NOVEMBER, 1960
Vol. 23 No. 11

Journal of

MILK and FOOD TECHNOLOGY

Official Publication

International Association of Milk and Food Sanitarians, Inc.

Father and son dairy partners combine old-fashioned business sense and modern technology

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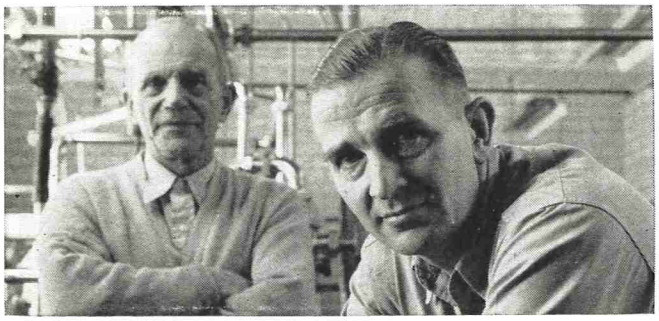
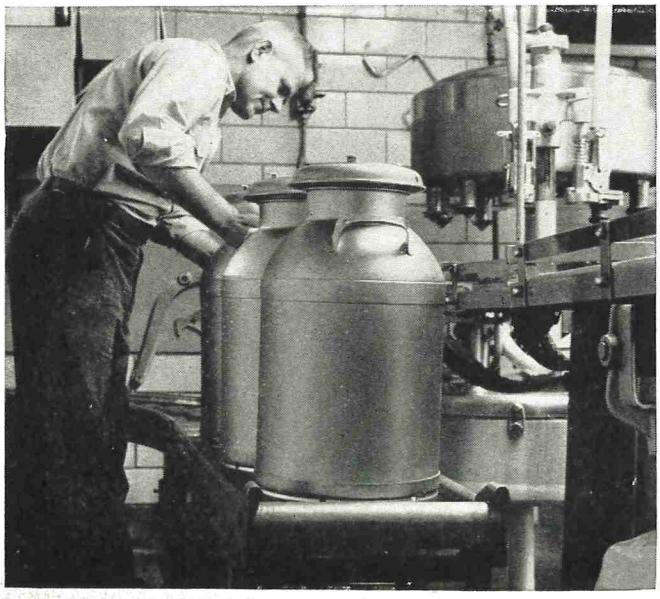


"There's a lot less work involved with a dispenser. We don't have to fill individual containers. And we don't have to pick up hundreds of empties. We deliver the milk in 10-gallon Stainless Steel cans that we place right into the dispenser. When the can's empty, we take it out and put a fresh one in. It's fast, eliminates breakage and spilling, and it's more sanitary because there's less handling involved.



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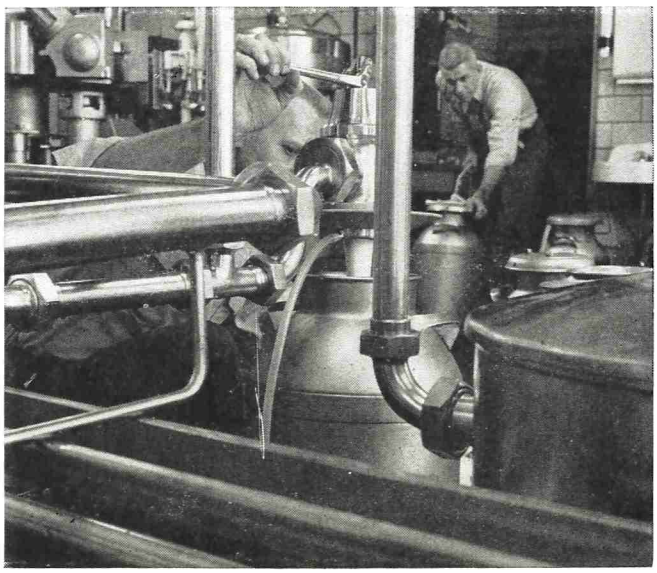

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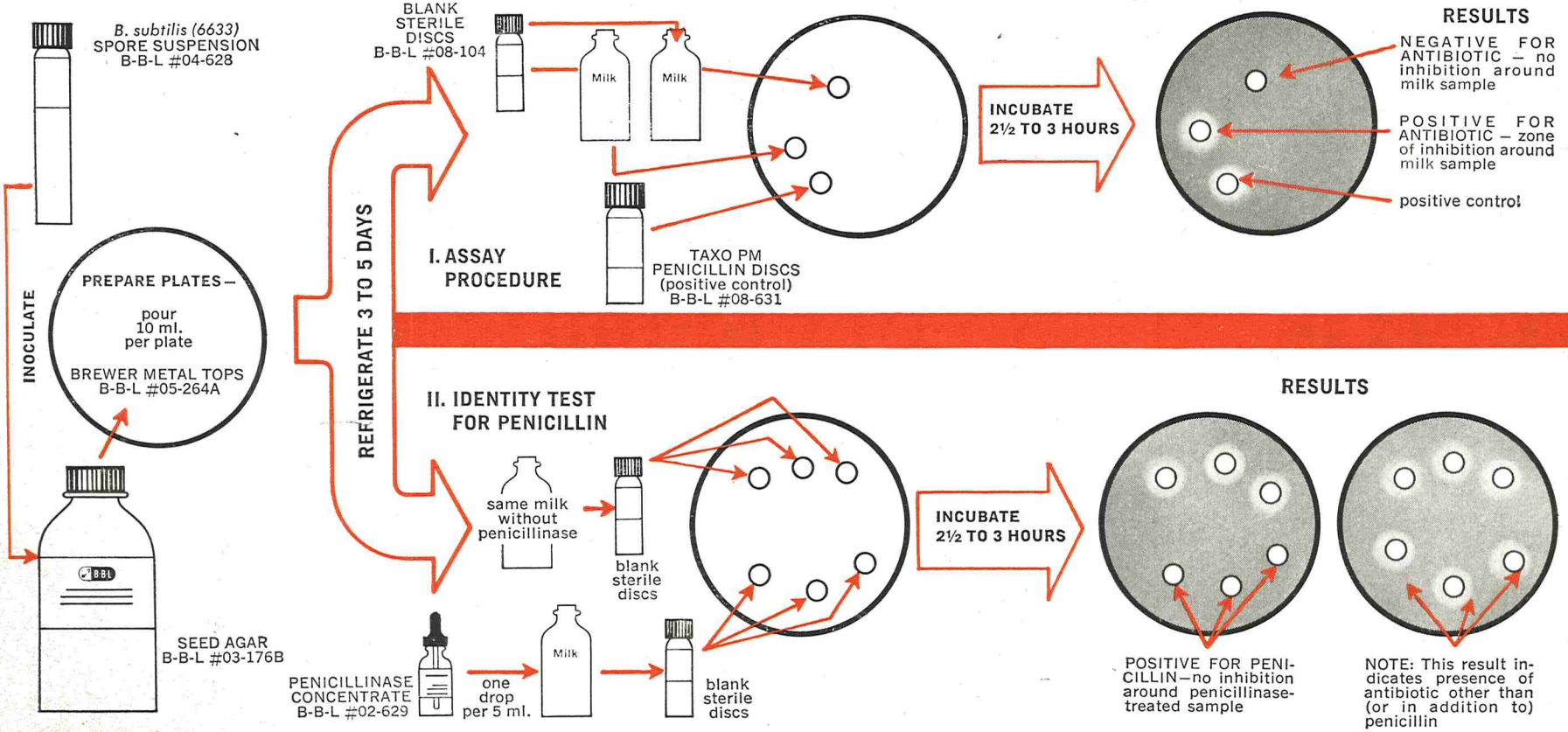
DETECTION OF PENICILLIN IN MILK



The presence of antibiotics in milk following mastitis therapy in cows has created serious public health problems and caused technical difficulties within the dairy industry. A rapid, practical laboratory procedure to assist regulatory agencies and the dairy industry in solving these problems was described by Arret and Kirshbaum.* This procedure employs rapid growth of a sensitive strain of *B. subtilis* for assaying the presence of antibiotics in milk and for determining its identity with penicillin. Inhibition of growth by the presence of as little as 0.05 unit of penicillin per ml. of milk sample is detectable within 2½ hours.

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*Arret, B., and Kirshbaum, A.: J. Milk and Food Technol. **22**:329, 1959.

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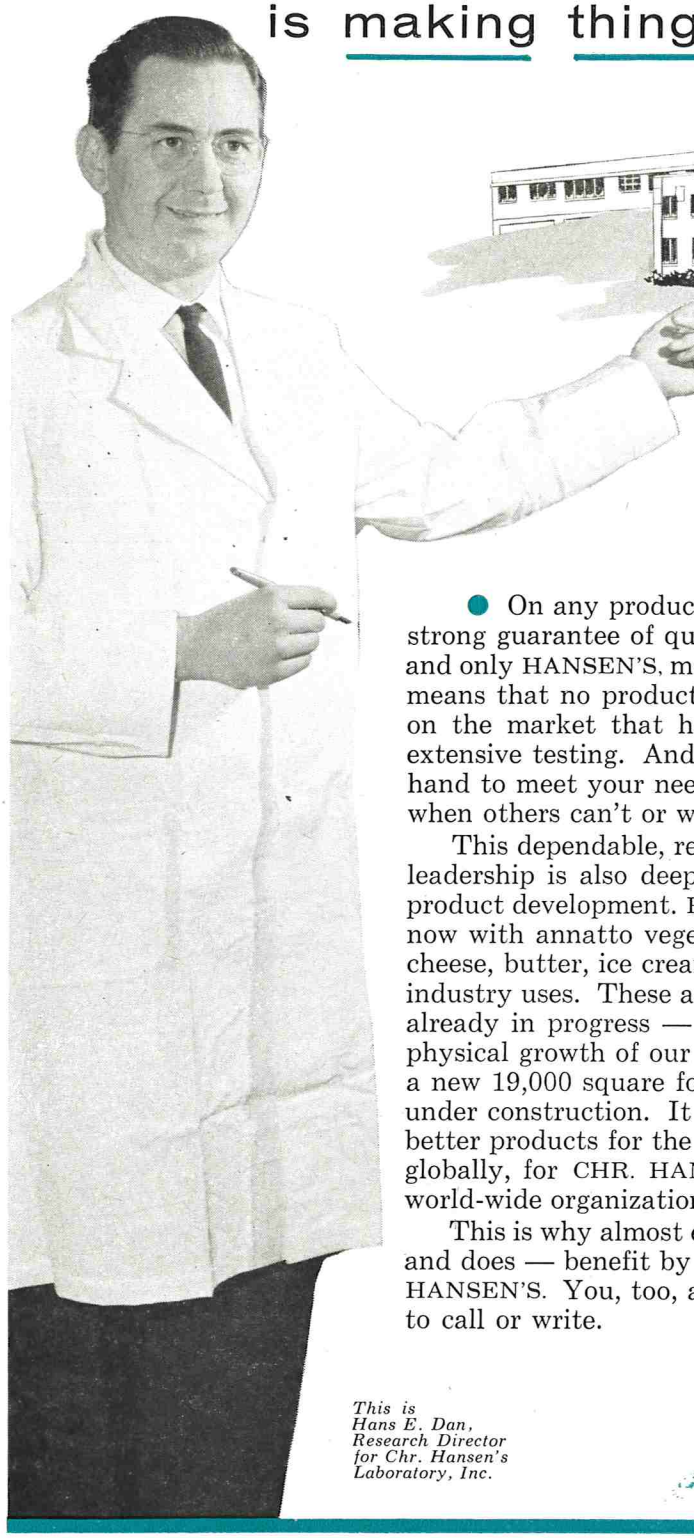

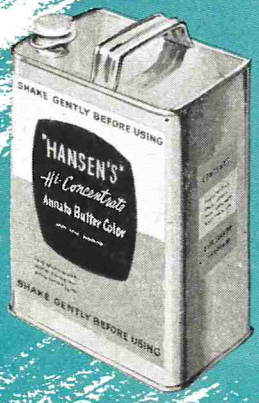

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The Journal of Milk and Food Technology is issued monthly beginning with the January number. Each volume comprises 12 numbers. Published by the International Association of Milk and Food Sanitarians, Inc., with executive offices of the Association, Blue Ridge Rd., P. O. Box 437, Shelbyville, Ind.

Entered as second class matter at the Post Office at Shelbyville, Ind., March 1952, under the Act of March 3, 1879.

EDITORIAL OFFICES: J. C. Olson, Jr., Associate Editor, Dept. Dairy Husbandry, University of Minn., St. Paul, Minn.; H. L. Thomasson, Managing Editor, P. O. Box 437, Shelbyville, Ind.

Manuscripts: Correspondence regarding manuscripts and other reading material should be addressed to J. C. Olson, Jr., Associate Editor, Dept. Dairy Husbandry, University of Minn., St. Paul, Minn.

"Instruction to Contributors" can be obtained from the Editor for the use of contributors of papers.

Journal of

MILK and FOOD TECHNOLOGY

Official Publication

International Association of Milk and Food Sanitarians, Inc.

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Vol. 23 November No. 11

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Subscription Rates: One volume per year
Individual non-members, Governmental and Commercial Organization subscription,
1 yr. $8.00
Public and Edueational Institution
Libraries, 1 yr. $6.00
Single Copies $1.00

Orders for Reprints: All orders for reprints should be sent to the executive office of the Association, P. O. Box 437, Shelbyville, Ind.

Membership Dues: Membership in the **International Association of Milk and Food Sanitarians, Inc.,** is **$7.00 per year,** which includes annual subscription to the **Journal of Milk and Food Technology.** All correspondence regarding membership, remittances for dues, failure to receive copies of the Journal, changes of address, and other such matters should be addressed to the Executive Secretary of the Association, H. L. Thomasson, Box 437, Shelbyville, Indiana.

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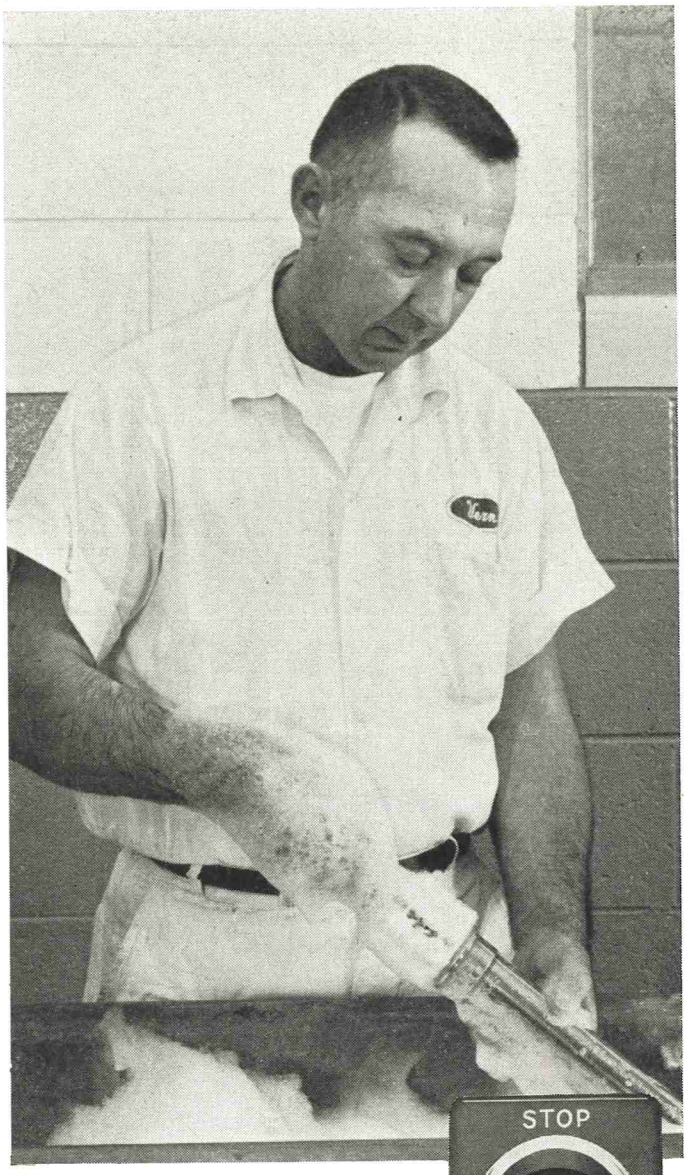

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EDITORIAL

THE BITTER END

In nautical practice, the "bitter end" of the line, such as an anchor line, had best be tied to something fast. Casting unattached anchors is a hazardous business. Yet the equivalent of such practice is frequently noted in conferences to develop sanitary standards in design for equipment or in regulations for the handling of foods. All too often impressions gained during years of professional practice are submitted at conferences as matters of fact, whereas actually they have never been subjected to critical evaluation beforehand to establish their true worth. All too often such impressions, which have been the basis of rule or law, or *modus operandi* in a proponent's area, are found to be false, or at best, extremely in want when subjected to the light of examination, or rebuttal by sound evidence from experience in other quarters. But most unfortunate is the reluctance of bearers of such impressions to face the facts. Equally unfortunate is the reluctance to accept proposals that at least have equivalent merit for the purpose of new developments.

