m.—Dinner Meeting, Iowa Room
Executive Board
Local Arrangements Committee
Chairman of All Committees
Chairman of Affiliate Council
Affiliate Council Members
Officers — Iowa Association of Milk Sanitarians, Inc.
Ad Hoc Committee Members
Journal Management Committee
Past Presidents of the Association
Sanitarian Award Winners
Sanitarian Award Sponsors

TUESDAY, AUGUST 15, 1961

7:00 a.m.—Early Bird Breakfast, Rocket Room
Executive Board — Committee Chairman

7:45 a.m.—Executive Board Meeting, East Room
Council of Affiliates President
Local Arrangements Chairmen

GENERAL SESSION

Savery Ballroom

CHARLES E. WALTON, President Elect, *Presiding*

8:30 a.m.—Invocation — DR. C. T. R. YEATES, Westminster United Presbyterian Church, Des Moines, Iowa

8:35 a.m.—Introduction of IAMFS Officers — FRANKLIN W. BARBER, Sr. Past Pres.
Iowa Association of Milk Sanitarians Officers
Affiliate Council President
Local Arrangements Committee

8:45 a.m.—Address of Welcome
EDMUND G. ZIMMERER, Commissioner of Public Health, Iowa State Department of Health, Des Moines, Iowa

8:55 a.m.—Welcome:
JAMES F. SPEERS, Director, Des Moines-Polk County Health Department, Des Moines, Iowa

9:05 a.m.—Response to Welcome—
WM. V. HICKEY, JR., Jr. Past President, IAMFS

9:10 a.m.—Greetings—
E. N. KENNEDY, President, Iowa Association of Milk Sanitarians, Inc., Iowa City, Iowa

9:15 a.m.—Presidential Address — Charge to the Nominations Committee, JOHN J. SHEURING, Athens, Georgia

9:30 a.m.—Keynote Address — Today and Tomorrow, MARCUS ROSENBLUM, Executive Editor, Public Health Reports, Washington, D. C.

10:00 a.m.—Milk Break

10:10 a.m.—Our Heritage — Fifty Years in Retrospect
Moderator — H. L. THOMASSON
1911-1921—C. A. ABELE, Evanston, Illinois
1921-1931—C. K. JOHNS, Ontario, Canada
1931-1941—RUSSELL PALMER, Detroit, Michigan
1941-1951—MILTON FISHER, St. Louis, Missouri
1951-1961—K. G. WECKEL, Madison, Wisconsin

11:00 a.m.—Commemorative Service — Roll Call of Deceased Members — RICHARD M. PARRY, President, Council of Affiliates

11:15 a.m.—A Man of Principle — A Man of Vision — H. E. EAGAN, Milk and Food Training Consultant, Environmental Health Training Section, U.S.P.H.S.

11:45 a.m.—Land Grant Centennial — VERNER H. NIELSEN, Head, Dairy and Food Industry Department, Iowa State University, Ames, Iowa

11:55 a.m.—Announcements

12:00 Noon—Lunch

GENERAL SESSION

Savery Ballroom

WM. V. HICKEY, JR., Past President, *Presiding*

1:10 p.m.—Door Prize

1:15 p.m.—The Sanitarians Award — An Honor — JAMES C. BERRINGER, Director, Sanitation Division, City-County Health Department of Health, Evansville, Indiana

1:30 p.m.—Status of the New Food Service Sanitation Manual Recommended by the Public Health Service — WM. C. MILLER, JR., Chief, Food Sanitation Section, Milk and Food Program, USPHS, Washington, D. C.

2:00 p.m.—The Status of Bacteriological Standards for Frozen Foods — GLEN G. SLOCUM, Director, Division of Microbiology, Bureau of Biological and Physical Sciences, Food and Drug Administration, HEW, Washington, D. C.

2:30 p.m.—Committee Report on Frozen Foods — FRANK E. FISHER, *Chairman*, Division of Food and Drugs, Indiana State Board of Health, Indianapolis, Indiana

2:40 p.m.—Committee Report on Food Equipment Standards — KARL K. JONES, *Chairman*, Division of Food and Drugs, Indiana Board of Health, Indianapolis, Indiana

2:50 p.m.—Committee Report on Bakery Standards —VINCE FOLEY, *Chairman*, Kansas City Missouri Department of Public Health, Kansas City, Mo.

3:00 p.m.—Committee Report on Applied Laboratory Methods — O. W. KAUFMANN, *Chairman*, Department of Microbiology and

Public Health, Michigan State University, East Lansing, Michigan.

3:10 p.m.—Committee Report on Membership — HAROLD WAINESS, *Chairman* — Wainess and Associates, Chicago, Illinois

3:20 p.m.—Milk Break

3:30 p.m.—Training in Basic Food Technology for Sanitarians — Panel Discussion
F. C. BASELT, American Can Co., New York
K. G. WECKEL, Dept. of Dairy and Food Industries, University of Wisconsin, Madison
J. H. FRITZ, Milk and Food Program, Division of Engineering Service, Public Health Service, Washington, D. C.
R. F. CLAPP, Community Services Training Section, Training Branch, Communicable Disease Center, Atlanta, Georgia

4:30 p.m.—Are Your Public Relations Showing? — MALCOLM GROVER, Director of Public Relations Councel, Safeway Stores, Inc., Oakland, California

5:00 p.m.—Announcements — Adjourn

6:00 p.m.—Dinner Meeting — Iowa Room
Council of Affiliates Business Meeting — Election of Officers — RICHARD M. PARRY, Council of Affiliates President, Presiding.

6:00 p.m.—Dinner Meeting, East Room
Executive Board
Journal Management Committee
Sanitarians Joint Council
Ad Hoc Committee of the Executive Board

WEDNESDAY, AUGUST 16, 1961

7:00 a.m.—Early Bird Breakfast, Rocket Room
Executive Board
Past Presidents
Council of Affiliates Officers

GENERAL SESSION

Savery Ballroom

RAY BELKNAP, First Vice President, *Presiding*

8:10 a.m.—Door Prize

8:15 p.m.—Report on Council of Affiliates Business Session and Introduction of New Officers — RICHARD M. PARRY, Council of Affiliates President.

