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MILK and FOOD TECHNOLOGY

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Official Publication

International Association of Milk and Food Sanitarians, Inc.

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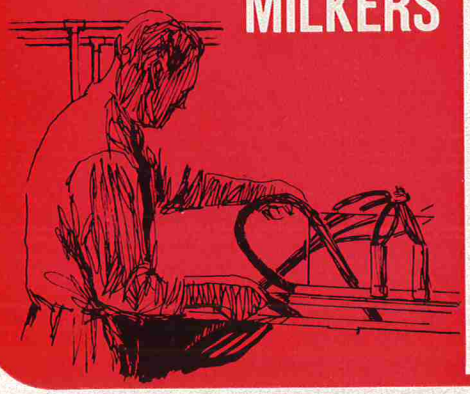

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BANKAL® Non-foaming acid cleaner and milkstone remover—goes to work quickly, effectively even in hardest water.

B-K® POWDER Economical 50% chlorine-bearing bactericide. Imparts no flavor or odor to milk—need not be rinsed from equipment.

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NOTE: At least once a week circulate BanKal solution (3 oz. BanKal to 5 gals. of water) to control milkstone and films.

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4. Rinse tank thoroughly and allow to drain.
5. Prior to putting milk into tank,† sanitize with Pennsan solution using 1 oz. Pennsan per gal. of water. Spray or brush all surfaces with Pennsan solution. Drain excess Pennsan solution.

*At least once a week replace Super Clorital or MC-3 with BanKal, using 2 oz. BanKal to 10-12 qts. of water.

†BanKal treatment is not needed if Pennsan is used as the sanitizer.

NOTE: When pipeline milker is used with bulk tank, Super Clorital may be used for tank cleaning eliminating the need for MC-3.

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3. Dismantle equipment and brush all parts in MC-3 solution, using proper brushes. Pay particular attention to inflations.
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*At least once a week replace MC-3 with Pennclean solution (3 oz. Pennclean to 5 gals. of hot water) to control milkstone.

†Pennsan may be used to sanitize. If **PENNSAN** is used, the need for Penncleen is eliminated.

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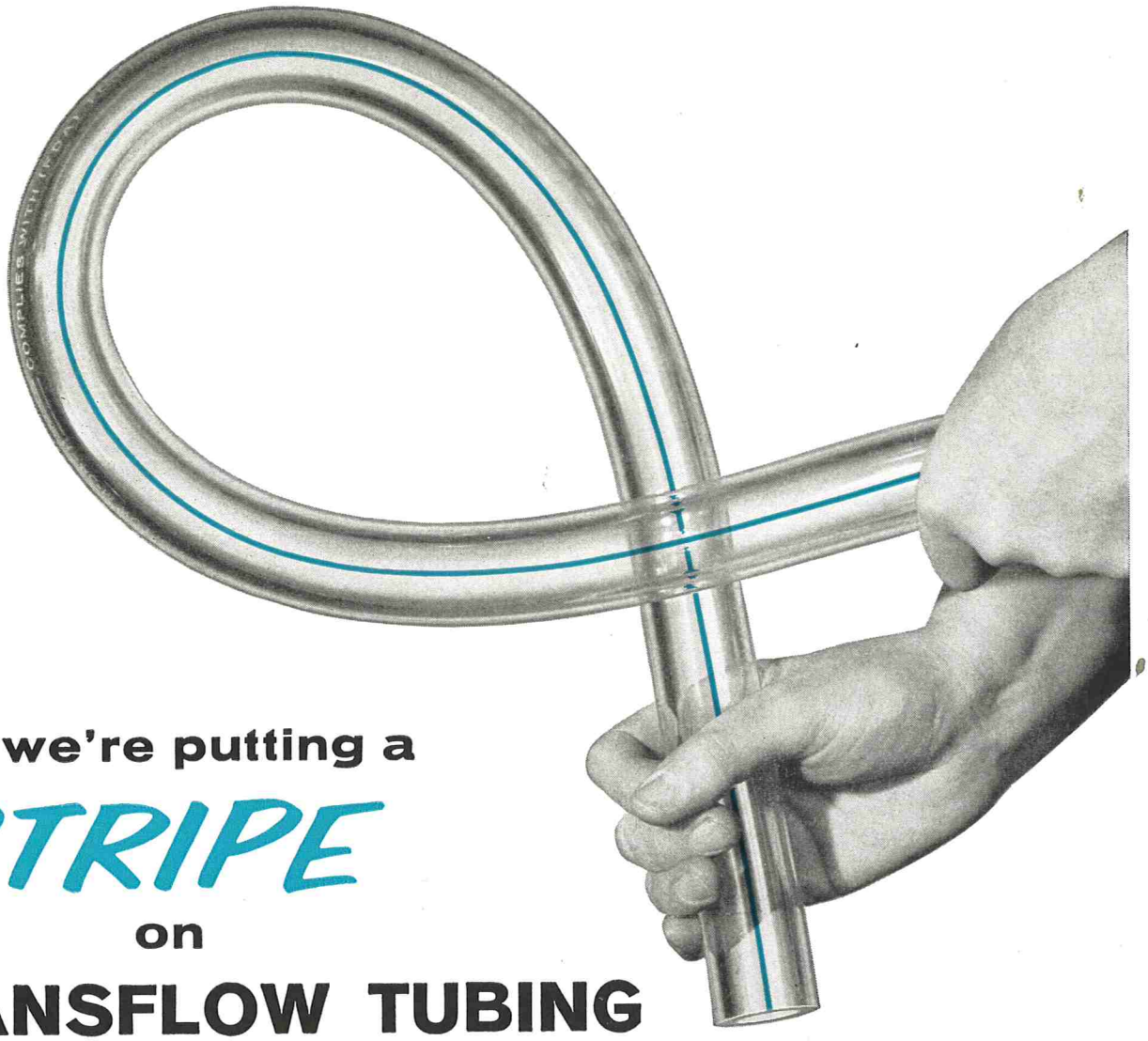

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Editorial

The Changes Have Already Taken Place

Recent excellent editorials and reports have argued for changes in the Association, changes in what it represents, change in its name, journal and objectives, and changes in methods of attracting young men into the field of sanitary science (I prefer the term environmental health science) and the International. While these arguments for internal change go on and on and actual change occurs at snail pace, external changes have been going on almost with the speed of a rocket. It is imperative that the sanitarian take time for a quick introspective evaluation, and alter his titles, his standards, and his training to keep up with the changing environment in which he functions. He must be prepared to participate in directing solutions to tomorrow's problems rather than "spin his wheels" on yesterday's.

A few years ago the job of the sanitarian was a lonely one with little advancement or glory, but loaded with the difficult chore of enforcing necessary but unpopular and misunderstood regulations. Much of his work was with the operators of little milk and food plants, little farms, little restaurants, little municipal governments, and often the work was with people with little education. Only the hardy and dedicated survived in the profession. The high quality and vitamin content of the foods, brought about by sanitary regulation enforcement, along with certain other acts of God, have brought about a fantastic increase in population. This, coupled with consumer prosperity, marvelous technical and mechanical developments, preparations for modern defense, and economic factors too complex for anyone to comprehend, has changed the world we live in: the cities, the farms that produce our foods, our homes, the plants and stores and restaurants that prepare our foods, the governmental agencies that collect our taxes, the air we breathe, the diminishing water resources, the vast array of chemical additives (most good but some bad) that are used to improve our foods and clothes.