It is important that professional sanitarians subject all of their concepts to critical review of their peers at periodic intervals. And perhaps there is no more soul-searching than occurs at the conferences in the development of sanitary standards. The abandonment of concepts, long thought to be tied fast, but not, is difficult indeed, and often is the measure of the capability of the man.

Reflection of practices formerly required in the past, but modified in many respects, will serve to illustrate the necessity of having the facts. We can remember regulations which required barn stalls or gutters with dimensions in specific inches, or milkhouses with stated (often varying) distances from the barn. What happened to these concepts with modern attached milkhouses, open-run barns, and milking parlors?

It is not too long ago when certain practices which were specifically prohibited are now part of a modern concept of acceptable operation: continuous pasteurization at various temperatures; the post-processing of pasteurized milk; the fortification of milk with essential nutrients and solids; the sterilization of facilities with alternate methods; the paper container; the plastic flexible tubing; the institutional milk, beverage and food dispenser; the cleaning in-place systems; automatic controls; every other day and every third day pick up and delivery; the bulk hauling of milk; and the bulk handling of milk on farms; various methods of evaluation of quality; the concept of tolerance of certain chemicals in foods; the extensive marketing of refrigerated perishable foods from widespread geographical areas; the certification program of interstate and intra-state shipment of milk, and other foods such as shell fish; standardization of milk and other products.

Virtually all the developments such as mentioned have resulted in convictions or impressions giving way to fact. This is often difficult to achieve. It is a common statement it requires 7 to 10 years to translate ideas, or facts, into practice. Why should this be so? This period is a good portion of any person's life span. But most important is the tendency to cling to impressions in the guise of protection for public health, when in fact, it is illusory, and detrimental, and often costly.

Perceive what may come: examination of the logic of prohibition of multiple use of tanks for cross haul of various foods, including dairy products, when acceptable procedures of cleaning and sanitation are employed; the transhipment of bottled or bulk concentrated milks for subsequent delivery or processing; the use of single service bulk milk dispensers in designed cabinets in homes; sterilized aseptically filled milk and food products (already in operation); uniform labeling and identification for interstate trade; Grade A manufactured milk products; mechanized automatic cow-barn centers; increased dehydration, and other means of preservation of foods; development of dispensers for modified foods, single service bulk containers, and so on. In the development of these, and other concepts, will undoubtedly appear trade barriers of independent impressions. There will be many developments requiring new processes, new units of equipment, new standards of design and for regulation. Each will require reexamination of old concepts, establishing of facts, and scuttling of misconcepts. In all, it is important that the professional sanitarian, if he is best to serve, and protect public health, have the lines to his rules securely tied to fact at the bitter end.

K. G. Weckel

COOLING STARCH-THICKENED FOOD ITEMS WITH COLD TUBE AGITATION[1]

KARLA LONGREE, LENORA MORAGNE, AND JAMES C. WHITE

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(Received for publication July 31, 1960)

This investigation was concerned with the cooling of 4-gal. batches of food by agitation using a rotating tube as agitator through which flowed refrigerated water. The aim was: (a) to gain information on the total cooling time of various white sauces; and (b) to observe changes in certain quality characteristics affected by this method of cooling such as, relative viscosity, density, whiteness reflectance, and acceptability for service. The variables were the level of flour in the sauces (4, 6, and 12 oz-/gal. milk), the level of fat in the sauces (4, 6, and 12 oz./gal. milk), and the rate of agitation of the cold tube (6, 12, and 18 rpm.)

In general, the rate of cooling increased as the rate of agitation increased. The twenty-four sauces cooled from 140°F. to 60°F. within 5 hours, and half of them within 3 hours. The high-fat sauces cooled more slowly. Changes in relative viscosity were small, and in all but two cases they did not affect the acceptability of the sauces for service.

It appears that efficient cooling can be obtained with the u-tube without obejctionable loss in culinary quality. An analysis of variance and t test comparisons were carried out.

Bacterial growth in large batches of food has long been a problem in the food service industry. The difficulty of refrigerating large batches of warm food has been pointed out and the need for precooling these foods before refrigeration has been emphasized (*4*).

A method of precooling white sauces in flowing water has been described by the authors (*3*). Varied were: the temperature of the water (35°, 42°, and 70°F.), the rate of water flow (2 rates), the batch size of the sauce (2 and 4 gal.), the viscosity of the sauces (2 levels), and the intervals between agitations (15 and 30 min.). Agitation *per se* was not chosen as a variable because in non-agitated batches the cooling was extremely slow. The most effective factors in decreasing the total cooling time were: low water temperature and fast rate of water flow, 2-gal. batch size and low viscosity of the sauce, and 15-min. intervals between agitation.

The uses of manual agitation and cold tap water are limited. The limiting factor in agitation is the human element, and the temperature of tap water is subjected to seasonal variation. Therefore, it was thought that the use of mechanical agitation and of refrigerated water should be combined in a unit which could be relied upon for a more efficient and predictable method of precooling foods prepared in quantity.

The present investigation was concerned with the cooling of large batches of starch-thickened food items with a rotating tube containing cold water as agitator. The aim was: (*a*) to gain information on the heat transfer from various starch-thickened food items cooled in this manner, and (*b*) to observe certain quality characteristics of the starch-thickened food items that might be affected by this method of cooling.

Results from preliminary studies were used to determine the methodology to be used in this investigation. The preliminary studies were concerned with the design of the rotating tube, the position of the tube in the starch-thickened mixtures, the rate of agitation of the rotating tube, and the position of the thermocouples.

PURPOSE AND VARIABLES

In this investigation white sauces were cooled using a rotating tube as agitator; refrigerated water flowed through the tube. Temperatures were recorded in specified locations within the batches and of the surrounding air during the cooling period. In order to determine possible quality changes attributable to agitation, certain objective measurements were taken on the sauces, including determinations of relative viscosity, density, and whiteness reflectance values. Subjective observations were also carried out. The variables were: (a) the level of flour[2] in the white sauces (4, 6, and 12 oz./gal. milk); (*b*) the level of fat[3] in the white sauces (4, 6, and 12 oz./gal. milk); and (*c*) the rate of agitation of the tube (6, 12, and 18 rpm).

Twelve experiments were performed. For each experiment the level of flour, the level of fat, and the rate of agitation were varying factors. Two randomized replicates were carried out.

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

[2]All purpose, Robinhood.

[3]Margarine, Tastex.

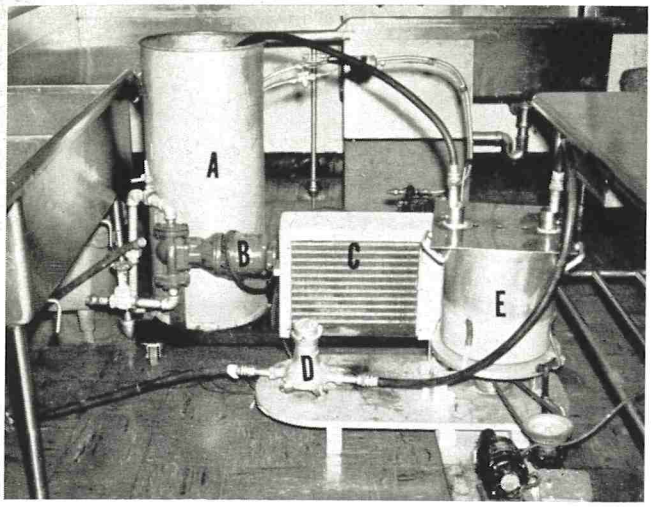

Figure 1. The portable refrigeration unit and the rotating cold tube assembly: A ice storage tank, B water pump, C compressor unit, D water meter, and E rotating stock pot.

EXPERIMENTAL PROCEDURE

Materials

White sauces were used as the food medium because: (*a*) their consistency is conducive to slow transfer of heat; (*b*) the amount and the proportion of the ingredients can be altered; (*c*) their preparation is simple; and (*d*) their cost is relatively low.

Some sauces were made with a 1:1 ratio of flour to fat; others were made with a 1:2 ratio of flour to fat. Each sauce is representative of a food item prepared from a white sauce base: the 4-oz. sauces are representative of cream soups; the 6-oz, sauces are representative of cream sauces for vegetables; the 6-oz, sauces made with a high proportion of fat are representative of gravies; and the 12-oz. sauces are representative of cream sauces for entrees.

Four gal. plus 2 qt. of the sauce were prepared in order that 2 qt. of the sauce could be removed to provide for aliquots to carry out specific tests on the sauces before they were cooled. After cooking, the 4-gal. batches of sauce were cooled[4] to 140°F. and thoroughly blended before the agitator was inserted. The sauces were cooled from an initial temperature of 140°F. to a final temperature of 50°F.

Equipment

Heavy-duty cast aluminum stock pots[5] of 25-qt. capacity were used as containers for the starch mixtures. The stock pots were 13 in. high and 12 in. in diameter.

A portable refrigeration unit was designed and installed to supply the cold water (Figure 1). The unit was composed of two parts: a 1/3-HP compressor unit and a 1/2-HP pump which circulated the water over ice formed in a galvanized iron tank and through the stainless steel cooling tube. A water meter was installed in the line to regulate the water flow at a rate of 0.3 cu. ft. per min.

The rotating cold tube unit used as the cooling device is pictured in Figure 1. The unit was composed of two parts: a wooden supporting disc 14¼ in. in diameter and an 18-gage stainless steel tube mounted on a 15 in. x 15 in. sheet of stainless steel. The stock pot rotated on the wooden disc while the cold tube was held stationary approximately ¼ in. above the stock pot. The rotating disc was operated by a 1/30-HP motor which could be adjusted to turn the disc at speeds from 1 to 36 rpm.

The design of the cold tube was arrived at on the basis of results of a study comparing a u-shaped and an o-shaped tube which were made of the same material and of the same length and diameter. The criteria for selecting the design of the cold tube were: in relative viscosity. When the u-shaped tube was used, cooling of the medium near the surface of the sauce was quite slow. Although the o-shaped tube produced shorter total cooling times, a considerable change in the viscosity of the sauce was also produced. The u-shaped tube was selected for use in (*a*) short total cooling times, and (*b*) little change the present investigation.

In another preliminary study the effect of placing the u-tube in two positions within the stock pot was studied. The criterion for determining the position of the cold tube to be used in the main investigation was the least change in consistency of the medium associated with the shortest total cooling time at a slow, medium, and fast rate of agitation. This criterion was met when the u-tube was placed at the bottom of the stock pot (Figure 2) rather than in the middle of the mass.

In a third preliminary study several rates of agitation were studied (2, 6, 12, and 36 rpm) and the effect of the variation on cooling time and relative viscosity of the sauces was observed. The criteria for the selection of the "slow" rate of agitation by the cold tube were: (*a*) little or no change in consistency of the food medium cooled, and (*b*) reasonably short total cooling times from 140°F. to 50°F. The criteria for the selection of a "fast" rate of agitation were: (*a*) a slight change in consistency of the food medium agitated, and (*b*) a total cooling time of 2 hr. These criteria for the rate of agitation were met when the mixture was agitated at 6 rpm for the "slow" rate and 18 rpm for the "fast" rate. In the present investigation the sauces were agitated at these two rates and also at a medium rate of 12 rpm.

[4]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 cu. ft. per min.

[5]Wearever, model 4252.

Objective Measurements

Temperatures were recorded continuously[6] in the starch mixtures as the mixtures cooled from an initial temperature of 140°F. to a final temperature of 50°F.

In a preliminary study the temperature drops measured at various locations in the batch were studied. The positions of the thermocouples were varied; the center, off center, and the bottom. It was found that the slowest drop in temperature was registered by the thermocouple located 1½ in. from the surface of the mixture in the center of the mass, this being the position nearest the surface. In the present investigation the thermocouple positioned here as well as four other thermocouples were located in the mass: one 2½ in. from the surface of the food medium; one 3¾ in. from the surface of the medium (midway between the surface of the medium and the cold tube); one 4¼ in. from the surface of the custard (midway between the mass of the cooling medium); and one 6 in. below the surface of the medium (1½ in. above the cold tube) (Figure 2). The total cooling times were based on the readings recorded 1½ in. below the surface of the sauce. Temperature readings were also made of the cold water entering the cold tube, of the water leaving the cold tube, and of the surrounding air 5 ft. above the cooling unit.

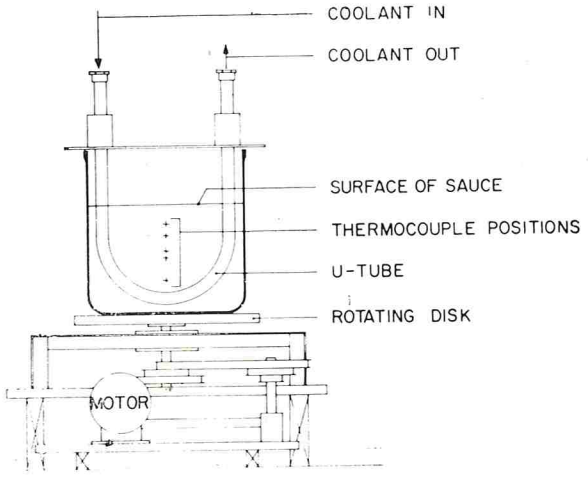

Figure 2. A diagram of positions of the rotating cold tube and the thermocouples in the stock pot.

The relative viscosity measurements of the starch mixtures were determined by a modification of the linespread method as described by Billings (*1*). The measurements were taken on two samples of the starch mixtures. One sample was removed from the cooked mixture cooled[4] to 140°F. A second sample was removed from the mixture that had been cooled from 140°F. to 50°F. by agitating with the cold tube and was reheated to 140°F. before the linespread measurement was taken. For each sample two determinations were made and an average value calculated.

Color determinations on the starch mixtures were made by measuring the light reflectance on a color difference meter[7]. Density measurements were made in the starch mixtures using a modification of the method of Dunn and White (*2*). The measurements were taken on two samples of the starch mixtures. One sample was removed from the cooked mixture and cooled[4] to room temperature, approximately 78°F. A second sample was removed from the batch after it was cooled by means of the cold tube agitator. The sample was reheated to room temperature, and three color determinations were made and an average was calculated from the three readings.

Subjective Observations

Subjective observations were made on the white sauces by a panel of six experienced judges. The judges were presented two samples of sauce at 140°F. One sample of the mixture was removed before the batch was agitated and the second sample was taken after agitation. The judges were asked to determine whether the consistency of each sample was acceptable, too thin, too thick, or alike in consistency.

RESULTS AND ANALYSIS

Measurements taken on the white sauces before and after cooling by agitation are presented in Table 1. Included are total cooling times, radius of spread values, subjective observations, density values, and whiteness reflectance values.

An analysis of variance[8] based on the differences in these measurements taken on the sauces before and after cooling is presented in Table 2. In regard to the statistical analysis an explanation of the symbols used is in order: FF (Fat Flour) refers to all the sauces prepared using a 1:1 ratio of flour to fat. Trtl (Treatment 1) refers to the 4-oz. sauces with a 1:1 ratio of flour to fat; Trt2 (Treatment 2) refers to the 6-oz. sauces with a 1:1 ratio of flour to fat; Trt3 (Treatment 3) refers to the 6-oz. sauces with a 1:2 ratio of flour to fat; and Trt4 (Treatment 4) refers to the 12-oz. sauces with a 1:1 ratio of flour to fat.