8:25 a.m.—Committee Report on Education and Professional Development — W. HOWARD BROWN, *Chairman* — Director, Food and Laboratory Division, Department of Public Health, Jacksonville, Florida

8:35 a.m.—Committee Report on Sanitary Procedures — C. A. ABELE, *Chairman*, Public Health Research Analyst, Diversey Corporation, Chicago, Illinois

8:45 a.m.—Twenty One Years' Experience on the Committee on Sanitary Procedures — C. A. ABELE, Evanston, Illinois

8:50 a.m.—Committee Report on Communicable Diseases Affecting Man — *Chairman* — JOHN H. FRITZ, Milk and Food Program, Division of Engineering Services, Public Health Service, Washington, D. C.

9:00 a.m.—Committee Report on Research Needs and Applications — FRED B. BASELT, *Chairman* — American Can Company, New York, New York

9:10 a.m.—Residues — A Medical Appraisal — MITCHELL R. ZAVON, Assistant Professor of Industrial Medicine, Kettering Laboratory, College of Medicine, University of Cincinnati, Ohio

9:40 a.m.—Immunodiffusion, A Break-through to Simpler and More Powerful Antigen-Antibody Analytical Techniques — ALFRED J. CROWLE, Head, Division of Immunology, The Webb Institute For Medical Research, Denver, Colorado

10:40 a.m.—Report of Nomination Committee — IVAN PARKIN, *Chairman*

10:40 a.m.—Milk Break

10:50 a.m.—The Organization and Functioning of the Committee on Coordination of Labeling, Definitions, and Standards for Milk and its Products — A. C. DAHLBERG, Cornell University, Ithaca, New York
Development and Purposes of the Labeling Committee — HAROLD J. BARNUM, Chief, Milk Sanitation, Denver Health and Hospitals, Denver, Colorado
Organization and Procedures of the Labeling Committee, WM. V. HICKEY, Public Health Committee of the Paper Cup and Container Institute, New York, New York
The Northeastern Dairy Labeling Committee — RICHARD M. PARRY, Department of Agriculture, Hartford, Cinnecticut.

11:25 a.m.—An Evaluation of Existing and Proposed Mastitis Control Programs —
R. W. METZGER, *President*, National Mastitis Council, Inc.
H. G. HODGES, Engineering Consultant, Dairy Division of DeLaval Separator Company, Poughkeepsie, New York
W. G. EVANS, Animal Disease Eradication Branch, Agricultural Research Service, U.S.D.A., Washington, D. C.
W. M. DECKER, Milk and Food Program, Division of Engineering Services, Public Health Service, Washington, D. C.

12:05 p.m.—Committee Report on Farm Practices — R. W. METZGER, *Chairman*, Director of Quality Control, Dairyman's League Coop. Assoc., Syracuse, New York

12:15 p.m.—Lunch

GENERAL SESSION

Savery Ballroom

JOHN J. SHEURING, President, *Presiding*

1:10 p.m.—Door Prize

1:15 p.m.—What Sanitarians Should Know About Stainless Steel — H. L. MITTEN, Director of Technical Sales, Creamery Package Co., Chicago, Ill.

1:45 p.m.—Composting of City Refuse — WALLACE H. FULLER, Head, Dept. of Agricultural Chemistry and Soils, University of Arizona, Tuscon, Arizona

2:30 p.m.—Mail Order Quacks Harvest — Dollars and Death — U. S. Postal Inspector's Office — Speaker to be Announced.

3:00 p.m.—Milk Break

3:10 p.m.—To Fee Or Not To Fee —Panel Discussion

MILTON R. FISHER, Chief Milk Control Section, St. Louis Department, St. Louis, Missouri
HAROLD J. BARNUM, Chief Milk Sanitation, Denver Health and Hospitals, Denver, Colorado
CHARLES M. COPLEY, JR., Deputy Health Commissioner, St. Louis Health Department, St. Louis Missouri
FRANK B. CLACK, Director, City of Pittsburgh Health Department, Pittsburgh, Pennsylvania

4:00 p.m.—Annual Business Meeting
Election of Officers
Executive Secretary Report
Journal Management Report
Sanitarians Joint Council Report

5:00 p.m.—Adjournment of General Sessions

EVENING PROGRAM

6:30 p.m.—Cocktail Party — Des Moines Room

7:00 p.m.—Annual Awards Banquet, Terrace Room. JOHN J. SHEURING, President, IAMFS, *Presiding*
Presentation of Awards — MR. FRANKLIN W. BARBER, Senior Past President, IAMFS, *Chairman*, Committee on Recognition and Awards

1. Citation Award
2. Sanitarians Award

Installation of Officers
Speaker of the Evening: THEO. R. FREEMAN, Professor of Dairying, University of Kentucky, Lexington, Kentucky
Topic: Glittering Gold

THURSDAY, AUGUST 17, 1961

7:00 a.m.—Early Bird Breakfast, Rocket Room
Executive Board
Citation Winner — Past Winners
Sanitarian Award Winner — Past Winners
Sponsors of Sanitarians Award

7:45 a.m.—Executive Board Meeting with Sanitarian Award Sponsors — East Room

MILK SESSION

Savery Ballroom

RAY BELKNAP, First Vice President, *Presiding*

8:30 a.m.—Door Prize

8:45 a.m.—Bacteriophage Destruction by Aerosols of Trichlorocyanuric Acid And Other Germicides — P. R. ELLIKER, Chairman, Department of Microbiology, Oregon State University, Corvallis, Oregon

9:15 a.m.—Bacterial Counts of Bulk Milk For Interstate Shipments As Affected By Farm Practices — A. RICHARD BRAZIS, Bacteriologist, Milk Sanitation, Milk And Food Research, Taft Engineering Center, Cincinnati, Ohio

9:45 a.m.—Sanitarian — Director Relationships — JAMES F. SPEERS, Director, Des Moines — Polk County Health Department

10:15 a.m.—Bulk Tank Sediment Testing on the Farm — B. J. LISKA, Assistant Professor, Dairy Department, Purdue University, Lafayette, Indiana

10:30 a.m.—Milk Break

10:40 a.m.—Cracker Barrel Sessions —
Committee on Farm Practices — R. W. METZGER, Chairman
Committee on Sanitary Procedures — C. A. ABELE, Chairman
Committee on Ordinances and Regulations — DON RACE, Chairman

ENVIRONMENTAL SANITATION SESSION

Iowa Room

JOHN H. FRITZ, Second Vice President, *Presiding*

8:10 a.m. Door Prize

8:15 a.m.—Basic Community Sanitation — MAXWELL J. WILCOMB, Senior Scientist, Public Health Service, Lansing Vector Control Program, Lansing, Michigan

8:45 a.m.—Milk and Food Surveillance Activities of the Public Health Service — W. MAX DECKER, Acting Chief, Milk and Food Program, Division of Engineering Services, Public Health Service, Washington, D. C.

