

VOLUME 18

NO. 7

JULY, 1955

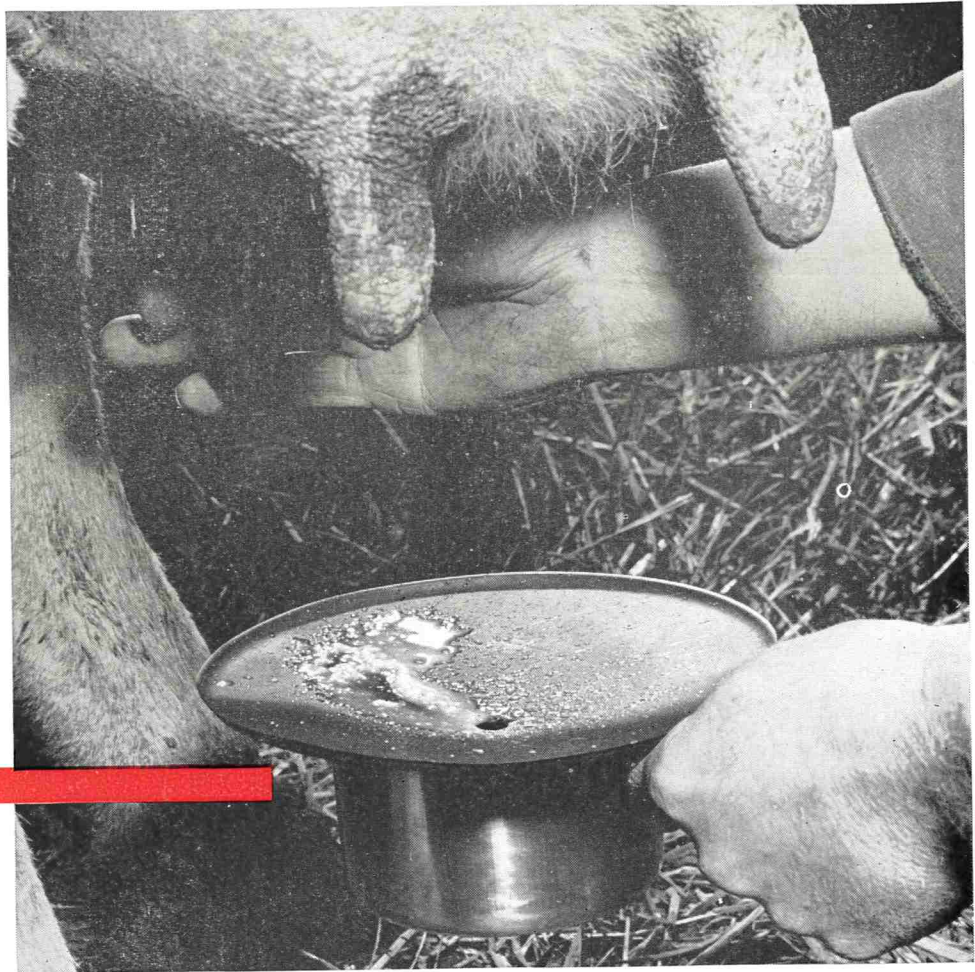
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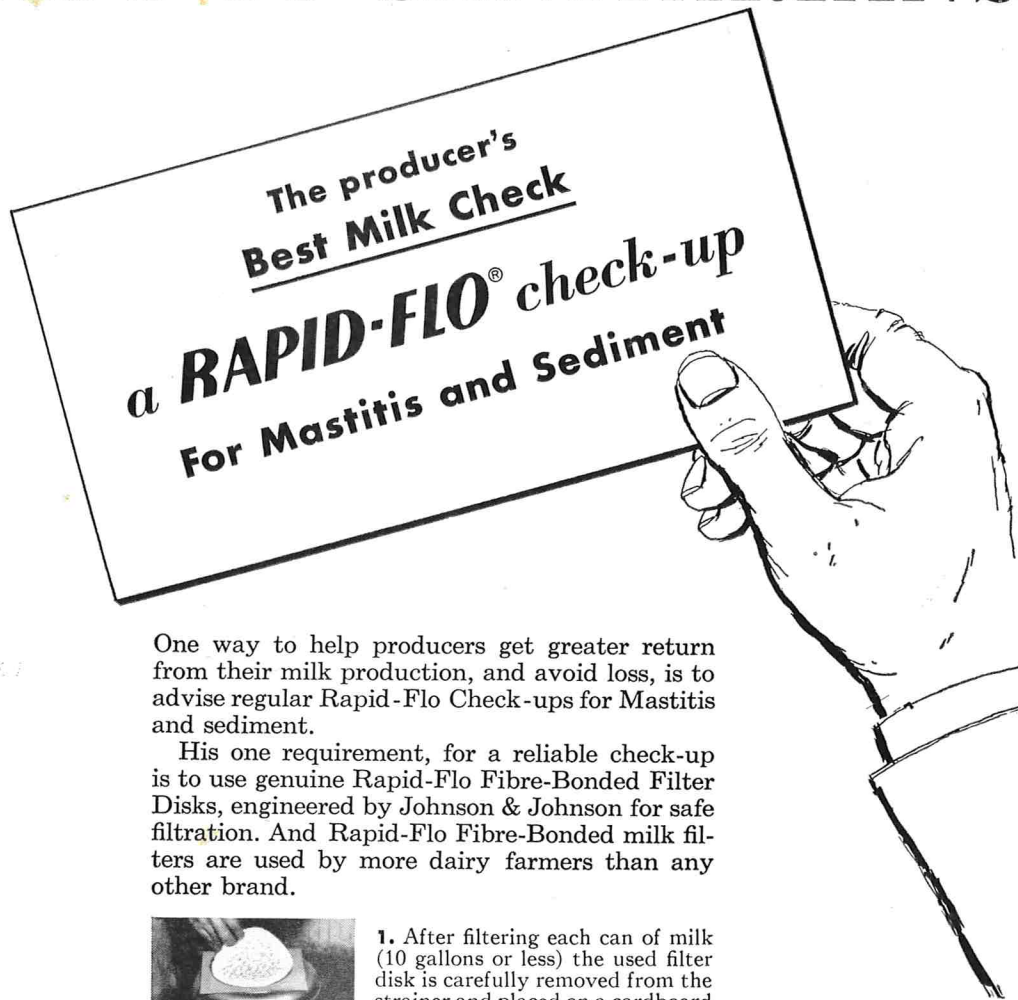
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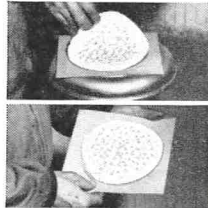


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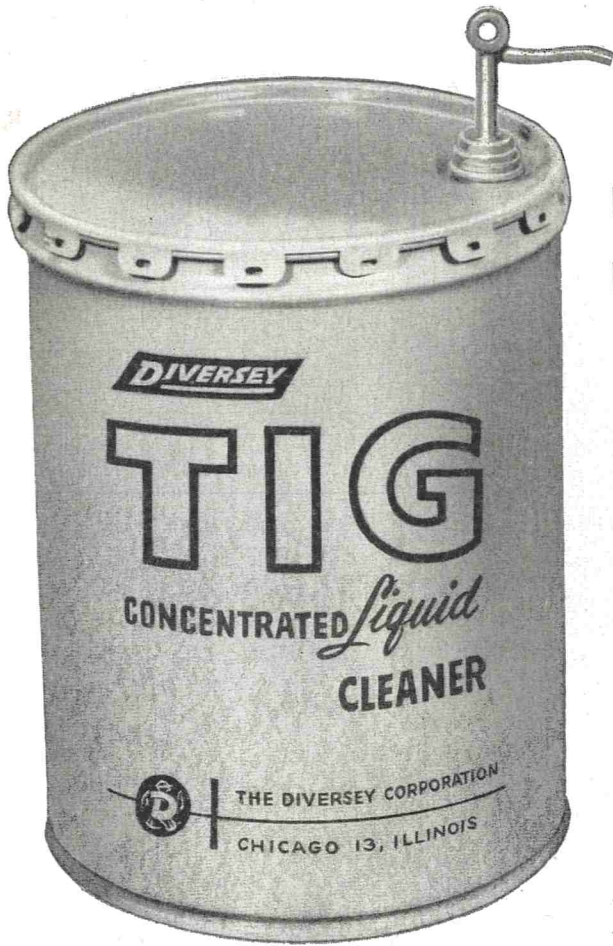
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The Journal of Milk and Food Technology (including Milk and Food Sanitation) is issued monthly beginning with January number. Each volume comprises 12 numbers. Published by the International Association of Milk and Food Sanitarians, Inc., with executive offices of the Association at Ritz Building, 12½ East Broadway, 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.

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

Journal of

MILK and FOOD TECHNOLOGY

INCLUDING MILK AND FOOD SANITATION

Official Publication

International Association of Milk and Food Sanitarians, Inc.

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Vol. 18

JULY

No. 7

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Business Matters: Correspondence regarding business matters, advertising, subscriptions, orders for single copies, etc., should be addressed to H. L. Thomasson (address above).

Subscription Rates: One volume per year Individual non-members, Governmental and Commercial Organization subscription,

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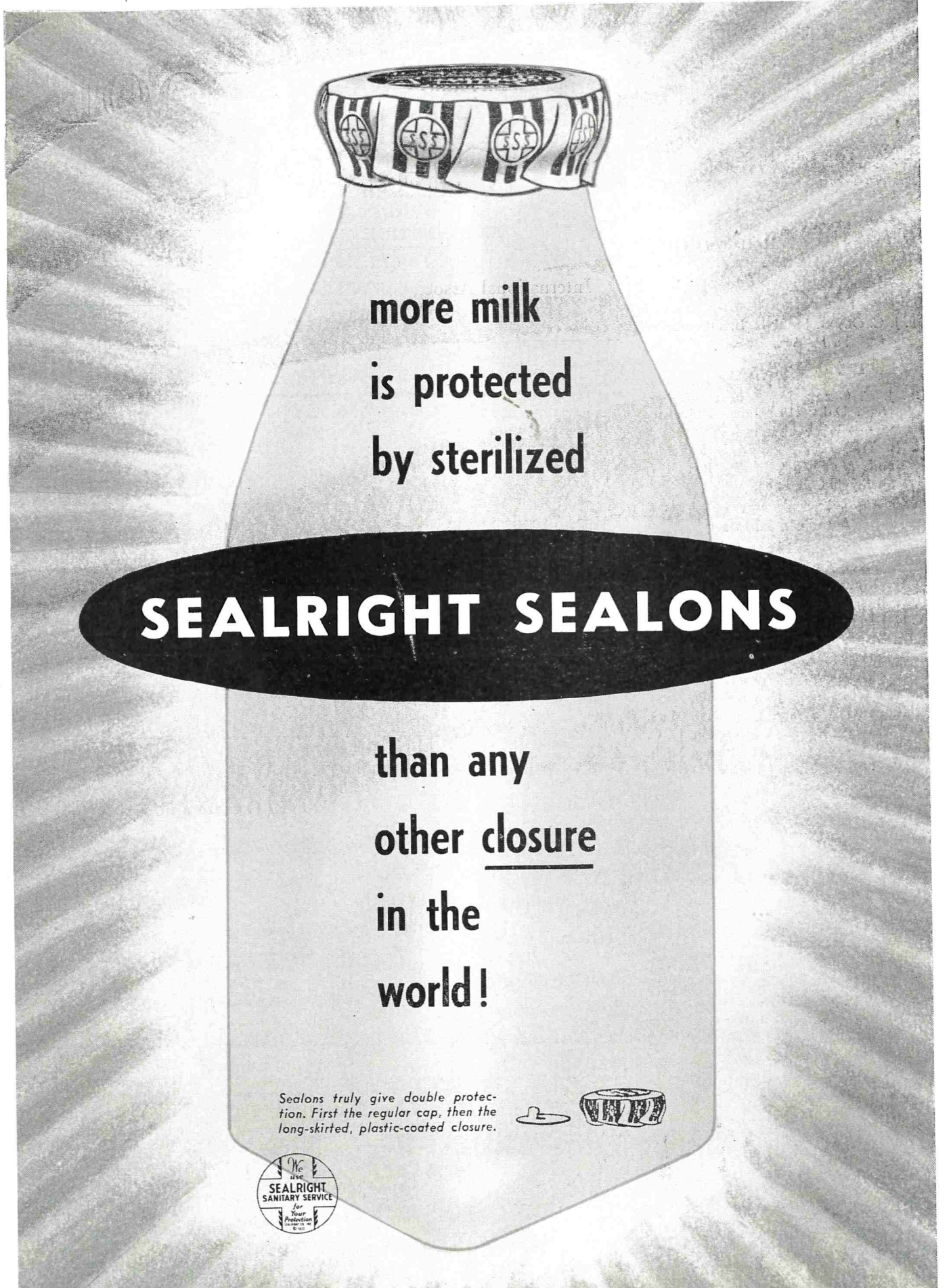
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Association, P. O. Box 437, Shelbyville, Ind.

Membership Dues: Membership in the International Association of Milk and Food Sanitarians, Inc., is \$5.00 per year, which includes annual subscription to the Journal of Milk and Food Technology, (including Milk and Food Sanitation). 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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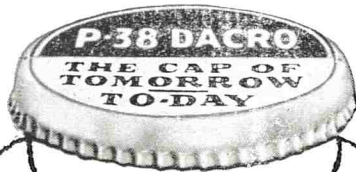
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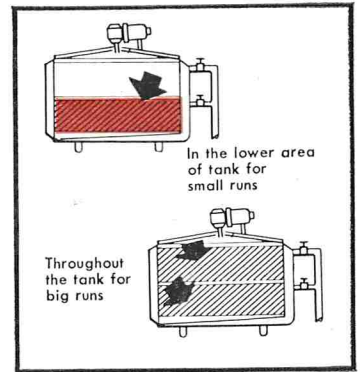


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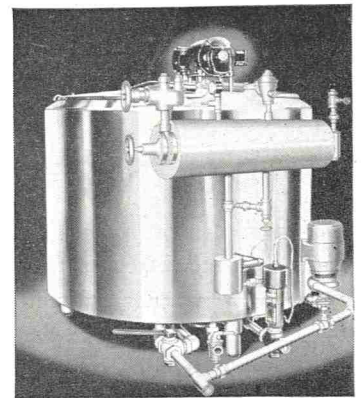


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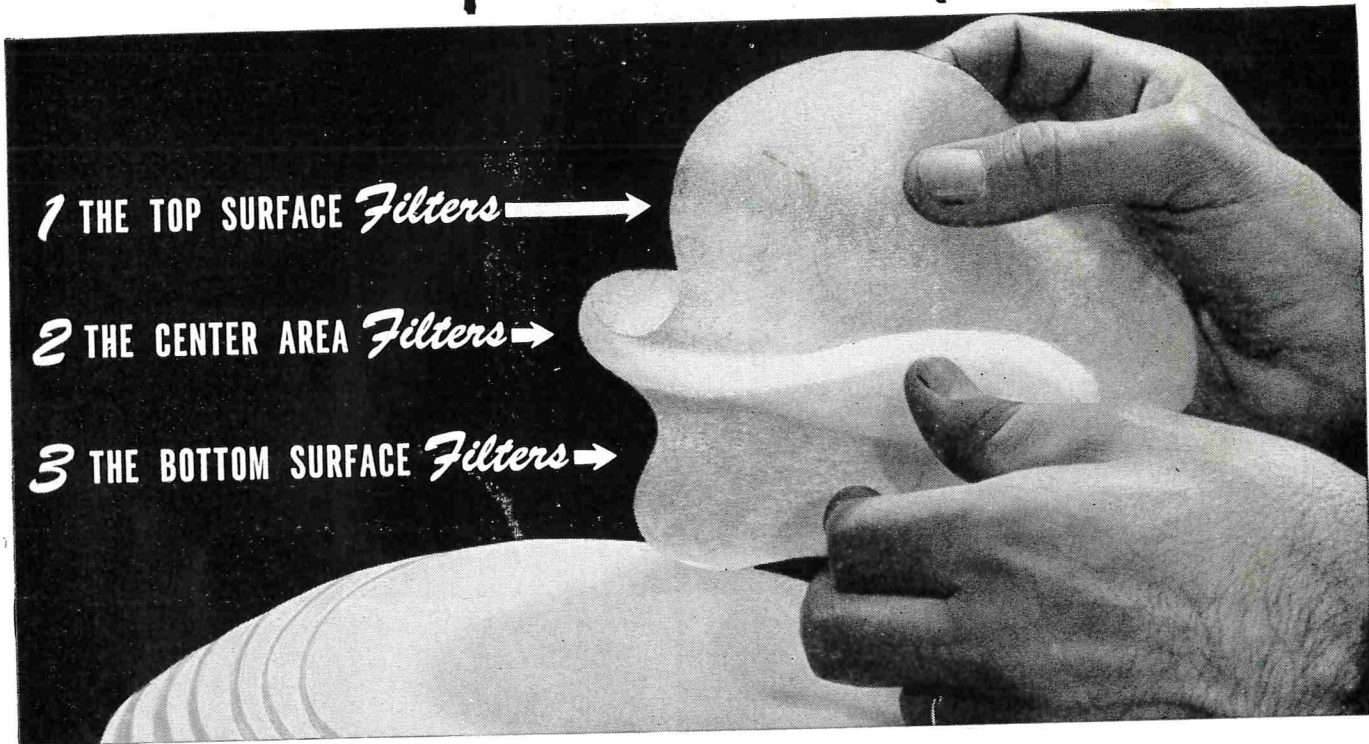


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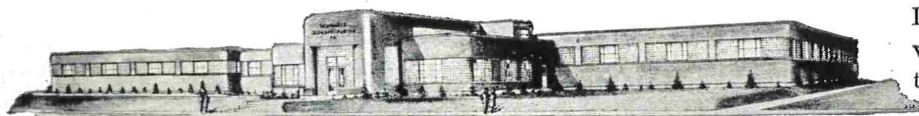
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FUTURE TRENDS IN THE MILK AND FOOD INDUSTRY¹

A. L. WENTWORTH

The Borden Company, New York, New York

With increasing population in this country and sound economic conditions there is no question that a firm future market for milk and other food can be well established. There have been many predictions, all of which develop that fact. It seems unnecessary to review them.