Two t test comparisons were also made involving

[6]Minneapolis-Honeywell potentiometer, model 153 x 64 P12-x-41.

[7]Hunter Color and Color Difference Meter. Standard (white) for color and reflectance, R = 85.0, a = -1.0, b = + 1.3. Henry A. Gardner Laboratories, Inc., Bethesda 14, Md.

[8]The writers wish to express their sincere thanks to Mr. Wallace R. Blischke, Research Associate in the Department of Plant Breeding, Biometrics Unit, for his assistance in the statistical analysis of these results.

TABLE 1 — DATA OBTAINED FROM THE WHITE SAUCES BEFORE AND AFTER COOLING BY AGITATION: TOTAL COOLING TIME, RADIUS OF SPREAD, SUBJECTIVE OBSERVATION, DENSITY, AND WHITENESS REFLECTANCE[a].

Amount[b] of Flour	Amount[b] of Fat	Flour fat ratio	Agitation rate	Total cooling time[c]	Radius of spread (relative viscosity) Before cooling	Radius of spread (relative viscosity) After cooling	Radius of spread (relative viscosity) Difference	Accept. for service[d]	Density Before cooling	Density After cooling	Density Difference	Whiteness reflectance[e] Before cooling	Whiteness reflectance[e] After cooling	Whiteness reflectance[e] Difference
oz.	oz.		rpm.	min.	mm.	mm.	mm.							
4	4	1:1	6	140	46.94	49.05	+2.11	yes	1.16917	1.17866	+.00949	47.50	47.68	+ .18
			12	108	44.43	46.50	+2.07	yes	1.16733	1.17333	+.00600	49.12	47.68	−1.44
			18	88	44.94	48.13	+3.19	yes	1.17967	1.17433	−.00534	45.79	47.07	+1.28
6	6	1:1	6	210	33.31	35.44	+2.13	yes	1.17566	1.17600	−.00034	46.25	45.67	− .58
			12	140	31.25	37.43	+6.18	quest.	1.17633	1.18000	+.00367	44.65	45.13	+ .48
			18	98	33.63	36.25	+2.62	quest.	1.17567	1.18000	+.00433	43.92	46.31	+2.39
6	12	1:2	6	375	32.63	35.13	+2.50	yes	1.15500	1.16967	+.01467	45.27	43.10	−2.17
			12	248	31.05	35.00	+3.95	yes	1.16433	1.16667	+.00234	42.48	43.08	+ .60
			18	88	31.94	35.25	+3.31	yes	1.16700	1.17233	+.00533	43.47	43.94	+ .47
12	12	1:1	6	270	15.81	16.94	+1.13	yes	1.16067	1.16700	+.00633	40.51	40.16	− .35
			12	130	17.06	20.13	+3.07	yes	1.16200	1.16666	+.00466	40.90	40.18	− .72
			18	95	16.88	19.86	+2.98	yes	1.16300	1.16332	+.00032	41.29	41.36	+ .07

[a]Average values of two randomized replicates.
[b]Ounces of flour per gallon of milk.
[c]From 140°F. to 60°F.
[d]"Yes" indicates a positive response by ⅔ or more judges; "questionable" indicates a positive response by ½ or fewer judges.
[e]Calculated from the Hunter whiteness formula (*J. Opt. Soc. Am.* 50:44-48, 1960).

the ratio of flour to fat. One t test compared 6-oz. sauces with a 1:1 ratio of flour to fat with 6-oz. sauces with a 1:2 ratio of flour to fat (Trt2 *vs* Trt3). The second t test compared 6-oz. sauces with a 1:2 ratio of flour to fat to 12-oz. sauces with a 1:1 ratio of flour to fat (Trt3 vs Trt4) (Table 3).

The results of this investigation concern two aspects, total cooling times and changes in quality characteristics.

TOTAL COOLING TIMES

The total cooling times of the sauces decreased tremendously as the rate of agitation increased. The sauces agitated at 18 rpm cooled in ⅔ the time necessary to cool the sauces agitated at 12 rpm to the same final temperature. In turn, the sauces agitated at 12 rpm cooled in ⅔ the time necessary to cool the same sauces agitated at 6 rpm (Tables 1, 3).

The total cooling times were also influenced by the composition of the sauces. In all the sauces prepared using a 1:1 ratio of flour to fat, the cooling times increased as the amount of flour and fat in the sauces increased. The sauces prepared with a 1:2 ratio of flour to fat cooled slowly. A 6-oz. sauce prepared with the 1:1 ratio of ingredients cooled to the same final temperature in 3/5 the time necessary for the same sauce made from a 1:2 ratio of ingredients to cool. Considerable amounts of fat congealed on the cold tube and possibly interferred with the transfer of heat.

All twenty-four sauces cooled from 140°F. to 60°F. within 5 hours, half of these within 3 hours.

Analysis of Variance and t Test

1:1 Ratio of flour to fat: Several treatment effects were highly significant in influencing the total cooling time of the sauces (Table 2). The A_{linear} effect was significant, indicating that the total cooling time was influenced linearly by the rate of agitation; as the rate of agitation increased the total cooling time decreased linearly (Table 3).

1:2 Ratio of flour to fat: The ratio of flour to fat was highly significant in altering the total cooling times (FF *vs.* Trt3, Table 2.) The sauces made with a 1:2 ratio of flour to fat (Trt 3) cooled at a much slower rate than the sauces made using a 1:1 ratio (Trtl, Trt2, and Trt4; Table 3).

A t test comparison of the 1:1 ratio, 6-oz. sauce *vs* the 1:2 ratio, 6-oz. sauce (Trt2 *vs* Trt3) was highly significant. This substantiates the analysis above pointing out that cooling rates of the two sauces were different, the high-fat sauce cooling at the slower rate. A comparison of the 1:2 ratio, 6-oz. sauce with the 1:1 ratio, 12-oz. sauce (Trt3 *vs* Trt4) was also significant. The 6-oz. sauce with high fat cooled at a slower rate than the more viscous 12-oz. sauce (Table 3).

TABLE 2 — ANALYSIS OF VARIANCE AND F VALUES BASED ON THE DIFFERENCES IN THE MEASUREMENTS OBTAINED FROM THE WHITE SAUCES BEFORE AND AFTER COOLING BY AGITATION

Source of variance	Degrees of freedom	Mean square	F value
	Total Cooling Time[a]		
Replicates	1	9,801.042	4.74
Treatment	3		
FF (Fat Flour)	2		
FF_{linear}	1	6,846.368	3.31
$FF_{quadratic}$	1	2,156.410	1.04
FF *vs* Trt3	1	40,375.347	19.51**
A (Agitation)	2		
A_{linear}	1	98,439.063	47.57**
$A_{quadratic}$	1	1,054.688	1
Fat Flour x Agitation	6		
$FF_{linear} \times A_{linear}$	1	6,973.157	3.37
$FF_{quadratic} \times A_{linear}$	1	531.010	1
FF *vs* Trt3 x A_{linear}	1	22,750.521	10.99**
$FF_{linear} \times A_{quadratic}$	1	1,629.514	1
$FF_{quadratic} \times A_{quadratic}$	1	13.542	1
FF x Trt3 x $A_{quadratic}$	1	1,633.507	1
Error	11	2,069.223	
	Relative Viscosity (Radius of Spread)		
Replicates	1	1.7740	1.15
Treatment	3		
FF (Fat Flour)	2		
FF_{linear}	1	.6175	1
$FF_{quadratic}$	1	5.3169	3.43
FF vs Trt3	1	.9742	1
A (Agitation)	2		
A_{linear}	1	4.7852	3.09
$A_{quadratic}$	1	9.0567	5.85*
Fat Flour x Agitation	6		
FFA_{linear}	3	.3227	1
$FFA_{quadratic}$	3	4.4238	2.86
Error	11	1.5491	

[a]From 140°F. to 60°F.
**Significant at the 1% level.
*Significant at the 5% level.

TABLE 3 — THE TREATMENT MEANS AND t VALUES BASED ON DIFFERENCES IN THE MEASUREMENTS OBTAINED FROM THE WHITE SAUCES BEFORE AND AFTER COOLING BY AGITATION[a]

Variable	4 oz.[b] 1:1[c] Trt1	6 oz.[b] 1:1[c] Trt2	6 oz.[b] 1:2[c] Trt3	12 oz.[b] 1:1[c] Trt4	Agitation 6 rpm	Agitation 12 rpm	Agitation 18 rpm	s-d	t Value[f]
Total Cooling time[d]	111.67	149.17	236.67	165.00	248.75	156.25	91.88	26.2630	3.332** 2.729*
Increase in Radius of Spread	2.46	3.64	3.30	2.39	1.97	3.82	3.06	.7186	.481 1.258
Change in Whiteness Reflectance Value[e]	+.01	+.76	−.38	−.34	−1.31	−2.78	+1.05	.7872	1.448 .051
Increase in Density	.00339	.00278	.00767	.00377	.00770	.00416	.00132	545.889	.896 .714

[a]Two randomized replicates were carried out.
[b]Ounces of flour per gal. of milk.
[c]Ratio of flour to fat.
[d]From 140°F. to 60°F.
[e]Calculated from the Hunter whiteness formula (*J. Opt. Soc. Am.* **50**: 44-48, 1960).
[f]The upper valve refers to the Trt 2 *vs* Trt 3 comparison; the lower valve refers to the Trt 3 *vs* Trt 4 comparison.
**Significant at 1% level.
*Significant at 5% level.

QUALITY CHARACTERISTICS

Relative Viscosity

Since the relative viscosity was measured in millimeters of radius of spread, an increase in radius of spread denotes a decrease in relative viscosity.

The radius of spread values of the sauces were altered by agitation. The least changes were observed in the sauces agitated at the slow rate of 6 rpm. Although the changes observed in the sauces agitated at the faster rates were of statistical significance, the judges considered all but two samples as acceptable for service. The two questionable samples were 6-oz. sauces, one of these a high-fat sauce. A slightly greater decrease in the relative viscosity in the two sauces might explain these judgements. The high-fat sauces were agitated quite long because they cooled slowly; this prolonged agitation might explain the thinning in that instance. No explanation can be offered why the other 6-oz. sauce thinned unduly by agitation (Tables 1, 3).

Analysis of variance and t test (Relative viscosity)

1:1 Ratio of flour to fat: The only factor significantly influencing the radius of spread of the sauce was the quadratic effect of agitation (Table 2). This increase in radius of spread due to agitation was not linear; that is, the increase was not in proportion to the decrease in the amount of flour and fat in the sauce (Table 3).

1:2 Ratio of flour to fat: Agitation of the sauces with this ratio of flour to fat was not significant in altering the radius of spread (Table 2).

A t test comparison of the 1:1 ratio, 6-oz. sauce with the 1:2 ratio, 6-oz. sauce (Trt2 *vs* Trt3) and the 1:2 ratio, 6-oz. sauce with the 1:1 ratio, 12-oz. sauce (Trt3 *vs* Trt4) indicated no significant influence on the radius of spread resulting from agitation (Table 3).

Density—Analysis of variance and t test

Ratios of flour to fat: An analysis of the treatment effects on the change in density due to agitation showed that no treatment effect significantly influenced the density of the sauces.

A t test comparison of the 1:1 ratio, 6-oz. sauce with the 1:2 ratio, 6-oz. sauce (Trt2 *vs* Trt3) and the 1:2 ratio, 6-oz. sauce with the 1:1 ratio, 12-oz. sauce (Trt3 *vs* Trt4) showed no significant influence on the density of the sauces attributable to agitation. (Table 3).

Whiteness Reflectance

The whiteness reflectance value was decreased at agitations of 6 and 12 rpm; but the value was increased slightly at the faster rate of 18 rpm. The 4-oz. and 6-oz. 1:1 ratio sauces tended to show an increase in whiteness value while the 6-oz. 2:1 ratio and the 12-oz. 1:1 ratio sauces showed a decrease. Mean values in Table 3 show that the whiteness values in the sauces which were agitated long decreased while the values in the sauces with shorter agitation times increased.

Analysis of Variance and t test (Whiteness reflectance)

1:1 Ratio of flour to fat: Observations of the var-

ious treatment effects on the change in the whiteness reflectance value showed that the whiteness value changed linearly with the rates of agitation (A_{linear}, Table 2). As the rate of agitation increased, the whiteness reflectance value increased significantly (Table 3).

1:2 Ratio of flour to fat: This ratio of flour indicated no significant affect on the whiteness value after agitation.

A t test comparison of the 1:1 ratio, 6-oz. sauce with the 1:2 ratio, 6-oz. sauce (Trt2 *vs* Trt3) and the 1:2 ratio, 6-oz. sauce with the 1:1 ratio, 12-oz. sauce Trt3 *vs* Trt4) indicated no significant influence on the whiteness value due to agitation (Table 3).

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DETECTION OF A RANCID-LIKE FLAVOR IN MILK[1]

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(Received for publication June 11, 1960)

Homogenized milk was inoculated with different amounts of rancid whole milk powder. The samples were scored by three milk judges to determine their "threshold value" for rancid flavor. The results revealed that the sensitivity to rancidity varied among judges. This indicated that consumers probably do not have like tolerances for rancidity and that milk graders should apply a chemical test in addition to taste to detect slight rancid off-flavor defects in a milk supply.

It has been known for some time that individuals differ in their sensitivity to odors and flavors. Consequently some milk consumers will tolerate more intense off-flavors in milk than others. Not unlike milk consumers, it has also been considered that milk judges may vary somewhat in their sensitivity toward certain milk flavor defects. With this in view, an experiment was conducted at the Montana Agricultural Experiment Station in an attempt to procure some information on milk judges, sensitivity to the rancid or rancid-like flavor defects that sometimes occurs in market milk. This flavor defect was chosen because some consumers are very sensitive to this milk flavor defect and because of its increased frequency of occurance with the innovation of bulk farm tank and tank truck handling of raw milk, and increased use of pipeline milking equipment. Futhermore, the characteristic flavor reaction may vary somewhat due to other flavor complication, so milk judges may not always agree on its presence especially when it is present in milk only to a slight degree.

Procedure

High quality pasteurized, homogenized market milk of good flavor quality, processed from the college herd raw milk supply of low bacterial count in which no rancid off-flavor could be detected organoleptically was used in the experiment. Two trials were made consisting of a series of samples. All the milk samples in each series were from the same supply. Some of the samples were inoculated with different amounts of a commercial lipase enzyme treated whole milk powder which had a very definite rancid-like odor and flavor. Some samples were left untreated to be used as control samples. All the samples were held at 40°F. for different periods of time. The coded samples were examined independently for rancid flavor by experienced milk judges. Each judge registered independently his organoleptic impression on the presence and intensity of the flavor present in each sample.

The addition of the lipase treated whole milk powder to the homogenized milk did not produce quite the same rancid flavor that sometimes develops spontaneously in raw milk. The flavor detected in the inoculated samples was more "nut like" and somewhat more pleasant than the disagreeable, unclean characteristics of spontaneously developed rancidity. The flavor was not sufficiently different, however, to interfere with its organoleptic detection.

The addition of the commercial lipase enzyme treated rancid whole milk powder to homogenized milk was done in such a manner as to make it possible to control the intensity of this flavor in the inoculated samples. Such a control would not have been possible in milk with spontaneously developed rancidity.

Experimental

A trial was made consisting of four series of samples. In each of two of the series, one involving a group of five samples and the other, a group of six samples, one sample was left uninoculated. The other samples were inoculated with different amounts of lipase enzyme treated whole milk powder varying from one to eight grams per quart.

All the samples were held for periods of 24, 48 and 72 hours at 40°F. At the end of each holding period, the samples were examined organoleptically for rancidity by three experienced milk judges.