9:15 a.m.—Manatory Poultry Inspection—W. F. DOSSEY, Ass't. Area Supervisor, Agricultural Marketing Service, U. S. Dept. of Agriculture, Des Moines, Iowa

9:45 a.m.—Sewage Lagoons — Are They the Answer? ARTHUR N. WILLIAMSON, Director of Environmental Health, State of Wyoming Health Dept., Cheyenne, Wyoming

10:15 a.m.—Milk Break

10:25 a.m.—Cracker Barrel Sessions —
Committee on Communicable Diseases — JOHN H. FRITZ, *Chairman*
Committee on Research Needs and Applications — F. C. BASELT, *Chairman*
Committee on Education and Professional Development — W. HOWARD BROWN, *Chairman*
Committee on Membership — HAROLD WAINESS, *Chairman*

12:00 Noon—Lunch

FOOD SESSION

Terrace Room

KARL K. JONES, *Secretary-Treasurer, Presiding*

8:10 a.m.—Door Prize

8:15 a.m.—The Protective Screening Program for Canned Foods — JAMES W. BELL, Sanitarian, National Canners Association, Washington, D. C.

8:45 a.m.—Title to be Announced — GEORGE N. STITCH, Self Insurors Management, Inc. Morrison Cafeterias, Mobile, Alabama

9:15 a.m.—Automatic Merchandising — 75 Years of Progress — DAVE HARTLEY, Public Health Counsel, NAMA, Chicago, Illinois

9:45 a.m.—Freeze Drying as a Method of Food Preservation — HARRY E. GORESLINE, Deputy Scientific Director, Food Division, Quartermaster Food and Container Institute For the Armed Forces, Chicago, Ill.

10:15 a.m.—The Importance of Food Additives and Government Regulation of Them—JAMES D. KITTLETON, Secretary, Food Additives Committee, Manufacturing Chemists Association, Washington, D. C.

10:45 a.m.—Milk Break

10:55 a.m.—Cracker Barrel Sessions:
Committee on Frozen Foods — FRANK FISHER, *Chairman*
Committee on Baking Industry — VINCE FOLEY, *Chairman*
Committee on Food Equipment — KARL K. JONES, *Chairman*
Committee on Applied Laboratory Methods — O. W. KAUFMAN, *Chairman*

12:00 Noon—Lunch

SPECIAL MEETINGS

Savery Ballroom

JOHN J. SHEURING, President, *Presiding*

1:10 p.m.—Door Prize

1:15 p.m.—Committee on Coordination of Labeling, Definitions and Standards for Milk and its Products — A. C. DAHLBERG

2:00 p.m.—National Mastitis Council Inc. — R. W. METZGER, *President*

2:45 p.m.—Report of Chairman of all Committees to Executive Board
Report of Cracker Barrel Sessions
Appointment of Committee Members for 1961-62

4:00 p.m.—Adjourn Annual Meeting

NEWS AND EVENTS

COMMITTEE ON COORDINATION OF LABELING, DEFINITIONS, AND STANDARDS FOR MILK AND ITS PRODUCTS REPORTS ON RECENT MEETING

As Temporary Chairman, Dr. A. C. Dahlberg opened the meeting at 7:45 P.M. He pointed out that during the afternoon session of the National Conference on Interstate Milk Shipments this evening's meeting had been announced, and that all who were interested were invited to attend. There was no set program, and no individuals had been selected to speak.

The purpose of the meeting was to hear the report of the Subcommittee on Organization which had met in Washington on January 23, 1961. The recommendation for a permanent organization to be called the *Committee on Coordination of Labeling, Definitions, and Standards for Milk and its Products* had been circulated in advance to all members of the group that met in Chicago on October 30. The reason for the organization of the Committee is to try to make progress in the coordination of labeling requirements to reduce confusion among consumers, to reduce the expense to handlers of a multiplicity of packages, and to reduce the difficulty of enforcement. It was assumed that all were interested in this common goal. It was pointed out that this Committee is an outgrowth of the recommendations of the Committee on Ordinances of the International Association of Milk and Food Sanitarians. At the Chicago meeting, it was suggested that a Task Committee of five be appointed to draw up a permanent organization but it was felt that broader representation was needed, and hence twelve Committee members were appointed. At the meeting on January 23, all twelve were present for the entire day's deliberations.

The emphasis of the Committee's work would be on labeling, although a certain amount of understanding must be reached on what product is being labeled. The Committee would be an independent committee,, not responsible to any one organization. The basis of the Committee is that representatives are from national organizations of regulatory agencies and other associations. There will be one representative from each association, and none representing individual companies. Three Federal agencies are invited to provide representation, the USPHS, USDA, and FDA. The plan of operation calls for not only a national committee but for regional committees. The Committees has been invited to use the personnel and facilities of the Dairy Products Improvement Institute on a half-time basis for its work, and believes this a practical and workable opportunity. The work would be primarily in fluid milk and fluid milk products inasmuch as Federal standards and labeling requirements have not been established for most of these products. There is no plan to force through any ideas or to do any legislative work. It is for this reason it is spoken of as a committe on coordination of labeling. No one industry can become the center of the activity, and no one type of regulatory agency can control the Committee. The problems for consideration may originate anywhere, in a market, in a region, or in the national committee.

From the floor, it was pointed out that the IAMFS desired the committee to become a separate entity, although IAMFS wants to be and expects to be a participating agency.

It was felt that the Council of State Governments should be represented on the Committee.

It was brought out that in the Northeast, eleven states have already effected a regional committee, operating from Maine down to Washington, D. C.

It was moved, seconded, and carried that the proposed areas be developed along natural regional lines rather than the arbitrary lines, inviting all agencies to participate in the work. In discussing this proposed motion, it was pointed out that the AFDOUS region comprising thirteen Western states would be a natural region for that area, and that such a regional committee would probably be developed at the next meeting of that AFDOUS region.

It was moved, seconded, and carried that all committees, both regional and national, be required to have a majority membership of individuals representing regulatory agencies.