With more widespread knowledge of the role which individual foods play in good nutrition, it is natural to expect that there will be shifts in the future as there has been in the past. Protective foods which include dairy products, meats, fruits and vegetables are promoted by nutritionists for the welfare of all.

People are spending more in total for the food which they buy in proportion to their income. For the first nine months of this year about 3 percent more money was spent in grocery and combination stores than in the similar period of the year before. For the first seven months of this year average daily sales of fluid milk in Federal Milk Order areas were more than 3 percent ahead. The use of meat during the first eight months was also 3 per cent above 1953. The store sales mentioned are in dollars, the fluid milk and meat sales are in pounds. These commodities represent a large share of the food supply. The gain of 3 per cent in each of them is about twice the rate of population increase which was 1.6 per cent.

The food industry is in competition with other industries for a share of the consumers' dollars. Like other industries, the food industry can only maintain its position or further improve it by increased advertising and sales promotion, the development of new products and improvement of established ones and adequate distribution so that products are conveniently available everywhere.

That these basics of business growth are being carried out by

the food industry can be illustrated in many ways, but a few should suffice. The Grocery Manufacturers of America reported the other day that grocery advertising in the daily press had increased from \$38 million to \$108 million in ten years, 1944 to '53. Other media for food advertising show nearly the same increases. In the dairy industry the American Dairy Association is this year devoting about two million dollars to advertising compared with almost negligible amounts right after World War II. It is reported that dairy companies are expending more for advertising and merchandising this year than ever before.

In the development of new products and improvement of established ones, we see a constant stream of these presented to the public. In the dairy field, cursory survey of trade publications indicate a parade of new products recently that is almost astonishing. Let's look at one that caused concern with its first introduction — household packages of nonfat dry milk solids. Since 1948 when that product really hit the market, sales have increased to well over 100 million pounds. Fluid skim milk and whole milk sales as reported from Federal Milk Order areas have steadily increased showing that that new product did not affect sales of the fluid product in those areas. Furthermore, civilian per capita consumption of fluid milk, as estimated by the U. S. Department of Agriculture was 3 pounds (one per cent) higher in 1953 than in 1948. The field would be endless for other illustrations of the development, the marketing and the influence of new products upon food consumption, but of what avail. You know that aspect.

The availability of foods, the third phase of holding or enlarging the share of the consumers' dollar devoted to this industry, is one which presents little problem for most foods. Distribution has grown to reach practically every nook and corner. Refrigeration is universally available for products



W. A. Wentworth, Director of Industry Relations with The Borden Company, New York City, is a graduate of Iowa State College. For over forty years he has been connected with the dairy industry; in the earlier years in Iowa, then in Ohio and since 1935 in New York. For the past 25 years his work with The Borden Company has pertained largely to industry problems. Mr. Wentworth is a member of the Production, Distribution and Quality Committee of the National Research Council.

He has been President of the Dairy Products Improvement Institute for seven years, and he is also President of the International Dairy Show, a Director of the National Dairy Council and Treasurer of the Dairy Industry Committee.

requiring it. Display cases now used invite patronage.

The matter of availability does bring up factors related to milk which I shall discuss later.

Let us now look at milk consumption. We have heard much that per capita milk use is down from the peak experienced in 1945. That is true, but 1945 was a war year. Subsidies were in effect and rationing prevailed with many other foods while milk was not rationed. Furthermore, most of the figures used combine fluid milk and its equivalent in cream.

Last June a new series of per capita consumption of dairy products was presented by the U. S. Department of Agriculture which

¹Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Atlantic City, New Jersey, October 21-23, 1954.

separated fluid milk and fluid cream. From that we find that when the war years, 1942 through 1946, are disregarded that the use of fluid milk alone per person during the past five years is up 30 pounds annually over the 12 year period preceding the war. That is an increase of 11 per cent, a showing that is a credit to you people, to the professional people who have so generously advocated increased consumption and to the farmers and the industry who have produced, processed and distributed the product.

Other dairy products, except butter and cream, show even greater gains. Comparing the same periods per capita consumption of cheese is up 40 per cent, ice cream is up 78 per cent, evaporated and condensed 21 and other uses which includes powder up nearly 70 per cent.

When these are put together the annual per capita consumption of all dairy products, excepting butter and cream, are up 25 per cent.

As we look into the future, the maintenance of that rate of increase which is practically 2 per cent per capita per year presents a challenge — certainly not an impossibility.

In the previous references butter and cream have been excluded. Before World War II, together they represented the equivalent of about 400 pounds of milk per capita annually. During the last five years they represented 244 pounds, a decrease of nearly 40 per cent.

There is one of the greatest challenges confronting the dairy industry. Is that market for two products of milk lost? Will that decrease continue or is there a way to overcome it and perhaps regain the lost consumption?

The consumption of fats has been declining. Butterfat is the most expensive as measured in cents per pound, but when understood it fulfills a place in a normal diet which makes it most desirable. Its flavor, its natural vitamins, its ease of digestion are unequalled. To impress those facts upon the public seems to be difficult. I am sure that the industry has not given up in its effort but the trend is difficult to overcome. It is reported that butter sales are now running somewhat ahead of last year. But cream sales for the first eight

months of this year are 4 per cent below last year in the Federal Order Markets — about the same rate of decrease as has been experienced for several years.

I have sort of moved to a discussion of milk and milk products. We can hardly think of the future for them without considering the big problem of government price supports.

In two and one-half years — April 1, 1952 to September 30, 1954 — the government purchased 699 million pounds of butter, 645 million pounds of cheese, 1,250 million pounds of nonfat dry milk solids.

As of the end of last month 42 percent of the butter, 36 per cent of the cheese and 80 per cent of the nonfat dry milk solids had been disposed of. There was left in government hands somewhat over 400 million pounds each of butter and cheese and 240 million pounds of nonfat solids.

Support prices were lowered last April, milk production (due to drought) for several weeks this summer and fall did not maintain at the previous high rate, although in September it moved up again. As a result it has not been necessary for Uncle Sam to purchase butter for nearly two months and some sales have been made back to the commercial trade. How long that will hold remains to be seen.

Several changes in the Agricultural Act and in other important related Acts have opened additional avenues for disposing of those surpluses. Whether these will be sufficient to meet the situation remains to be seen.

On Monday of this week the Department of Agriculture released an estimate that milk production in 1955 will be about the same as the 124 billion pounds indicated for the current year. There was added the comment that if pastures are better than in the past two drought years, milk production "could readily show another substantial increase."

To cope with the future, Congress inserted a provision in the recent Act that the Secretary of Agriculture should study plans and report to Congress the first of next year on control of production and methods of price support. Those studies are now underway.

If price supports bearing a higher parity relationship are to prevail it may be necessary to invoke some form of production control. If that should occur will we have the milk to go on building consumption? What if anything will be your function or what change may it require in the established methods of supervising the quality of city milk supplies? I do not know and do not feel qualified at this time to speculate.

A while ago in mentioning availability of foods, I indicated that I would discuss that later.

Let me read you an item which appeared in the press about a month ago.

"The Department of Agriculture announced today the start of a study of Federal, state and municipal milk marketing regulations. It reported complaints that efforts to increase the consumption of milk were being 'handicapped' by various laws, regulations and ordinances.

"The inquiry will cover sanitary and economic regulations, including milk quality, pricing, setting of marketing areas and boundaries and rules relating to interstate trucking and other transportation of milk.

"The study has been planned for several months, since the department began efforts to increase milk consumption and to halt the rise in surplus dairy stocks."

At the close of World War II a request of somewhat similar nature was advanced by the then Secretary of Agriculture. That request stimulated a suggestion by the Agricultural Board of the National Research Council that it with the Food and Nutrition Board of the National Research Council look into the whole subject.

Nearly five years of thorough investigation, the most complete study of this nature, brought forth a publication by the National Research Council entitled "Milk Regulations and Milk Quality". Funds necessary to carry out this study were made available by the United States Department of Agriculture out of those appropriated in the Research and Marketing Act of 1946.

That study developed the fundamentals of Public Health regulation of a fluid milk supply. The complete studies carried on in eight representative cities and their

Continued on Page 173

FACTORS INVOLVED IN THE CONTROL OF GELATINOUS CURD DEFECTS OF COTTAGE CHEESE.

I. STORAGE TEMPERATURE AND pH

E. B. COLLINS

Department of Dairy Industry, University of California, Davis

(Received for publication March 10, 1955)

METHODS

Fruitiness, caused by growth of *Pseudomonas fragi*, was the defect that most commonly limited the storage life of commercial cottage cheese. Cultures of *Pseudomonas fragi*, *Pseudomonas viscosa*, and *Alcaligenes metalcaligenes* produced typical defects in cottage cheese at initial pH values as low as 4.6 and at temperatures as low as 3.5° C. Low temperature was very effective as a means of retarding the development of defects. Of the species studied, *P. fragi* was retarded least by low temperature. Violet red bile agar was found satisfactory for enumeration of the three species of bacteria.

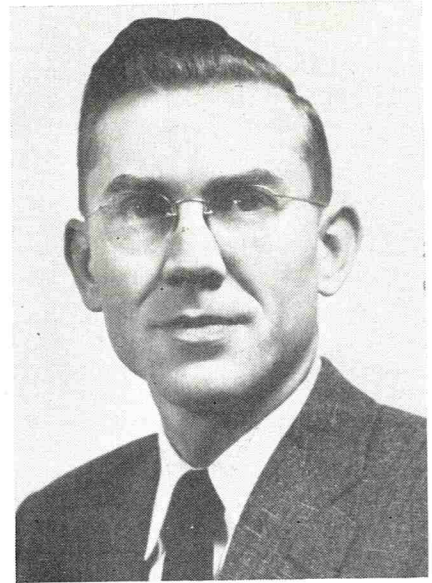
The development of gelatinous curd defects on the surface of cottage cheese is an important bacteriological problem. Parker *et al.* (4) studied this type of spoilage, and demonstrated that three species of bacteria, *Pseudomonas fragi*, *Pseudomonas viscosa*, and *Alcaligenes metalcaligenes*, produced defects that were typical and distinguishable. The chief sources of the organisms were thought to be contaminated equipment and water. A limited control of surface spoilage was accomplished by regulating the pH of the final product. Recently, Davis and Babel (2) associated certain unidentified species of *Proteus*, *Pseudomonas*, *Aerobacter*, *Achromobacter*, and *Alcaligenes* with surface spoilage of cottage cheese.

The present study was made to determine the bacteria responsible for surface spoilage of cottage cheese in this locality and to investigate the influence of storage temperature and initial pH upon the development of defective odor or appearance in cottage cheese inoculated with bacteria capable of causing surface spoilage. Parker *et al.* (4) found that none of the species studied produced a defect during 72 hours at 15° C. when the initial pH was below 5.0. But since the "fruity" defect resulting from the growth of *P. fragi* has been observed to develop during prolonged storage of cottage cheese with initial pH as low as 4.65, it appeared desirable to have additional data on this point.

Enumeration of spoilage bacteria. Violet red bile agar, recently suggested by Elliker (3) for detecting surface spoilage bacteria, was used for plating cultures of *P. fragi*, *P. viscosa*, and *A. metalcaligenes* in preference to several other media recommended for culturing Gram negative bacteria. An incubation period of 48 hours at 25°C. was selected. Subsurface colonies were reddish purple to greyish purple with grey edges, round to elliptical, and usually 0.5 mm. or less in diameter. *A. metalcaligenes* formed colonies that were slightly redder than those formed by *P. fragi* and *P. viscosa*. Representative species of genera *Streptococcus*, *Micrococcus*, *Lactobacillus*, *Leuconostoc*, and *Bacillus* did not form colonies on violet red bile agar during the 48-hour incubation period.

Isolation and initial study of cultures. Samples of commercial cottage cheese that exhibited surface spoilage, and samples of tap water from a plant experiencing such difficulty, were plated on violet red bile agar. Isolated colonies were grown in litmus milk at 25°C. Several cultures that produced visible changes and/or gave undesirable odors in litmus milk, and pure cultures of *Pseudomonas*, *Alcaligenes*, and *Xanthomonas*, were grown in litmus milk for 48 hours and inoculated into cottage cheese at pH 5.2. (Commercially-prepared large-curd type cheese was used.) Ten ml. of a 1:100 dilution of each culture was added to each of two petri dishes containing cottage cheese. The excess inoculum was poured off, and the inoculated samples were observed for changes at 10° C.

Preparation of experimental cheese for use in studying the influence of temperature and initial pH upon the development of surface spoilage. Cottage cheese curd was cut into particles about 1/8 in.



Dr. Edwin B. Collins was graduated in 1943 from Clemson College of South Carolina with a B.S. in Dairying. Upon return from service in the U.S. Army, he completed his M.S. and Ph.D. degrees in Dairy Bacteriology at Iowa State College in 1948 and 1949, respectively. He is now Assistant Professor of Dairy Industry and Assistant Dairy Bacteriologist in the Experiment Station, University of California, Davis.

in diameter or smaller, heated, washed, and drained in the usual manner. To each of five 2-lb. quantities of curd enough sterile distilled refrigerated water was added to give a layer about 1 in. deep above the curd, after the mixture had been stirred and permitted to settle. Sufficient sterile dilute lactic acid or sodium carbonate to give pH values of approximately 4.6, 4.8, 5.0, 5.2, and 5.4 then was added, and the curd was stored overnight at 3.5° C. A Beckman model K potentiometer was used for determining pH. A half a day was required to make final adjustments in pH, after which sterile cheese cloth was used for draining the curd. Five 450-ml. quantities of refrigerated creaming mixture also were adjusted to the same pH

values and then inoculated with 10 ml. of a 1:100 dilution of the desired bacterial species (grown 40 hours in litmus milk). Adding the creaming mixtures to the appropriate curds inoculated each with about 10^5 bacteria per gram. After each curd and creaming mixture combination had been stirred and permitted to stand 1 hour, the excess creaming mixtures were poured off, so that the consistency of the finished product approached that of commercial cheese. Quantities of the creamed curd were stored in sterile petri dishes at 3.5°, 10°, and 15° C. and checked daily for defective odor or appearance.