In each case of the other two series of the trial, 21 samples of milk were involved. In one of the series, no enzyme treated milk powder was added to seven of the samples; to each of another seven samples, three grams were added and to each of a third group, or seven samples, 6 grams per quart were added. Likewise, in the other series of 21 samples, no enzyme treated milk powder was added to a group of

[1]Journal Article No. 496—Montana Agricultural Experiment Station.

seven samples. To each sample of the other two groups of seven samples, 7 and 10 grams per quart were added, respectively. At the end of a 24 hour holding period all the samples were examined organoleptically for rancidity by the milk judges. The findings of the judges on the first trial are given in Table 1.

In the second trial, consisting of six series, homogenized milk samples were inoculated with varied amounts of the commercial lipase treated whole milk powder. In each of the series of six milk samples, one sample had no enzyme treated milk powder added to it. To the other five samples, different amounts of the enzyme treated powder was added to each pint of homogenized milk. After holding the samples, including the untreated one in each series at 40°F, for 24 hours, they were examined organoleptically by three milk judges. The judges recorded independently the detection of the presence and intensity of the rancid-like odor and/or flavor in the samples without identification as to their previous treatment. After the elapse of about one hour, the

TABLE I — JUDGES DETECTION OF "RANCID-LIKE" FLAVOR IN HOMOGENIZED MILK INOCULATED WITH DIFFERENT AMOUNTS OF LIPASE ENZYME TREATED WHOLE MILK POWDER AND HELD FOR DIFFERENT TIME INTERVALS AT 40°F.

	Time After Adding Inoculant								
Grams of inoculant per quart	24 Hours Judge A	24 Hours Judge B	24 Hours Judge C	48 Hours Judge A	48 Hours Judge B	48 Hours Judge C	72 Hours Judge A	72 Hours Judge B	72 Hours Judge C
None	−	−	−	−	−	−	−	−	−
1	−	−	−	−	−	−	−	−	−
2	−	−	−	−	−	−	−	−	−
3	−	−	−	−	−	−	−	−	−
4	−	+	−	−	−	−	−	+	−
None	−	−	−	−	−	−	−	−	−
4	−	−	−	−	−	+	−	−	++
5	−	−	−	−	−	+	−	−	++
6	−	−	−	−	−	+	−	−	++
7	+	+	+	−	++	+	−	+	++
8	+	+	+	−	++	+	++	++	++

	24 Hours After Adding Inoculant					
Grams of inoculant per quart	Judge A	Judge B	Judge C	Grams of inoculant per quart	Judge A	Judge B	Judge C
None	−	−	−	None	−	−	−
"	−	−	−	"	−	−	−
"	−	−	−	"	−	−	−
"	−	−	−	"	−	−	−
"	−	−	−	"	−	−	−
"	−	−	−	"	−	−	−
"	−	−	−	"	−	−	−
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
3	−	−	−	7	−	+	+
6	−	−	+	10	−	+	+
6	+	+	+	10	−	+	+
6	+	−	+	10	−	++	+
6	+	−	+	10	−	++	+
6	+	−	+	10	−	+	+
6	+	−	+	10	−	+	+
6	+	−	+	10	−	++	+

TABLE 2 — JUDGE'S DETECTION ON TWO EXAMINATIONS OF RANCID-LIKE ODOR AND FLAVOR IN THE SAME HOMOGENIZED MILK SAMPLES INOCULATED WITH VARIOUS AMOUNTS OF LIPASE ENZYME TREATED WHOLE MILK POWDER

Grams inoculant per pint milk	First Examination						Second Examination					
	Judge A		Judge B		Judge C		Judge A		Judge B		Judge C	
	Odor	Flavor	Odor	Flavor	Odor	Flavor	Odor	Flavor	Odor	Flavor	Odor	Flavor
None	−	−	−	−	−	−	−	−	−	−	−	−
0.5	−	−	−	−	−	−	−	−	−	−	−	−
1.0	−	−	−	−	−	−	−	−	−	−	−	−
1.5	−	−	−	−	−	−	−	−	−	−	−	−
2.0	−	−	−	−	−	−	−	−	−	−	−	−
2.5	−	−	−	−	−	−	−	−	−	−	−	−
None	−	−	−	−	−	−	−	−	−	−	−	−
2.0	−	−	+	++	+	+	−	−	+	+	−	−
2.5	−	−	+	+	+	+	−	+	+	−	+	+
3.0	−	−	+	+	+	+	−	−	+	+	+	+
3.5	−	+	+	+	+	+	−	−	+	+	+	+
4.0	−	−	+	+	+	+	−	−	+	+	+	+
None	−	−	−	−	−	−	−	−	−	−	−	−
3.5	−	−	−	+	+	+	−	+	−	+	+	+
4.0	−	−	−	+	+	+	−	−	−	+	+	+
4.5	−	+	−	+	+	+	−	+	−	+	+	+
5.0	−	+	−	+	+	+	−	+	−	+	+	+
5.5	−	+	−	+	+	+	−	+	−	+	+	+
None	−	−	−	−	−	−	−	−	−	−	−	−
5.0	−	−	+	+	++	++	−	+	+	++	++	++
5.5	−	−	+	++	++	++	−	−	+	+	+	+
6.0	−	−	+	++	++	++	−	−	+	+	+	+
6.5	−	+	+	++	++	+	−	−	+	+	+	+
7.0	−	+	+	+	++	+	−	+	+	++	++	++
None	−	−	−	−	−	−	−	−	−	−	−	−
6.0	−	−	+	+	+++	+++	−	−	+	++	+	+
6.5	−	++	+	+	++	++	−	+	+	+	++	++
7.0	−	++	+	+	+	+	−	++	+	++	++	++
7.5	−	−	+	++	++	+	−	+	+	+++	++	++
8.0	−	++	+	++	++	+++	−	−	+	+++	+++	+++
None	−	−	−	−	−	−	−	−	−	−	−	−
2.0	−	−	−	+	+	+	−	−	+	+++	++	+
4.0	−	−	−	+	++	+	−	+	+	+	++	+
6.0	−	−	+	++	++	+	−	+	−	+	+++	+++
8.0	−	+	+	++++	+++	+++	−	++	+	+	+++	+++
10.0	−	+	+	+++	++++	++++	−	++	+	++++	+++	+++

− No rancidity detected
+ A trace of rancidity detected
++ Slight rancidity detected
+++ Distinct rancidity detected
++++ Pronounced rancidity detected

samples were shuffled and recoded. The same judges examined them again for the rancid-like odor and/or flavor. The results on the six series in this trial are given in Table 2.

RESULTS

As shown in Table 1, the judges did not all have the same sensitivity toward the detection of the "rancid-like" flavor resulting from the addition of different amounts of lipase treated whole milk powder to homogenized milk. The sensitivity of Judge B for detection of the rancid-like flavor was not quite as good as that of Judge C. The sensitivity of Judge A was the lowest of all three judges.

Table 2 reveals the same relationship of the sensitivity of the judges in the results of samples in which

various amounts of lipase whole milk powder were added. Judge A was not as sensitive to either the odor or the flavor as Judge B or C and the sensitivity of Judge B was just slightly less than that of Judge C. The detection of the added powder was more frequent by flavor than by odor of the inoculated samples.

The judges differed slightly in their ability to classify the same sample in the same category on second examination. Judge A classified 13 of the 36 samples (36%) differently; Judge B 15 (41%); and Judge C classified 12 samples (33%) differently on second examination.

On the basis of odor on both examinations, Judge C classed all 72 samples as negative; on the basis of flavor, a trace of rancid-like flavor in 19 samples (26%) and a slight rancid-like flavor in six samples (8%). Judge B classed 35 samples (49%) as negative on odor; on the basis of flavor, a trace of rancid-like flavor in 32 samples (44%), slight rancid-like flavor in 11 (15%) and distinct, and pronounced rancid-like flavor in four and in two samples, respectively. Judge C classed 23 samples (32%) as negative on odor; on the basis of flavor, a trace of rancid-like flavor in 32 samples (44%), slight rancid-like flavor, nine samples (13%); and distinct and pronounced rancid-like flavor in six and in one sample, respectively.

In no case did any of the judges classify any of the uninoculated samples as having a rancid-like odor or flavor.

SUMMARY AND CONCLUSIONS

Two trials, one consisting of four series and the other of six series of judgements were conducted by three experienced milk judges on the detection of the rancid-like flavor in homogenized milk samples resulting from inoculation with various amounts of a commercial lipase, treated whole milk powder.

The results revealed that the sensitivity to the rancid-like flavor present in the inoculated samples varied with the different judges and did not seem to follow any definite pattern. Not only was the sensitivity of the judges different, but the ability to reproduce the results was different.

From these results, it would be reasonable to conclude that the "threshold value"[2] for the rancid flavor defect in milk is different for each one of these milk judges.

Applying these findings to milk consumers, it would be reasonable to expect that some milk consumers would be more tolerant to a rancid off-flavor in milk than others that have a low "threshold value" for this milk flavor defect. Applied to milk graders, this inconsistency in organoleptic detection and possible rejection of rancid milk when it is graded at the plant may not adequately protect the resulting market milk against a rancid flavor. This suggests that possibly a chemical test for rancidity used in conjunction with the organoleptic examination in the detection of rancidity may be helpful especially if the defect is present only to a slight degree.

Work has been done by many researchers on the lipase action on milk fat (*1*). Thomas and co-workers (*2*) have published and later revised a method that is being successfully used for the detection of hydrolytic rancidity in milk.

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[2]Threshold value is the minimum concentration of a flavor that can be recognized by odor or taste.

FORTY-SEVENTH ANNUAL MEETING
OF THE
INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC.
OCTOBER 26-29, 1960, HOTEL MORRISON, CHICAGO, ILL.

OVER 400 ATTEND IAMFS ANNUAL MEETING SPONSORED BY ILLINOIS ASSOCIATION

Under the Chairmanship of Mr. Henry G. Ellsworth the Associated Illinois Milk Sanitarians sponsored another excellent Annual Meeting of the IAMFS. Mr. Ellsworth and his local committee provided the mechanism for a smooth functioning meeting which was attended by well over 400 registrants. This number was swelled by approximately an additional 100 who on the last day attended a Mastitis Actions Conference sponsored by the IAMFS through its Mastitis Actions Committee.

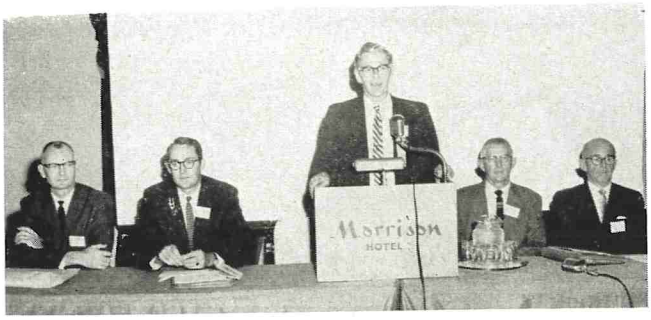
In his address of welcome, Dr. Samuel Andelman, Commissioner of Health for the City of Chicago, stressed the enlarged role of the Sanitarian in light of their ever enlarging scope of activities. To meet their greater responsibilities Dr. Andelman cited the attainment of greater competence and the maintenance of high standards of performance as essential.

Dr. Samuel Andelman, Commissioner of Health, Chicago, Illinois welcomes members.

President Hickey in his Presidential Address reviewed the year's activities of IAMFS, citing activities of Committees which contribute so much toward the influence of the Association in the field of milk, food and environmental sanitation. Mr. Hickey dealt at length on ways and means of strengthening the Association and referred to the role of the *Journal of Milk and Food Technology* in this regard. He pointed out the phenomenal growth of the Association during the last 10 years with membership increasing from 2,200 to the present level of approximately 4,500. Coupled with this has been a growing need for a greater effort in keeping membership informed of Association Activities. Recognizing the need for editorial assistance in the Association's national headquarters at Shelbyville, Indiana, Mr. Hickey reported that the Executive Board will attempt to obtain additional personnel to supplement the staff of the Executive Secretary. Mr. Hickey also referred to the work of the Committee on Education and Professional Development who through their representation on the Sanitarian's Joint Council have prepared a Model Registration Act. He urged endorsement of this act in the interest of nation-wide uniformity in such Acts. In concluding his address, President Hickey appealed to the membership to be active in Association affairs. He emphasized that by so doing, individuals may more effectively place themselves in a position to meet the challenge of a variety of new disciplines in the field of sanitation.

Outstanding among the technical papers given during the meeting (abstracts of these are presented elsewhere in this issue of the JOURNAL) were those presented in the panel discussion on Use of Welded Pipelines. The excellent discussions given by panel participants, Dr. George Coffee, Dr. R. B. Maxey, Mr. Karl Fowler and Mr. David Hennigh brought out many enlightening facts. Quite evident was the organizational effort in preparation for this event by the panel moderator, Dr. F. W. Barber. The complete text of the paper by each panel participant will appear soon in the Journal.

The Ladies were not forgotten in the planning by the Local Arrangements Committee. Included in their activities were visits to the Haeger Potteries at Dundee, Illinois and luncheon before at the famous Milkpail Restaurant; the morning broadcasts of the



Dr. F. W. Barber moderates panel discussion on Use of Welded Pipelines. Members of the panel were (left to right) Mr. David Hennigh, Safeway Stores; Professor R. B. Maxey, University of Nebraska; Dr. F. W. Barber, National Dairy Products Corporation; Dr. George Coffee, Government of the District of Columbia; and Mr. Karl Fowler, Sealtest Foods.

Don McNeil Breakfast Club; and a tour of the Merchandise Mart.

Highlighted at the Annual Banquet, Thursday evening, were the Award presentations. As customary, the recipients were known only to the Awards Committee, and the audience awaited their announcement in great anticipation. The Sanitarian's Award went to Mr. James C. Barringer, Director of Sanitation, Evansville, Indiana. Dr. Luther A. Black, Robert A. Taft Sanitary Engineering Center, U. S. Public Health Service, Cincinnati, Ohio received the Citation Award (see reports on these awards elsewhere in this issue). Retiring President W. V. Hickey presented Dr. F. W. Barber with a Past President's Certificate.

Dr. F. W. Barber, left, receiving the Past-President Certificate from retiring President W. V. Hickey.

In a change of procedure from past meetings the election of officers was held on the second day of the meeting, and new officers were installed as the concluding ceremony at the banquet. A new *Secretary-Treasurer*, Mr. Karl K. Jones, Director of the Food and Restaurant Section, Indiana State Board of Health, was elected, succeeding Mr. Vincent T. Foley. Mr. John H. Fritz, Milk and Food Program, U. S. Public Health Service, Washington, D. C. was elected *Second Vice-President.*

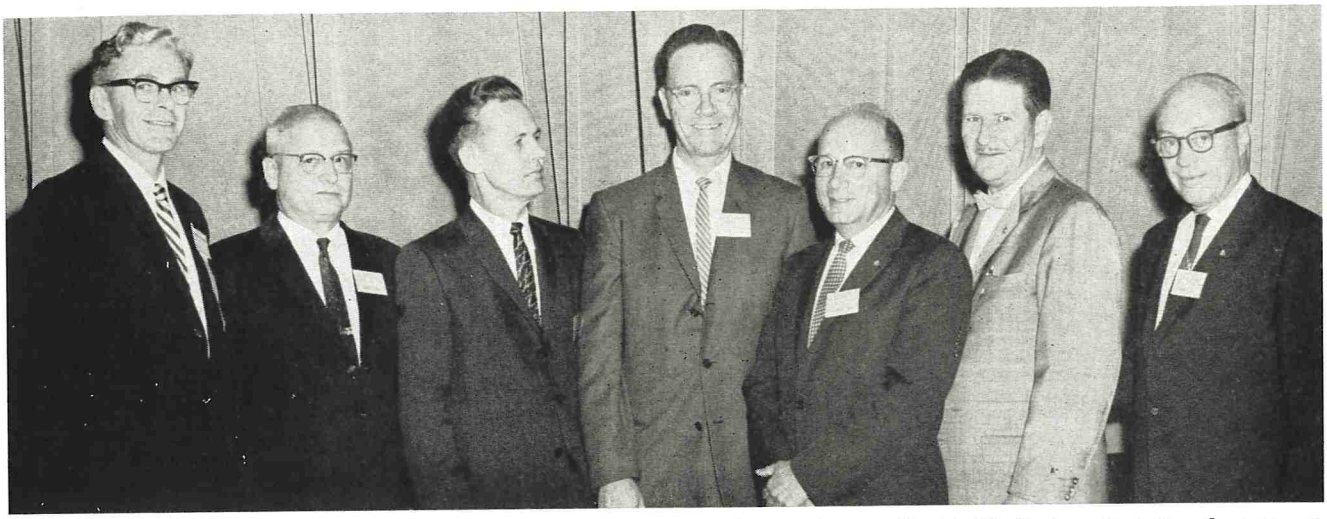
President W. V. Hickey presents the gavel to Dr. J. J. Sheuring, new President of IAMFS for 1960-61. Observing are Mr. J. H. Fritz and Mr. Karl K. Jones, newly elected Second Vice-President and Secretary-Treasurer, respectively, and new members of the Executive Board. Left to right are Mr. Fritz, Mr. Jones, Mr. Hickey and Dr. Sheuring.