It was moved, seconded, and carried that only those associations and organizations have a vote on the national committee whose principal work is of a regulatory nature. On the national committee, industry members would be advisory only. On the regional committees, this restriction on industry members would be optional, however, it was expected that the chairman of each regional committee would be in regulatory work. Each association represented on the national committee would be informed of this requirement so that the association could, if possible, appoint someone in regulatory work as its representative. This motion was passed because it was the opinion of all present that regulatory officials should have full control as to what goes on a label. The proposal met unanimous approval of industry people present because industry's primary interest generally is not what is required on the label but that such

requirements be uniform across the country. The discussion showed that industry, through its trade associations, would probably be footing the bill for the committee work, and would be primarily interested in seeing that the Committee was able to make progress in this field.

It was moved, seconded, and carried that regional associations be encouraged to be formed, and that as each region is formed, it be encouraged to apply for membership in the national committee and be represented thereon by the chairman or his appointed representative.

It was moved, seconded, and unanimously carried to approve the report of the Subcommittee on Organization with the amendments indicated in the preceding motions.

The motion was made, seconded, and carried that the remainder of the work on organization and the beginning of activity of the Committee be transferred to an interim Board consisting of one representative of each of the nine associations and governmental agencies listed herein plus a representative to be invited from the Conference of State Governments. In the discussion of this motion, it was indicated that one or more of the representatives of the Federal agencies may find their policies will not permit them to vote in these matters, but this situation should not prevent full cooperation in the activities of this Committee.

The final motion made and carried was that Dr. A. C. Dahlberg and Ernest B. Kellogg continue as Temporary Chairman and Secretary respectively during the interim until the Board meets and elects its new officers.

The meeting adjourned at approximately 10:30 P.M.

A. C. Dahlberg, Temporary Chairman
Ernest B. Kellogg, Temporary Secretary

MYRICK NAMED PUBLIC RELATIONS DIRECTOR FOR MILK INDUSTRY FOUNDATION

Norman Myrick, editor of the American Milk Review of New York, has been named Director of Public Relations for the Milk Industry Foundation, according to recent announcement made by Erwin L. Peterson, Executive Director. The Milk Industry Foundation, with headquarters in Washington,, is the national trade association for the fluid milk industry. Mr. Myrick will assume his new duties on June 1.

Mr. Myrick has been editor of the American Milk Review,, a business magazine serving the fluid milk industry, since 1947. He was a member of the Public Relations Department at the University of Massachusetts from 1946-1947. During World War II Myrick served as an officer in the navy, returning to inactive duty with the rank of Lieutenant Commander.

A native of Longmeadow, Massachuetts, he was graduated from the University of Massachuetts in 1931. He did graduate work at Amherst College. In addition to his career as a journalist, Myrick has been active in education and agriculture.

For the past 13 years Mr. Myrick has made his home in Ridgefield, Connecticut.

PHYSIOLOGICAL ASPECTS OF WATER QUALITY CONFERENCE PROCEEDINGS AVAILABLE

A conference of scientists was organized to investigate the present state of knowledge with respect to the physiological and toxicological aspects of certain chemical constituents in water. The keynote address was titled "Human Health and Well-Being and the Aqueous Environment."

The Proceedings of this conference make available for the first time a variety of detailed reports on the subjects of water quality, minerals and trace elements such as molybdenum, selenium, vanadium, and zinc were discussed. The effects of insecticides, pesticides, and other organic substance were reviewed.

There has been a lack of interest and information concerning non-biological constituents of water. Chemists and engineers have given some attention to this problem, but medical specialists, physiologists, toxicologists, biochemists, and biologists were called upon for contributions. A wide variety of future research studies will be needed to explore the significance of many chemical constituents.

Copies of the Proceedings (244 pages) are available upon request from: Chief, Research and Training Grants Branch, Division of Water Supply and Pollution Control, Public Health Service, Washington 25, D.C.

VETERINARIANS ALARMED ABOUT SPREAD OF EXOTIC ANIMAL DISEASES

Veterinarians are viewing with alarm the rapid spread of animal diseases throughout the world. Convinced that modern transportation has put an end to an era when distance alone could be relied upon for isolation and defense against exotic diseases, they believe that North American livestock and poultry are threatened by animal diseases of foreign origin because measures to prevent their importation into the U.S. are inadequate.

The profession's deep concern with this condition was voiced by the Council on Public Health and Regulatory Veterinary Medicine of the American Veterinary Medical Association, an organization rep-

resenting 16,000 out of some 21,000 U.S. veterinarians.

In a resolution adopted Apr. 25 and released today (May 5), the Council urged the U.S. Department of Agriculture to protect U.S. livestock against exotic diseases by increasing inspection personnel at ports of entry of foreign animals, and by modernizing inspection and quarantine facilities.

In its resolution, the Council specifically noted:

—The explosive outbreak and spread of African horse sickness in the Eastern Miditerranean area and Southeast Asia. With a mortality rate of about 80 per cent in horses, this disease has spread since late 1959 from Africa to 8 countries of the Near East and southeast Asia, causing an estimated loss of 170,000 horses, mules, and donkeys.

—The spread of African swine fever to Spain and Portugal. This disease is 100 per cent fatal, causing losses in Spain estimated in excess of 100,000 head, and diminishing the meat supply of Europe.

—The appearance of bluetongue in Japan. This debilitating disease of sheep was strictly an African problem until, since 1924, it began a rapid and relentless spread through European countries, the Near East, the United States, and now Japan, where great losses are occuring.

—The discovery of the African red tick in Florida and New York. The African red tick is a carrier of exotic diseases.

—The diagnosis of equine piroplasmosis in a zebra imported into the United States from Africa. Piroplasmosis, caused by a blood parasite, results in anemia.

CENTRAL ONTARIO SANITARIANS ASSOCIATION MAKES RECOMMENDATIONS

The Central Ontario Milk Sanitarians Association was formed in 1957 and has since affiliated with the International Association of Milk and Food Sanitarians. The more than one hundred members of our Association are mainly engaged in the farm production, transportation and processing of fluid milk, in addition to members employed by both local and provincial regulatory agencies, educational institutions, and dairy supply firms. As a great many of our members are actively engaged in attempting to improve present methods and standards of raw milk production, it is quite natural that we should be intensely interested in any proposed amendments to our present provincial regulations. In January 1960 the membership approved the establishment of a Standing Committee on Quality Control, to consist of a representative from each segment of our Association under the chairmanship of Dr. D. M. Irvine, Head, Department of Dairy Science, Ontario Agricultural College.