The demands for healthy living and long life by the American taxpayer have *brought about action* (the words we used to get) by governmental bodies at all levels. Public, state, federal, charitable foundation and industrial monies are pouring into health research and development at an unprecedented rate.

Obviously these changes warrant a close look at the people who should play a prime role in making the transition from the old to the new environment in which we live. Entirely too much time and effort of the handful of trained experienced personnel has been spent in quibbling about procedures methods, regulations, and bacterial numbers while serious problems developed and have gotten out of hand. It is unfortunate that it takes harsh words by a legislator or by a popular science writer to bring about the self-inspection that is needed.

The problem is certainly not one of inefficiency, incompetency, or lack of interest of the people charged with control of the problems; rather it is the fact that the number of problems is growing faster than the small number of hardy, dedicated people can solve them. Adequate numbers of American colleges and universities are teaching courses in the background subjects of environmental health, but very few graduates are attracted into positions in the environmental health fields. Far more attractive positions are open to the bachelor's graduate of sanitary science, microbiology, chemistry or biological science in non-health related industry, government and academics. Large amounts of money are available to attract the better students into graduate research opportunities. The supply of rural students who used to come to college in the agriculture-oriented fields such as food and dairy science just doesn't exist today. Some optimistic people among us feel that getting more schools to create curricula in sanitary science is a panacea. A recent check on several of the schools that have added such curricula showed that the number of students graduating would not fill the positions available in one good-sized city. Also, I personally don't believe that the answer is the creation of registration and licensing acts.

What is to be done to overcome these past problems and to make the necessary quick transition to the future? No simple answer is possible, but I would like to suggest that we all abandon the fear of change. We must not think that change is inherently bad because it shakes up our old beliefs, or alters the jobs in which we have become entrenched, or forces us to study and learn new skills or brings some strangers into our organization. Changes can be stimulating, exciting and productive, leading to growth and greater prestige. Examine each possible alteration in our way of doing things; reject the unworthy but accept the good ones rapidly.

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Opinions expressed in this editorial are those of the author and do not necessarily represent those of the Association.

THE DEVELOPMENT OF MICROBIOLOGICAL STANDARDS FOR FOODS[1]

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In recent years, there have been many reports on microbiological standards for foods and their significance *(1, 3, 7, 9, 10, 13, 14, 15, 16, 17)*. The topic has prompted a certain degree of controversy and arguments for and against such standards. All authors have indicated that microbiological standards should be applied with great caution. Microbiological standards have been proposed to measure the following attributes of a food: *(a)* the sanitary conditions under which the food was processed, *(b)* the keeping quality, and *(c)* the presence or absence of pathogens or other organisms that may indicate the presence of pathogens.

ADVANTAGES OF STANDARDS

Though the pros and cons of microbiological standards in measuring these attributes have been extensively presented *(2, 5, 8, 11)*, it is useful to review briefly some of these arguments. The proponents for microbiological standards for foods have presented the following points:

1. It has been shown, through experience, that as soon as microbiological standards are issued (even on an arbitrary basis), there is an improvement in the microbiological status of the food to which the standards have been applied. The establishment of standards has stimulated improvements in plant sanitation and quality control. Standards supplement programs of plant inspection and promote comprehensive sanitation programs.

2. Defects in the plant may be missed in a physical inspection of the food establishment. These defects may be uncovered in a bacteriological examination of some type related to raw or finished products or to food handling equipment.

3. Microbiological tests can serve as the final check on sanitation of the food and the food process.

4. While low bacterial counts do not guarantee the safety of the food, the presumption of safety is on the side of foods that are consistently within established microbiological standards. Hobbs *(12)* has noted that, generally, those foods suspected of causing food poisoning have counts of greater than one million per g, and usually greater than 10 million per g. Bacterial counts for the majority of normal food stuffs are approximately 100,000 per g or less.

5. Low bacterial counts in certain foods are attainable.

6. Microbiological standards can serve as indicators of keeping quality. It has been demonstrated that low bacterial counts will enhance shelf life, and that the bacterial count may reflect the degree of decomposition of a food. However, in order for a standard to be meaningful, relative to keeping quality, it must take into account specific types of organisms which will spoil the particular food, and the specific conditions of storage that prevail.

7. Standards are especially useful in the control of foods which are manufactured at a distance, and over which the regulatory authority has no opportunity of control through physical plant inspection.

LIMITATIONS OF STANDARDS

The objections to microbiological standards for foods are based on the following arguments:

1. The establishment of a numerical microbiological standard may be arbitrary and more or less dependent on a loose correlation with some other factors. Therefore, the standard may be unrelated to the sanitation status of the food.

2. There are defects in bacteriological tests. Present methods of sampling and analyses of foods are inadequate. There are statistical inconsistencies in the sampling of foods and bacteriological procedures for foods are not uniform or well established. Laboratory results may not be reproducible and many more samples than are usually collected are needed for drawing inferences which are statistically significant.

3. There can not be any universal microbiological standard for all foods, and a separate standard must be arrived at for each food or class of food. In addition, microbiological standards may not be feasible for many types of foods.

4. Various processing phases and storage phases that the foods undergo influences the viable count. If only the final phase of the food chain is tested, insanitary handling before heat treatment or other bactericidal processing may be covered up. A food which has been handled poorly in the initial phases of production may be given a final treatment that will permit it to meet a bacteriological standard.

5. The food is usually taken off the market or consumed before the bacteriological tests are completed, therefore, the tests have only retrospective significance.

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[1]Presented at the 49th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., October 24-27, 1962 at Philadelphia, Pennsylvania.

6. Microbiological standards will be expensive and difficult to administer and may not find acceptance in the courts of law.

If the list of advantages and objections is examined, it is found that they fall into these classifications:

1. Scientific or theoretical validity—are the standards based on verified data?

2. Technical—are standards technically feasible?

3. Administrative—can standards be employed in a regulatory food program?

4. Legal—will standards have legal acceptance?

SCIENTIFIC VALIDITY

The first premise to examine is the basic question of standards in environmental health rather than microbiological standards for foods. Standards have existed in environmental health for many years and over the years have been supported by some and rejected by others.

Environmental health standards should be related to the enhancement of the public health. However, there are great differences between the objectives of various standards. Some of the existing standards in environmental health are concerned with insuring the elements of simple survival, such as limits of concentration of toxic gases. Others are concerned with the prevention of disease, such as water quality standards. Others are concerned with maintaining a favorable environment for man, such as light intensity standards, and some are concerned with the maintenance of comfort.