Through his election this year, Mr. Fritz begins a term of office which may eventually lead to the Presidency of the Association since the *President-Elect, First Vice-President,* and *Second Vice-President* automatically succeed into the offices of *President, President-Elect,* and *First Vice-President,* respectively.

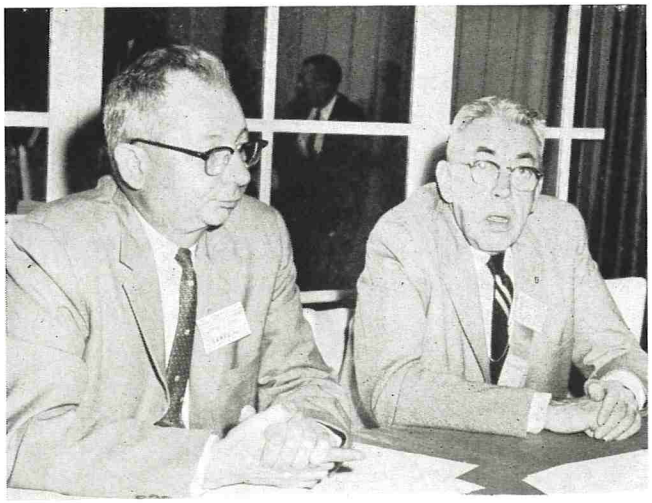
Advancing to other IAMFS offices for 1960-61 were: Dr. J. J. Sheuring, Professor of Dairying, University of Georgia, Athens, as *President;* Mr. C. E. Walton, Laramie Health Department, Laramie, Wyoming as *President-Elect;* and Mr. Ray Belknap, Iowa Department of Health, DeMoines, as *First Vice-President.* These officers along with Jones and Fritz, and *Past-Presidents* Barber and Hickey constitute the Executive Board of IAMFS for the year 1960-61.

The meeting of the Affiliate Council with Pete Riley of the Illinois Association presiding and Dr. Richard Parry as Secretary met on Wednesday before the opening of the first General Session. Dr. Parry was elected *Chairman* of the Council for the year 1960-61 and Karl Jones was elected *Secretary.* A complete report of this meeting will be contained in the minutes which will be published in a forthcoming issue of the Journal.

Wednesday evening the Illinois Association was host to a reception for all present. Refreshments and entertainment were provided and the event was an occasion for much good fellowship and the renewal



Members of the Executive Board, IAMFS for the year 1960-61. Left to right are: Dr. F. W. Barber, *Past President;* Dr. J. J. Sheuring, *President;* Karl K. Jones, *Secretary-Treasurer;* J. H. Fritz, *Second Vice-President;* R. Belknap, *First Vice-President;* C. E. Walton, *President-Elect;* and W. V. Hickey, *Immediate Past-President.*



Mr. Peter Riley, right, of the Illinois Association and *Chairman* of the Affiliate Council presides over Council meeting. Dr. Richard Parry, left, Secretary of the Connecticut Association was elected as *President* of the Council.

Mr. Arthur Neill, left, receives a fishing reel as one of the door prizes. Making the presentation is Mr. Howard Dailey of Peoria, Illinois.

of old acquaintanceships and the making of new ones.

Quite effective in assuring prompt attendance at beginning sessions each morning and afternoon was the traditional drawing for door-prizes. A sufficient number of Affiliate Associations donated prizes to provide an ample supply for use at each session.

As the Annual Meeting drew to a close, many began to look forward to the 1961 meeting which will be held at Jekyll Island, just off the coast of Georgia. Dr. J. J. Sheuring, after his installation as *President*, reported that plans were progressing rapidly and that a special effort to encourage members to bring their families will be made. Jekyll Island is an outstanding playground area. The meeting will be in August and is timed to facilitate vacation planning in conjunction with attending the Annual Meeting.

Jack Jelke, left, of Idaho Association presents Vern Swieso with door prize.

THE PRESIDENT'S ADDRESS[1]

WILLIAM V. HICKEY
Public Health Committee, Paper Cup and Container Institute, New York

In some respects, a presidential message is both a sad and happy occasion for the president. It is the time when he gives a report of the association activities under his stewardship for the past year; it is also the time when he is almost ready to turn these responsibilities over to his successor. So, as I have said, if such a thing is possible, he can feel both sadness and happiness at this time. In this case it has been a fourteen month year, and so now we look back to see how well we have fulfilled the hopes and aspirations we had when we left Glenwood Springs, Colorado, a year ago last August after I assumed the president's office.

As usual, time has been fleeting – we have not completed as much as we had hoped, but progress has been made and we believe that the future of International has never been more secure than it is at the moment. The final judgment, of course, is yours to make as you hear this and other reports.

Committees, and especially Committee Chairmen, have worked through the year to advance the knowledge and effectiveness of the Association and its membership. Without the countless hours of work contributed by our Committees, International could never hope to be the powerful influence it is in the field of environmental sanitation. In turn, the work of our Committees would have little meaning without the *Journal of Milk and Food Technology* and the Annual Meeting to report and publicize this work.

It has been a stimulating and satisfying experience for me to work with the other members of the Executive Board. They are fine men dedicated to the best interests of the International Association of Milk and Food Sanitarians, public health and the individual sanitarian.

One of the great satisfactions in this position is the ready response to be found when help is asked for. This has been exemplified by the Committee on Association Activities, Programs and Administrative Practices. Under the chairmanship of John Faulkner, the Committee's report is nearing completion.

It is a monumental work that this Committee has been concerned with, one certain to influence for the better the affairs of International for many years to come. I'm sure that you have noticed some of the improvements already, and there are many more to come. First, in addition to our continuing emphasis

William V. Hickey

on milk and food sanitation, our International Association will devote more attention to areas of general environmental health. I believe this generalization is the key to the future, nationally and locally. An increasing proportion of the members of our affiliates is interested in general sanitation activities.

I believe, International will be responding to and encouraging this interest. Toward this end more papers and information on general sanitation and administrative practices are to be included, not only in this annual program, but in others to come, and in the *Journal of Milk and Food Technology* as well. Future issues of the Journal also will include papers and other materials on techniques and practices of interest to a greater number of members at the local level.

This publication, our *Journal of Milk and Food Technology*, is in for some important changes. The Journal Management Committee was set up in accordance with one of the recommendations of the Committee on Administrative Practices. It consists of H. S. Adams, K. G. Weckel and Fred Baselt. All of these men have had extensive experience, not only professionally and in the area of publications, but also in the growth and development of the Association. Two of them are past presidents. Contributing

[1]Presented at the 47th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., October 26-29, at the Morrison Hotel, Chicago, Illinois.

their time, talent and experience to International, this group met in Indianapolis a few months ago, took a searching look at the problems relating to the Journal and have rendered a very comprehensive report. Some of their recommendations have already been put into effect. Many more of their recommended improvements will soon follow.

The Journal is the life-blood of our International Association, and on it depends much of the strength of the organization. It is a most important means by which our members in the thirty affiliated groups can keep abreast of new techniques and new processes, and thus further themselves professionally. The publication of scientific technical and semi-technical papers under the careful editorial scouting of Professor J. C. Olson has provided ample evidence that as sanitarians we are alert, professionally qualified public health people. It has contributed materially toward maintaining the competence of all of our members at a high level. Publication of such material must continue. It must be of such quality that scientific and technical people will continue to look to the *Journal* as a leading source of reliable information. Equally important the publication must also continue to knit our far flung membership into a single unit. We have concluded that we will attempt to employ sometime this coming year a full-time person to help with editorial duties. It has taken some time to determine whether or not the dues increase would be adequate to pay the salary needed for such a person. It has now been determined that the dues increase will provide sufficient revenue to accomplish this, and it is small indeed compared to the greater value you will be receiving through the Journal improvements.

The employment of a full-time staff member should have a far-reaching effect in many ways in addition to the improvements that will be brought about in the Journal. It will relieve our Executive Secretary of many time-consuming details related to meeting the Journal deadline each month. Although he will continue to function as Business Manager of the Journal, he will have much more time to maintain close contact with our affiliate organizations, to bring about closer contact between the respective affiliates, and participate in the various state and regional affiliate meetings. Over the past ten years "Red" Thomasson has demonstrated in a hundred different ways his ability to run the Association affairs on a sound business-like basis, to build membership and to improve the effectiveness of our organization in all areas. In order to continue this he must be freed from many other details which not only consume a great portion of his time but also do not make the most use of his talents.

The membership of our Association has grown from 2200 only ten years ago to 4500 today. In that period the number of our affiliate members has risen from 11 to 30 organizations. We are striving to continue our growth, and to help our growing membership raise its level of competence in every possible way. All our efforts to reorganize the International Association and to realign our executive responsibilities are aimed at this goal. Our efforts to strengthen relationships with our affiliates and place ourselves in closer more direct contact with our members is geared to the one end of raising the standards and enhancing the status of all professional sanitarians. That is our purpose.

Another matter bearing importantly on this purpose is the Model Registration Act which has been developed by the Sanitarians' Joint Council. This Act provides for the licensing and registration of all sanitarians. Its effect would be to establish a consistent professional standard throughout the entire sanitation field.

While it is true that a number of the states have adopted some form of registration act, many of these acts are entirely inadequate and no single standard applies to all of them. It is this single standard that is needed. A standard that will be uniformly applied and understood by sanitarians and the public alike. The lack of such a uniform standard for those who follow our calling has meant that thousands of able sanitarians are being denied the status and the rewards which they have earned by their competence and plain hard work.

It is my hope that at this meeting the members of International will endorse this Model Registration Act. The end result would be to provide a nationwide standard of sanitation practice having equal worth to the public and to you working sanitarians. When this is brought about, as I fervently hope it will, we shall have reached a new high point in our continuing search for better public health practices. In every area of sanitation, International will continue to press forward for increasingly effective standardized laws, and for vigorous but fair and impartial enforcement.

As part of this effort, immediately following this Annual Meeting, a meeting will be held under the sponsorship of International, to attempt to make recommendations for a Mastitis Control Program to be adopted nationally. We are all indebted to Dr. K. G. Weckel, George Willits and a half a dozen other men for the masterful manner in which they have brought about this meeting of the nation's top people to institute a national mastitis control program. In this hotel many of the country's best trained and experienced men from the fields of education, veterinary

medicine, industry and leading professional societies will inaugurate a National Mastitis Control Program. Many of them would prefer to stay at home with their families. All of them are busy executives with many other heavy responsibilities. Recognizing mastitis control as a foremost problem, they are sacrificing personal desires to help in the attack on this costly menace.

Another very important function, due to start next Sunday, will be a Task Committee formed under the leadership of Mr. Donald Race and Dr. Arthur Dahlberg to attempt to bring about a more uniform interpretation of labeling of dairy products.

In these efforts International needs each of you. It needs your continuing support, your continuing interest in these matters which are vital to better public health practices and better relationships between industry and regulating agencies.

Preparation of an agenda for the Affiliate Council was started several months ago. Dr. Richard Parry, Secretary of the Council has devoted much valuable time to the job of informing the Council of the many things to be discussed here with them. The Council is your representation and voice; the Executive Board wants to hear from you — loud and clear. This is your most direct line of communication to your officers; make use of it by keeping your Council representative informed.

And now let's talk a bit more about you. Are you a troublemaker? We have all known troublemakers. We have huddled together off to one side and we have said of this one or that one: "He's a nice guy but he is a troublemaker. He is always complaining or shooting off his mouth about one thing or another." We have wisely nodded our heads after such informal conferences, secure in the knowledge that we were all agreed this one or that one was a troublemaker.

But who is the real troublemaker? He is the silent one. He doesn't stand up at meetings and sound off on issues. He never writes a letter to the editor of his association Journal. He is as quiet as the proverbial clam and just about as effective. In his efforts to offend no one he defeats democracy. How can a democratic organization succeed if all of us, like this one, withhold our opinions, our ideas, our criticisms? Voting for the officers of your Association is only a small part of your duty as a member. Active day by day participation in our professional association is a responsibility for each and every one of us. The silent troublemaker fails to understand this. In his worship of "maintaining law and order" he never dares to question what may be an oppressive law, an improper regulation or an unjustifiable use of authority. He fails to distinguish the difference between law and order and stagnation. He is the apostle of decay, of dedication to established practice. He by inertia opposes democratic action.

Take a good look at yourself and see if you have been one of the silent ones. If you have, I suggest it's high time you do something about it — for your own good, for the good of your association and the good of your profession. Are these selfish motives? Well, yes, in a way, but they are the kind of motives which will bring about better trained professional sanitarians and a higher level of environmental sanitation programming, not only for health departments but for the milk industry, for the food industry, and for the many other industries concerned.

Next year International will celebrate its fiftieth anniversary. When its founders first met in 1911 to form the International Association of Dairy and Milk Inspectors, as it was then named, all sanitarians like you here this morning, were confronted by a mountain of public apathy. Standards were low, sanitary laws were few and far between, means of enforcement were almost non-existent and often nullified by political interference. Qualified sanitarians were rare and those who were qualified could not possibly do all the work that needed to be done. Authoritative information about new techniques in sanitation, new processes, new equipment and other technical matters were almost impossible to come by.

At the first meeting of International, in the president's opening address, he said that he had known carpenters, locksmiths, ward politicians, plumbers and a cobbler to be appointed as dairy inspectors and very few people seemed to care. In the fifty years since then International has had a share in bringing about much of the progress that has been made toward the firm establishment of sanitation as a science and a profession. The enormous changes that have taken place in the field are reflected accurately in the changes of the size, scope and function, even the change in the name, of our International organization. These changes point up the ever-widening areas of responsibility and opportunity which are open to us modern sanitarians today.

In 1911, our founding members were strictly dairy and milk inspectors, all 35 of them. Today our members include specialists in virtually every area throughout the broad field of environmental sanitation. Today we sanitarians must be equipped to deal with problems extending throughout the entire range of environmental health. We must solve problems of waste disposal, insect and rodent control, air pollution, housing, radiological poisoning and many others. Additionally, with more Americans constantly eating out more often than ever before, the food service industry has become an area of responsibility such as would have been impossible for our founding

members to imagine. Recently the packaging of prepared foods of the "heat and eat" variety has developed as a rapidly expanding industry that poses new sanitation problems for you to solve.

Thus, the field of sanitation is becoming generalized at an almost explosive rate of speed. You are being asked to master a challenging variety of new disciplines. There is need for closer and more expert surveillance over a wider field than ever before. Obviously, and contrary to what has been suggested in some quarters, your most vital and interesting work as sanitarians lies ahead.

During my tenure it has been my constant aim to do the best that I could for what I considered best for International. My employers, the Public Health Committee of the Paper Cup and Container Institute, have urged that I do this. They have been most generous in furnishing me with necessary secretarial and clerical assistance, and in financing the greater part of the many thousands of miles I have traveled to further International's interests.

I feel, and I hope the membership of International will agree, that with the assistance and support I have had both from within and outside of our organization, I have been able at least to get started many of the things I have wanted to see done in the interest of sanitation and the sanitarian.