Recommendations of Quality Control Committee

1. It is the opinion of the committee that the Sediment Test is not sufficiently accurate as a standard of raw milk production methods and quality to be adopted as a routine test used to evaluate fluid milk quality. This test can best be used as an educational guide to indicate to the producer in visual form the results of his production methods. It is therefore suggested that a standard method for obtaining sediment samples from bulk tank milk be established along with an acceptable sediment score card. Should future regulations require this test in spite of its inadequacies, there should then be a single sediment standard applied equally to all fluid milk producers, regardless of the method of milk handling.

2. The committee recommends that the Resazurin Test be excluded from regulations applied to fluid milk shipments. This test is not of sufficient selectivity to be used as a basis of grading milks of the high quality presently established in many fluid milk markets and we feel that adopting the Resazurin Test as the sole provincial standard would definitely lower the quality of milk in markets previously using a more sensitive test for quality evaluation.

3. The committee strongly recommends a provincial standard for fluid milk of not more than 100,000 bacteria per ml as determined by the Standard Plate Count. Realizing the importance of the early detection of mastitis, we advocate the use of either the Danish or California Mastitis Tests, in addition to the Standard Plate Count, both these tests to be carried out routinely once each month on all fluid milk producers.

4. The committee felt that tests being performed on raw milk to judge its bacteriological quality, must give results in terms that may be interpreted easily by the milk sanitarian and milk producer to indicate the source of contamination of the producer's milk. In addition it must be selective enough to indicate lower standards of production in milks that many tests, e.g. the Resazurin Test, would consider satisfactory. It is asked that these factors remain foremost in consideration of selecting a suitable method of bacteriological analysis. If the Department of Health feels that it lacks the laboratory facilities to carry out standard plate counts on raw milk, the Department of Agriculture should be asked to provide such facilities.

5. Lastly, it is recommended that the Department of Agriculture be commended for its series of educational bulletins promoting good farm sanitation and milking practices, and the Department should be encouraged to continue this work.

DARISONOMETER DEVELOPED FOR MILK TESTING

A new instrument that will simultaneously test milk for butterfat content and the percentage of nonfat solids has been unveiled to the dairy industry.

University of Wisconsin dairy scientist W. C. Winder and J. W. Fitzgerald, Chesapeake Instrument Corp., demonstrated the new device for some 1800 research and industry people attending the annual meetings of the American Dairy Science Assn. The device was invented by Fitzgerald, Winder, and G. R. Ringo, Argonne National Laboratories.

The inventors call their instrument the Darisonometer. It measures the fat and solids content of milk by means of electronics and ultrasonics — sound waves of extermely high frequency, higher than humans can hear.

Basically, it works on the principle that sound waves move at different speeds through material of differing composition — for instance, faster through solids than through liquids. The Darisonometer measures the speed or velocity at which the sound waves move through the milk to be tested. The velocity is converted to percentage of solids-not-fat and percentage of butterfat and is recorded on dials in these two figures.

Here's how the machine works:

First, the milk sample to be tested is warmed to exactly 122 degrees F. Then part of the sample of warm milk is placed in a test cell which is kept at 122 degrees temperature. Another part of the same sample is placed in a second test cell held at a lower temperature — around 57 degrees. Both these containers are connected by electric cables to the Darisonometer.

Solids-not-fat content is tested first. The machine sends an electric pulse through one cable connected to the sample held at the cooler temperature. This electric pulse is converted to an ultra-high frequency sound wave which then passes through the milk and is bounced back to the other cable.

This reflected sound is changed back into a pulse of electric current which goes back to the instrument. When this returning electric pulse gets back to the Darisonometer, it releases another electric pulse which then goes through the same process.

A counter in the machine measures how often the machine is sending out these pulses, and this moves a dial to register the amount of solids-not-fat in the milk. At this cool temperature, the butterfat content doesn't influence the solids-not-fat reading.

For butterfat measurement a flip of a switch transfers action of the machine to the sample which is held at the higher temperature. Within the instrument the butterfat testing process is the same as for measurement of solids-not-fat.

Actually, in this second operation the instrument measures the combined influence of solids-not-fat and butterfat on sound velocity, but the instrument makes the proper calculation and registers the correct butterfat percentage on the dial.

The method is extremely accurate. Tests reported at the meetings by Winder, N. P. Consigny and Bernardino Rodriguez-Lopez showed that measurements of both fat and SNF compare closely with other testing methods which require more time and care.

Since the speed of sound through a liquid depends a lot on the temperature, it's very important that the water baths holding the test samples be kept at exactly the right temperature. The Darisonometer, when commercially produced, will check the temperature before making a reading. If the temperatures aren't exactly right, the instrument won't give a reading.

This feature — along with the easily read dials and the mechanical accuracy of the device — should make the instrument easy to use and accurate in practical situations. Also, there's no need for the arithmetical computations which are involved in some other tests.

The Darisonometer that Winder and Fitzgerald used in the demonstration is the only one so far produced. It was made by Chesapeake Instrument Corp. of Shadyside, Md. Cost of the machine hasn't yet been determined, but it will be well under the cost of many types of equipment used routinely in dairy plants.

The first machines produced will go into laboratories of other universities and research institutions, Winder says. They'll be used for checking out and verifying the method.

Actually, it will be some time before dairy plants can use the Darisonometer as the basis for paying for milk. It will first have to be approved as an official test method. Meanwhile the instrument will find a place in dairy plant quality control work, in dairy industry research and in official control laboratories.

PROJECT NEW COMPREHENSIVE CATALOG OF CORROSION-RESISTANT PIPE AND TUBING

Designers, engineers and purchasing agents confronted with the procurement of corrosion-resistant materials for the construction of new or the maintenance of existing plant and equipment will soon have a valuable new guide where tubular products are concerned.

Questionnaires have just been issued to more than

1000 U. S. manufacturers and processors of corrosion-resistant pipe and tubing requesting information to be included in the inaugural 1961-1962 edition of the "M. L. Sheldon Catalog of Corrosion Tubing."