The key problem in the establishment of standards is to meet the tests of soundness and objectivity whether the standards are for pollutants in air, microbiological quality of foods, radiation exposure, or chemicals in water. Of the hundreds of quantitative standards that already exist in the area of public health, how many can meet these rigid tests? Shuval *(18)* has raised some basic questions relative to the establishment of quantitative standards. These questions are:

Do the standards have a scientific basis?

Can the standards be justified as necessary for the protection of public health?

Are there other conditions operative in addition to scientific validity and public health necessity?

Are standards overly rigid?

Have the standards been influenced by political or economic considerations or by local factors?

Can standards be kept up-to-date in the light of an advancing technology or are they continually doomed to obsolescence?

Therefore, any discussion of standards raises problems beyond those related to science and technology. The establishment of standards raises questions relative to philosophy and morality, strategy and tactics, and economics and law.

TECHNICAL PROBLEMS

Leaving the realm of theory and descending into the "every day world," we are still confronted with some very basic technical problems relating to the implementation of microbiological standards. For instance, one of the most difficult and controversial areas in the establishment of microbiological standards concerns the role of indicators of fecal contamination. Tests based upon the detection of fecal indicators of sanitation have serious limitations *(5, 6, 23).* Tests for the detection of potential pathogens should not be used in the routine testing of foods, but should be limited to exploratory surveys of new and existing food products to assess their potential as sources of food-borne disease.

Other technical problems are related to improvement and clarification of standard laboratory methodology, including methods of collecting samples, size of samples, statistics of sampling, culture media, incubation temperatures, and quantitative detection of pathogens or indicator organisms of demonstrated sanitary significance.

The main purpose of a microbiological standard is to give information relative to the sanitary conditions, practices, and processes in the plant; and to the likelihood that the food may or may not present a health hazard. In order to do this, the development of a microbiological standard must be preceded by the development of sanitary codes of practice. The bacteriological standard might be based on an observed numerical count when the acceptable standards of sanitation specified in the code are followed. It is important that microbiological tests and standards not become a mere "numbers" game, rather, standards should be as objective and meaningful as possible. Standards are more likely to be objective if field inspection services are teamed with laboratory services to correlate and identify the sanitation factors, the food components and the particular food processes which influence the microbiological quality of a food at each stage.

ADMINISTRATIVE CONSIDERATIONS

Environmental health standards do not arise of themselves. There must be a need for such standards, and this need must be successfully communicated to a competent governmental, or professional, or scientific organization so they will start on the arduous task of developing standards. The role and expectation of the program administrator is critical to the development of standards in environmental health. On one hand, the administrator operates

within a wide area of discretion. On the other hand, legislative bodies, courts, and administrators have been interested in clearly defined quantitative limits in order to have a greater uniformity in the administration and interpretation of public health laws. It has been suggested that the development of objectivity in standards will result in less need for dependence on individual determinations and subjective judgments. Some administrators have looked to microbiological standards as authoratative guides that may substitute for professional judgment and thus relieve them of troublesome decisions. Wolman *(24)* has said that many administrators are searching for mathematical certainty in the solution of complex problems related to the environment, despite the fact that there is a high degree of uncertainty in the underlying scientific principles that are involved in establishing such standards. Such administrators hope that they will be able to solve these problems by some formula which has universal applicability. This, of course, is a delusion since there will always be the need for continued use of sound professional judgment based on experience and understanding in the application of standards.

LEGAL

If and when microbiological standards for foods come into wide use, we can expect that they will be tested in the courts. Tobey *(22)* notes that although the courts have been liberal in upholding all reasonable regulations on milk and food, the judiciary has also recognized the existence of certain constitutional limitations upon the scope and extent of such control, especially when the legal rights of individuals under the federal and state constitutions have been or are likely to be infringed. Tobey *(22)* notes that ". . . the health officer who confiscates and destroys private property such as milk in a summary manner must be able to prove the impurity of the milk in a court of action, should it arise . . . . Similar precautions must be observed by health officers in taking samples of milk and milk products for analysis. Where, for example, only one of twenty cans of milk was tested in a supply which was to be commingled, it was held that there was insufficient evidence to convict." The established legal principles regarding state and municipal control of foods in general are the same as those set forth for dairy products.

Whether microbiological standards for various foods will be upheld in the courts will depend on their demonstrated objectivity, the lack of capriciousness, and the way they are applied by the regulatory agency. The latter is probably the determining factor. For instance, there is doubt whether standards can be used by regulatory agencies for the acceptance or rejection of food. This type of surveillance is more applicable for a continuous industry quality control program than for an official regulatory program, where the sampling is done on an intermittent basis and extremely small numbers of samples are taken. An exception to this may be made in those cases where the processing plant is beyond the control of the regulatory authority and when sampling constitutes the only method of gathering information on the safety and quality of the food. In this instance, greater use should be made of reciprocal arrangements between departments, so that the regulatory agency receiving a food product may be informed of the results of sanitary inspections of the food plant made by the agency where the manufacturer is located. This inspection information in combination with bacteriological tests at the point of receiving the food would have validity.

DISCUSSION

There are a limited number of microbiological standards and criteria in current use *(11)*. This insufficiency of explicit standards is reflected in the scope of present day laboratory programs in food sanitation. Referring specifically to local regulatory agencies, these laboratory services have been limited to the endless routine testing of milk and milk products and a few other foods, and the occasional investigation of a food borne disease outbreak.

When the administrator is confronted with a laboratory report showing a high bacterial count in a milk sample, he knows the course of action to take since there are well established standards. But what action does the administrator take when confronted with standard plate counts in foods such as ground beef, and chicken salad, which may run into the millions? To all intents and purposes these foods appeared to be wholesome and edible when sampled. Upon receiving the laboratory report, the administrator must make some interpretation as a guide to action. One can not escape from standards and criteria, be they implicit or explicit. Standards and criteria are part of the decision making process in government.

Recognizing that local regulatory agency budgets do not allow for routine testing of all food that might warrant such sampling, the program administrator should increase the scope of food testing. However, there should be a change of emphasis from the routine testing of foods to field research and evaluation surveys of foods. Laboratory services in food bacteriology should be used as a diagnostic tool to collect information relative to acceptable processing techniques and potential hazards of a wide variety of foods rather than the continual and repetitive sampling of a few foods. A rational approach requires the correlation of plant inspection data with laboratory

data. Field studies of the sanitary conditions in food plants should be related to bacteriological findings. This has not always been the case in the derivation of microbiological standards for foods. For the most part, the regulatory microbiological standards in current use have been based either on arbitrary indices which have been established and modified through subsequent experience, or they have been arrived at retrospectively, based on performance studies of food products already on the market. This is not to say that standards derived in this way are not valid. It is not necessary to wait until all uncertainties are settled before microbiological standards are proposed and established. Legislative bodies, courts and administrators do not require perfect knowledge. However, what is required is the absence of capriciousness in the establishment and enforcement of standards. Confidence in the use of microbiological standards by regulatory agencies and by food industries will be proportionable to demonstrated objectivity of standards.