It is not my intention here to suggest that those who preceded me in this office were any less sincere or any less able than me, or to deny them credit for their accomplishments. It is my hope that Dr. John Sheuring who will succeed me and those who will follow him may prove to be men of greater ability and devotion and that they may carry ever nearer to our goal the work that has been started.

But, I must remind you that no officer or group of officers of International and no officer or group of officers of its affiliates should be expected to or can do all of the many things that need to be done for the advancement of our profession at the national and local levels. Every sanitarian must resolve to do his utmost for self-improvement and to work with his organization to further its purposes. Where everybody works together toward the common goal, everybody benefits.

IAMFS CITATION AWARD FOR OUTSTANDING SERVICE GIVEN TO DR. LUTHER A. BLACK

Dr. Luther A. Black (left) receives the IAMFS Citation Award from Mr. H. B. Robinson, Chairman of the Awards Committee.

Dr. Luther A. Black of the U. S. Public Health Service has been given the Citation Award of the International Association of Milk and Food Sanitarians. The presentation was made by Harold B. Robinson, Senior Past President of the Association and Chairman of the Committee on Recognition and Awards, at the 47th Annual Meeting of the Association in Chicago on October 27, 1960.

The Citation Award is given annually to an individual who has given outstanding service to the Association, and who has advanced the cause of sanitation and the sanitarian. The award was given to Dr. Black, who is Chief of Milk Sanitation, Milk and Food Research, at the Robert A. Taft Sanitary Engineering Center, Cincinnati, for his work in the development and unification of laboratory methods and standards in milk and food sanitation.

The Citation reads: *"For outstanding service to the Association in providing leadership in the development and unification of milk and food sanitation laboratory methods and standards through frequent contribution of significant articles to the Journal of Milk and Food Technology; through service as an Associate Editor of the Journal; through service as a mem-*

ber and Chairman of the Committee on Applied Laboratory Methods; and through service as Association representative to groups concerned with the standardization of laboratory equipment."

Dr. Black, a native of Macon, Illinois, is a graduate of the University of Illinois, receiving his bachelors degree in 1924, his M.S. degree in 1925 and his Ph.D. degree in 1928. After serving as a bacteriologist with the Illinois State Health Department from 1926 to 1927, he became an instructor and Assistant Professor of Bacteriology at the State College of Washington, serving also as Associate Dairy Bacteriologist in Charge at the Washington Agricultural Experiment Station from 1928 to 1930.

From 1930 to 1941 Dr. Black was Associate Professor and Professor of Bacteriology at the University of Maryland. In the latter year he joined the Public Health Service at the Sanitary Engineering Center.

Dr. Black is also a member of the Society of American Bacteriologists, the American Dairy Science Association, and is a fellow of the American Public Health Association. He is now Chairman of American Public Health Association Subcommittee on Standard Methods for the Examination of Dairy Products, Chairman of the Laboratory Committee of the National Conference for Interstate Milk Shipments, and is a member of the Public Health Committee of the American Dairy Science Association.

Dr. Black is recognized as an authority in milk and food sanitation bacteriology. Research conducted by him includes collaborative studies in the development and standardization of laboratory methods for the examination of milk, studies leading to the development of methods for the testing of bactericides, and extensive studies for evaluating the performance of laboratories. Dr. Black's contributions to the scientific literature include more than 80 articles.

JAMES C. BARRINGER IS WINNER OF SANITARIAN'S AWARD

James C. Barringer, Director of Sanitation of the city of Evansville, Indiana, has been named recipient of the Sanitarians Award of the International Association of Milk and Food Sanitarians. The honor, which carries with it $1,000 in cash, was presented by Harold B. Robinson, Senior Past President of the Association and Chairman of its Committee on Recognition and Awards, at the 47th Annual Meeting in Chicago on October 27, 1960.

The award is sponsored jointly by the Diversey Corporation, Klenzade Products, Inc., Oakite Products, Inc., Olin-Mathieson Chemical Corporation, and the Pennsylvania Salt Manufacturing Company. It is given annually to a city or county sanitarian who has made outstanding contributions to the health and welfare of his community. Selection of each recipient is an exclusive function of the Association; the sponsors exercise no choice in the selection or consideration of candidates.

In making the selection of Mr. Barringer, the Committee reported as follows: "In Evansville, Mr. Barringer reorganized local sanitation services and made the city's sanitation programs more effective. He also organized and conducted intensive in-service training programs for sanitarians employed under his direction, and developed new sanitation programs that provide more comprehensive city sanitation services. A firm believer in education as providing the effective tool in solving municipal sanitation problems, Mr. Barringer worked tirelessly with both industry and citizen groups to advance public understanding of environmental health programs and objectives. The effects of this approach and effort are seen in the support now given sanitation in the city of Evansville, and in Vanderburgh County, for in the past five years local governing bodies have revised the milk ordinance bringing it into agreement with modern concepts of milk sanitation and milk technology, adopted new ordinances for the control of substandard housing, the regulation of private disposal of sewage, and regulation of nursing homes. In addition, the sanitation services of the Health Department, under Mr. Barringer's direction, have brought about marked improvements in milk, food, and general sanitation. In so doing, the policy of fact finding surveys, staff training, and industry and public education have been uniformly followed to bring about a maximum of improvement with a minimum of enforcement action."

Mr. Barringer is a native of St. Louis, Missouri, and received his B.A. degree from Northeastern State College, Oklahoma in 1946, and his B. S. degree from the University of Oklahoma in 1948. After serving for four years with the St. Louis County Health Department, he went to his present position. He is a member of the International Association of Milk and Food Sanitarians, is a director of the Indiana Public Health Association, and is chairman of its Environmental Sanitation Section. He is active in the Southern Indiana Food and General Sanitarians Organization, the Indiana Association of Sanitarians, and the Indiana Sewage and Industrial Waste Association.

Mr. James C. Barringer (left) receives the IAMFS Sanitarian's Award Plaque and $1,000 check from H. B. Robinson, Chairman of the Awards Committee.

In Evansville, he is a member of the Lions Club, serving as chairman of the Health and Welfare Committee.

Previous winners of the Sanitarians Award were: Paul Corash, Chief of the Milk Division of the New York City Health Department (1952); Dr. E. F. Meyers, Chief of the Milk, Meat and Food Divisions of the Grand Rapids, Michigan, Health Department, and since retired (1953); Kelley G. Vester, Senior Sanitarian of the Rocky Mount, North Carolina, City Health Department (1954); B. G. Tennant, Chief Sanitarian of the Escambia County Health Department, Pensacola, Florida (1955); John H. Fritz, Chief of the Milk and Food Section of the Kansas City, Missouri, Health Department (1956), currently with U. S. Public Health Service in Washington, D. C.; Harold J. Barnum, Chief of the Milk Sanitation Services of the Department of Health and Hospitals, Denver, Colorado (1957); Carl A. Mohr, Sanitarian and Deputy Health Officer, Health Department, Green Bay, Wisconsin (1958); and William Kempa, Dairy and Milk Sanitarian for the City of Regina, Saskatchewan, Canada (1959).

ABSTRACTS OF PAPERS PRESENTED AT THE 47TH ANNAUL MEETING OF IAMFS

The complete text of papers presented at the annual meeting will be published in subsequent issues of the JOURNAL. Because of the general interest in these papers abstracts of them are given below.

Exerpts From Address Of Welcome, by SAMUEL L. ANDELMAN, Commissioner of Health Chicago Board of Health — As Commissioner of Health of Chicago I am deeply honored to be given this opportunity to welcome the 47th Annual Meeting of the *International Association of Milk and Food Sanitarians, Inc.*

It has been sixteen years since this Association has met in our wonderful city and we have seen great change in practically every aspect of our environment during this period. Notwithstanding the changes that have occurred in the past sixteen years, none of these changes has in any way reduced the heavy responsibility of those of us who are devoting our careers to the field of public health.

Today the role of the sanitarian is vastly different than it was in 1944. Professional standards have been raised. This organization and many other official and unofficial public health organizations have contributed to the knowledge which we have gained in the field of sanitary sciences and have developed standards which permit uniformity of enforcement in milk and food production, processing and distribution.

All of us in the field of public health — and particularly the sanitarian — are faced with an unequaled challenge in the coming decade. Our greatest challenge perhaps lies in the field of research. We must develop more effective ways of determining the bacteriological and sanitary quality of our food and food processing methods.

We must educate ourselves, and more important, educate the food handler and food service employee to insure that food served in the nation's restaurants and homes is of the highest possible quality. Technological advancements have a habit of developing problems peculiar to their own conditions. Thus, with the development of automation in the milk and food plant and the intricate problems of cleaned-in-place pipelines on our dairy farms, we are presented with a challenge that must be solved if we are to continue to progress in the field of sanitary food production. Set high standards for yourself and your colleagues, and the milk and food sanitarians of this country will certainly meet the challenge of the Sixties.

Recent Advances In Food And Milk Borne Diseases, by WALTER S. WOOD, Dept. of Preventive Medicine, University of Illinois, Chicago — Technological innovations in the food producing and distributing industries have grossly altered related disease concepts in man and animals. In this country, milk borne bovine tuberculosis, streptococcosis and brucellosis are rapidly disappearing from the scene, attributable to such things as herd control, vaccination, and the use of antibiotics.

These same innovations, in addition to such factors as the development of atomic energy, a rapid population growth and the tendency to prepared frozen warm and serve items as exemplified by "TV dinners" have given impetus to complex interactions of man and his food environment. Food additives, radionuclides contamination and even the waxes of food containers have more than adequately substituted for diphtheria, trichinosis and mushroom poisoning. Home canning with the occasional hazard of botulism is now replaced by the significant phenomenon of unwanted salmonella in prepackaged foods, frozen eggs and spray-dried milk.

In addition to the realization of environment's role, we are now more cognizant of host idiosyncrasies and intolerances.

Food Sanitation And Quality Control — Facts And Fallacies, by PAUL E. LAUGHLIN, Sanitarian, National Biscuit Company, New York — Sanitation and quality control as they apply to food processing operations are clarified. The functional differences and the places of each in a food manufacturing plant are discussed. The common misconception regarding objectives and end results of these two functions are reviewed describing their needs and area of activity. Since sanitation has suffered as a subordinate to quality control, a managed approach, not yet entirely understood within the food industry, is offered as a remedy to the problem. A high cost and low level of cleanliness usually accompanies the sanitation program which has not been so organized and separated from other plant functions. The fallacies and deception of grade certification, official inspection in general, the U.S.D.A. so-called continuous inspection service, specifically, and the shield of approval are reviewed giving the facts which clearly contradict the claims and implications.

The Dynamics Of A Successful Public Health Food Service Sanitation Program, by A. FAEGIN PARRISH, State Dept. of Public Health, Atlanta, Georgia — Observations of successful programs have shown that both the technology and administration of food service sanitation programs are dynamic. In this study the following premises are accepted: (a) The administration of a food service sanitation program can best be accomplished at the county level; (b) The mechanics of administration are equally as important as technology; (c) The public appreciates and respects the food sanitarian; (d) There is a balance point of adequate programming without excessive agitation; (e) Food service sanitation as well as the public administration accompanying it are dynamic; and (f) Evaluating program failures is a necessary first step in planning for success.

Self injected tranquilizers such as the following have caused many program failures: (a) The food program is difficult: (b) Defensive status preservation by the sanitation; (c) False confidence in only a poor educational program; (d) Placing blame on someone else; (e) Sluggishness; (f) Lack of time, and (g) False sense of progress.

The same principles of reasoning used in Koch's Postulates apply in studying administrative programming. The primary causal complex of successful programs are as follows: (a) Professional sophistication including confidence that programs can be successful, technological prepardness and the will to work; (b) The approach to the total program including acting as if we belong, diplomacy, courtesy, cooperation, understanding and firmness; and (c) Administrative balance including pre-planning, inspections, communication and firm follow-up.

Spray Residues On Fruits And Vegetables, by T. E. SULLIVAN, Director, Division of Food and Drugs, Indiana State Board of Health — The Miller Pesticide Amendment to the Federal Food, Drug and Cosmetic Act limits the amount of toxic pesticide residues that may remain on raw agricultural products.

This law, although limited in its application to foods ship-

ped in interstate commerce, has a direct impact on state food control programs. For example, although most states do not produce cranberries, they became immediately involved when the announcement of the Secretary of the Department of Health, Education, and Welfare was broadcast that aminotriazole — a weed killer — had been found in cranberries in interstate commerce.

A greater proportion of fresh fruits and vegetables are consumed in their state of origin and do not get into interstate commerce than any other class of food. They are not, therefore, subject to the federal law. Since insecticides are poisons it becomes a public health matter of the first importance for State food control officials to determine that locally produced fresh fruits and vegetables do not bear or contain excessive residues of the poisons used to treat the growing crops.

There is need for States to review their legal authority and amend their laws for regulations if necessary; to review their food control programs and institute appropriate measures to include an effective evaluation of pesticide residues on fresh fruits and vegetables produced and sold in intrastate commerce; to review their laboratory facilities, techniques and personnel and secure necessary changes if indicated, to accomplish the testing of samples; and finally to train their field staff to do the inspectional work necessary to determine what spray or dusting materials are being used, and whether their use will result in excessive residues or whether prohibited or dangerous materials or methods are being used.

Waste Treatment By Stabilization Ponds, by CHARLES E. CARL, Director, Division of Sanitary Engineering, South Dakota, State Department of Health, Pierre — The first waste stabilization pond in South Dakota was intsalled at Lemmon in 1951. Such ponds, designed to receive raw sewage, consist of engineered earthen cells with water depths of 3-5 feet, and surface loading of 100 people per acre (15-20 lbs. BOD per acre).

Studies conducted on typical ponds in 1952, 1953, 1955 and 1956 indicated coliform reductions from an M.P.N. of 17 million per hundred milliliters to a range of 30-230 per hundred milliliters. BOD reducations were in the range of 74-98% under aerobic concitions and 70-96% under anaerobic conditions.

Since 1951, 77 stabilization ponds have been constructed in South Dakota serving municipalities, State institutions, Federal installations, private installations and industries. Significant dairy wastes are handled in seven of the installations with average loadings of about 20 lbs. BOD per acre. Under these conditions ponds operate satisfactorily and will give good treatment for dairy wastes.

South Dakota dveloped design criteria for stabilization ponds in 1953. These criteria have been revised since that time, and the state participated with other Missouri Basin states in the development of uniform criteria for basin area application. It is significant to note that the average cost of stabilization ponds approximate the cost of conventional primary units and the operational costs are always much less.

Stabilization ponds are relatively simple to operate; however, care must be given to maintenance of the area, dikes and fences. The discharge of abusive wastes to the sewers also must be controlled. Sulfate concentrations of the water supply in excess of 500 ppm have been associated with odors emanating from some of the stabilization ponds. Odor problems usually occur only during the transition period from ice to open water.

Stabilization ponds have fulfilled a long recognized need for effective treatment at reasonable cost for smaller municipalities and industries, and with proper study can be applied to larger installations.

Regulation Of Bactericides Under The Federal Insecticide, Fungicide And Rodenticide Act, by L. S. STUART, Head, Bacteriology Section, Pesticides Regulation Branch, United States Department of Agriculture, Washington, D. C. — The general requirements of the Act, and the procedures followed by the Department in administering the law are outlined insofar as sterilizers, disinfectants and sanitizers are concerned. A list of the type of bactericidal chemicals and devices subject to regulation is given. Special problems involved in the registration and enforcement programs on bactericides, sanitizers and detergent-sanitizers sold specifically for use in dairies, food plants, restaurants and taverns are discussed.

Report On The Iowa Bulk Milk Study, by L. F. CHARITY, Agr. Engineering Dept., Iowa State University; L. B. ALTMAN, Farm Electrification Research Branch, Agr. Research Service, U. S. Department of Agriculture, Washington, D. C.; and R. A. BELNAP, Iowa State Department of Health, Des Moines — A study of milk temperatures in a number of farm type bulk milk tanks were made during the summers of 1958 and 1960. All the tanks were of the atmospheric design. Twenty-three were of the direct-expansion (DE) construction and 35 of the ice-bank (IB) type. Temperatures were measured with plastic rods containing the thermocouples. A survey form was filled out for each tank to provide information on the tank and condensing unit.