RESULTS AND DISCUSSION

Bacteria found to cause surface spoilage. The defect most commonly encountered in samples of commercial cottage cheese was fruitiness, caused by growth of *P. fragi*. One sample was slightly putrid and slightly moldy, as a result of the growth of *Geotrichum candidum*. Cultures of *P. viscosa* and *A. metalcaligenes* were not isolated from any of the samples of cottage cheese examined.

Defects similar to that produced by *P. viscosa* (4) were produced by four cultures isolated from water provided by a plant that had experienced difficulty. Two of these cultures were classified as *P. viscosa* and the others were *P. jaegeri* and *P. geniculata* (1), respectively. Although the culture of *P. jaegeri* after prolonged incubation in litmus milk gave an odor resembling jasmine (which was not produced in cottage cheese), it was motile and therefore probably not *P. smaragdina*. Although these species were present in the plant water supply, only the fruity defect caused by growth of *P. fragi* was encountered in cottage cheese manufactured in the plant. This was due, at least in part, to contamination of the cottage cheese with comparatively large numbers of *P. fragi* from unsanitary cream cans.

In view of the possibility that other species could cause surface spoilage, 60 cultures of *Pseudomonas*, three of *Alcaligenes*, and five of *Xanthomonas* were inoculated into cottage cheese of pH 5.2. The experiment is noted because of the infrequency of resulting defects. Within 5 to 7 days at 10° C. four

cultures produced a defect similar to that produced by a control culture of *P. viscosa*, and 13 cultures produced gelatinous curd similar to that produced by *A. metalcaligenes*. It was somewhat surprising to find that 51 of the 68 cultures did not produce defects during storage for 10 days. It is likely that some of the cultures had not grown well in litmus milk, which undoubtedly gave variations in the level of inoculation. However, such differences in numbers of bacteria were not considered the primary limitation that determined whether or not a species produced surface spoilage.

Influence of temperature and initial pH upon the development of surface spoilage. Experiments were run to determine the time required for cultures of *P. fragi*, *P. viscosa*, and *A. metalcaligenes* to produce defective odor or appearance in cottage cheese at different temperatures and different initial pH levels. With cultures of *P. fragi*, a fruity odor was normally the first evidence of defect development; with cultures of *P. viscosa*, small gelatinous areas usually appeared simultaneously with a slightly putrid odor, or just before; with cul-

tures of *A. metalcaligenes*, small gelatinous areas were the first evidence of defect.

The experimental cheese was prepared as described above because large curd particles proved difficult to adjust to the desired pH values with accuracy. This procedure may have influenced the time required for defects to develop, for the resulting particles were considerably smaller than those of country-style cheese. It also is possible that storage life was influenced by the numbers of bacteria in the inocula. Davis and Babel (2) demonstrated with cultures of the genus *Aerobacter* that large initial numbers of bacteria produce a defect sooner than smaller numbers at 21° C. In the present experiments the numbers of bacteria were greater than those expected in freshly-made cottage cheese.

The results in Table 1 show that the lower pH values and storage temperatures retarded the appearance of typical defects but did not prevent them. Cultures of *P. fragi* and one culture of *A. metalcaligenes* were retarded by low pH to a slightly greater extent than was the culture of *P. viscosa*. Data are not available to show whether or

TABLE 1—INFLUENCE OF TEMPERATURE AND INITIAL pH ON THE PRODUCTION OF DEFECTS IN COTTAGE CHEESE BY *Pseudomonas fragi*, *Pseudomonas viscosa* AND *Alcaligenes metalcaligenes*

Culture	Minimum number of days required for development of defective odor or appearance at:				
	pH 4.6	pH 4.8	pH 5.0	pH 5.2	pH 5.4
Storage temperature of 15° C.					
<i>P. fragi</i> A	7	4	4	3	3
<i>P. fragi</i> B	6	4	4	3	3
<i>P. fragi</i> C	5	4	3	3	3
<i>P. fragi</i> D	5	4	3	3	3
<i>P. viscosa</i>	5	4	3	3	3
<i>A. metalcaligenes</i>	5	4	4	3	3
Storage temperature of 10° C.					
<i>P. fragi</i> A	12	8	7	4	4
<i>P. fragi</i> B	9	7	6	4	4
<i>P. fragi</i> C	—	—	—	—	—
<i>P. fragi</i> D	8	6	5	4	4
<i>P. viscosa</i>	8	6	5	5	5
<i>A. metalcaligenes</i>	7	6	6	5	5
Storage temperature of 3.5° C.					
<i>P. fragi</i> A	16	11	9	8	8
<i>P. fragi</i> B	21	17	10	11	10
<i>P. fragi</i> C	18	14	13	12	12
<i>P. fragi</i> D	17	15	10	10	10
<i>P. viscosa</i>	16	13	12	12	12
<i>A. metalcaligenes</i>	18	16	13	13	13

not pH increased during the time required for defects to develop. Relative to this point, Davis and Babel (2) reported that some unidentified species of five genera caused surface spoilage at pH 4.75. They found that inoculated cottage cheese samples held at 4.4° C. showed little change in pH; samples held at 10° C. showed no change or an increase in pH; and all samples held at 21° C. showed an increase in pH.

The data indicate that low temperature is very important as a means of retarding the production of defects by the species of bacteria studied. The development of defective odor or appearance required longer storage periods at 10° than at 15° C. and considerably longer storage periods at 3.5° C. Of the three species studied, *P. fragi* was retarded least by the lower temperatures. However, under the experimental conditions only one culture of *P. fragi* produced defective cheese in less than 10 days at 3.5° C., even at initial pH values above 5.0. Obviously a considerable advantage may be gained by careful maintenance of low temperature as early as possible during the processing of cottage cheese curd and during storage of the finished product.

Use of violet red bile agar for routine enumeration of bacteria. Bacteria in products from a plant experiencing difficulty with fruity cheese were enumerated by means of violet red bile agar, with an incubation period of 48 hours at 25° C. The creaming mixture and

the finished product contained large numbers of bacteria from which cultures of *P. fragi* were easily isolated. Contamination of the creaming mixtures proved to be the result of inadequate sanitation of cans. Subsequent enumeration on violet red bile agar was practiced routinely. Counts on creaming mixtures and cottage cheese normally were very low, but in a few instances large numbers of bacteria warned of unsanitary practices.

Counts at about 10-day intervals on the plant water, obtained from two wells about 350 ft. deep and stored in a metal tank, eliminated the possibility that seasonal variations caused differences in the numbers of bacteria capable of forming colonies on violet red bile agar. The average count for 36 samples was eight colonies per milliliter.

SUMMARY

Prolonged incubation permitted cultures of *Pseudomonas fragi*, *Pseudomonas viscosa*, and *Alcaligenes metalcaligenes* to cause surface spoilage of cottage cheese at initial pH values as low as 4.6 and at temperatures as low as 3.5° C. The defects developed slowly at low pH values and very slowly at 3.5° C. Low initial pH values did not retard *P. viscosa* quite as much as they retarded *P. fragi* and *A. metalcaligenes*; low temperatures did not retard *P. fragi* quite as much as they retarded the other two species.

The defect most commonly found to limit the storage life of com-

mercial cottage cheese in this locality was fruitiness, caused by growth of *P. fragi*. Other species of bacteria were found to cause surface spoilage, but they were not isolated from the samples of cottage cheese examined.

Violet red bile agar was found satisfactory for enumeration of *P. fragi*, *P. viscosa*, and *A. metalcaligenes*. Subsurface colonies formed by these species in 48 hours at 25° C. were round to elliptical, usually 0.5 mm. or less in diameter, and reddish purple to greyish purple with grey edges. Enumeration of bacteria with violet red bile agar was found helpful in the prevention and control of surface spoilage.

ACKNOWLEDGMENT

This study was supported in part by funds from the California Dairy Industry Advisory Board. The author wishes to acknowledge the assistance of Dr. P. R. Elliker, Oregon State College, and Dr. M. P. Starr, University of California, Davis, who kindly furnished certain cultures of bacteria.

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NOTICE TO MEMBERS OF IAMFS

Please, notice letter by H. L. Templeton, Chairman, Membership Committee, on page XV, please, fill out questionnaire (page XVI) promptly and mail as directed.

FORTY-SECOND ANNUAL MEETING

HOTEL BON AIR — AUGUSTA, GEORGIA, OCTOBER 4 - 6, 1955

SHELLFISH AND SANITATION¹

HAROLD F. UDELL

*New York State Conservation Dept., Bureau of Marine Fisheries
Freeport, Long Island, New York*

Historically, shellfish have been important to the economy of many peoples of the world. Since the days of antiquity a significant number of the population of costal regions have depended upon shellfish to make up a part of their diet. The records of the Roman Legions indicate oysters from Italian waters were relished by epicurians of the day, and a critical comparison was made between native oysters and those from British waters. During early colonial days oysters and clams were harvested in great numbers not only for food but for use as fertilizer and lime to enrich the land.

In modern times molluscan shellfish have been utilized exclusively as food. Oysters, clams and mussels are extremely nutritious, being rich in minerals and glycogen. Oysters, especially, have a high protein value and are rich in all minerals ordinarily required in the human diet. Thus, it may be said that these shellfish in addition to being relished by fastidious diners, fill important requirements of the human diet. As might be expected, the demand for shellfish has increased steadily so that at present the supply barely satisfies the demand.

The molluscan shellfish such as oysters, clams and mussels grow in salt water usually in embayments fairly close to shore. They obtain their food by "pumping" sea water to their gills where microorganisms are filtered out and passed to the mouth for ingestion. The water passes through the gills into water tubes where the oxygen is utilized for respiration. Thus, any objectionable organism may pass into the stomach with the filtered microorganisms or single bacterial cells may pass through the gill openings into the water tubes.

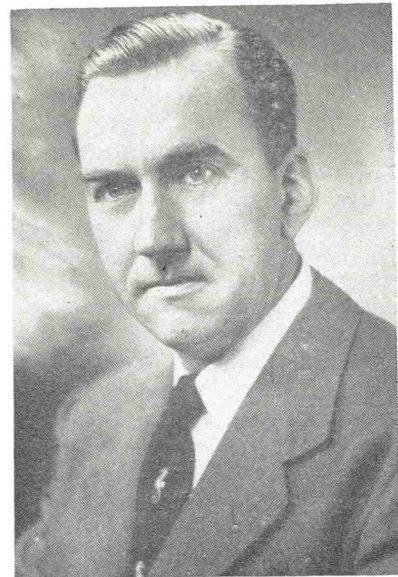
The proximity of the shellfish growing beds to the shore is not accidental. Oysters and some clams

thrive in water having a salinity considerably less than that of the open ocean. Circulation of water is needed as well as an abundant food supply consisting of various microorganisms. Such conditions prevail in bays receiving fresh water flow from rivers.

At this point it becomes obvious that shellfish grown in waters contaminated with sewage are potentially dangerous. Shellfish taken from sewage contaminated waters were suspected of causing illness as early as 1603. However, it was not until about 1890, with the development of knowledge of bacteriology and the connection of bacteria with specific diseases, that water pollution began to be recognized as a health problem. Investigations carried on during the next twenty years indicated some cases of typhoid fever were due to the consumption of polluted shellfish. These findings resulted in the condemnation and abandonment of shellfish beds and oyster floating areas located in polluted creeks and bays.

Typhoid fever of epidemic proportions during 1924 and 1925 in several cities of the United States was attributed to the consumption of polluted shellfish. The incrimination of shellfish as a cause of illness in many people situated in several cities of the country, spelled ruin for the entire shellfish industry.

In order that the extensive shellfish industry might survive adverse publicity resulting from these reported typhoid cases, and regain public confidence, the United States Public Health Service was designated to exercise supervision over the sanitary quality of shellfish shipped in interstate commerce. A system of endorsement of state control measures was developed whereby each shellfish producing state presents a list, to the Public Health Service, of certified dealers in shellfish who it has determined conform to state requirements. Such lists, if the state control measures are acceptable to the Public Health Service, are published semimonthly for the information of the consumer



Mr. Udell formerly a shellfish sanitation consultant of the U. S. Public Health Service, has for the past two years been in charge of the Shellfisheries Management Unit for the State of New York Conservation Department, Bureau of Marine Fisheries. This Unit is concerned with sanitary control of the shellfish industry, propagation and conservation of the shellfisheries. Mr. Udell holds graduate degrees in Sanitation and Marine Biology and in Civil Engineering.

states. To establish the degree of state control deemed essential, the Public Health Service utilizes a "Manual of Recommended Practice for Sanitary Control of the Shellfish Industry" which outlines minimum requirements for endorsement of state shellfish control measures and certification of shippers in interstate commerce. It should be noted that the system of endorsement of state control measures by the Public Health Service does not in itself have legal status. The individual states enter into the shellfish certification program supervised by the Public Health Service voluntarily. In entering into this cooperative control the state, the industry and the Public Health Service are each responsible for certain procedures. The state shellfish regulatory authorities enact laws and promulgate rules and regulations which must be followed by the industry. The industry

¹Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Atlantic City, New Jersey, October 21-23, 1954.

carries out the state requirements. The Public Health Service evaluates compliance by the states with the requirements outlined in the "Manual of Recommended Practice for Sanitary Control of the Shellfish Industry" and bases its endorsement or withdrawal of endorsement of state control measures upon the adequacy of this compliance. In as much as only certified shellfish may be handled by dealers in states embracing the shellfish certification program, dealers of states not participating in the program are not considered to be certified and their product will not be acceptable in states receiving Public Health Service endorsement.

Until recent years the theory of control at the source was thought to provide adequate protection to the ultimate consumer. Such reasoning was acceptable because little if any packing or repacking of shellfish was carried on in receiving states. With the expansion of transportation facilities by refrigerated trucks the situation has changed.

Repacking of fresh oysters from gallon size containers received from a shellfish producer-packer by various establishments in inland states has added to the complexity of shell fish sanitation. This repacking whether for producing small containers of fresh shellfish, breaded frozen oysters, frozen oyster stew, frozen clam chowder or other products, when accomplished at the source is under strict supervision of representatives of shellfish regulatory authorities. Processing plants and equipment are constructed and maintained to meet specific sanitary requirements. The products are packed and/or frozen in compliance with certain requirements using proper equipment and approved containers. The most important feature of packing and repacking or processing at the source is that only certified shell-

fish will be handled for interstate shipments. This also will be true of intrastate shipments in states receiving endorsement of their shellfish program by the Public Health Service.

The practice of repacking shellfish especially as breaded frozen oysters is increasing in the inland cities. This operation may be carried on without adequate supervision by state agencies and therefore without adequate sanitary control. In states neither possessing laws nor machinery to prohibit the entrance and sale of non-certified shellfish, there exists a grave danger to the consuming public.

As previously indicated it is absolutely essential that only shellfish grown and harvested from areas approved by state shellfish regulatory authorities are utilized for food purposes. The use of the Public Health Service list of certified shellfish shippers furnishes this information, as every package of shellfish processed by a certified packer must have the certificate number and state abbreviation permanently recorded on the container.

The multiplication of bacteria introduced by multiple handling must be controlled. In breeding oysters the control of bacteria in the finished product is a matter of proper handling, clean equipment, and adequate refrigeration. Experience has shown that adequate inspectional services are necessary to continually produce a finished product that will be safe, wholesome, and free from spoilage. Such inspectional service must be an integral part of a well planned program formulated for the protection of the health of the ultimate consumer.