CONCLUSIONS

There is a need by administrators for microbiological standards for foods. The greater the objectivity of these standards, the more useful they will be. Standards should be developed only after a careful study of field conditions and through correlation of results of plant inspections with laboratory data. The approach in establishing microbiological standards should, therefore, be ecological and epidemiological. The ecological concept is one which studies the relation between living organisms and their environment; the epidemiological method is one which comprises an orderly approach to the study of causes and effects. Local regulatory agencies that combine field inspection services and laboratory services can do a great deal of field research to help arrive at objective standards.

The very nature of the food chain requires that there be close intergovernmental cooperation. No single level of government can muster enough resources to do a complete job of food protection.

Metropolitan health departments should conduct microbiological evaluations of foods for they are well situated to carry on this type of field activity. However, much of the data from these efforts will be lost unless there is a method for the information to be readily disseminated. To do this a suggested method is to have the major local health departments organize an information network so that these findings may be made available to each other. The Public Health Service could take a major role in establishing an information exchange or clearing house for information on microbiological standards for foods. At the same time, more use should be made of reciprocal arrangements and agreements between food protection agencies. A governmental unit receiving a food product could be informed of the results of food plant inspections made by the control agency where the manufacturer is located.

Standards will continue to be used by administrators of environmental health programs and use of microbiological standards for foods will increase. There have been misuses and abuses of such standards in the past. The future of microbiological standards will depend as much on the equitable and rational application by environmental health administrators as on the scientific validity of the standards.

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SELECTION OF A MEDIUM FOR THE ISOLATION AND ENUMERATION OF ENTEROCOCCI IN DAIRY PRODUCTS[1]

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Ten media, commonly used for the detection and isolation of streptococci of sanitary significance in water, dairy and other food products, were compared to establish a plating medium for the enumeration of enterococci in dairy products. To make all media suitable for comparison by the agar plate method, agar was added to those media which initially were recommended for use as broths. Criteria used in selecting the medium were high recovery, selectivity but not undue inhibition of enterococci and ease in obtaining and interpreting results.

The recovery data of three different platings of enterococcus cultures were statistically analyzed. In this manner, one medium was eliminated on the basis of low recovery. Six of the remaining nine media were eliminated because they permitted the growth of non-enterococcus cultures. Two of the three media then remaining were eliminated because they allowed one *S. bovis* culture to grow. In addition, these media showed considerable variation in size and color of enterococcus colonies.

The medium selected, the Citrate azide medium of Reinbold, Swern and Hussong (13), was modified by increasing the azide concentration. This did not result in undue inhibitory effects. It was further tested by obtaining recovery data for 158 known enterococcus cultures. High selectivity was demonstrated by showing that 408 colonial isolates from plates of raw milk, cheese and butter could be identified as enterococci.

Coliform bacteria are widely used as indicator organisms for pollution in water, food and dairy products. Some investigators have proposed that the enterococcus group of bacteria could serve as a supplement or substitute for the same purpose. While coliforms may be isolated easily and confirmed by relatively simple bacteriological techniques, the multiplicity of detection procedures and poor agreement among various methods for the quantitative enumeration of enterococci present serious handicaps to their systematic study.

This study was undertaken to establish a plating medium which would be suitable for the detection and enumeration of enterococci in dairy products. Criteria used in selecting the medium were high recovery, selectivity but not inhibition of enterococci, and ease in obtaining and interpreting results.

Since the discovery of the suppression of growth of Gram-negative bacteria with sodium azide by Hartmann *(6)*, many investigators have used this substance in media for the isolation of fecal streptococci. Thallous acetate also has been used for this purpose. White and Sherman *(18)* devised a medium, Penicillin azide agar, for the enumeration of enterococci from raw milk. They reported that the medium, although completely selective, partially inhibited the growth of *Streptococcus durans*. Studies on the reduction of tetrazolium by lactic acid bacteria have been made by many workers. Laxminarayan and Iya *(9)* compared the dye-reducing activities of dif-

[1]Journal Paper No. J-4487 of the Iowa Agricultural and Home Economics Experiment Station, Ames, Iowa. Project No. 1488.

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ferent microorganisms. They found streptococci to be more active than lactobacilli in reducing tetrazolium. Among the streptococci, enterococci, followed by S. *lactis*, were more active than others. This property now is utilized for differentiation of enterococci by colony color on many media.

EXPERIMENTAL PROCEDURE

The following commonly used media for the detection and isolation of streptococci of sanitary significance in water, dairy and other food products, with their respective code numbers, were used in this investigation; the composition and procedure for use were as recommended by the respective authors unless otherwise stated.

M1—Azide dextrose broth *(12)*
M2—Buffered azide glucose-glycerol broth *(5)*
M3—Ethyl violet azide broth, Litsky *et al. (10)*
M4—Citrate azide agar *(13)*
M5—Modified thallous acetate tetrazolium agar *(2)*
M6—M-Enterococcus agar *(16)*
M7—Ethyl violet azide agar, Mallmann and Kereluk *(11)*
M8—Enterococcus confirmatory agar *(14)*
M9—Azide sorbitol agar *(8)*
M10—KF streptococcal medium *(7)*

In M1, M2 and M3, 1.5% agar was added for use as a plating medium. Pour plates were prepared and incubated for 48 hr at 37 C. The azide level in medium M4 was raised from 0.01 to 0.04%, and the melted medium was tempered to 48-50 C before plating. For enumeration, a thin sheet of white paper (Kleenex tissue) placed underneath the petri dish on the illuminated Quebec colony counter enhanced color contrast between colonies in medium M4 and the background. One per cent glucose was added during the preparation of M5, and the medium was used for plating, pour plates being incubated for 48 hr at 37 C. Medium M6, used by the original authors for enumeration by membrane filter technique, also was used as a plating medium after increasing the agar content to 1.5%.

Recovery

Ten cultures of enterococci, obtained from the American Type Culture Collection (ATCC), were plated in duplicate in the 10 media. Except for the plating media and incubation temperatures noted, the standard procedure for the agar plate method as given in Standard Methods for the Examination of Dairy Products *(1)* was used throughout the investigation. Using fresh transfers of 16-20-hr cultures, three different platings were accomplished. Average counts of duplicate plates were recorded, and the recovery data for all media were statistically analyzed.

The following cultures were used for plating:

Organism	ATCC Number
S. *durans*	6056
S. *faecalis*	4200
S. *faecalis*	6057
S. *faecalis*	9790
S. *faecalis*	10541
S. *faecalis*	11420
S. *faecalis*	11700
S. *faecalis* var. *liquefaciens*	13398
S. *faecalis* var. *liquefaciens*	13399
S. *faecalis* var. *zymogenes*	6055

Selectivity

To study the inhibitory action on non-enterococcus cultures, two cultures each of S. *bovis* and S. *equinus* were plated in the remaining nine media. These cultures grew in five of the media, eliminating these media from further consideration. Nineteen other non-enterococcus cultures representing five different genera, *Streptococcus*, *Pediococcus*, *Leuconostoc*, *Lactobacillus* and *Bacillus*, were plated in the remaining four media to study further their inhibitory effect on these cultures.