The 3A Sanitary Standards for Farm Tanks was used as the basis for judging performance. The percentages of direct-expansion tanks that failed to meet these standards are as follows: 22%, 1st milking; 26% 2nd milking; 39%, 50°F blend temperature. Ice-bank tanks failed to perform satisfactorily as follows: 37%, 1st milking; 17% second milking; 23%, 50°F blend temperatures. The time that the milk in the unsatisfactory performing DE tanks was above 50°F averaged 42 minutes and the time for the IB tanks averaged 17 miinutes. After rechecking some of the same tanks in 1960, it was found that mechanical and refrigeration problems along with operator neglect were responsible for most of the tanks not cooling to 40°F in the specified time. A systematic, routine check of all tanks would reduce considerably the numbers not meeting 3A Standards.

Protection Of Food Plants During National Emergencies, by JAMES W. BELL, National Canners Association, Washington, D. C. — This broad subject has been reduced to the prevention of sabotage in food plants. Possible points and methods of slowing production are discussed. This may be done by damage to the plant or equipment and removal of key personnel. The choice of attack would depend upon what the enemy wished to accomplish. Examples of this type of subversion are given.

A saboteur could desire to use foods produced to cause illness, injury or fear among the consumers which would spread throughout our population. This could be done by contaminating the food material directly. Three types of materials could be used. These are extraneous material, chemical agents, and bacterial agents. Foreign materials would only be nuisance additives but the ill-will created could disrupt an industry. Chemical and bacterial agents would have a wide range of use by the enemy since the food could be made unfit for human consumption, or illness and death could

result if it was consumed. Great loss to the industry and the national economy would occur if spoilage of the foods was achieved by a subversive agent.

The various chemical and bacterial agents that could be used for contaminating the food supply are not discussed since many thousands would be available. However, the points where additions to the food could be made under present operational procedures are specifically pointed out with comments on some possible corrective measures.

Dr. I. A. Schipper, Division of Veterinary Medicine, North Dakota State College presents discussion on control of mastitis.

Bovine Mastitis: Its Detection And Prevention, by DR. I. A. SCHIPPER, Department of Veterinary Science, North Dakota Agricultural College, Fargo — Mastitis is an inflammation of the bovine mannary gland caused by the combination of a multitude of microorganisms and environmental stresses. Mastitis can be best diagnosed by the dairyman through the use of the strip cup at every milking. A good mastitis prevention program can be of unlimited value to the dairyman and should consist of uncomplicated practical procedures that will not discourage the dairyman from employing them each day. Competent veterinary advice will be of unlimited help in preventing mastitis and competent veterinary service should be obtained immediately upon detection of mastitis.

Sanitation In Suburbia, by ARTHUR NEIL, Chief Technical Services Section, General Engineering Program, Public Health Service U. S. Department of Health, Education and Welfare Washington, D. C. — Problems of sanitation in suburban areas of our growing communities are briefly mentioned and contrasted with desirable suburban living. Emphasis is placed on future planning as the key to providing essential sanitary utilities and services which will prevent many of the problems facing our communities at the present time. Some meaningful figures are presented to illustrate what the current rapid growth of our communities means in terms of sanitation and other needs. The need for leadership by public health agencies and sanitarians is suggested to mobilize the community development team toward the goal of better community health in the future. Mention is made of the current studies by the Public Health Service on the subject to assist growing communities in planning for future sanitation needs and services.

Laboratory And Epidemiologic Aspects Of Foodborne Diseases, by DR. MILDRED M. GALTON and DR. JAMES H. STEELE, Public Health Service, Communicable Disease Center, U. S. Dept. of Health, Education and Welfare, Atlanta, Georgia — Foodborne diseases have been defined as those diseases in which illness is due to the ingestion of contaminated foods. Consideration is given to illness due to infection with bacterial, parasitic and viral and rickettsial agents and those due to the preformed toxins produced by certain bacteria. In addition, mention is made of the bacterial agents about which information is still uncertain as to whether actual cause of illness is due to toxins or to infection with overwhelming numbers of organisms.

Methods recommended for reporting of foodborne diseases are reviewed. The essential steps necessary in the epidemiological investigation of foodborne diseases are presented as well as the important role of the laboratory in the confirmation of the etiologic agent.

Particular attention is given to the most common food infections and intoxications. Among the former, salmonellosis, the distribution of Salmonellae in human and animal foods and the increasing problems raised by the widespread contamination of animal feed ingredients are discussed in detail. Similar emphasis is placed upon food poisoning due to staphylococcal enterotoxin.

Finally, it is pointed out that national and international cooperation in reporting epidemiological investigation and the development of microbiological standards is essential to prevention of the spread of foodborne diseases.

PANEL DISCUSSION: INDUSTRIAL USES OF WELDED PIPELINES

1. Cleaning And Sanitation Of Welded Line Systems For Handling Milk, by R. BURT MAXCY and K. M. SHAHANI, Department of Dairy Husbandry, University of Nebraska, Lincoln — The use of welded pipe lines in a commercial milk plant poses a problem of assurance of cleanliness. A commercial operation was evaluated by bacteriological examinations of the equipment and by comparisons of the finished products with those of a conventional plant. Further evaluations in the laboratory were made by comparing equipment with conventional joints and with welded joints.

Commercial circulation cleaning of welded pipelines was found to be extremely effective. After normal rinsing prior to washing, most of the milk solids were removed. Only approximately 2.6 grams of milk solids could be found in an average circuit cleaned with 165 gallons of cleaning solution. The results indicated this quantity of milk solids relative to the volume of the equipment involved would have little if any effect on the growth of microorganisms.

The small amount of milk solids left in pipelines after cleaning was not enough to cause any dissipation of chlorine. Thus, it should be possible to adopt a continuous sanitizing program for pipeline systems by leaving overnight a chlorine

solution of 1.0 - 2.5 ppm concentration. This system should be safer from a public health standpoint, and it may be less destructive to the stainless steel equipment than the ordinary use of chlorine solutions of high concentrations. Using either system of sanitizing, circulation cleaning should afford a completely satisfactory system of cleaning welded lines.

2. *Safeway Store's Experiences,* by DAVID HENNIGH, Safeway Stores, Denver, Colorado — Safeway's experience with welded lines dates back to 1948. Sixteen hundred feet of sanitary lines were welded in place in a cottage cheese plant in Hanford, California. Since then, all Safeway's milk plants, with the exception of one, have installed welded lines. Experiments of every nature have been conducted on these welded lines.

The welded line has proven practical for these reasons: (a) Saves in cleaning up labor; (b) Saves product by eliminating leaks; (c) Provides more positive cleaning processes; and (d) Gives better control over end product by minimizing possibilities of line contamination.

A welded line system must be properly engineered. The final layout should be approved by the responsible Sanitarian so there will be complete agreement. An experienced welder should make the installation. His work should be inspected by company personnel as well as by the Sanitarian.

The C.I.P. (Cleaned-in-Place) system is the heart of a welded line installation. Controls on this system can govern how well sanitary lines are cleaned. Control include:

(a) Automatic program timer to control length of cleaning process; (b) Temperature controller and recorder; (c) Cleaning solution controls - pH meter, conductivity meter, titration; (d) Bacteria counts of cleaning solution; (e) Swab counts of interior surfaces; and (f) Finished product bacterial counts.

A completely welded line system is feasible and practical. Such a system is more efficient and allows better control over the end product. The C.I.P. system is all important and it is here that the Sanitarian should place his primary control emphasis.

3. *Sealtest Food's Experiences,* by KARL R. FOWLER, Sealtest Foods, New York, New York — Pertinent facts for successful welded, cleaned-in-place, sanitary pipe lines operation include the following: It is cheaper than other methods; welding must be done by an experienced mechanic or purpose is defeated; job must be studied and engineered to perfection; proper advance plans enable 25 to 35 welds to be made each 8 hours. As much as 60% to 70% of sanitary lines in an ordinary plant may be welded; valves and elbows may be welded in. Satisfactory inspection of lines is possible with rubber plug, covered with a swab and attached to a Fish Tape. Advantages are many including positve cleaning; less possibility of contamination; maintenance is less; installation costs are lower; cleaning labor is substantially reduced and product losses are lower by elimination of leaky fittings. Bacteria and coliform counts are more constantly low, with shelf life of products extended. With proper engineering and installation, experiences to date have shown no adverse results.

4. *Regulatory Aspects Of Welded Steel Milk Pipelines,* by DR. GEORGE COFFEE, Milk and Veterinary Division, Government of District of Columbia, Washington, D. C. — Results of a one year study by the D. C. Department of Public Health with the sanction and cooperation of Region III, Public Health Service, of welded stainless steel milk pipelines in actual plant processing usage was made in 1957-58. Results of this and other similar studies convinced us that welded pipelines for conveying milk were safe from a public health standpoint. The Public Health Service agreed to accept such pipelines in plants participating in the Interstate Milk Shipper's Program, provided a means of examining welds as fabricated be used (boroscope or x-ray).

The regulatory agency should gain some prior experience with the examining instrument. Good welds are relatively smooth on the interior of pipe, though they may be undulating or wavy without harm. Welds showing blind pockets, pin or blow holes or cracks are to be avoided. The regulatory agency should not have to inspect each weld as fabricated. Spot checks should suffice.

Regulatory inspections of a newly installed welded pipeline system should be rather frequent until it is definite that cleaning and sanitizing procedures are adequate. Subsequently, inspection should be at periodic intervals. Heli-arc welded pipeline systems properly constructed and maintained are safe for handling milk.

MASTITIS ACTION CONFERENCE ATTRACTS MANY

What may well become an historic occasion took place at the conclusion of the IAMFS Annual Meeting in Chicago, October 29, 1960. Approximately 200 scientists and other technical personnel attended a Mastitis Action Conference sponsored by the *International Association of Milk and Food Sanitarians, Inc.*

Nine separate papers on various aspects of the problems of mastitis in dairy cattle were presented in the morning session. In the afternoon, participants assembled in five different "Task Group" meetings. Each group was given a specific assignment relative to the development of a National Program to provide a continuing effort toward solution of the problem of mastitis.

The program of the morning session was as follows:

Origin, procedure, objectives of the conference, by Dr. K. G. Weckel, General Chairman, University of Wisconsin.

Keynote-Mastitis: Where do we stand — What can we do? by W. S. Knox, Editor, Hoards Dairyman.

Economic effects of the diseases on the dairy farmer, by Dr. H. G. Hodges, Supervising Veterinarian, New York State Mastitis Control Program, Cornell University.

Economic effects of the disease on the dairy processor, by Dr. A. C. Fay, Immediate Past-President, American Dairy Science Association.

Bacteriological aspects of the disease as related to public health, by Dr. Elizabeth McCoy, Department of Bacteriology, University of Wisconsin.

Epidemiological aspects of the disease as related to public health, by Dr. James H. Steele, Chief, Veterinary Public Health, Communicable Disease Center, Public Health Service, Atlanta, Georgia.

Status of research progress on mastitis, by Dr. James M. Murphy, School of Veterinary Medicine, University of Pennsylvania.

The requirements of an effective organized mastitis control program, by Dr. W. A. Hagen, Director, National Animal Disease Laboratory, U. S. Department of Agriculture, Ames, Iowa.

How the practicing veterinarian can help dairy farmers control mastitis, by Dr. C. J. Haller, Veterinary Practitioner, Avon, New York.

The regulatory agencies problems in mastitis control, by Paul Corash, Chief, Milk Division, Bureau of Food and Drugs, City of New York.

Task Group meetings and assignments were as follows:

Group I. *Research Needs — To state the major needs related to mastitis and its control.*

Chairman: Dr. C. A. Manthei, Animal Disease and Parasite Research Division, U. S. Department of Agriculture, Washington, D. C.

Secretary: Dr. Keith I. Loken, Department of Veterinary Bacteriology and Public Health, College of Veterinary Medicine, University of Minnesota.

Group II. *Education in Mastitis Control — To develop a plan for organized national effort on education for mastitis control.*

Chairman: Dr. James Crowley, Department of Dairy Husbandry, University of Wisconsin.

Secretary: Dr. O. W. Schalm, Department of Veterinary Medicine, University of California.

Group III. *Regulatory Aspects of Mastitis — To decide on need and direction of regulatory action in mastitis control.*

Chairman: James A. Meany, Chief, Dairy Inspection, Chicago Board of Health.

Secretary: Harold Barnum, Chief, Dairy Division, Bureau of Health and Hospitals, Denver, Colorado.

Group IV. *Organization of National Effort Toward Mastitis Control — To develop plans for a continuing organization to foster national effort in mastitis control.*

Chairman: Dr. Robert Metzger, Dairyman's League Cooperative Assoc., Syracuse, New York, and Chairman of Farm Methods Committee of IAMFS.

Secretary: Dr. John C. Flake, Evaporated Milk Association, Chicago, Illinois.

Group V. *Organization Support for Mastitis Control — To develop a plan for obtaining support and participation of dairymen, farm organizations, industry groups, and government agencies in a national effort.*

Chairman: George Willits, Johnson and Johnson, Chicago, Illinois.

Secretary: R. M. Hoyt, National Milk Producers Federation, Washington, D. C.

Following the meetings of the Task Groups, the Conference was reconvened. Group Chairmen presented their recommendations towards fulfillment of their assignments. Significant in this regard was the adoption by the Conference of a recommendation that the Farm Methods Committee of IAMFS proceed immediately in calling a meeting of representatives from appropriate organizations for the purpose of forming a continuing body to coordinate a national effort in attacking the problem of mastitis. IAMFS will then continue to be represented in this new organization by the Farm Methods Committee.

A complete report of the Conference will be published in a forthcoming issue of the Journal of Milk and Food Technology. Papers which were presented at the Conference have been assembled and may be purchased at $10.00 per set on request to the Executive Secretary, International Association of Milk and Food Sanitarians, Inc., P. O. Box 437, Shelbyville, Indiana.

NATIONAL UNIFORM LABELING COMMITTEE FORMED

The International Association of Milk and Food sanitarians, after three years intensive work, has spearheaded a move which should lead to more uniform labeling of milk and other dairy products.

In Chicago, on October 30, 1960, a meeting was held under the auspices of IAMFS to determine the interest of regulatory and industry groups toward organizing a national committee to coordinate and foster uniform labeling. About 45 people representing 18 regulatory and industry organizations participated at the meeting.

IAMFS President Dr. John Sheuring of the University of Georgia introduced the subject and told of the preliminary work which had been done by the Associations Executive board and the Committee on Ordinances and Regulations.

Comments made at the meeting by regulatory and industry officials indicate strong interest in supporting this national effort. As a result, Dr. A. C. Dahlberg of Cornell University was appointed temporary chairman and Ernest Kellog of the Milk Industry Foundation was made temporary secretary of the proposed organiaztion. At the same time two subcommittees, one on organization and the other on finance, were appointed to begin work immediately.

Among the associations and agencies represented at this first meeting were the U. S. Food and Drug Administration, U. S. Public Health Service, U. S. Department of Agriculture, Association of Food and Drug Officials of the United States, Association of State and Territorial Health Officers, National Association of Commissioners of Agriculture, International Association of Milk and Food Sanitarians, National Conference on Interstate Milk Shipments, American Dairy Science Association, Paraffined Carton Research Council, Milk Industry Foundation, Dairy Products Improvement Institute, and the International Association of Ice Cream Manufacturers.

NEWS AND EVENTS

PAPERS PRESENTED AT AFFILIATE ASSOCIATION MEETINGS

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

NEW YORK STATE ASSOCIATION OF MILK SANITARIANS
37th Annual Conference Joint With
CORNELL DAIRY INDUSTRY CONFERENCE
September 19-21, 1960

(*Secretary*, R. P. March, Dept. of Dairy Industry, Cornell University, Ithaca, New York)

GENERAL SESSIONS

Milk sanitarians in agriculture. Phillip Alampi, Sec., New Jersey Dept. of Agriculture, Trenton, New Jersey.