In New York State all matters pertaining to management, production, harvesting, processing and distribution of shell fish is the responsibility of the State of New

York Conservation Department. The Sanitation Unit of the Department operates a well developed program for the sanitary control of the shellfish industry and management of the shellfisheries. A completely equipped laboratory and a survey boat are utilized for sanitary and bacteriological studies of approximately 315,000 acres of marine waters. The compliance of the industry with sanitary requirements is constantly checked through the State Shellfish Laboratory. Studies and investigations concerned with the microbiology of shellfish and operations of the industry are also carried on in this laboratory. A trained staff of sanitary engineers, bacteriologists, chemists, biologists, and assistants are constantly working to assure the consumer of New York State shellfish products of receiving the ultimate in quality and wholesomeness.

Unless some unforeseen situation arises the shellfish leaving New York State certified establishments are safe and wholesome. If these shellfish are not removed from the original containers and if they are properly refrigerated they should remain in excellent condition for about two weeks. What happens if the conditions are reversed; if adequate and continuous refrigeration is not maintained; if the shellfish are rehandled many times, and in addition to improper handling, are dipped in batter, breaded and frozen? As indicated previously repacking and breeding operations must be carried on under controlled conditions to reduce bacterial multiplication to a minimum, without control of such operations by a responsible state agency, adequate protection may not be afforded the ultimate consumer.

FUTURE TRENDS IN THE MILK AND FOOD INDUSTRY

Continued from Page 167

milk sheds were detailed to the nth degree. Published only a year ago its influence upon practices naturally can not yet be measured.

As we attempt to gauge some of the things which the future may

unfold, may I express to you an urge that you give every consideration to the fundamentals which came out of this study. They can be used to improve many milk supplies, to reduce the cost of and compliance with inspection, to bring about more uniformity in requirements and, I believe, to

avoid just such misunderstandings as have now brought on another investigation. The latter is significant in the all important role of developing ever greater public confidence in the product and consequent large consumption — so important to public health, good nutrition and farm income.

DISHWASHING MACHINES

PERFORMANCE STANDARDS — TESTING AND FIELD OBSERVATIONS¹

JACK McALLISTER

*National Sanitation Foundation Testing Laboratory, Inc.
University of Michigan, Ann Arbor, Michigan*

The popular appeal of good eating establishments, and the vast number of dishes resulting from mass feeding, and the ever-increasing difficulty in securing help willing to wash dishes by hand, served to stimulate the inventions and development of dishwashing machines. Dishwashing machines in the earlier years had the fundamentals of present-day machines and served the practical purpose of turning out clean dishes with a minimum of help. Recently, the opinions of public health officials and the restaurant and hotel operators were solicited as to what constitutes good sanitation in the dishwashing field. Kitchen sanitation and especially clean eating utensils headed the list. Since then manufacturers of dishwashing machines have instructed their engineers to keep sanitation foremost in their minds in the development and construction of new models.

The long experience of manufacturers of dishwashing machines made them quick to see the importance of standardizing the essential factors of mechanical dishwashing such as time, temperature, volume of water, pressure, spray pattern, size of equipment, and the necessity for making the operation easy and as nearly fool-proof as possible. With these thoughts in mind the development of National Sanitation Foundation Spray-Type Dishwashing Machines Standard No. 3 was prepared.

The following discussion will cover the single tank door type machine and the two tank conveyor type dishwashing machine which are commonly used.

Wash cycles for a single tank stationary rack, hood, curtain and door types are different for each size rack used. But the minimum temperatures of 140° to 160° F. is

specified and the minimum time required for the water to be pumped over the dishes is 40 seconds. The easiest way to compute the water needed for a particular sized rack is to multiply the rack's length by the width times 0.23. (Example: 20" x 20" = 400 sq. in. x .23 gal/sq. in. = 92 gal. rack) This figure then gives you a rough approximation of water which will fall on each rack of dishes. As an example the minimum requirement for the 20", the 18" and the 16" rack is .23 gallons for every square inch; or 92 gallons for a 20" x 20" rack, 75 gallons for a 18" x 18" rack, and 60 gallons for a 16" x 16" rack. During this discussion we must keep in mind the fact that each pump delivery capacity is rated to deliver so many gallons per minute. If the pump capacity is below a certain minimum, the wash time may be increased as necessary to deliver the required number of gallons over each rack of dishes.

In checking the pump capacities it is generally found that the pump capacities exceed the minimum requirements to deliver the wash water volumes per rack calculated as stated above. In all cases the pressure of the wash water had a cutting velocity. The jet velocity must be just under that which will dislodge standard restaurant coffee cups from the dish rack (usually about 3 to 4 pounds per square inch at the nozzle).

For the final rinse, on single tank machines the time interval is 10 seconds, in which $\frac{3}{4}$ gallons of water shall be uniformly sprayed over each 100 square inches. For example the 20" x 20" rack will receive a minimum of 1½ gallons, the 18" x 18" rack will receive a minimum of 1¼ gallons and the 16" x 16" rack will receive a minimum of 1 gallon of hot water at not less than 180° F. The temperature will be registered at the entrance to the rinse manifold and a flow pressure of not less than 15 pounds per



Mr. McAllister received the B.S. degree in Public Health from Indiana University in 1945 and the M.P.H. degree from the University of Michigan in 1952. He was appointed to the staff of the National Sanitation Foundation Testing Laboratory in 1953 where he now serves as a field Representative.

square inch on the line adjacent to the machine and not less than 10 pounds per square inch at the rinse nozzle is required. (The effects of high pressure above 30 pounds per square inch atomizes the rinse which reduces temperature and general effectiveness of rinse).

For the manually operated machines there shall be a legible plate giving the minimum wash and rinse times of 40 sec. wash—10 sec. rinse. Automatic controlled wash and rinse cycles shall comply with the minimum requirements.

For the wash cycle on multiple tank conveyor types having dishes inclined on a conveyor or in a rack they shall be so constructed that each lineal inch of conveyor belt shall be effectively sprayed from above and below with not less than 1.65 gallons (for a 20" x 20" rack) of pumped wash water at 140° to 160° F. A minimum of seven seconds is required for a given point to traverse the wash spray area. The pump must have a minimum capacity of 125 gallons per minute. Pressure at the nozzles shall be sufficient to deliver the wash water to

¹Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Atlantic City, New Jersey, October 21-23, 1954.

all portions of the dishes with a cutting velocity. There shall be an adjustable device for automatically adding made-up water in sufficient quantity to skim off any grease which may be present. To measure the time, the following formula should be used:

$$\text{Time} = \frac{\text{Effective spread (of arm) in inches (measured)}}{\text{Conveyor speed inches per second (timed)}}$$

The formula for measuring gallons per inch is:

$$\frac{\text{Gallons per sec. x time in sec.}}{\text{Spread in inches (effective spray area in direction of travel)}}$$

The recirculated rinse requirements shall be the same as that of the wash tank with the exception of the water temperature which shall be 170° F. or more.

The final rinse temperature shall be not less than 180° F. at the manifold entrance. Flow shall not be less than 4 gallons per minute at not less than 15 pounds nor more than 30 pounds per square inch at the machine and not less than 10 pounds per square inch at the rinse nozzle.

One of the most important factors for proper dishwashing procedures is to have an adequate supply of hot water with the proper line pressure. The dishwashing machine can have the National Sanitation Foundation seal of approval, but if it does not have adequate hot water and pressure the machine cannot clean dishes. It is one of the main responsibilities of the local sanitarian, and also an important function of distributors of dishwashing machines, to see that all new dishwashers are properly installed. I cannot over-emphasize the point that *personal* or *unnecessary requirements* should not be added to the existing requirement. If deficiencies in the Standard are found they should be taken up with your Committee for consideration in revising the Standard.

To determine compliance with Standard No. 3, performance tests were conducted in the plants of twelve manufacturers on 228 models. In addition to the perfor-

mance tests, compliance with materials, design and construction were checked.

Our primary concern in testing dishwashing machines was to determine whether or not the machine washed dishes. We were able to do this with a standard soiled dish which was subjected to the prescribed detergent and hot water and then analyzed for per cent soil removal. By this method we were able to determine coverage of wash and rinse sprays. In determining volume of wash water delivered, a flow meter was installed in the wash tank. This volume was checked by means of a pressure meter attached to the pump discharge. The pressure reading was referred to pump discharge curves from which the gallons pumped per minute could be read directly. These tables and our actual pump readings were almost identical (confirming accuracy of pump manufacturers' discharge curves). By use of a stop watch, conveyor speeds were checked, and wash and rinse cycles were determined. The volume of final rinse water was measured by collecting the entire supply of rinse water for a period of ten seconds. This volume then could be related to the timed requirements for the particular model tested. In testing we checked the accuracy of temperature gauges by means of a recording potentiometer. Gauges which varied more than $\pm 2^\circ$ F. were not accepted. All manufacturers were advised to have gauges standardized with $\pm 2^\circ$ F. before installing on models bearing the National Sanitation Foundation seal of approval.

During the development of the standards there was some discussion about the temperature increases of china which occur during a normal wash and rinse cycle. By using thermocouples we were able to obtain a new temperature picture. A standard dinner plate was used and a hole was drilled from the back, until it was just under the surface of the glaze. On another plate a thermocouple was placed on the outside of the plate and another thermocouple was located in the wash tank, and another in the final rinse manifold. All of these readings were then recorded simultaneously so that we

could tell where the temperature increases occurred, and at what time interval. These results together with similar data from studies with utensils, are being analyzed and will be available for distribution in the near future. We now can state that the temperatures of the surface of the plate will vary from two to fifteen degrees from that of the glaze under the surface, and that the glaze temperature will vary from three to thirty degrees from the highest temperature of the water used during the wash and rinse cycles of machines tested. One of the greatest influences on temperature is the time of the complete operation. The interesting fact is that china dishes which have reached the temperature giving heat treatment equivalent to pasteurization, will retain that heat for 10 to 15 seconds after the rack is removed from the washing machine.

In checking dishwashing machines various deficiencies were disclosed. We now can state that in every instance the manufacturer has made the necessary changes to comply with the standards. Several manufacturers have completely redesigned their pumps and spray systems to meet the requirements; others made major changes in the spray systems to obtain better and proper distribution of water upon dishes. Some are still re-designing and making changes in certain models before they can affix the National Sanitation Foundation seal of approval.

The Testing Laboratory has published an "official listing" showing names and addresses of manufacturers whose equipment has been found to comply with the standards including the model numbers of machines. The "official listings" are re-issued annually following the re-examination of equipment at the approved plants. These listings have been sent out to all health departments. If you have not received your copy one may be requested from the National Sanitation Foundation.

The National Sanitation Foundation testing program now is a reality. This program does not in any way restrict or limit any responsibility of the local Sanitarian for

Continued on Page 178

GENERALIZED MILK AND FOOD SANITATION¹

P. W. PURDOM

Department of Public Health, Philadelphia, Pennsylvania

Reorganization of the Philadelphia city government resulting from adoption of the Home Rule Charter in 1951 is an old story. Most people who have followed affairs in Philadelphia are familiar with the upsurge of public opinion that preceded this action. Included in the reorganization program was a drastic reorganization of the Department of Public Health.

REORGANIZATION OF SANITATION SERVICES

Plumbing and housing sanitation were combined with building inspection services in the newly created Department of Licenses and Inspections, along with all licensing functions. The remaining sanitation activities were co-ordinated in a single Division of Environmental Sanitation. Additional programs were developed as needed to fulfill obligations under the Charter for "... air, water, food and drugs, health hazards, the pursuit of occupations affecting the public health, and pests, including animal, insect and plant-life."

To plan and direct programs, a corps of specialized professional engineers, sanitarians, entomologists and veterinarians were assembled in the central office. This staff, also, constituted an immediate source of technical consultation within the Division for the Department, as well as for other city agencies.

Natural functional relationships guided the realignment of services into groupings composing Sections and Units. To provide increased emphasis for animal disease control, veterinary services (including meat inspection) were established in a new Public Health Veterinary Medicine Section. Milk and food activities were combined with restaurant inspection to form the Milk and Food Sanitation Section.

To supervise local programs of swimming pool, private water supply and community sanitation and

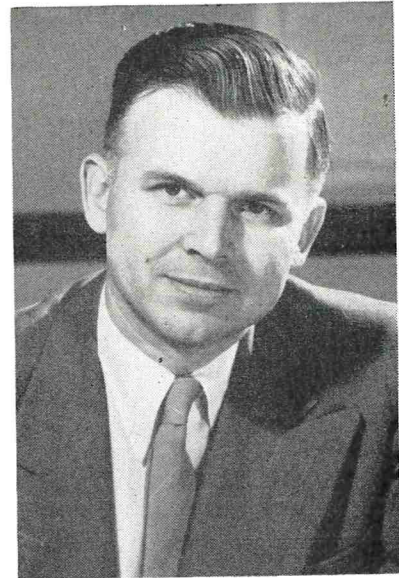
to supply consultative service related to public health engineering and vector control, an Environmental Health Section was created. A Housing Hygiene Section was charged with evaluation and investigation of housing conditions related to public health and development of a home accident prevention program.

Surprisingly perhaps, this reorganization provided for the first time in the Philadelphia Department of Public Health an Industrial Sanitation Section concerned with both industrial hygiene and radiological health. Another innovation was the creation of a Training Section to inaugurate an in-service training program for the staff of the Division, conduct independent program evaluation, and assist in the development of community interest in environmental sanitation program objectives.

Recently, air pollution control has been added to the functions of this division. This section is responsible for smoke, odor, dust, and other air pollution control measures.

Prior to this reorganization, all field personnel activities were based from a central office with very loose contact and supervision. Problems of travel, communication, and administration led to the logical establishment of five sanitation districts of about 400,000 population each. All field operations were transferred to these offices under the direct supervision of a district sanitation supervisor. The district sanitation supervisor receives instructions and requests advice directly from the central office. The central office insists that the city-wide program be adhered to closely in each district.

Field personnel formerly maintained contact with the central office by telephone once or twice a day. With their transfer to district offices, the sanitarians report to the office for 30 minutes each morning. During this time, they plan a work schedule for the day, secure information from the files on previous visits, and confer with the District



Mr. P. W. Purdom received the B.S. degree in Civil Engineering from the Georgia Institute of Technology in 1937 and the M.S. degree in Sanitary Engineering from the University of Michigan in 1951. Mr. Purdom has had wide experience in public health work serving with the U. S. Public Health Service, the Knoxville Bureau of Health, the Georgia Department of Public Health, and the Tennessee Department of Public Health. He has been active in several professional societies and committees. His current position is Director of the Division of Air Pollution Control and Environmental Sanitation, Philadelphia Department of Public Health.

supervisor for general or specific directions. Before leaving the office, they indicate where they can be reached at 11:00 A.M., 1:00 P.M., and 3:00 P.M. in case an emergency arises. In the evening, personnel return to the district offices a few minutes before the end of the work day to complete daily reports and review events with the supervisor.

This move was not well received at first. However, as the sanitarians became more familiar with their territories, planning their work and completing the work schedule for the day was less of a chore. The system has proved its value on many occasions when unforeseen emergencies made quick contact essential. It is also an automatic work organizer. In this respect, the system has been instrumental in training employees to develop

¹Presented at the Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Atlantic City, New Jersey, October 21-23, 1954.

good work habits. When the personnel observed that there was real value in this system and that it was not just a means to check up on them, their discontent diminished.

GENERALIZED INSPECTION

Of possibly more direct concern to milk and food sanitarians, however, is the basic change in inspection services to a generalized program. Therefore, the remainder of this discussion will relate to that subject.

Prior to reorganization in 1953, sanitation services were performed by several specialized units — each with its own staff of inspectors and functioning without relation to other activities.

These were:

1. Food 21 inspectors
2. Restaurant 12 inspectors
3. Milk 4 inspectors
4. Barber Shop... 3 inspectors

It was necessary for as many as three different inspectors from separate units to visit a restaurant to accomplish all of the work of the Department. This led to overlapping territories, confusion of the public, and inflexible, cumbersome administration.