RESULTS AND DISCUSSION

In the choice of a medium, selectivity and recovery were the main factors considered. The appearance of typical, colored colonies, as described by the respective authors, in some instances did not result from the growth of enterococci. Therefore, identification of isolates from selective media, to confirm them as enterococci, on the basis of morphological, cultural and biochemical tests was considered essential to determine the presence of false-positive organisms.

Recovery

The analysis of variance of the recovery data of 10 pure enterococcus cultures in the 10 media in three consecutive trials was carried out in accordance with Snedecor *(17)*. The results are presented in Table 1.

The statistical implication of the F value obtained in Table 1 is that there are highly significant differences between the media. To compare further the recovery of enterococci from the different media, the Multiple Range Test of Duncan *(4)* was carried out; results are presented in Table 2. The statistical interpretation of "Means" as given in Table 2 suggests that the recovery of enterococci from medium M8 was the lowest. The difference between this medium and the other media for the recovery of enterococci was statistically significant. However, as Table 2 indicates, there was no significant difference in the recovery of enterococci in the remaining media. This eliminated medium M8 from further consideration and suggested that the remaining media could be equally useful for the enumeration of enterococci in pure cultures.

TABLE 1.—ANALYSIS OF VARIANCE OF ENTEROCOCCUS COUNTS OF PURE CULTURES IN 10 MEDIA

Source	Degree of freedom	Sum of squares	Mean squares	F Value[a]
Media	9	2,188,998	243,222	9.009[b]
Cultures	9	25,930,053	2,881,117	
Experimental error	81	2,186,662	26,996	
Sampling error	200	5,295,082	26,475	

[b]Significance at 1 per cent level.

[a]F value = variance ratio.

ed that all of the fecal streptococci be included under the "enterococcus" group. We have followed the classification of streptococci as given in Bergey's Manual of Determinative Bacteriology *(3)* and regard, as enterococci, only those organisms included under the enterococcus group. Therefore, from our point of view, this eliminated these five media, leaving only four media, M4, M6, M7 and M9, for further consideration.

The following nineteen non-enterococcus cultures, representing five different genera of organisms commonly found in dairy products, were plated in media M4, M6, M7 and M9: one culture each of *S. lactis, S. diacetilactis, Lactobacillus casei, L. acidophilus, L. bulgaricus, L. plantarum, L. brevis, L. fermenti* and

TABLE 2—MULTIPLE RANGE TEST OF MEANS OF ENTEROCOCCUS COUNTS IN 10 MEDIA

P[a]	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Rp[b]	2.820	2.966	3.063	3.134	3.189	3.233	3.269	3.300	3.327	
Media	8	7	4	10	3	6	2	1	9	5
Means	11.92	34.78	37.16	39.82	39.95	40.33	40.62	40.68	40.88	42.12

[a]P = number of means entering into comparison.

[b]Rp = shortest significant ranges.

Note: Any two means not underscored by the same line are significantly different.

Selectivity

The recovery of enterococci from a mixed culture or product, such as milk, with a wide variety of microorganisms would depend upon the selectivity of the media used. To find out if the media permitted the growth of non-enterococcus, fecal streptococci, two cultures of *S. bovis* and two of *S. equinus* were plated. All four of these cultures grew in large numbers in media M1, M2, M3 and M10. Both *S. bovis* cultures, as well as large numbers of other microorganisms from raw milk, grew well in medium M5. Only one *S. bovis* culture (ATCC 9809) grew in media M6, M7 and M9. None of these non-enterococcus cultures grew in medium M4, as shown in Table 3. This eliminated media M1, M2, M3, M5 and M10 from further consideration. All five of these media, with the exception of medium M3, were developed primarily for use in detecting and enumerating fecal streptococci from water and foods other than dairy products The originators *(10)* of medium M3 have claimed high selectivity for this medium when used as a broth for detecting enterococci in water. They also have reported that a wide variety of organisms, including one *S. bovis* culture, did not grow in this medium. They did not attempt to grow *S. equinus* in the medium. Although growth of the four non-enterococcus cultures mentioned was less in this medium than on others, the cultures did grow in the medium (Table 3). The originators *(7)* of medium M10 have suggest-

TABLE 3. GROWTH OF NON-ENTEROCOCCUS, FECAL STREPTOCOCCI IN SELECTIVE MEDIA[a]

Medium	*S. bovis* ATCC 9809	*S. bovis* T9[b]	*S. equinus* T11[b]	*S. equinus* T12[b]
M1	>30 X 10^7	30 X 10^7	65 X 10^6	16 X 10^5
M2	26 X 10^7	25 X 10^7	37 X 10^5	90 X 10^4
M3	15 X 10^7	14 X 10^7	10 X 10^4	50 X 10^4
M4	<10	<10	<10	<10
M5	20 X 10^7	30 X 10^7	<10	<10
M6	>30 X 10^7	<10	<10	<10
M7	22 X 10^7	<10	<10	<10
M8	—[c]	—	—	—
M9	24 X 10^7	<10	<10	<10
M10	26 X 10^7	40 X 10^6	72 X 10^6	25 X 10^5

[a]Counts expressed as Plate Count/ml. Incubation times and temperatures used were as recommended by the respective authors of each medium.

[b]Source of cultures: Dr. P. M. F. Shattock.

[c]Determination not made.

Bacillus subtilis; three cultures of *Pediococcus halophilus;* one culture each of *Ped. acidilactici* and *Ped. pentosaceus* and five cultures of *Leuconostoc* sp. The culture of *L. acidophilus* grew in medium M6 but not in the other three media. This, coupled with the growth of one S. *bovis* culture, eliminated medium M6 from further consideration. Six additional S. *bovis* cultures obtained from various sources then were plated in the remaining three media. None of these cultures grew even when 0.1 ml of a 24-hr litmus milk culture was plated directly.

Fifty-one colonies isolated from raw milk plated in media M4, M7 and M9 (19 from M4, 18 from M7 and 14 from M9) were studied. Using Sherman's criteria *(15)*, the percentages of these colonies identified as enterococci were 100, 90 and 93 respectively. There was considerable variation in the colony size and color observed in media M7 and M9. Continuous colonies in straight, long strips were consistently observed in plates of medium M7, and the colony size was quite variable, ranging from pin-point colonies of S. *durans* to large colonies of other enterococci. The colonies in plates of medium M9 also were often small, yet countable, and sometimes had lighter shades of yellow to green. The varying colony size and color in plates of media M7 and M9 presented difficulty in counting. Colonies in plates of medium M4 were usually large (up to 3 mm in diameter) and had a deep blue color. Small blue colonies (0.5 mm) were observed only in the case of S. *durans* but were easily counted despite small size. These considerations and the fact that one S. *bovis* culture grew in media M7 and M9 eliminated them from additional consideration.

To test further the desirability of medium M4, 158 known enterococcus cultures, including four S. *faecium* cultures were plated. All grew well. Four-hundred-eight colonial isolates from 29 raw milk, six cheese and six butter samples plated in medium M4 also were identified and confirmed as enterococci.