How now. Harry T. Kaufman, Dir. of Public Relations, Dairy Council, Inc., Philadelphia, Pa.

Dairying in Mexico and So. America. Dr. K. L. Turk, Dept. of Animal Husbandry, Cornell University, Ithaca, N. Y.

Advances. Dr. E. S. Guthrie, Prof. Emeritus, Cornell University, Ithaca, N. Y.

The dairy farmer in a changing world. Prof. R. Albrectson, Dept. of Animal Husbandry, Cornell University, Ithaca, N. Y.

Social changes in a farmer's community. Dr. O. F. Larson, Dept. of Rural Sociology, Cornell University, Ithaca, N. Y.

Radiation—facts and fancies. Prof. H. Blatz, Director, N. Y. City Office of Radiation Control, Dept. of Health, N. Y., N. Y.

Status of antibiotics in dairy products. Dr. F. V. Kosikowski, Cornell University, Ithaca, N. Y.

Flies, Lice, Mange — Insecticides and hazards. Dr. J. G. Matthysse, Dept. of Entomology, Cornell University, Ithaca, N. Y.

Cleaning and cleanability. Dr. W. K. Jordan, Cornell University, Ithaca, N. Y.

Fifty years of experience in the milk business. R. E. Cotton, Sunnyside farms, Galeton, Pa.

Lets take another look at can washing. W. H. Bertsche, Erie, Co. Dept. of Health, Buffalo, N. Y.

Experience in India. Dr. C. N. Stark, Middle Tenn. State College, Murfeesboro, Tenn.

Cell count, CMT, and Whiteside tests. Dr. C. J. Haller, Veterinarian, Avon, N. Y., and Dr. H. C. Temple, Director of Regional Laboratory, Kingston, N. Y.

MILK SESSION

The impact of bulk tanks on dairy operations. Dr. R. D. Alpin, Dept. of Agr. Economics, Cornell University, Ithaca, N. Y.

Welded pipelines for milk plants. F. H. Fischer, Erie Co. Health Dept., Buffalo, N. Y.

Schain and TESA tests. Dr. B. L. Herrington, Cornell University, Ithaca, N. Y.

FOOD SESSION

Food technology at Cornell. Dr. P. A. Buck, Cornell University, Ithaca, N. Y.

Special training for food technologists. Dr. W. B. Robinson, Dept. of Food Science and Technology, N. Y. State Agr. Exp't. Station, Geneva.

AFDOUS Frozen food code. Harold Clark, Chief, Food Division, Dept. of Consumer Protection, Hartford. Conn.

A study of the sanitary quality of natural casings and the development of a sanitary standard. A. E. Abrahamson, Chief, Wholesale Division, Dept. of Health, N. Y., N. Y.

CONNECTICUT ASSOCIATION OF DAIRY AND FOOD SANITARIANS, INC.
Cooperating with
THE COLLEGE OF AGRICULTURE AND AGRICULTURAL EXTENSION SERVICE,
UNIVERSITY OF CONNECTICUT

(*Secretary*, Dr. R. M. Parry, Dept. of Agr., State Office Bldg., Hartford, Conn.)

CONFERENCE ON PIPELINE AND TRANSFER SYSTEMS OF MILK HANDLING

Findings of University program on rancidity in milk. Dr. R. G. Jensen, University of Connecticut.

C-I-P cleaning of pipe-lines, transfer lines and bulk tanks. A. A. Roth, Wyandotte Chemicals Corp.

Experience with pipe-line milkers in the Northeast. Dr. J. C. White, Cornell University, Ithaca, N. Y.

MILK AND ANTIBODIES

A few months ago, there appeared a question and an answer in the Journal of the American Medical Association which had to do with a number of recently appearing articles in popular magazines under the title of *Magic Milk.*

The inquirer asked the Journal Editor this question:

The milk is supposed to contain antibodies useful in the alleviation of disease. Is it really useful and in the treatment of what diseases?

The Editor replied as follows:

ANSWER.—I have read several articles on "magic milk" in popular magazines. Some questions have been raised by persons attempting to duplicate the result reported by Drs. Peterson and Campbell. Some doubt exists about the actual transfer of antibodies through the stomach into the blood without being destroyed. A recent study on antibodies in milk and on passive immunization reported that there was no detectable increase in the blood titers of three human subjects who had ingested large doses of equine diphtheria antitoxin mixed with skimmed milk. It was also found that the blood levels of antibodies in cows injected with diphtheria antitoxin were always higher than the milk level, which suggests that antibodies in milk are actually produced in the blood stream (Greenbaum and Miller *J. Lab & Clin. Med.* 55: 229 (Feb.) 1960). Varied results have been reported, and additional studies are needed.

The success reported in the treatment of arthritis is difficult to evaluate, since spontaneous remissions occur frequently. I know of no control clinical studies with the product which would allow one to evaluate its usefulness in arthritis, asthma, or hay fever. The use of "immune" milk is therefore still experimental, and cannot be considered an accepted form of treatment for any disease.

Reprinted from the Sept. 10, 1960 issue of the Journal of the American Medical Association.

FOOD AND THE MEDICINE MAN APPROACH

Most Americans agreed that we had made a good deal of progress when the old medicine man and his snake bite remedies disappeared and we generally became willing to pay the medical doctor for advice and treatment of our ills. But there is plenty of evidence that we either are not out of, or are entering into a new medicine man era. . . .

Not only are consumers being offered a vast array of pills and colored water and so-called health foods that their purveyors claim will cure everything from athlete's foot to baldness — including all the aches and pains and mental disorders in between. . . .

But also some of the country's biggest names in the food business have now apparently decided that they, too, must be medicine men in order to build product sales. This really becomes insidious as the big budgets are applied to four color in the print media and saturation on the electronic media.

Quacks and food faddists have been a menace through the ages, but the decision of heretofore respected food companies to give what amounts to medical advice to consumers — in areas of health that medical and other scientific groups consider to be subject to much more research rather than to any conclusions at the present time — raises the very serious question of just who is qualified to give medical advice and who is going to protect the public from misleading medical advice.

When food companies begin to use their huge promotion budgets to suggest that the composition of the American diet should be changed on the basis of unproved and challenged theories, perhaps it is time for the medical profession and every other person interested in the public health to speak up and make it quite clear that we do not want any return to the age of the medicine man — no matter how entertaining he was!

As dairy farmers who are working together to sell our milk and other dairy products, we make no secret of the fact that we are quite upset by all the attention that has been given to completely unproved theories that suggest that animal fats may be less desirable in the human diet than other types of fat.

Some of the people whose business it is to gather statistics on disease and health have expressed doubts that there really has been a serious increase in heart disease in this country in recent years. They point out, for example, that today it is quite fashionable to die of a heart attack, and also that part of the increase may be attributed to better diagnosis.

But assume that there has been an increase in heart disease. If we all decide to resort to the same kind of trickery that some publicity-minded researchers and some advertisers are exhibiting today, we could point out that during this period when heart disease has been increasing, Americans, on a per capita basis, have been consuming less milkfat while they have increased their consumption of vegetable fats. The superficial investigator could quickly conclude that heart disease has increased as a result of our consuming less milkfat or because we are using more of other fats!

Or forget diet entirely and speculate on your own for a bit. Heart disease has increased during the same period when automobiles have come into common use, while we have been using more electricity and gasoline to do our physical work for us, while we have spent more time sitting and reading our newspapers and books, listening to more radio and

television. Perhaps it might even be wise to investigate whether or not the stress and strain of trying to understand rock and roll music on radio or the tension that arises out of night after night of watching the cowboys and Indians tangle on TV might have put extra burdens on our hearts!

When it comes to protecting the public health, no industry has a better record than does the dairy industry. When the medical scientists have suggested ways that dairy products might be improved to build better public health, dairymen have wasted no time in doing this. We certainly haven't changed one bit — we still stand ready to continue to carry out this same obligation to the public. And we are spending our own money for nutrition and product research to help find ways to give the public a better and more healthful selection of dairy products.

We are not interested in trying to mislead the public with half-truths or tricky handling of incomplete research reports. We think highly of those people who give the public honest information that helps people know more about how to eat properly, but we do not believe that food sellers should be medicine men. We much prefer to place our trust in the medical doctors and their scientific associates.

Naturally, we hope that you feel this way, too, and will do whatever it might be in your power to do to see that the American public gets facts that are not sensationalized out of their true meaning.

The dairy farmer's report, Food Sellers Become Medicine Men Reprinted from American Dairy Association, Sept. 1960.

MICHIGAN STATE DAIRY ENGINEERING CONFERENCE SCHEDULED

The ninth annual National Dairy Engineering Conference will be held at Michigan State University on February 28 and March 1, 1961. The conference will be devoted to automation of dairy plant operations and will include speakers from processing plants, equipment manufacturers and others interested in the subject of automation. The conference is sponsored by the Department of Agricultural Engineering in cooperation with the Department of Food Science and the National Association of Dairy Equipment Manufacturers.

Topics to be covered include automation of receiving, processing, packaging and the handling of processed products. Other topics to be covered include the use of quality measuring devices for automation, computers in the processing plant, quality control, public health approval of systems and labor management experiences.

The final program will be available by the first of the New Year and persons wishing to obtain a copy should address an inquiry to: Carl W. Hall, Chairman, National Dairy Engineering Conference, Department of Agricultural Engineering, Michigan State University, E. Lansing, Michigan.

TRAINING IN EPIDEMIOLOGY OFFERED IN CDC COURSE

A multidiscipline course in *Principles of Epidemiology* will be offered at the U. S. Public Health Service's Communicable Disease Center, Atlanta, Georgia, January 16-20, 1961, as a part of the continuing program of the Center's Training Branch.

Designed to provide public health workers with a basic understanding of how epidemiological techniques can be used in an approach to the solution of problems in the preventable disease field, the course is offered for the following categories of public health personnel: physicians, dentists, veterinarians, nurses, laboratory workers, environmental health personnel and other members of the public health team. Participants will be selected on the basis of professional education and experience and current responsibility in public health programs at all levels of government. Preference will be given to persons whose professional tasks involve the application of epidemiological procedures, and registrants will be expected to attend all sessions of the course.

Further information and application forms may be obtained from: Chief, Communicable Disease Center, Atlanta 22, Georgia, Attention: Chief, Training Branch.

NEW BULLETIN AVAILABLE ON MICROANALYTICAL METHODS

The Food and Drug Administration has published a new technical bulletin describing the latest methods for microscopic identification of contaminants in foods and drugs. The publication is designed to not only help analysts trace adulterants to their sources but also to advise manufacturers on sanitation and control measures.

The eleven chapters cover product control and sanitation; sources and types of contamination; isolation and detection of contamination; microscopic techniques; photomicrography; fungi associated with food decomposion; entomology in food and drug work; parasites and related forms; rodent and animal filth; applied histology of food and drug materials; and other material relating to identification useful to the analyst. The bulletin has 255 pages and is illustrated with 289 excellent photographs and line drawings.

Copies of the new bulletin, *Microscopic Analytical Methods in Food and Drug Control*, Food and Drug Technical Bulletin No. 1, may be obtained from the Supt. of Documents, Government Printing Office, Washington 25, D. C. at $2.00 per copy.

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Complete 1951-1960 file of Journal of Milk and Food Technology 18.00, F.O.B. Ames. Also Journal Dairy Science, Vol. 1 1917 to Vol. 42 1959. Correspondence invited. E. F. Goss, Dairy Dept., Ames, Iowa.

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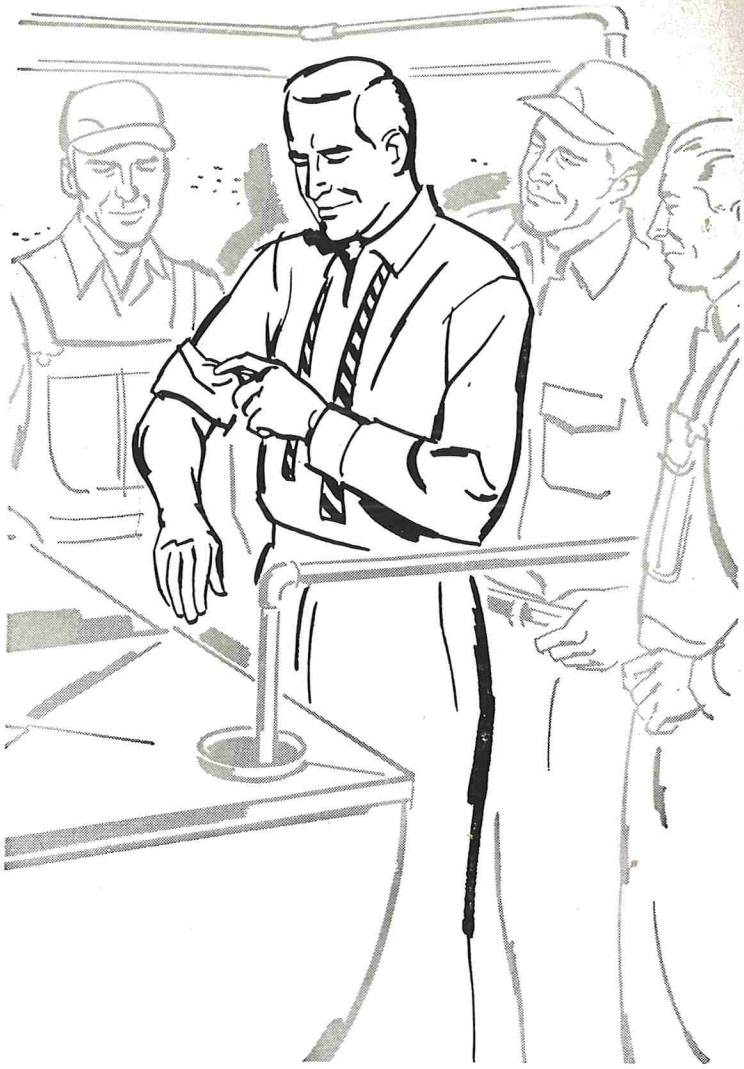

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Dr. Turner tells how to . . .

REDUCE MASTITIS

DR. C. W. TURNER, Professor of Dairy Husbandry at the University of Missouri, specializes in fundamental research on the physiology and anatomy of the mammary gland. Author of numerous scientific papers, bulletins and textbooks, his major recognitions include winning the Borden Award in 1940 and doing research work abroad on a Fullbright Fellowship.

"Remove teat cups as each quarter is milked out"

By Dr. C. W. Turner

In machine milking, the milk is removed by vacuum acting on the end and side of teat. When the cow has let down her milk, its removal by this process is pleasurable. However, as soon as all the available milk is removed from each quarter, the vacuum acting on the teat causes discomfort to the cow . . . and injury to the delicate tissue lining the teat and milk cistern of each quarter. *The irritation and traumatic injury to the delicate tissues of the gland is a common predisposing cause of mastitis.* The incidence of mastitis has been reduced markedly by rapid milking and by removing the machine as soon as the milk has been removed.

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With unequal milking time of the quarters, the fact remains that the faster milking quarters are subject to *irritation and trauma of the vacuum for periods of from one to three or four minutes if the machine is left on until all quarters are dry.*

Reduce this cause of mastitis! Improve your machine milking by this rule. *Don't wait until all four quarters are milked out. Remove each teat cup as the quarter is milked out.*

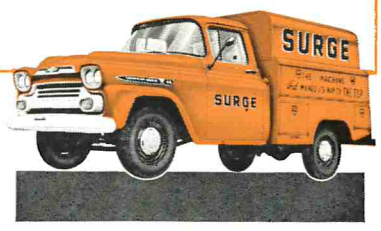
Following this additional rule of better milking will result, first, in further reducing the incidence of traumatic-caused mastitis.

Second, it will increase milk yield by obtaining more milk from the more productive quarters which take more time to milk out.

Vacuum acting on the quarters which are milked out is painful to the cow, and induces the secretion of the bad hormone which causes cows to "hold up" more of the last milk rich in fat.

WE AGREE WITH DR. TURNER!

Every time Babson Bros. get a chance, we urge dairy farmers to follow the rules of good cow milking. Most important of all these rules — when any one quarter is milked out, remove the teat cup.



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