To us, the solution lay in generalizing inspection. This is not an idea original with Philadelphia; although, Philadelphia has, perhaps, actually put the practice into use to a much greater extent than most major metropolitan health jurisdictions. In 1949, the Conference of Municipal Public Health Engineers' Committee on Sanitation Division Organization advocated generalized sanitation inspection. For years, minimum health units employing only one sanitarian or sanitary engineer have been forced by necessity to conduct a generalized program. This has not been a deterrent to prevent many of these departments from making outstanding progress under trying circumstances.

Obvious advantages of generalization are:

- (1) Duplication of inspection areas is eliminated.
- (2) Reduced area permits better follow-up on violators.
- (3) Less time of travel between establishments.
- (4) One inspector performs complete job in establishment visited.
- (5) General experience develops better personnel for advancement to administrative positions.

(6) Generalized personnel permit more flexible administration in relation to job assignment and program emphasis.

Primary limitation on a generalized program is the ability of an individual to attain proficiency in a number of activities. It was decided that this was practical; provided, that there was a readily available corps of specialists in the central office, that close supervision was exercised through the district offices, and that a continuing training and evaluation program was conducted.

Thus, Philadelphia embarked on a total program for environmental sanitation. Each phase of activity was coordinated with other activities. Most advantageous, however, was the fact that this approach permitted our staff to attack each problem as a team. It meant that we could use the collective talents of all our staff — our engineers, sanitarians, veterinarians, and entomologists — on any problem.

Because of Philadelphia civil service requirements, a complete new series of job classifications had to be approved. The work previously performed by the various inspector groups was included in the job description of a new class called Sanitarian Aide, with some general sanitation duties added.

Since the position required more knowledge and had greater responsibility, a higher pay range was assigned to the job. This also meant that the former inspectors could attain qualification only by examination. To protect their tenure, it was agreed to hold examinations for Sanitarian Aide on a promotional basis only.

To assist in making the transition, the Division inaugurated an in-service training program. Ten to fourteen inspectors at a time were detached from their duty for a period of eleven weeks, and while at full pay they attended one of three training courses during normal working hours. This program covered elementary arithmetic, chemistry, and bacteriology, current practices in water supply, sewage treatment, vector control, and milk and food sanitation; and to a lesser degree the public health

aspects of housing hygiene, accident prevention, heating and ventilation, air pollution, school sanitation, noxious weed control, radiological hazards, and other general sanitation subjects. A training committee with representation from the inspectors, as well as technicians helped plan the course. The material was presented in accordance with the average educational level — about 2 years of high school. This training was followed by a period of supervised work experience in the new job duties.

The examinations for Sanitarian Aide were scheduled to be held shortly after completion of each of the three sessions. It was further agreed that each inspector, in the event he failed the first examination, would have a second opportunity to qualify after about three months supervised work experience. This resulted in a minimum of dislocation, in fact, most inspectors approached their new Sanitarian Aide jobs with tremendously increased enthusiasm after completion of the training period. Only three former inspectors who participated in the complete training program failed to qualify for the new Sanitarian Aide classification.

According to the new job duties, a sanitarian aide performs routine inspections of restaurants, food stores, meat markets, barber shops, etc. and also collects samples of water, milk, and food for examination.

There is another field job — that of Sanitarian I. Personnel with this classification have the same routine duties plus additional responsibility for a more advanced type of work such as inspection of milk and ice-cream plants, meat and other food processing plants, swimming pools and to assist in industrial hygiene and radiation surveys, etc. This category is intended as an entrance position for the college trained sanitary science or sanitary engineering graduate. It is open, however, to Sanitarian Aides on a competitive basis. Previous to the training courses, none of the inspectors taking the Sanitarian I examination were able to pass; however, five inspectors subsequently have qualified.

All newly appointed Sanitarian I employees are given about two weeks orientation and job instruc-

tion for generalized work, followed by a brief period of field training before assignment. After a short period of general work experience, these sanitarians are provided additional training and experience in more technical jobs. Over a two year period, a Sanitarian I will receive experience in milk, food, housing, industrial hygiene, pest control, swimming pools, and other activities.

Plans to train large numbers of personnel in both food and restaurant inspection and milk and milk plant inspection have evoked considerable interest. Heretofore, many jurisdictions, particularly the larger cities, have considered each a specialty in which proficiency is not readily obtained. Selecting five Sanitarians I at a time — one from each district — they have been trained in a period of six weeks to begin routine milk sanitation work. Of course, training must be continued on-the-job. In Philadelphia, the local health department inspects each milk and ice cream plant. There is an industry system for inspecting dairy farms; however, the health department will guide this work through sample surveys. After training, the Sanitarian I is able to perform the routine inspections and also perform the various tests normally made to check high temperature-short time equipment. This does not mean that he is a specialist that can handle all milk problems, but such competency to a practical extent is quickly available in the central office. Ten field personnel and supervisors have al-

ready been trained in this manner. It is intended ultimately to train about 25 sanitarians to do all types of food and milk work. In addition, they will be instructed in other sanitation activities.

Generalization will be practiced to the greatest extent feasible. It is possible, however, that engineering graduates will be utilized to a greater extent on industrial hygiene, radiation hazards, and water and waste problems.

PROFESSIONAL RECOGNITION

While many benefits have accrued to the Department from this reorganization and generalization, the personnel have not been without reward. Where else can a young graduate enter the field of Public Health and receive training and experience in all phases of environmental sanitation?

The Department will ultimately reap this benefit by developing supervisors with broad experience.

Admittedly, this system requires greater effort by the employee to maintain proficiency in a number of activities. This has been recognized by establishing a higher pay scale than previously set for inspectors.

For many years, sanitarians have strived to receive professional recognition similar to that accorded physicians and engineers. One does not attain professional stature through desire alone. While activities were confined to narrow specialties, only high school education and two years limited experience were required for appointment. When duties were broaden-

ed, the minimum requirements were advanced to require professional training in sanitary science or engineering or their equivalents. The result was the unusual classification of engineers and sanitarians at the same professional level and the establishment of identical salaries for comparable responsibilities.

Thus by requiring professional qualifications and by demanding professional ability and job performance, professional status was awarded without question.

SUMMARY

In conclusion, the recent reorganization of the city government in Philadelphia has afforded an unusual opportunity to observe the effects of a complete revamping of environmental sanitation services in a comparatively short period of time. On the basis of the limited experience to date, these statements can be verified:

1. A generalized inspection program is practical to an extent greater than practiced in many areas.
2. Personnel with limited education can, through in-service training, improve job performance and perform many generalized inspection duties.
3. Personnel with professional education and training in sanitary science can satisfactorily perform a variety of sanitation inspections, including both food and milk.
4. Professional status as a sanitarian is recognized when there exists professional training, a broad sphere of technical interest and responsibility, and ability to do a professional job.

DISHWASHING MACHINES

Continued from Page 175

checking equipment in the field, or seeing that it is properly installed, maintained or operated. The "ap-

proval program" does aid in making available equipment that will do a satisfactory sanitation job if it is properly installed and operated. We believe the Sanitarian can feel confident that when a dishwashing

machine bearing the National Sanitation Foundation seal of approval is purchased, the cleaning function will be accomplished if the equipment is properly installed, maintained and operated.

THE OBJECTIVES AND PURPOSE OF THE NATIONAL CONFERENCE ON INTERSTATE MILK SHIPMENTS¹

D. B. WHITEHEAD

Mississippi State Board of Health, Jackson, Mississippi

The slogan adopted by the National Conference on Interstate Milk Shipments is "The Best Possible Milk Supply for All The People". This slogan expresses very simply the results hoped for if the objectives and purpose of the Conference are realized. The National Conference on Interstate Milk Shipments was a natural outgrowth of circumstances and necessity. The milk industry in the United States was slowly being bottled up and restricted to relatively small and limited trade areas by sectional complacency and differences of ideas.

The sanitary quality of milk shipped interstate, as well as intrastate, varied considerably, and I believe I can say truthfully was of considerable concern to both the receiving areas as well as the responsible department supervising these supplies in the producing areas. There had been from time to time attempts on a limited interstate basis to reconcile differences in laws and codes that tended to set up interstate barriers, but the lack of a uniform approach to this problem made it exceedingly difficult to accomplish very much on a nationwide basis.

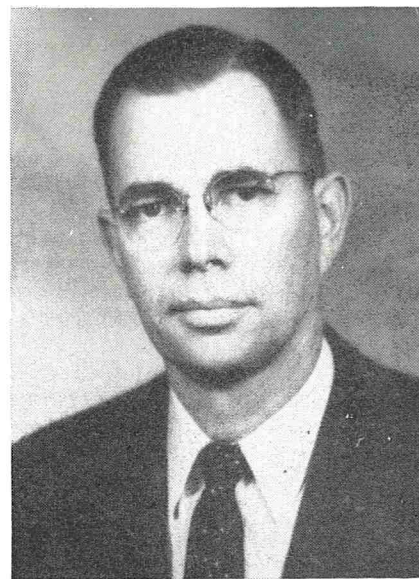
As a result there developed considerable misgiving and apprehension, particularly in the receiving areas, as to what kind of milk they would get when it was necessary to import milk. Ignorance also played a part in the problem; for example, since I did not know how the milk supply in Wisconsin was supervised I had natural misgivings. Today that is not so! In some regions a high percentage of milk processed the year round is received as interstate milk. In some of the states a high percentage of import is required only during a relatively short period of emergency.

Many of the receiving areas have insisted on making personal inspec-

tions of all milk supplies coming into their state, or city, or area of supervision. This, of course, is costly, multiplies inspection problems and naturally creates some personal problems between the two inspecting agencies. Also, in some instances the receiving areas were obliged to do their own inspecting because there was no proper supervision by the producing area. Unfortunately, in a few cases the regulatory agency used their regulations as a means of restricting the flow of milk into their areas and thus it constituted in itself a trade barrier. For the most part, however, the supervisors in the receiving area were merely trying to "get the facts" and assure an acceptable milk supply for its population.

There had been numerous requests following the war to do something about this situation in a way that would be agreeable, economical and afford free distribution of high quality milk. The level of supply in all areas then could be maintained on a satisfactory consumer level without the usual confusion in securing good milk equal in quality to the normal supply for areas during seasonal shortages. It was felt that a proper solution would afford an acceptable quality of milk for all and would permit greater utilization of the milk supplies available throughout the country and would also materially increase the incentive for greater production of really high quality milk. Due to the more economical administration of interstate traffic of milk, it would reduce the actual cost of the supervision as well as reducing the complexity of maintaining satisfactory supervision of interstate milk supplies. This being done the necessary confidence would be afforded to provide a good working agreement between the States.

As a result of these conditions and this thinking a request was made, in 1946, by the Conference of State and Territorial Health Officers to the Public Health Service requesting that some sort of a



Richard B. Whitehead received the B. S. degree in Agriculture in 1935 and the M. S. degree in Bacteriology in 1946 from the University of Missouri. The following five years he spent with industry in milk and ice cream plants. Since 1940, with the exception of a four year period in the Armed Forces, he has been employed by the Mississippi State Board of Health and now is Supervisor of Food and Milk Control, Division of Sanitary Engineering.

plan be devised that would facilitate certification of interstate milk supplies. This same year there was a plan outlined by the Public Health Service which was submitted to the various States and local milk control authorities. In 1949 a further request by the State and Territorial Health Officers was made to the Public Health Service to assist the States in developing some working agreements. Many States that had been successful in developing individual interstate agreements also requested further assistance from the Public Health Service to expand these agreements in order to cover emergency shipments of milk and to assist them in the seasonal periods when local shortages were experienced.

Late in 1949 and the early part of 1950 several small conferences were held, the result of these con-

¹Presented at the 41st Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Atlantic City, New Jersey, October 21-23, 1954.

ferences being the first meeting of the National Conference on Interstate Milk Shipments which was held in St. Louis in June of 1950.

The work of this Conference as an organization has been successful because there was a real need for its existence.

In order to expedite proceedings and to make possible the proper consideration, discussion and presentation of all the problems involved, the entire Conference was divided into discussion groups. There were seven primary groups. Each group was responsible for a complete exploration and recommendation for the subject assigned. These discussions covered Certification, Supervision, Laboratory, Education, Promotion of Interstate Program, Manufactured Milk Products, and Channels and Forms for Reporting.

Participation in the Conference included representatives from universities and colleges, Army, Navy, Air Corps, U. S. Department of Agriculture, Milk Industry Foundation, Council of State Governments, allied Industry Associations, Industry, State Departments of Agriculture, local and State Health Departments, local control agencies other than Agriculture or Health, and the U. S. Public Health Service.

Through this system of task forces, the problems and proposed solutions were brought before the Conference as a whole for consideration, modification, rejection or acceptance as a possible means of bringing into reality a free flow of high quality milk to all parts of the United States without restrictions, so long as the actual sanitary quality of the milk supply and the standard of supervision was on a basis acceptable under standards equivalent to Grade A for milk and milk products.

Since it is the only widely adopted standard, the U. S. Public Health Service Standard Milk Ordinance and Code and the U. S. Public Health Service sanitation rating methods were adopted as basic standards by the Conference. There is no intention by the conference, implied or directed, to indicate that the U. S. Public Health Service Code is perfect; but it is a good standard and if properly enforced will assure the quality of milk and milk products desired.

Based on the conclusions and recommendations of this 1950 Conference the objectives and purpose of the Conference were outlined and brought into focus, so to speak. The result of the work of this Conference, I am sure, opened the eyes of many regulatory people to their many shortcomings, as well as pointing out their assets, and pointed toward the need of doing a better and more cooperative job all the way down the line. As a receiving State it meant that if we were to demand milk of the proper quality when it came into our State we would most assuredly, unless we had no conscience or sense of responsibility, have to *put* as well as *keep* our own "house" in order.

As a shipping State it focused attention on the absolute necessity that all Certifications must be as complete as records permitted and be a true and accurate statement of the milk supply and proficiency of supervision.

There were, however, many problems the solutions for which were somewhat vague and there were some who doubted that the recommendations were such as to make the objectives of the Conference felt in day to day business transactions. But a good foundation had been laid. This foundation meeting, in 1950, reinforced as it was with a sincere purpose and definite need, had caught the interest *in*, and had promoted a better understanding of the magnitude of the problems.

The second conference in 1951 resulted in further consolidation of problems with greater understanding between State control agencies and considerably more confidence was developed between the various sections of the country relative to the type of job that was being done in those areas. Quite naturally the personal association of the individuals responsible for the milk control programs in both the receiving and shipping areas resulted in a better understanding of the individual problems.

Following the 1951 Conference there developed a need for certain certification forms and uniform methods of reporting that would expedite and implement the purpose of the Conference. To me this was the first real sign that

the Conference recommendations were being tried and actually accepted. These forms have been worked out, I think, on a very satisfactory basis.

The 1952 and 1953 Conferences dealt particularly with perfecting the mechanics of carrying out the recommendations of the previous Conferences and in making changes where experience indicated they were desirable.

The foregoing discussion I felt was necessary to give those of you not thoroughly familiar with the Conference activities some background and insight into my following discussion.

The Conference properly viewed is essentially one of planning and coordinating. It is striving to reach sound basic conclusions to be used as *guides* in the organization and administration of State Milk Control Programs that will be in reasonable agreement with one another.

Therefore we see that the purpose of the Conference is to formulate a plan for the control, supervision, and administration of Milk Programs that are adequate, practical, and reasonable and thus provide "The Best Possible Milk Supply for All The People".

This is understandable enough but unattainable in any degree unless certain basic objectives are reached. Very briefly I would like to point out what I consider the basic ones.

1. The Certifications and the accompanying survey information should be sufficient for a supervising agency in an importing State to determine the acceptability of a milk supply. For this system employing certifications to be workable, it is imperative that there be established complete confidence in the integrity and honesty of the supervisory agency. At the present time, the success or failure of the Conference rests on the honesty and validity of the information supplied by the responsible agency in the producing State. If the responsible certifying agency in the producing State will supply information honestly and as promptly as circumstances permit, leaving the decision of accepting or rejecting a supply up to the importing State, I feel sure that the proper consideration will be given and

there will develop mutual respect so important in these matters.