The originators *(13)* of medium M4 reported that 0.01% sodium azide, when used with ditetrazolium chloride, completely inhibited gram-negative rods. Upon subsequent investigation, this recommended concentration of sodium azide was found inadequate to suppress the growth of all gram-negative bacteria and, in some instances, permitted the growth of a haze of pin-point, colorless colonies. For this reason, 0.04% sodium azide, a common level for enterococcus media, was used. Contrary to the report of the original workers, no readily discernible reduction in colony size was observed. The comparable recovery, highest selectivity and ease of enumeration of enterococci in medium M4 suggested it as the best plating medium for dairy products among media studied in this investigation.

SUMMARY

Ten commonly used selective media for enterococci in water, food and dairy products were used in a comparative study to select a suitable plating medium for dairy products. The media were used on 10 pure cultures in three successive trials to compare recovery rates. Statistical analyses were applied to the data. To determine selectivity of the media for enterococci, 29 non-enterococcus cultures were plated in the various media. In addition, colonies isolated from raw milk plates were identified. to confirm them as enterococci. Media were eliminated on the basis of low recovery, growth of non-enterococcus cultures and variation in the size and color of colonies.

The medium selected, the Citrate azide medium of Reinbold, Swern and Hussong *(13)*, was modified by increasing the azide concentration without showing undue inhibitory effects. It was further tested by obtaining recovery data for 158 known enterococcus cultures. High selectivity was demonstrated by showing that 408 colonial isolates from plates of raw milk, cheese and butter could be identified as enterococci.

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LAST IN A SERIES

TRAINING OPPORTUNITIES FOR THE SANITARIAN[1]

ON THE JOB TRAINING

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This part of the panel discussion on training opportunities for the sanitarian deals directly with the bread and butter approach—the sanitarian at the local level. That there are training needs at this level is without question even though they may be unrecognized. At this point it would seem appropriate to quote from the report of the Sub-Committee on Continuing Education of the Committee on Training of the Engineering and Sanitation Section Council of the American Public Health Association *(1)*. "The success or failure of many public health programs is directly related to the competency of the staff at the local level, the firing line in public health administration today." With today's limited supply of sanitarians and public health engineers it is even more essential that specific training be provided for the new employee regardless of how his job specifications may be written.

Few graduates come to the job with adequate backgrounds in public health; thus, orientation and training in this field is essential. Not training just for training's sake—so many hours of lecture, so many feet of visual aids projected, the ears of so many trainees bent and their gluteal muscles sorely tested—but training with an objective. As emphasized elsewhere *(2)*, such training should be directed at bringing about "desirable changes in knowledge, skills, attitudes, and behavior." Procedures for measuring some of those changes have been developed by the Professional Examination Service of the American Public Health Association which are called the Pre-and-Post Evaluation Tests. The effective use of these measurement tools has been documented previously by Franklin *et al. (3)*.

On-the-job training is much more than specific formal in-service training courses right on the job with appropriate visual aids. After all, one good picture is worth a thousand words. It also includes effective use of policy and procedures manuals of the specific agency as training guides to field actions. Staff meetings should be considered training when "used for passing the word" and the development and interpretation of policy. Certainly the supervisory conferences for individual guidance and development of the sanitarian is the supervisors' direct contribution to training. Another element of training is "supervised field training experience which provides the opportunity under supervision to observe and participate in the field application of the principles and practices of public health" *(4)*. The last item of on-the-job training, but not the least, is the development of skills and techniques in the "s c h o o l of hard knocks," the actual job itself.

So much for the needs for training, the objectives and the setting of the stage. The topic is, however, "Training Opportunities for the Sanitarian." My prejudices show rather markedly and a large part of my remarks are necessarily drawn from the training that goes on here in Pennsylvania, and more specifically here in Philadelphia. Recently Steigman *et al.*

[1]Presented as part of a Symposium on Training Opportunities for the Sanitarian at the 49th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Philadelphia, Pennsylvania, October 24-27, 1962.

(5) described in detail the career development of the sanitarian in Pennsylvania. They reviewed the progress made in sanitarians' training since the survey of Pennsylvania sanitarians and their backgrounds was reported by O'Brien *(6)*.

Steigman *et al. (5)* described the three month orientation period for new personnel, the formal intensive twelve-week generalized in-service training course given at the Pittsburgh Field Training Station, and the last three months of supervised field training experience that provided an opportunity for the sanitarian to put into practice his previous observations and his learning experiences from his twelve week formalized training course.

In Philadelphia's Division of Environmental Health, we like to think of using all the tools for career development. The undergraduate education of the sanitarian in sanitary science, dairy or food technology or biological sciences plus one year's experience is used as a foundation upon which basic topical courses in milk sanitation, insect and rodent control and swimming pool sanitation are given. Specialized topical courses are developed and presented as program emphasis changes and new programs are undertaken. Not all courses necessarily are of purely a technical nature. Certain courses have been provided in the areas of inter-personal relations, public relations, communications, and supervisory development.

These short topical courses usually are from two to five days in length. They are designed to cover a specific subject, whether a technical subject such as rodent control or a non-technical subject in the social sciences such as communications. They are designed and developed to cover the area item by item after which speakers are asked to participate in the training program. This request might be made to the section chief, the assistant in a particular program area, one of our supervisors or field sanitarians, or a speaker from industry or a local academic institution. Asking for and obtaining participation of individual staff sanitarians provides a subtle way of reinforcing the specialized knowledge of the individual speaker. A basic library, with the standard texts in environmental health and an extensive catalog of technical material such as soft cover reference reports, sales brochures for equipment and flow diagrams, is an essential tool in subject preparation.

As an integral part of any training course, time should be set aside for one or more field problems of a practical nature. In addition, each training course should attempt to measure the effectiveness of the presentations with a final examination or quiz. We call it a written review but such a subterfuge is quite apparent. It is a measure of the effectiveness of the instruction—"if the pupil hasn't learned, the teacher hasn't taught." A course evaluation with questions about content, time, sequence, effectiveness, etc., is filled out by the trainees. This assists in planning other training courses.

All of this in-service training is not a substitute for actual work experience, but it can do much to minimize costly mistakes and do much toward making the new sanitarian recruit feel more at home and develop his confidence. In the Philadelphia operation we have developed a system of rotation from district to district since field problems vary throughout the city. In this fashion the trainee receives a broadening of his knowledge and work experience in phases of environmental health that he may not have experienced in his previous district. We also use a system of rotation from district office assignments to specialized central office programs in accident control and radiation protection. These are short term, approximately six months, training assignments that provide an introduction to the subject area and develop a minimum working effectiveness in the area.

In addition to internal training, opportunities are provided for external training. For example, personnel are given opportunities to attend specialized courses at the Robert A. Taft Sanitary Engineering Center in radiological health, air pollution control or industrial hygiene. Furthermore, opportunities for graduate training leading to the M.P.H. degree are provided. In this program the individual sanitarian is given educational leave at three-fourths pay and the Pennsylvania Department of Health pays for the tuition.