The Catalog, to be published in September by M. L. Sheldon's Corrosion Tubing Division, is expected to be the first widely distributed compilation of data covering the physical and mechanical properties, installation procedures, supply data and corrosion-resisting performance of virtually every type of solid metallic and solid plastic as well as coated and lined tubular product now on the market or about to be marketed.

Industrial users of corrosion-resistant tubulars will be enabled by means of the Catalog to flip to any of 300 corrosive media and determine precisely what types of effectively resistant tubular products are available in the required sizes, lengths, price ranges, etc.

There is no charge to the manufacturer for the listing of products in the Catalog and no charge is contemplated for first copies of the M. L. Sheldon Catalog.

Requests for copies of the Corrosion Tubing Catalog, when issued, are now being accepted at the M. L. Sheldon Company, 350 Lexington Avenue, New York 16, N. Y.

PLAN FOR CERTIFICATION OF CULTURE MEDIA UNDER STUDY

Several inquiries indicate uncertainty among laboratory administrators as to the present requirements or recommendations of "Standard Methods for the Examination of Dairy Products" on the subject of certification of milk plating culture media. The following clarification is made:

The 11th Edition of "Standard Methods," page 59, recommends that when a suitable procedure for standardizing or certifying the culture media used in making milk plate counts for official results is available, only media so certified should be used.

At a recent meeting of the Executive Board of the American Public Health Association a statement recommended by the Committee on Evaluation and Standards was approved, which expresses the position of the Association with regard to certification or standardization of milk plating culture media:

1. Some form of standardization or certification of milk plating medium is essential.

2. The APHA should take the responsibility of providing for this.

3. The Coordinating Committee on Laboratory Methods of the Committee on Evaluation and Standards should be asked to work out in detail the method for achieving standardization or certification.

Item 3, above, has been referred to the Committee on Evaluation and Standards for implementation by the Coordinating Committee. The provisions of the 11th Edition, including the footnote on page 59 which holds in abeyance the recommendation for ceritfied media, still apply and will continue to do so until a plan for standardization or certification has been approved by the Executive Board. When this occurs an appropriate notice will appear in the American Journal of Public Health and a suitable news release will be sent to the technical press.

MICHIGAN CHANGES ICE CREAM LAW

The legal butterfat content of Michigan ice cream has been reduced from 12 percent to 10 percent. This is to bring state requirements in line with federal standards. The law also was changed to permit use of yellow color in vanilla ice cream, which has been prohibited for the past 30 years in the state.

The lower butterfat content will not be apparent to the consumer since the weight of ice cream will remain at 4.5 pounds per gallon since the total weight of food solids will remain the same.

A product under a new name will be *ice milk.* Ingredients are the same as for ice cream except butterfat content will be only 2 to 7 percent. The product, according to Agricultural Director G. S. McIntyre, is now widely sold in the state as sherbet in frozen form and also as "soft frozen" products at drive-in stands.

Under the amended law fudgsickles, popsicles and similar products on a stick will be called frozen confections.

OPEN LETTER TO SOUTH CAROLINA SANITARIANS FROM A MILITARY MEMBER*

Dear Friends:

I "woke up" one morning last fall on my way to an overseas station for duty. As some of you know I had expected to be at the Marine Base, Parris Island for at least another year, and then tentative plans to retire from the Navy. However orders arrived before my official request for retirement was submitted, so on to Africa.

The military base where I am stationed is adjacent to a city with about the same population figure as Charleston, S. C., however the area is considerably less. It is not uncommon for several families to live in one or two rooms. The city ranges from the most modern to primitive. In the modern

section of town the sewage runs into the river, untreated of course. An adequate water supply is piped in from nearby mountains, however this is untreated and only occassionally will run a negative for coliform. The native population answers the call of nature on the side of the street or in the most convenient spot.

Milk is sold by street vendors from tin cans and dippers from door to door. The mode of transportation is donkey or bike. Needless to say pasteurization is unheard of.

They do have beautiful vegetables over here, however here again all fruits and vegetables must be treated by soaking in a disinfectant before use.

Farming methods range from one extreme to the other. The former colonist had some fine farms and farm equipment but these have in a large part fallen into disuse under the present government. The natives farm much the same way as they did at the time of Christ. One amusing note, two animals of the same breed are never worked together, two horses, cows, donkeys, etc. but rather a horse and cow, camel and donkey, etc. The reason for this, two of the same breed will spend to much time talking and not enough working, so they are split up.

Rabies is an interesting and fairly common disease out here, it is carried by many of the local animals, but mainly by wild dogs and jackals which come onto the base at night. In the short period of time I have been here almost one hundred Americans have required the Pasteur treatment. We have a crash program and all American owned dogs must be inoculated every six months.

I was able to rent a very nice villa in the town, however back there in South Carolina we'd almost look at it as if it were a jailhouse due to the bars on the windows, locked gates, etc. This of course is necessary over here as stealing is a national past time.

Venereal diseases are one of my big problems here. They have no public health as such and since prostitution was out-lawed by the head of the government we are told that they don't have any more venereal disease. If we are fortunate to be able to point a contact to the police (all unofficial) the contact is jailed for a week or so then turned loose without treatment.

As you can see Sanitation as such ends at the Main Gate of the Base. We keep trying to get the word across but we don't make much headway.

I have two men in my department. Both are excellent Sanitarians and would like to have them with me when I come back to South Carolina. Which brings me to the close of this misile. Am looking forward to my return to South Carolina at some future date and renew my acquaintences with the members of the South Carolina Association.

I would welcome any personal mail and appreciate being kept up to date on the association.

I remain very sincerely yours,

J. E. COATES, SR.
Box 14, Navy 214
FPO, NY, NY

***Editor's note: While addressed to the South Carolina Sanitarians it was felt this letter had much general interest for our readers.**

FDA MAKES SWISS CHEESE SEIZURE

Seizure of three lots of Swiss cheese totaling 2,700 pounds has been requested by the Food and Drug Administration because it has "artificial" eyes.

In order to promote honesty and fair dealing in the interest of consumers, a standard of identity under the Federal Food, Drug, and Cosmetic Act was established by FDA for Swiss cheese in 1950.

The standard requires the product to have large holes or "eyes" developed throughout the cheese during the curing process. Swiss cheese with well-developed shiny eyes, as compared with "blind Swiss" without naturally developed eyes, receives a higher grade under the grading system, is in greater demand by consumers and commands a higher price.

A number of firms have been using Swiss cheese with little or no natural eye development for the preparation of packaged sliced Swiss cheese.