The U. S. Public Health Service surveys are made only on request by the States. Since the Survey Ratings play so important a part in establishing acceptability of supply, the U. S. Public Health Service quite naturally shoulders a major responsibility in training and standardizing the personnel who will be eligible to make official surveys. The proficiency and attitude of survey officers reflects directly on the value of Certifications. Only the best qualified and properly trained men in the State organizations should be considered for survey officers. Standardization of both U. S. Public Health Service as well as state survey officers should assure complete confidence in Survey results.

2. We all know that satisfactory milk supplies cannot be realized without an adequate and efficient system of supervision. There are some differences of opinion as to how much supervision is needed and where it is most important. These differences are not, in my opinion, significant if the minimums of the Standard Milk Ordinance and Code are met. The objective of the Conference in the matter of supervision is to assist all states in putting into effect milk regulations equivalent to the Standard accepted by the Conference and having these regulations properly enforced so that they could supply a satisfactory Certification on its milk supplies needed for interstate shipments.

3. The objectives relative to the laboratory examination of interstate supplies resolved themselves principally to a question of uniformity of procedures and adequacy of equipment used in the *authorized* laboratories. It has been felt that milk shipped interstate should be examined either by Standard Plate Count or by direct microscopic count. This poses a problem in some of the larger producing areas, but nonetheless the objective is a good one and I feel that all who participated in the discussion felt that ultimately this may be accomplished. Due to the difference in various states and municipal laws and codes, departure from old established methods

takes a little time and patience. It is felt by the participants of the Conference that the purpose of the Conference will allow sufficient time for accomplishment of its objectives and overall purpose. These individual circumstances and difficulties due to differences in laws and codes is well understood by all. "Standard Methods" is used as a basis of acceptability relative to laboratory procedure, and if we all meet these standards we can be assured that a good job will be done and that the laboratory results will correctly reflect the bacterial and chemical quality of the milk. Through the system of laboratory certification set up at the Conference, every State can be assured that reasonable and proper examinations are possible if a laboratory surveyed has a satisfactory rating and is so certified. The details of methods of rating and procedures for States requesting certification of their laboratories is fully explained in the summary of the 1953 Conference as reported in the *Journal of Milk and Food Technology*. It is expected that bacteriological and chemical examinations be made at least as frequently as required by the Standard Milk Ordinance.

4. Concerning education, it is hoped that through continuous education relative to the Conference activities and application of purpose will develop a more cooperative endeavor and understanding of mutual problems between milk producers, distributors, and regulatory officials. This program of education is aimed at developing the belief in the minds of milk producers and plant employees that sanitation is essential to the individual as well as the milk industry.

Through education we feel it will be possible to expedite and coordinate the activities of regulatory officials and industry with the requirements and necessities for quality milk production and processing. In order for the purpose and objectives of the Conference to be realized a sound educational objective is necessary. I feel that our objective of attempting to simplify procedures, regulations and methods is gaining ground and that each one who attends the Conference goes away better satisfied and

better informed. We all have a job of putting our best foot forward in order that each one with whom we do business may fully understand our differences in regulation and be willing to compensate for differences that may actually have only a bearing on a local situation.

5. By way of promoting the Interstate Program, the Conference is making every effort to extend to all states the program for cooperation in the regulation of interstate shipments of milk. We feel that states now cooperating will be successful in demonstrating their improvement in quality and more economical administration, in addition to rendering a valuable service to both the shipping and receiving State. Through the personal efforts of the members of the Conference much understanding and good will can be engendered, particularly in those neighboring States which are not now participating. Where legislation or other action is needed the Conference will extend a willing and sincere assistance to anyone desiring the encouragement or advice gained through the experience of others.

6. With an eye to the future the Conference continually explores the manufactured milk products field. In line with the objectives and purpose of the Conference, the problems are being approached in a very cautious but forward-thinking manner. The Committee on Dry Milk Standards has completed what I feel is a very reasonable and workable set of standards that will further the progress of the industry as well as further amplify the conference slogan "The best possible milk for all the people". This approach is further in line with our thinking that 'milk is an essential food but it is essential that it be good milk'.

7. As in all businesses that require correspondence as a means of contact there arise difficulties in expediting matters of urgency without letting the barriers down on quality. Due to the fact that the U. S. Public Health Service is acting as the balance wheel in this enterprise it is important that they be properly consulted and informed concerning the individual States' activities. This matter of keeping everyone properly informed in order that there be no misunder-

standings concerning any interstate activity is one of the basic objectives of our Conference. As each member of the Conference becomes better acquainted with the problems in States outside his own the understanding of problems outside of his own State has made the matter of accepting certification seem very much more plausible.

This entire matter was clarified nicely at the last Conference and for our part is working very satisfactorily at the present time. The fondest hopes of the Conference in regard to the part the Public Health Service plays have been justified by their excellent cooperation. The Public Health Service is looked to for training, for interpretation and for counsel in all phases of the Conference activities. My personal feeling which, I think, is shared by many others in the Conference is that the Conference is still a baby and a pacifier will do the job up to a point but that on occasion, figuratively speaking, a well placed hand is necessary. None of us who are in earnest should resent honest criticism and advice from any source.

In summing up the principal objectives of the Conference we might point them out in the following manner:

1. That we will recommend the adoption of uniform ordinances and regulations that will permit and assure a free flow of high quality milk between States and areas.

2. That we might dissolve the small differences in some local ordinances that will not interfere with quality milk shipments.

3. That provided a shipping State is making available supplies having a satisfactory rating and abiding by the rules of the Conference agreement that even though there is some detail relative to supervision that this supply will be readily acceptable in a State needing quality milk to supplement its own that may be in short supply.

4. That the efficiency of both the official agency, whether it be State or local, and the industry cooperating with the regulatory agency will provide more quality milk for the consumer.

5. That interstate barriers, whether they be intentional or unintentional, will be eliminated through cooperation and better understanding and effective supervision.

6. To inform everyone in the milk industry, whether they be industry or regulatory in nature, to the point that there will be a mutual understanding and respect for the problems in each others State.

7. That further by education that

where a lack of adequate regulations and effective control curtail interstate shipment of milk that such regulations and control be improved to the point that supplies will be available from all producing areas.

8. That effort be continued to simplify as much as is consistent with adequate control the procedures and records involved in handling interstate milk supplies.

9. That confidence and faith in certification be developed to the point that it will no longer seem necessary for any receiving area to personally observe conditions in a producing area.

Already at the Conference great strides have been made toward accomplishment of these many objectives. By personal contact and better understanding, the handling of the interstate milk programs has become very much more business-like, the records are more complete and the quality of milk shipped interstate has improved materially. The continued work of the National Conference on Interstate Milk Shipments will, I am sure, continue to be a deciding factor in the improvement of the overall milk industry and in making it possible that everyone may have available the very best and safest milk supply when and where needed.

NEWS AND EVENTS

HORTMAN NAMED CHAIRMAN OF INTERSTATE MILK SHIPMENTS CONFERENCE

Mr. H. L. Hortman was elected as Chairman of the Executive Board of the National Conference on Interstate Milk Shipments during the recent conference which was held at Memphis, Tennessee, March 29-30, 1955.

Mr. Hortman began working for the Louisiana State Department of Health in 1936 and in 1949 became Director of the Division of Milk and Dairy Products. He also is a member of the faculty of the School of Public Health, Tulane University.

Dr. K. G. Weckel of the University of Wisconsin, retiring Chairman was retained on the Executive Board for the next two years and Mr. H. J. Barnum, Denver Health Department, and Mr. Harvey

Weaver, Wisconsin Department of Agriculture, were appointed Secretary and Treasurer, respectively, of the Executive Board.

Other members of the Executive Board are:

- M. R. Fisher, St. Louis Health Department.
- C. H. Mattson, Land O'Lakes Creameries, Inc., Minneapolis.
- Dr. M. P. Baker, Iowa State College, Ames.
- J. A. Stalbird, New York State Department of Health, Albany.
- H. C. Goslee, Connecticut Department of Agriculture, Hartford.
- H. E. Mills, Washington, District of Columbia, Health Department.
- Everett Loab, North Dakota State Health Department, Bismark.
- J. E. Mapes, Foremost Dairies, Inc., Dallas, Texas.
- V. R. Layton, Kansas State Board of Agriculture, Council Grove.
- C. J. Babcock, U. S. Department of Agriculture, Washington, D. C.
- H. B. Robinson, Public Health Service, Washington, D. C.



H. L. HORTMAN

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TULSA CIVIL SERVICE BOARD ANNOUNCES THE RECRUITMENT FOR THE POSITION OF FOOD SERVICE TRAINING DIRECTOR JUNE 1, 1955

Position: Food Service Training
Director.

Entrance Salary: \$4500 per year.

Duties of Position: Under the supervision of the Superintendent of Health the Food Service Training Director will plan, promote and execute a continuous course of instruction for all food service personnel. These responsibilities will include instruction in the basic principles of personal hygiene, bacteriology, disease transmission and their application to the food service industry and conduct special studies of routine programs of supervision of food service establishments to evaluate their effectiveness. Studies of special or unusual problems encountered in the food service industry will also be made.

Minimum Qualifications: Candidates must be a graduate of a four year college or university with at least eighteen semester hours work in physical, natural or biologic sciences and/or public health with graduate instruction in sanitation, health education or public health leading to a masters degree; plus responsible experience in public health sanitation including experience in the supervision of food service establishments. Specialized college training or considerable experience in teaching or teaching methods will also be required.

Selection Procedures: Each candidate is requested first to submit a written statement of his education and experience in such form as he may wish. References should include names, titles, and (if possible) present telephone numbers of former supervisors, instructors, and other persons able to speak as to

the professional competence of the candidate. Please indicate if you do not wish to have a contact made with your present employer. Applications will be accepted at Room 407, Municipal Building, Tulsa, Oklahoma.

PRESIDENT ELECT ADAMS ON FOREIGN ASSIGNMENT

Our President-Elect Harold S. Adams, (Dick to many of us) will journey to India, East and West Pakistan and the Philippines during July and August. He has been selected as one of a three man team to visit these countries to make a survey and evaluation of the progress of community development programs now operating under the sponsorship of the United States Foreign Operations Administration. Dick will serve as an advisor in public health and sanitation. A detailed report with recommendations will be made to the FOA office at Washington, D. C., upon return to the United States.

We are most pleased that an officer of the International has been selected for this assignment. With a background of twenty-five years in public health and sanitation, Dick is well qualified to serve in this capacity. He assures us his summer work will be completed in time to be present for the annual meeting at Augusta, Georgia, October 4-6. This should be a very interesting assignment and an experience both worthwhile and productive.

MICHIGAN STATE CENTENNIAL TO FEATURE WORLD'S FAIR OF MECHANIZED AGRICULTURE

A tent-city will rise on 100 acres of Michigan State College farm and campus this summer for the Centennial of Farm Mechanization. Officials are busy preparing the area for the hundreds of exhibits which will mirror the transformation in agriculture in the past 100 years.

Promising to be the first "World's Fair of American Mechanized Agriculture," the mammoth show has been almost doubled in exhibit area to meet the demand

for additional space from the growing list of exhibitors. The show originally was to cover 60 acres including five large buildings. The event is slated August 15-20.

Farm equipment exhibitors alone will be more than double those shown at any agricultural event in this country, according to Robert Maddex, executive chairman.

So far over 300 exhibitors from New York to California have announced they will participate. They will put up more than 600 educational and entertaining exhibits ranging from farm machinery to atomic energy.

A small army of workmen will be required for some of the exhibits. One of the machinery exhibits will require the services of 75 men to assemble and operate.

Taking part will be farm equipment companies, historical associations, museums, major transportation lines, home equipment companies and many others.

Elaborate arrangements are under way to handle an expected crowd of a quarter to half million people who will see the colorful pageantry, demonstrations and exhibits valued at more than \$20 million.

A specially-designed arena seating 7,000 is to be constructed for an hour and a half pageant to be presented daily. Dramatizing the changes in farm life during the past century, the pageant, staged by students, staff and faculty members, will trace agriculture from the "age of animal power" to the "age of tractor and atomic power."

ASSOCIATION OF FOOD AND DRUG OFFICIALS OF THE UNITED STATES MEET JOINTLY WITH SOUTHERN ASSOCIATION

The Association of Food and Drug Officials of the United States recently concluded its annual meeting in New Orleans, Louisiana. Some highlights of the annual meeting just concluded were addresses by Mr. George Larrick, Commissioner of Food and Drug Administration and Dr. Arnold Lehman, Chief, Division of Pharmacology, Federal Food and Drug Administration, Washington, D. C.

Thorough coverage was given to the use of chemical additives to

food products and the establishment of pesticide residue tolerances. Control methods for the prevention of adulteration or contamination of food products came in for a considerable amount of discussion, and the effects of radiation and preventive measures to be taken in case of contamination from radiation also were principal topics on the program.

Considerable interest has been shown by both food and drug officials and food and drug and related industries in celebrating during 1956 the 50th Anniversary of the passage of the 1906 Wiley Food and Drug Law. Some committees already have been appointed to help establish some highlights of the celebration.

Joe Lakey, Director of Food and Drug Division, State Department of Health, Austin, Texas, is General Chairman for the Food and Drug Officials and Robert Stanfill, Federal Food and Drug Administration, Philadelphia, Pennsylvania, is Co-Chairman. The food industry will be represented by Howard Prentice, Vice-President, Corn Industries Research Foundation, Washington, D. C., as General Chairman and Siert Riepma, National Margarine Manufacturers, Washington, D. C., as Co-Chairman. These Chairmen will appoint appropriate committees to help them carry out their work. Chairmen for the drug industry will be appointed later. Mr. James M. Doughty, Jr. and Commissioner George Larrick are Program Chairmen.

The 1956 Convention will be held in New York, New York during the week of May 7.

Some of the greatest problems facing food and drug control officials today are the determination of the safety of chemical additives to foods, the detection of insecticide residue or other unwanted ingredients in foods and drugs and the enforcement of correct, factual labeling and advertising for food and drug packages. The Association of Food and Drug Officials of the United States represents personnel in the Federal Government, in State Departments and municipalities who are charged with the enforcement of Laws covering these problems. From the enthusiasm shown at the New Orleans meeting, these people, in cooperation with

the food and drug industries, will do everything to insure the consumer adequate protection, as well as truthful representation of food and drug products offered for sale.

Officers for the coming year are as follows:

President—Eugene H. Holeman, Supt. and State Chemist Division Foods, Drugs and Dairies Department of Agriculture, Nashville, Tennessee.

Vice-President — James M. Doughty, Jr., Director Division of Foods and Dairies, Department of Public Health, Santa Fe, New Mexico.

Secretary-Treasurer — Evan Wright, Director Division of Foods and Drugs, State Board of Health, Topeka, Kansas.

Board of Directors — Lowell D. Oranger, Director Division of Foods and Dairies, Department of Agriculture, Chicago, Illinois.

The Southern Association of Food and Drug Officials met jointly with the National group and the following officers were elected for the coming year:

President — Ernest Constable, State Chemist, Department of Agriculture, Raleigh, North Carolina.

Vice-President — Charles A. Miramon, Director Bureau of Public Health, New Orleans, Louisiana.

Secretary-Treasurer — H. S. Perkinpugh, Chief Chemist, Department of Agriculture and Industries, Montgomery, Alabama.

Board of Directors — Felton McIntire, Assistant State Chemist, Department of Agriculture, Atlanta, Georgia.

DAVID D. PEEBLES RECEIVES FOOD TECHNOLOGY AWARD

The "magic crystals" process used to produce Carnation Instant non-fat dry milk solids is the winner of the 1955 biennial Food Technology Award as the most significant food processing development in two years.

David D. Peebles, dairy scientist and inventor who developed the process, received the award June 13 at the annual meeting of the Institute of Food Technology in Columbus, Ohio, it was announced by Food Engineering, sponsor of the award.