Since 1954, eight sanitarians have been able to earn the M.P.H. while working with the Division of Environmental Health. A total of nineteen members from the Division have received this degree. The Pennsylvania Department of Health also has been exceedingly helpful by assuming the cost of fees for other short courses attended by Department Sanitarians at the local academic institutions. The other program at the graduate level is the M.G.A. degree program which is financed by the Samuel S. Fels Fund. In this program, a limited number of field sanitarians leave work early one day each week to go to the University of Pennsylvania, Fels Institute of Local and State Government, for courses in governmental administration. Although the City arranges part of the time for class attendance, the individual contributes the remaining time. Four of the Environmental Health staff have received Master's Degrees in this fashion and four presently are enrolled in the program.

All of these training opportunities are aimed at the career development of the individual sanitarian to improve his competence and make him a more

effective public health worker. We trust that they are effective.

If much of this discussion, on my part, of training opportunities for the sanitarian has sounded like a subtle, or even more pointed, recruitment pitch you are probably 100 per cent correct in assuming that it is. In Pennsylvania we are proud of the progress we have made in the last few years in the career development of the sanitarian, his professional status, and the improved monetary support provided for him. Come to Pennsylvania and profit by the training opportunity for sanitarians!

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THE FOOD SERVICE INDUSTRY AND ITS RELATION TO THE CONTROL OF FOODBORNE ILLNESS[1]

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Some viewpoints that I have acquired over the past 40 years in the food service business may prove of value to this group and the restaurant industry, and to our mutual interest, the public.

During my initial eight years, starting in 1921, as a cafeteria employee and supervisor, concern was that things be clean, which, of course, meant look clean. Of the next four years as manager, little of value is remembered of inspector visits or advice received. Cleanliness was largely a matter of the owner's personal consciousness. Drying of tableware was universally effected by toweling, since dish washing facilities seldom found water hot enough for self-drying.

Refrigeration during those earlier days was accomplished through the iceman, who filled the overhead bunkers of ice boxes with ice, producing storage temperatures from perhaps 60 degrees, at best, and on up as the ice melted away.

As President and General Manager of our company, beginning in 1932, I passed through 20 years of varying experiences with state and local health departments. This involved contacts within our establishments and at association meetings of local, state and national level. I saw great advancement in official and operator understanding of hazards and how to cope with them.

During these years, growing public awarenesses and demands for local action often found officials of varying qualifications in positions of responsibility. They did the best they could through combining limited criteria with personal hunches for determining problem areas and effective corrective measures.

Conflicts within and between communities became increasingly obvious. Unfortunately, differences of opinion between operators and officials combined to spread doubts among operators and their personnel upon regulations, even those deserving of full justification.

We have seen confidence and understanding among food service operators, upon whom end results to the public must eventually depend, deteriorate. Often the effect has been frustration for both public health officials and food service operators.

Thus, until ten years ago, my personal understanding of the relationship between restaurants and the control of foodborne illness developed under these confusing circumstances, the latter years of which involved the operation of twelve establishments in seven cities, over three states.

Restaurant association contacts soon confirmed that my personal frustration in knowing what was right was being voiced by operators generally over the country. As Chairman of the National Restaurant Association's first public health committee, appoint-

[1]Presented at the 49th annual meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., at Philadelphia, Pennsylvania, October 24-27, 1962.

[2]President, Bishop—Stoddard Cafeteria Company and formerly Chairman of the Public Health Committee of the National Restaurant Association.

ed for the singular purpose of probing for opportunities at the national level of improving the uniformity of and confidence in sanitation regulations applying to restaurants, I began my past ten years experience. Working with the National Sanitation Foundation during that period, as industry's co-chairman of the National Food and Beverage Council and with U. S. Public Health Service as an industry representative on its Advisory Committee, has provided an opportunity to associate with many officials from all over the country and with educators in this field.

I have, in fact, felt at times more like a health officer than an operator, having actually spent far more conference hours during the past ten years with public health groups than with those of the food service industry. Combine these close associations with industry and official groups with 40 years of working in and operating seven to twelve establishments, and we find acquired an understanding of problems and weaknesses of both groups.

It seems, therefore, most advantageous to speak of, and on behalf of, the great mass of people within the Food Service Industry, where understanding means the real difference between control in fact, and control substantially in theory and wishful thinking.

The principal handicap under which operators view the relationship of their establishments to foodborne illness and its control, is that of much frustrating confusion.

That confusion should exist and these questions be asked today, there perhaps should be no small measure of sympathetic understanding exchanged among all of us. For where do we find so many people of such limited qualifications, under so many varying conditions, trying to do something about so many vaguely identified hazards, the evidence of which cannot be seen, tasted, smelled, felt, or heard?

Regarding Compliments Due

There is no confusion regarding the tremendous contribution made throughout the years by health officers over the country to the development of sanitation standards. This applies to those within our local areas up to their centers of association guidance, such as the International Association of Milk and Food Sanitarians — to the leadership of the U. S. Public Health Service — to the National Sanitation Foundation, and other supporting research and educational institutions. There can be no doubt regarding the great wealth of pertinent knowledge possessed throughout this highly professional group. Of our local sanitarians, we in my own company say continuously to ourselves, "Thank heaven for health officers." A well organized and conscientiously run health department is indispensable to the development of understanding and satisfactory standards within our twelve establishments.

There is no doubt about the accomplishments of progressive restaurant operators throughout our land, with their native instinct of wanting to be right, and of taking pride in being progressive. Many have sought and adopted standards not only up to, but well beyond, normal sanitation and food safety requirements. With courage and a will to succeed, they have paid the bill for equipping and operating American public eating houses with the highest standards of sanitation and food protection the world over.

Tribute must also be paid to the restaurant equipment manufacturers and suppliers who, with keen inventiveness, have kept pace with demands, and at times gone ahead to help make these recent years of development possible.

Finally, there are the American food merchants who have combined technological developments to place constantly increasing varieties of American foods at their safest within our American restaurants, thus providing operators and their patrons a full measure of confidence in their safety.

Good Promoted by National Restaurant Association

Through its newly formed Public Health Committee, the National Restaurant Association, in the fall of 1952, questioned the National Sanitation Foundation on the possibility of getting all nationally organized groups of health officials to sit down with food service groups for the purpose of developing a new ordinance and code combining the best judgment of all concerned. This would insure a document deserving of countrywide support and adoption. Favorable reactions brought together at the National Sanitation Foundation a large, representative group of official and industry people, involving many meetings over a period of three years. This action created the National Food and Beverage Council.

The initiative for creating a new regulatory pattern was taken up by the U. S. Public Health Service as a revision of their 1943 Recommended Ordinance and Code Regulating Eating and Drinking Establishments. Two National Restaurant Association representatives served on the 16-man Advisory Committee appointed to assist in developing the new document, which was published recently.

The resulting new manual is a splendid document in many ways. The National Restaurant Association members of the Committee take satisfaction in having contributed generously to the better understanding and direction of purpose embodied in it.

The National Restaurant Association believes a major step was accomplished towards its first goal of a modernized regulatory pattern deserving of

countrywide support and adoption as a means of improving consistency and understanding.