They have made artificial eyes using appropriate mechanical devices and have further promoted the concealment of inferiority by rearranging or by facing the outside of cellophane wrapped sliced Swiss with slices having well developed eyes and placing in the middle of the package some slices with no or fewer holes. Some firms even labeled the article with artificial eyes as "natural."

The whole scheme of foisting off the inferior article is a deliberate one calculated to give the perpetrator a few cents a pound additional profit at the expense of the consumer, FDA said.

In order to protect consumers, some shipments of such adulterated and misbranded cheese are being removed from the market by seizure action. Further seizures are under consideration.

The FDA actions have resulted in a request by the major Swiss cheese producers and shippers for a meeting to discuss the situation.

Commissioner of Food and Drugs George P. Larrick said that the actions and the forthcoming meeting "should serve to put a stop to this form of consumer cheating."

The FDA on August 24, 1950, published the following standard in the Federal Register:

"At times the so-called eyes do not form in swiss cheese, and the resulting cheese is known as blind cheese. Such a cheese, if cured for 60 days, will have the flavor of swiss cheese, and it is suitable for manufacturing purposes but not for consumer consumption. The adoption of a definition and standard of identity for Swiss cheese for manufacturing which requires that such cheese conform to the definition and standard of idenity for Swiss cheese, except that the eyes have not formed, will reasonably assure use of blind cheese for manufacturing purposes only. Since the lack of eyes will effectively distinguish Swiss cheese, no special colored coating is necessary for Swiss cheese for manufacturing."

Blind cheese is used in cheese containing products where Swiss cheese flavoring is designed.

MILK TANKS ON LEASE BASIS OFFERED TO DAIRY FARMER AND PROCESSOR

The advantages of leasing equipment are now being offered to the nation's dairy farmers and milk processors under a new plan for marketing bulk milk tanks announced this week by the Solar Permanent Division of U. S. Industries, Inc., of Melrose Park, Ill., and Tomahawk, Wis.

Through an arrangement with Corporate Leasing, Ltd., of New York, Solar Permanent will lease tanks direct to farmers, or to farmers through their processing plants, for periods of 40, 50, 60 and 90 months.

Explaining the features of the plan, J. J. Hoffer, Jr., president of Solar Permanent Division, observed, "The gains which industries have made through convenient equipment leasing arrangements should be made available to the dairy producing industry as well. Previous efforts to do this have failed due to restrictions that the producers simply could not understand. We are confident producers will not only understand our setup, but will be enthusiastic about entering into it."

Many dairy farmers have installed bulk milk tanks in recent years, but a large number have held back, because of the investment required in a direct purchasing transaction.

U. S. Industries, Inc., is a broad-based industrial organization with fifteen divisions and subsidiaries in the United States, Europe, Latin America and the Far East. The Corporation manufactures and distributes advanced products for use in industrial automation, metal fabrication, transmission of oil, water and gas, petroleum production, electronics, aircraft and missiles, training systems, dairy production and a number of other fields.

PAPERS PRESENTED AT AFFILIATE ASSOCIATION MEETING

Editorial Note: The following is a listing of subjects presented at recent meetings of Affiliate Associations. Copies of papers presented may be available through the Secretary of the respective Affiliate Association.

Indiana Association of Sanitarians

June 13, 14, 15, 1961

(Secretary: Karl K. Jones, 2645 W. 22nd Street, Indianapolis 22, Ind.)

General Sanitation Section

Housing & Health - Joseph T. Taylor, PhD, Dir., Program Develop., Flanner House of Indianapolis.

Radiological Health in Indiana - Roscoe E. Miller, M. D., Indiana Univ. School of Medicine; Clifford Risley, Indiana State Board of Health.

Environmental Health in the University Community - George W. Nuffer, San. Officer, Purdue Univ.; Robert W. Webb, San. Office, Indiana Univ.

Milk Section

Newer Ideas in Single Service Containers - Harold Wainess, Harold Wainess & Assoc., Chicago, Ill.

New Developments in Dairy Processing Piping - Dale Sieberling, Mgr., Automation Dept., Klenzade Products, Inc., Beloit, Wisc.

Indiana Mastitis Program - Panel: J. D. Salisbury, D.V.M.,

Indiana State Board of Health; F. A. Hall, D.V.M., Purdue Univ.; W. K. Moseley, PhD., Moseley Lab., Indianapolis.

FOOD SECTION

Chemical Sanitizers and Public Health - Merle Ording, Mgr., Central Div., Klenzade Products, Inc., Beloit, Wisc.

The Why and How of Servicing Vending Machines - Panel: D. E. Hartley, Public Health Counsel, National Automatic Merchandising Assoc.; James O'Connor, Howard Vending Serv., Inc., Indianapolis; Morris Allee, Canteen Co., Indianapolis; Earl W. Dixon, Indiana Vendors, Inc., Indianapolis.

Freeze Drying - New Technique for Preserving Foods - Harry E. Goresline, PhD., Deputy Dir., Quartermaster Food & Container Institute for Armed Forces.

Procedure for Investigating a Food, Milk or Water Borne Outbreak - Frank E. Fisher, Ind. State Board of Health.

Role of the Sanitarian in the Newer Concept of Envioronmental Health - Wesley E. Gilbertson, Chief, Div. of Engineering Services, USPHS.

Florida Association Milk and Food Sanitarians

(Secretary: Dr. Kenneth L. Smith, Dairy Lab., Fla. Agric. Expt. Sta., Gainesville, Fla.)

May 10, 11, 1961

Methods of Insect and Rodent Control - Dr. Harold G. Scott, Training Officer, Insect & Rodent Control Center, Communicable Disease Center, PHS, Atlanta, Ga.

Food-Borne Outbreaks in Florida - Dr. James O. Bond, Dir., Bureau of Preventable Disease, Florida State Board of Health.

Sanitary Aspects of Food Vending Machines - Dr. Milton J. Foter, Ass't. Chief, Milk & Food Research, Robt. A. Taft San. Engineering Center, Cincinnati, Ohio.

Major Changes in Standard Methods for the Laboratory Examination of Dairy Products - Dr. Milton J. Foter.

Food-Borne Outbreaks Due to Dairy Products - Dr. Milton J. Foter.

Causes of Rancidity in Milk - Dr. P. H. Tracy, Prof. Emeritus, Univ. of Illinois, Dairy Technology Consultant, DeLand, Florida.