Peebles is president of Western Condensing Co. of Petaluma, Calif.

The award was made to the process after consideration of many entries in each of five categories by a 15-man "jury" of food technologists. Categories were canning, candy-making, meat and meat prod-

ucts, quick-freezing, and dairy foods.

The Peebles process converts a "raw material" of low-heat, spray-dried, extra-grade nonfat dry milk solids into instantly soluble, non-caking, nonhygroscopic crystals which retain B group vitamins, high quality proteins and important minerals of whole fresh milk. Fresh milk flavor, immediately after mixture with water, is another feature of Carnation Instant produced with the Peebles process.

For Peebles, one of the world's leading dairy scientists and inventors, the award climaxes 30 years of research aimed at developing the process. During that time, he has been widely recognized for a number of patented developments and disclosures in the dairy and related industries. He was a pioneer in the evolution of milk evaporation process, and is credited with discovery of the methods which made whey a practical food for livestock after centuries during which whey was considered a waste product. Peebles and Western Condensing have also been major suppliers of lactose used in the production of penicillin.

The instant milk process, involving a new "time-temperature-moisture" manufacturing operation, was introduced as Carnation Instant in the fall of 1954 and has since achieved national distribution.

The award jury was chairmanned by Dr. Samuel C. Prescott, dean of U. S. food technologists, and 14 other leading college and university food technologists, appointed by the Institute of Food Technologists.

ANNUAL MEETING MISSOURI ASSOCIATION MILK AND FOOD SANITARIANS

One hundred and fifty-nine Missouri Sanitarians attended the 23rd. Annual Milk and Food Sanitation Conference at Missouri University April 18, 19, 20th.

The conference has been co-sponsored annually by the Department of Dairy Husbandry College of Agriculture, University of Missouri, the Missouri State Division of Health and the Missouri Association of Milk and Food Sanitarians.

Sanitarians, representing City and County Health Departments as



Left to right — Retiring Pres. Vernon Nickle, Chief Sanitarian, St. Louis Health Dept. presenting Missouri Association of Milk and Food Sanitarians "By-laws" to newly elected President, Marvin Campbell, County Sanitarian, Cape Girardeau.

well as the Division of Health, whose business it is to guard the health of their respective communities, attend this "short-course" at M.U. each spring to endeavor to keep abreast of new approaches toward the enforcement and public education of milk and food sanitation.

At a business meeting of the Missouri Sanitarians, who are affiliated with the International Association of Milk and Food Sanitarians, Marvin Campbell, county sanitarian of Cape Girardeau County was elected President; Bernie Hartman, Senior Sanitarian, Kansas City Health Department, Vice-President; Vernon R. Cupps, Dairy Sanitarian for the St. Louis City Health Dept. at Lebanon; and John H. McCutchin, Director of Bureau of Food and Drugs, State Health Dept., Jefferson City, Secretary-Treasurer.

The retiring President is *Vernon Nickle, Chief Sanitarian, St. Louis Health Department.*

POULTRY ORDINANCE 1955 EDITION

The publication of a new model ordinance for adoption by States and communities desiring to assure

good sanitary practices in poultry-processing plants was announced today by the Public Health Service, U. S. Department of Health, Education, and Welfare. Through the *Poultry Ordinance — 1955 Edition*, the Public Health Service hopes to foster a degree of uniformity across the country which would be impossible to achieve without a widely accepted model, Surgeon General Leonard A. Scheele said.

In explaining the need for such an ordinance, Dr. Scheele noted that poultry and poultry products in interstate commerce are subject to inspection by the Food and Drug Administration, HEW, which participated in development of the Ordinance, and that about 25 per cent of such products comes from plants operating under the voluntary grading and inspection service of the U. S. Department of Agriculture. However, Dr. Scheele said, "the greater part of poultry and poultry products do not cross State lines, and thus are not subject to Federal jurisdiction.

"At the request of such organizations as the Association of State and Territorial Health Officers," the Surgeon General said, "the Service prepared this model ordinance which could be used by States and

local governments to supplement Federal regulations to insure wholesome poultry and poultry products for their own populations."

The *Poultry Ordinance*, while published by the Public Health Service, is not the product of the Service alone, Dr. Scheele noted. "It has come about through close cooperation among the Federal agencies concerned, State and local health and agricultural authorities, and the representatives of the poultry industry."

The current issue of the ordinance was prepared with the assistance of a public health-industry committee of which Dr. Cliff Carpenter, President of the Institute of American Poultry Industries, was co-chairman with Dr. James H. Steele, of the Communicable Disease Center, PHS, Atlanta, Ga.

The ordinance embodies the best information on poultry sanitation available at the present time, Dr. Scheele said, and will be revised from time to time as new experience or research indicates. A further part, dealing with ante-mortem and post-mortem inspection is now in draft stage and will be issued in the near future.

Copies of the *Poultry Ordinance—1955 Edition* are available from the Public Health Service, both in Washington and at its various regional offices, and from the Institute of American Poultry Industries, Chicago, Illinois.

**PRACTICAL SHORT COURSE ON
FOOD PLANT SANITATION TO
BE OFFERED BY AMERICAN
SANITATION INSTITUTE
THROUGHOUT MAJOR CITIES
IN THE COMING YEAR**

Dr. Edward L. Holmes, Executive Director of the American Sanitation Institute, a division of The Hugel Company, Inc., St. Louis, Missouri has announced they will offer throughout a selected group of representative cities during the coming year a one day sanitation short course. This clinic will emphasize practical methods of developing and maintaining a successful food plant sanitation program. The program will include actual demonstrations on utilization of the latest techniques involving

materials and equipment for insect and rodent control as well as general sanitizing methods. A portion of the program will be devoted to discussion of organization and planning methods for maintenance of adequate follow-through once the program has been well planned.

Dr. Holmes states that his organization feels that there is a need for emphasis upon the more practical aspects of the sanitation program in contrast to the much discussed theoretical considerations of how it could be done. Actual demonstrations will be offered of what is really working in plants today for curing special problems.

The first of these courses was held May 23, 1955 at the Forest Park Hotel, St. Louis, Missouri. Following the St. Louis meeting, it is contemplated holding additional meetings in such cities as Louisville, Cincinnati, Columbus, Indianapolis, Chicago, Detroit, Minneapolis, Omaha, Kansas City, Dallas, Houston and New Orleans. Dates for the meetings will be announced later. Anyone interested in attending may write to Dr. Edward L. Holmes, American Sanitation Institute, 884 Hodiament Avenue, St. Louis, Mo.

P. R. YORK PASSES ON

P. R. York, 300 West End Lane, Knoxville, Tennessee, died, suddenly, May 27, 1955 at the age of 62.

Mr. York started a career of public service in Tennessee as a teacher and principal in the Elementary Schools. In 1927 he became one of the first sanitarians in Tennessee, working in the Mid-State Area, and in 1937 transferred to Knox County as Chief Sanitarian and later as Sanitation Consultant.

During his twenty-eight years of distinguished service in the field of sanitation, he promoted the Grade A Milk Supply; was an instigator in Tennessee of the concrete drinking fountain, and the pre-cast concrete slab for pit privies; served as head of a Training Center for New Sanitarians; and assisted in organizing the Tennessee Association of Sanitarians, being a charter member and one of the first auditors.

**REPORT OF IAMFS EXECUTIVE
BOARD MEETING**

H. H. WILKOWSKE,
Secretary-Treasurer

President Ivan E. Parkin was host for the regular annual interim meeting of the IAMFS Executive Board at Pennsylvania State University, May 26-28, 1955. All members were present as well as H. L. "Red" Thomasson, Executive Secretary and Managing Editor, and Dr. J. C. Olson, Jr., Associate Editor of the *Journal of Milk and Food Technology*, who arrived for the third day of the meeting, which was devoted to Journal management problems. It was agreed the Editor will present an annual report to the membership at the annual meeting in which further details will be given. The important point to make at this time is for all members, and especially the Affiliate Association secretaries, to be on the lookout for timely milk and food sanitation papers which might be suitable for publication. Urge good speakers and writers to submit their papers to the Editor for consideration.

The Executive Board met in continuing sessions daily and until late at night to discuss and take action where necessary on the many phases of Association activities and financial matters. To better inform the membership of the activities of the Association, as directed by the Executive Board, the following highlights of the meeting are presented here, recognizing that space limitations preclude giving full details in all instances.

The Executive-Secretary reports he spends approximately 1/3 to 1/2 time in the field, that is, meeting with affiliate associations. He reported that in recent months two state organizations have voted affiliation with IAMFS. We are pleased to welcome the Rhode Island and South Carolina organizations.

The financial picture of the Association continues to look good, present indications being that by the end of the current fiscal year (July 15) there will be a net gain of nearly four thousand dollars. In order to follow sound business practices, authority was given to invest two thousand dollars in the Shelbyville, Indiana, Union Building and Loan and two thousand in U. S. Bonds. This four thousand dollars

is part of the seventy-five hundred dollars which has been set aside as a Reserve for Contingencies Fund.

Beginning the coming year a Budget will be prepared and submitted to the Executive Board for consideration and approval. A Financial Statement will be made to the Association for action at the annual meeting.

The many details of the Annual Program were discussed and the program finalized. Copies will be sent to the membership under separate cover from that of the Journal. An outstanding program has been arranged and all members are urged to attend the annual meeting in Augusta and enjoy the wonderful hospitality of the Georgia Association.

Numerous suggestions were made for the agenda of the Council meeting. Upon request, the Executive Board offered the following items they would like the Council to consider: Stimulation of interest in committee work, establishment of local committees to parallel IAMFS committees, encouragement of speakers to contribute good papers to the Journal, suggestions for the annual program (which should go to the President-elect) and stimulation of interest and acceptance of 3-A standards.

The 1957 Annual Meeting site is to be selected at the meeting in Augusta. Any Affiliate Associations desiring to extend invitations should request a hearing with the Executive Board at that time. The 1956 site, selected at the last annual meeting, will be Seattle, Washington.

Attempts are being made for better reporting of the annual meeting to determine whether a Committee on Publicity can be established. Finding persons particularly adept in this kind of work will determine whether such committee can be found.

The 3-A Symbol Council held its first meeting which was devoted primarily to organizational and financial matters as reported to the Executive Board by Paul Corash, one of the four IAMFS representatives on the 3-A Symbol Council. The other three are Ken Weckel, C. A. Abele and J. Mark Howlett.

Regarding reclassification of personnel, the Executive Board ex-

pressed the opinion that IAMFS basic policy is in general to encourage the principle of merit raises and the maintenance of incentives as the desirable means of encouraging dynamic progress and professional improvement.

Questions raised concerning the antibiotics in milk problems were referred to the Committee on Laboratory Methods.

The Committee on Recognitions and Awards brought forth their recommendations for the Citation Award. After careful consideration the Executive Board made the selection, the announcement of which will be made at the annual banquet in Augusta.

Nomination rules and Eligibility rules for the Sanitarians Award were clarified by amendments effective in 1955, (1) to provide that nomination for such award may be made only by members in good standing in the IAMFS except members of the Executive Board and members of the Committee on Recognitions and Awards, and (2) to show that elected officers of the IAMFS and members of the Executive Board and members of the Committee on Recognition and Awards shall not be eligible for nomination. When making nominations members are urged to submit the necessary factual supporting data upon which the selection will be based rather than solicited data in the form of letters of recommendation.

The appointments to the Committee on Recognition and Awards was changed to provide better continuity of terms.

The Committee on Education and Professional Development was instructed to investigate (1) establishment of two \$200.00 IAMFS Scholarships and (2) establishment of a Scholarship Fund of voluntary contributions from Affiliate Associations for additional scholarships as additional funds become available.

A request for permission to mimeograph 3-A standards was rejected.

Instructions were given to the Committee on Communicable Diseases Affecting Man regarding the publication of the "Outbreak" booklet on which the committee has been diligently working for the past two years. Details will be given

in the committee's annual report.

A suggestion that a new Committee on Inspecting Services be established was rejected.

The matter of Registration of Sanitarians was fully discussed. Several changes and modifications were suggested for the tentative Model Registration Act. The Executive Board formally went on record as endorsing the principle of Registration by Legislative Act as one means of achieving professional development and status of the Sanitarians, provided such legislative act is based upon proper qualifications and competence.

A suggestion was made that the IAMFS investigate the matter of whether it would be feasible to do our own printing of the Journal. Many possibilities and problems were explored. No decision was made pending further information along this line.

Since this meeting was devoted to long hours of work and deliberations, not many stories were told, the only printable joke being strictly on the corny side, which was about the little baby ear of corn asking its mother where it came from — the reply, "The stalk brought you!"

The Executive Board was deeply grateful to the Parkin family who were hosts for an enjoyable dinner and for the tour of the dairy facilities at Pennsylvania State University.

BACTI-KIT CHLORINATOR

May be used with other liquid bactericidal agents. Desired bactericidal strength available by turning on 2 valves without error or waste.

Ideal for farm tanks and other utensils because it's handy spray reaches all corners, lids, and hard to get places with a saving of time, chlorine, and effort. Suggest placement near farm tank so farm tank driver may save time in rinsing by using spray without chlorine.

Price approximately \$10.00, prepaid. Bacti-Kit Co., 2945 Hilyard Street, Eugene, Oregon.

**ANNOUNCEMENT OF THE 42ND.
ANNUAL MEETING OF THE
INTERNATIONAL ASSOCIATION
OF MILK AND FOOD
SANITARIANS, INC.**

The 42nd. Annual meeting of the International Association of Milk and Food Sanitarians, Inc., will be held at the Bon Air Hotel, Augusta, Georgia, October 4, 5, and 6, 1955.

The Program Committee consisting of Harold S. Adams of Indiana, Paul Corash of New York City, Howard Wilkowske of Florida and John J. Sheuring of Georgia, has worked hard to develop a stimulating program of current interest to both the milk and food sanitarian. Topics and speakers have been chosen to keep the membership abreast of new developments.

Speakers whose talks will highlight this annual meeting are the Honorable Ernest Vandiver, Lieutenant Governor of Georgia; Frank K. Lawler, Editor Food Engineer; Dr. C. L. Wrenshall, The Chas. Pfizer Company; Doctors Litsky and Barber and Mr. H. B. Robinson, who will discuss new pasteurization processes; Mr. A. J. Claxton, President of Meadowgold Dairies, Inc. Pittsburgh; Dr. Ernest Tierkel of the Veterinary Section CDC; and Dr. G. R. Spencer of the State College of Washington.

Among the topics upon which papers will be presented are: the use of antibiotics in both the milk and food industry, a new disinfectant for the decontamination of teat cups, proposed changes in the USPHS food ordinance, technological advances in ice cream manufacture, the use of silicones in the dairy and food industries, disposal of milk plant wastes, and a number of interesting committee reports covering professional development, food and milk epidemiology, frozen foods, sanitary procedures and others. Complete details for the 42nd. annual meeting will be published in an early issue of the Journal.

In addition to the technical program, the Georgia chapter has planned a barbeque and dance and a fine schedule of events for the ladies. The banquet will be highlighted by an able toastmaster and an address by Dr. Hugh Masters of the University of Georgia.

Make plans now to attend this

fine meeting. Remember the dates, October 4, 5, and 6, and be with us to enjoy a stimulating program and the good fellowship that makes the International the vital Association that it is.

We look forward to seeing you in Augusta in October.

Ivan E. Parkin, President
International Association
of Milk and Food Sanitarians, Inc.

**UNIVERSITY OF MARYLAND
SHORT COURSES**

The following conferences and short course of interest to dairy plants are scheduled to be held at the University of Maryland:

November 15-16, 1955—Eleventh Annual Dairy Technology Conference.

January 23 - February 2, 1956 — Seventh Annual Ice Cream Short Course.

February 2, 1956 — Sixth Annual Ice Cream Conference.

NOTICE

**Re: Complete sets of 3A
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**To: Previous and Future
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We offer a five year service for \$2.50. When ordering a set of standards, if you wish this service, add \$2.50 to the \$1.75 unbound or to the \$3.50 bound price. You will be placed on a mailing list and each new standard will be sent to you upon publication. To those who have already purchased complete sets and wish to bring them up-to-date, please indicate standards which have been published since receipt of your set. For the price of \$2.50, we will send the standards which you do not have and place your name on the mailing list for the five year period.

Send to: IAMFS, Box 437,
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Sanitarians — For local health units in the state of Arizona. Immediate opening in St. Johns, Holbrook, Prescott, Tucson, and Phoenix. Salary ranges \$332 - 384 for outlying communities; \$300 up for Phoenix and Tucson. Contact: Merit System Council, 1632 West Adams, Phoenix, Arizona.

FOR SALE: Single service milk sampling tubes. For further information, please, write: Bacti-Kit Co., 2945 Hilyard Street, Eugene, Oregon.

Improved Sediment Pad Dispenser, for further information write Bacti-Kit Company, 2945 Hilyard Street, Eugene, Oregon.

**Dairy Cleaning
Discussed in
FREE Booklet**

Dozens of practical, field-tested techniques for cleaning and sanitizing dairy equipment are discussed in Oakite's comprehensive 28-page dairy cleaning manual. Removing milkstone, cleaning processing equipment, bottle washing, descaling, and derusting are just a few of the many topics thoroughly covered. Your copy of this handy guide is available FREE from your nearby Oakite Representative, or by writing Oakite Products, Inc., 54 Rector St., New York 6, N. Y.

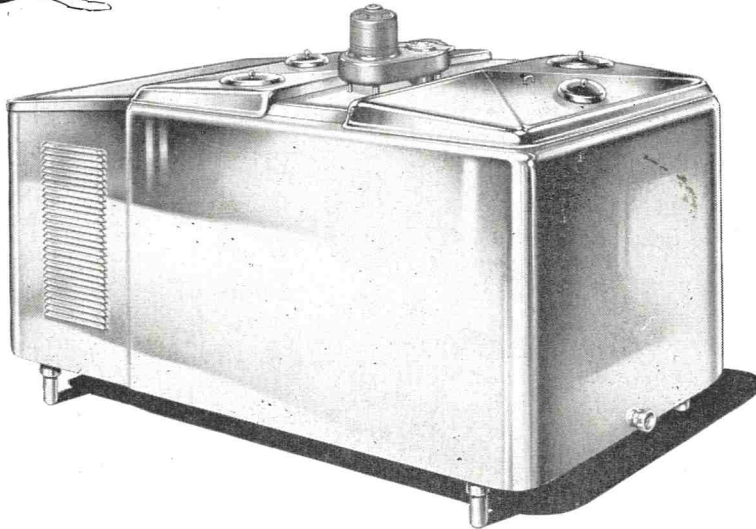
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the all new
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Price has been the big drawback to cooler sales, but now Kupfer, through mass production efficiency, makes possible a bulk cooler that every dairy farmer can afford. The Kupfer Cooler is priced lower than any comparable cooler now on the market, yet it's a quality product. The tank, agitator blades and shaft are guaranteed for 10 years, the refrigerating unit for 5 years.

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1. Meets or exceeds all **PMA and 3A standards.**
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3. Inner tank designed for **complete drainage and easy cleaning.**
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5. **Self-contained** up to 550 gal. size.
6. V-belt reduction on agitating unit eliminates messy gear box and oil dripping.
7. **Stainless steel** — inside and out.
8. **Lower operating costs** because the Kupfer cools just **one thing — Milk!**
9. Available in sizes from 150 gal. to 550 gal. self-contained. Up to 1000 gal. with remote refrigerating unit.
10. Designed to meet the most exacting demands in milk handling.

Sell the bulk cooler that costs less to own and costs less to operate. You'll be supported the year round by an intensive campaign of sales promotion directly to the dairy farmer. You'll be selling a proved profit producer to a market which has been untouched by competition.

Territories are now open for distributors and jobbers.
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KUPFER PRODUCTS CO.

MADISON, WISCONSIN

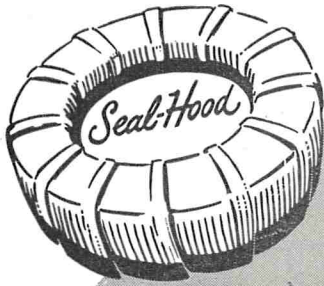
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DONE...AND FOR YOUR
CONTINUING EFFORTS TO
KEEP QUALITY FIRST!**

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**SAFEGUARDS
MILK FROM
CAPPING
TIME TO
CONSUMING
TIME**



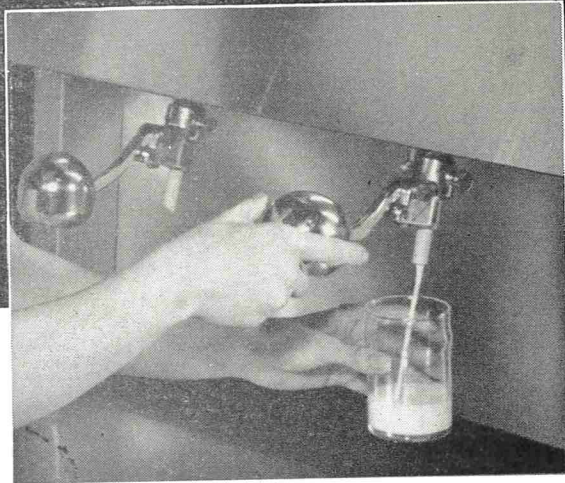
● Most bottle caps protect milk sufficiently from dairy to doorstep. But for safeguarding milk both before and after delivery, none can match the "last drop" protection assured by Seal-Hood and Seal-Kap closures (disc and cap in one compact, easy-to-open unit).

No metal to fight with...no annoying prying or special tool is needed to open a Seal-Kap or Seal-Hood closure. Both open easily...yet snap back on tightly every time the milk is used. This means sure sanitary protection—right down to the last drop of milk in the bottle.

Both Seal-Kap and Seal-Hood have the double-safe qualities of a cap-plus-hood — *without* its cost or operation trouble. These one-piece closures bring dairymen *single-operation* economy.

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ALL THE TIME**



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● Bulk milk dispensers are sweeping the food-serving industry. And for good reason. The chilled dispenser cans are delivered by the dairy and installed in gleaming, sanitary Stainless Steel dispensers. The dispensers are refrigerated, so the milk stays cold and sanitary.

The Stainless Steel dispenser is easy to clean, and free from corrosion. The cans are sterilized and the milk quality is carefully controlled by skilled dairy personnel. The cans (which hold about 80 servings each) are also available in Stainless Steel.

If you will mail the coupon below, we'll send you more information on the sale of milk from Stainless Steel bulk dispensers.

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NATIONAL TUBE DIVISION, PITTSBURGH
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
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Agricultural Extension Section
United States Steel Corporation, Room 4832
525 William Penn Place, Pittsburgh 30, Pa.

Please send me information on bulk milk dispensers for food establishments.

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Title.....
Company.....
Street.....
City..... Zone..... State.....

United States Steel produces steel, not bulk milk dispensers. Your request, therefore, will be sent to manufacturers who fabricate bulk milk dispensers for use in food serving establishments.

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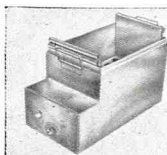
Write today for Bulletin 312 containing latest information on Mojonnier quality equipment and supplies for the modern dairy laboratory. Write:

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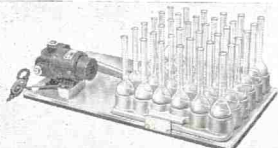
a flip of the thumb



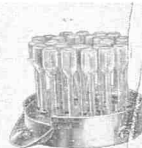
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M535 & M536



M50



M601



G46



M427

M535 & M536 Mojonnier Stainless Steel Babcock Test Bottle Bath. Thermostatically Controlled. Provides a means for keeping the fat in neck of babcock test bottles at proper temperature when readings are taken. Capacities 24 and 36—6" babcock bottles.

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M601 Wilson Babcock Bottle Washer. Designed to wash cream and milk test bottles, 6" or 9" size. Also used for washing test and culture tubes. Furnished in 24 and 36 bottle capacity. All stainless steel construction.

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for total counts

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(M-PH Medium)

for coliform counts

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Lactose Agar

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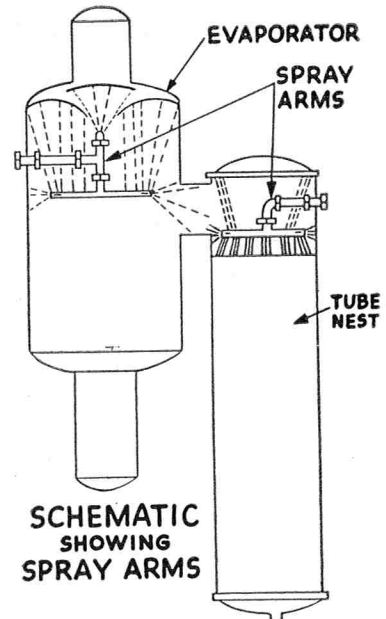


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Everybody is talking about the Sparta "Kleen-Udder" Cellulose Sponge — a really sensational farm sanitation aid that is helping in a big way to reduce sediment and bacteria counts on thousands of dairy farms the country over "Kleen-Udder" Sponges have EVERYTHING: long life, remarkable water absorption, easy to handle, and easy to rinse clean and fresh. Heaviest dirt washes off udders and teats like magic — yet rinses out quickly and freely. And "Kleen-Udder" Sponges can even be boiled without injury. Not affected by sodium or calcium hypochlorite or quaternary ammonium compounds.

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QUESTIONNAIRE FOR INFORMATION ON VOCATIONAL DATA OF MEMBERSHIP

Dear IAMFS Member:

Your association and the Journal of Milk and Food Technology has steadily grown in stature over the years. Beginning with January 1954, the Journal was issued monthly. In order to continue this and to increase the size and scope, it is necessary to increase our advertising volume. Prospective advertisers have informed us that they need additional information relative to the professional activities, employment and other general data of our membership. We would therefore appreciate it if you would fill out the following questionnaire to the best of your ability and send it to H. L. Templeton, Chairman, Membership Committee, 6125 Florence Blvd., Omaha 11, Nebraska. The material you submit will be held completely confidential. In addition, we would appreciate having any comments you wish to make.

Very truly yours,
H. L. Templeton, Chairman
Membership Committee

QUESTIONNAIRE

1. Which of the following occupational groups would you say you would fit? (You may answer more than one category.)

- Attorney
- Bacteriologist
- Chemist
- Consultant
- Educator
- Engineer (general)
- Farmer
- Food Processor
- Laboratory Technician
- Librarian
- Manufacturer of Food Equipment
- Manufacturer of Milk Equipment
- Milk Processor
- Physician
- Publisher
- Sanitarian
- Sanitary Engineer
- Student
- Veterinarian
- Other

2. How many of the following do you visit each year?

- Barber Shops _____
- Butcher Shops _____
- Dairy Farms _____
- Food Plants (excl. milk) _____
- Groceries _____
- Hotels _____
- Lodging Houses _____
- Milk Plants _____
- Nurseries _____
- Restaurants _____
- Drug Stores _____
- Soda Fountains _____
- Schools _____
- Sewage Disposal Plants _____
- Tourist Homes _____
- Trailer Camps _____
- Water Works _____
- Other _____

3. Milk Sanitation

- a. Approximately how many cows are there on the farms under your supervision? _____
- b. Approximately how many milking machines are there on these farms? _____
- c. How many farms are now under the bulk milk pickup system? _____
- d. What is the total production of the farms? plants? under your supervision?
- e. Are the plants filling bulk milk dispensers?
How many? _____

4. By which of the following agencies are you employed?

- a. Government Agencies -
 - Federal State
 - Civilian City
 - Military County
- b. Educational Institutions -
 - University or College
 - High School
 - Federal, State, or City
 - Industrial
- c. Laboratories -
 - Official agency
 - Commercial or industrial
 - Institutional
- d. Industry -
 - Milk and milk processing plants:
 - Receiving stations
 - Evaporating plants
 - Dry milk plants
 - Ice cream plants
 - Fluid milk plants
 - Cheese plants
 - Butter plants
 - Butter
- e. Other

5. Automatic Vending Machines - How many of the following are under your jurisdiction?

- Carbonated and non-carbonated beverage _____
- Coffee _____ Sandwich _____
- Milk _____ Other Foods _____
- Soup _____ Other _____

6. For statistical information, please indicate size of the city or place in which you have your residence. (If a suburb, check size of city of which it is a suburb.)

- Over 1,000,000 (in the United States, only New York, Chicago, Philadelphia, Los Angeles, Detroit) _____
- 100,000 to 1,000,000 _____
- 25,000 to 100,000 _____
- 2,500 to 25,000 _____
- Under 2,500 (non-farm) _____
- Farm _____

7. Please write in the state in which you have your permanent residence _____

8. Please furnish the following information relative to the car you drive.

- Make Year _____
- Miles driven per year _____

9. Do the advertisements in the Journal of Milk and Food Technology help you in your work? Yes No

10. Comments:

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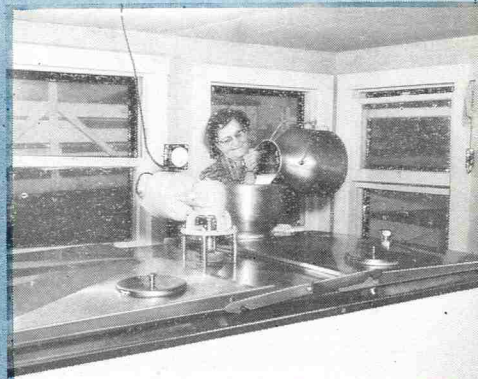
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"The convenience of the **WILSON**
Drop-in Unit has never been equalled . . ."

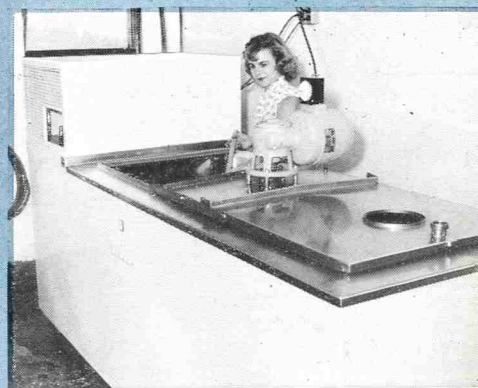
says Norman E. Thielking, field man for
SUNNY HILL DAIRY, Cape Girardeau, Mo.



Mr. Thielking (left) calls on producer Harold Wessel, Cape Girardeau, Missouri, who says: "Our Wilson Bulk Milk Cooler insures better milk through faster cooling!"



"... our bacteria counts are lower... milk-house so much easier to keep clean!" says Mrs. Charles Froemsdorf, another Sunny Hill Dairy producer.



"... Wilson fast cooling is just the thing... one of our most labor-saving purchases!" says Mrs. Edna Schabbing, also of Cape Girardeau, Mo.



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Wilson's famous self-contained ice-water-spray cooling system, with reserve ice bank, Drop-In Unit and *many other unique safeguards*, gets high praise from dairies, producers and sanitarians! Remember, it's farm-tested in over 20,000 bulk and front-opening can installations... based on 25 years' farm refrigeration experience. Freezing's impossible... milkstone practically so... cooling is fast... calibration accuracy assured... power and wiring normal... operation economical; sometimes lower than direct expansion, by impartial tests. And Wilson uses finest materials and construction, with latest "lifetime" galvanized steels, plastic-type finishes, stainless steel alloys! Write for further facts.

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BACTO-VIOLET RED BILE AGAR

BACTO-DESOXYCHOLATE AGAR

BACTO-DESOXYCHOLATE LACTOSE AGAR

are widely used for direct plate counts of coliform bacteria. Upon plates of such media accurate counts of these organisms are readily obtained.

BACTO-BRILLIANT GREEN BILE 2%

BACTO-FORMATE RICINOLEATE BROTH

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