The Laboratory Procedure of the Screening Test, Hydrolytic Rancidity - Dr. P. H. Tracy; Walter Krienke, Dairy Products Lab., Univ. of Florida.

The Pottermeter - Key to Dairy Automation - Mr. M. Bayer, Industrial Sales Mgr., Potter Aeronautical, Union, N. J.

Cleaning and Sanitizing Farm Tanks and Pipelines - Mr. Kelly Saunders, San. Engineer, The Diversey Corp., Chicago, Ill.

Panel Discussion: *Don't Forget the Cow* - Moderator: Howard Young, Asst. Extension Dairyman, Fla. Agr. Ext. Service.

Mastitis Problems - Ben Plummer
Testing for Mastitis - Kenneth Smith
External Parasites - Jim Brogdon
Sanitation at the Dairy - Leon Sheumaker
Sediment Elimination - Lewis Willis

Milk Flavor - Dr. Leon Mull, Prof., Dairy Science Dept., Univ. of Florida.

BOB METZGER HONORED

Dr. Robert W. Metzger, director of quality control for the Dairymen's League Cooperative Association, Inc., was honored May 24, by the Cornell Dairy Chapter of the American Dairy Science Association.

He received a plaque - The Dairy Science Achievement Award - for his "lasting contributions to the dairy industry in New York State." Each year the club selects one individual in the State for this recognition.

A native of Rochester, Dr. Metzger graduated from Aquinas Institute there and received the degree of Doctor of Veterinary Medicine from Cornell University in 1932. He was a member of Sigma Phi Sigma fraternity, Red Key, Quill and Dagger, and also collegiate crew manager.

After graduation Dr. Metzger conducted a private veterinary practice at Wolcott, N. Y., for a number of years. Later he served successively as a Division Veterinarian, Assistant Director of Quality Control, and now Director of Quality Control for the Dairymen's League Cooperative Association, Inc., with headquarters at Syracuse.

He helped organize and was chairman of the Farm Practices Committee of the New York State Association of Milk Sanitarians for several years; chairman of the Dairy Farm Methods Committee of the International Association of Milk and Food Sanitarians; member of the New York State Veterinary Medical Society, the U. S. Livestock Sanitary Association, the American Management Association, the New York State Public Health Association, and a member of the Public Health committees of the New York Metropolitan Milk Dealers Association and the New Jersey Milk Industry Association.

He is also a member of the Veterinary and Quality Control Committee of the New Jersey Milk Industry Association, a member of the American Veterinary Medical Association, the American Public Health Association, a past President of the Central New York Veterinary Medical Society and past President of the New York State Association of Milk Sanitarians.

Dr. Metzger is also President of the National Mastitis Council, Inc., a newly-formed organization to combat the mastitis problem throughout the U. S.*

Other affiliations include membership on the Executive Board of the Oswego County Council Boy Scouts of America, Vice-President of the Men's Club of St. Bernadette Church, Constantia, N. Y., a member and past President of the Oneida Lake North Shore Lions Club. His hobbies are boating and camping.

Dr. Metzger has played an active role in the development and advancement of sound quality control practices in the milk industry in the New York State area. He has also done much to promote uniform sanitation regulations throughout the area.

His contributions in his field of work have gained him national recognition.

*An IAMFS Sponsored project.

QUESTIONS AND ANSWERS

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

QUESTION:

Is the coliform count being used on raw milk very extensively? Can you suggest a maximum coliform count for producers raw milk?

ANSWER:

The coliform count is being used quite extensively in Europe according to Johns. He states that several persons in Europe regarded it as the best indicator of clean milking conditions, particularly where farm bulk tanks are used. More and more attention is being paid to this test in North America. One State has a maximum coliform count of 160.

During May and June, 1960, one Metropolitan milk market made coliform counts on 905 producers. Results of these counts were as follows:

Over 1000	Between 500 and 1000	Between 100 and 500	Between 10 and100	10 or under
5.08%	4.20%	17.24%	20.51%	52.92%

Thus, more than 71% of the producers had coliform counts of 100 or less and 88% had coliform counts less than 500. Eighty percent of these producers were using the bulk tank method of production, while the others were can producers. There appeared to be little difference between the results obtained from the two types of milk production. A number having low raw plate counts and low laboratory pasteurized counts showed high coliform counts.

QUESTION:

Should samples of milk be shaken thoroughly before testing for antibiotics, and does penicillin concentrate in the water or fat phase?

ANSWER:

Samples should be well shaken before sampling to evenly disperse the fat globules. About 80-90% of the penicillin concentration is in the water phase if sodium or potassium penicillin is used.

QUESTION:

Why do we get false positive antibiotic results on buttermilk and cottage cheese?

ANSWER:

Dairy products of high acid content, as compared to whole milk, such as buttermilk and cottage cheese, will give false positives because of the high acidity. These products should be diluted with a buffer to about the acidity of whole milk, and assayed, or incubated for at least six hours.

QUESTION:

In the antibiotic test why is there more luxuriant growth of *B. subtilis* around discs which have been dipped in

chocolate milk than around discs dipped in whole milk?

ANSWER:
The chocolate and sugar in chocolate milk supply added nutrients to the agar to cause heavier growth of the organism.

QUESTION:
What is the cause of curdy particles on top of homogenized milk?

ANSWER:
This is brought about by at least two causes. One factor is improper functioning of homogenizer valve. This usually results in a cream line when the defect is serious, but could be slight enough to only result in small surface particles. A test for homogenizer deficiency will determine if this is the cause. A more difficult cause to trace is the incorporation of air into the milk, prior to homogenization. The minute air cells tend to result in curdy particles rising to the surface, possibly due to denaturation of protein. A book called *Homogenization* by Doctor M. Trout, is an excellent reference to all aspects of homogenization.

QUESTION:
Do the diet products on the market present any special bacteriological problem?

ANSWER:
In general, they should present no special problem. However, because they are often handled in small batches, proper sanitation is often more difficult to insure. Also, because of high sugar and solids content in these products, they provide an excellent medium for bacterial growth and on prolonged storage may present a problem due to psychrophilic bacteria, as the time interval of storage is often sufficiently long to allow these organisms to move out of their lag phase into a phase of rapid growth on a highly nutrious medium and, as a result, can reach extremely high numbers in the product.

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