The continuing program of National Restaurant Association's activities in this field, as recommended by its Public Health Committee and endorsed by the Association's directors, calls for the exercise of leadership among the restaurant people in this field. Under the capable, energetic guidance of Mr. William Clements of Denver, Colorado, the present Chairman of this committee, this group is pursuing many projects including:

1. Working with state and local associations in their promotion of increased activity in their field, and interest in the use of the new Public Health Service Manual.

2. The best methods for reaching out to the industry in promoting increased interest, understanding and effective action are being sought. The National Restaurant Association believes that improvement of lasting results yet needed can be accomplished only by working through top management.

3. There is not to be found one complete text on this subject written especially for operators in language they and their people can understand. It is believed that such a text would represent a valuable asset in the promotion of good standards of food safety and sanitation. The development of such a text by sections is to be undertaken.

4. National Restaurant Association cooperation with public health leadership of national significance, as has occurred in the past, is being extended with continuing interest. This involves:

a. The National Sanitation Foundation, that has had the personal and annual financial support of the National Restaurant Association since 1948.

b. Cooperation with the Food Research Institute at the University of Chicago, headed by Dr. G. M. Dack. This organization has received substantial financial support from the National Restaurant Association annually for the past eight years with a very special interest in better knowledge being obtained for our industry on the control of food-borne illness.

c. Cooperation with the U. S. Public Health Service, which has been a source of great satisfaction to our Association leadership. With uniformity of regulations being a prime interest, its work in this regard is fully compatible with National Restaurant Association's plea for countrywide consistency.

d. With technical knowledge of this subject being well-known within our educational institutions, we take note that the National Restaurant Association in sponsoring the first restaurant graduate course at the University of Chicago in 1947, a course now provided in 21 schools over the country, is responsible for sponsoring enlightenment among new graduate entries into the food service field.

The restaurant industry is on the move with an earnest desire to contribute effectively to the elimination of confusion and the promotion of understanding in this field. Much of what eventually is to be accomplished will be determined by the acceptance and guidance given to this activity by the combined leadership.

SUGGESTED OFFICIAL ACTIONS

The following steps are considered of primary importance:

1. Campaign for a serious fresh approach to improving operator understanding through the elimination of inconsistencies. A wide range of variations is involved that create highly detrimental individual operator reactions, all the way from doubt and distrust to complete disbelief in his prime source of technical information, his local health department. To simply identify the scope of our reference, inconsistencies are cited as occurring within the following relationships:

a. One officer today, and the same officer tomorrow.

b. One officer and his successor.

c. One establishment and others within the same community.

d. One community and its neighbor.

e. One state to another.

f. Inconsistencies with the facts themselves, as well understood by the operator.

No single factor can contribute more to industry understanding and responsiveness than complete confidence of operators in their local health department. With inconsistencies, however, representing the one greatest destroyer of confidence, it would seem completely worthy of any effort required among health officer groups to campaign country wide for consistency wherever such may serve improved industry-health officer relationships in their mutual desires for doing what is right.

2. Take serious account of what actually should be practiced when officials express agreement with the so-called education approach vs. police methods. We quickly refer to our understanding that one is definitely not a complete substitute for the other.

Testifying to the increasing trend of confidence in this approach is the awareness that in the 1943 edition of the USPHS Recommended Ordinance and Code, but two lines were devoted to the educational approach as a passing remark, while pages are used to laud its merits in the new 1962 manual.

Undoubtedly, the simple reliance upon legally enforced directives is a convenient fast-acting process, and one requiring a minimum of knowledge and communicating ability. Yet, the local health department has a choice between continuous fence building or the more permanent results of a cooperative, understanding and enlightened food service industry. A

drive within health officer leadership for identifying what constitutes a true educational approach as a pattern to be promoted on a country wide basis would seem to possess great promise of honest-to-goodness value.

3. Sponsor the adoption of publicity programs of local to national level that are clearly and unmistakably directed to the accomplishment of practical standards of true and understandable public value. The perfectly natural desire found in most of us to seek personal satisfaction and recognition, keeps us constantly on the alert for new means of getting out in front. We believe the trend of some projects today deserves re-evaluation on this basis, the concern being that official effort and demands upon industry resources may occur disproportionate to any assessable public good.

For example, I believe there is ample justification for adopting the position that the right of decision to have a classy showplace kitchen should remain the prerogative of the man who has to pay the bill and make the extra investment pay out. Leadership, guided by a policy of adopting for official enforcement the very highest standards procurable — especially when fostered under such measurements as nicer, smoother, easier, better or surer — can find that leadership easily riding past real measurable benefits to the public.

There must be no confusion about the distinction that must be made between architects, designers and builders, functioning in the luxury of approving the finest, without concern for cost, and the great mass of individual restaurant operators who, in risking their personal life's savings, must necessarily weigh cautiously the value to be gained in economic return and public protection from every dollar spent.

Unless there is to be an official expectation of an ever widening gap between written regulations and what is generally enforced in a community, there must be a renewed dedication of our country's public health groups to the cause of meaningful, effective, and enforceable minimum standards. It must follow that if the current rush of interest toward luxury standards is permitted to continue, incorporated in regulations and enforced uniformly upon the country's restaurants, large numbers will be forced out of business.

The word "practical" must certainly have an understandably acceptable place in describing standards for public safety. There is great need for countrywide agreement on practical standards of food protection and sanitation. This was, we believe, the purpose of the new USPHS Manual.

4. The opportunity for the removal of a misunderstanding that exists, not only with industry but, perhaps of greater importance, with the public — we refer to the ABC Placarding System.

Though represented to the public as a measure of safety, it is in fact not that at all. Among operators who understand the problem of obtaining true and unbiased appraisal, this enforcement device represents an inexcusable element of operator distrust and justified antagonism.

The directors of the National Restaurant Association, understanding this ABC Placarding System, have over many years continued to protect its use. It is included, therefore, in this list of obstacles to the cause of understanding.

It is suggested that this system be placed under close scrutiny and the justification for its remaining on the American scene evaluated. We are confident that your strong support for the National Restaurant Association's position will be forthcoming.

5. Understanding can be served in many other ways. Industry, health officials and the public can stand to gain from joint efforts to obtain facts yet unknown or through qualified officers and industry representatives putting themselves to the task of reaching needed conclusions. For example, the real identity of foods termed "Potentially Hazardous" in the new Manual (previously described as "Readily Perishable") has not as yet been determined for any practical application. Yet the new manual applies two quite important control measures on the foods so described. The so-called sneeze-guard might well deserve re-evaluation of its real purpose and good. Identification of respiratory infections or other illnesses that can or cannot be transferred by ingestion could give needed clarification of the value of certain existing control measures, or the need for additional ones.

6. Last, there is the factor of regulation obsolescence. Regulations exist in the local ordinance and code, or in the habit of health officer thinking, long after the actual reason for their adoption has disappeared. As with the acceptance of the new Public Health Service Manual, change generally cannot be expected to take place without a forceful selling job being planned and executed by the total responsible leadership. Printed materials must be brought up to date.

Let's remember that Moses worked on these problems 3,412 years ago; yet today there remains incomplete knowledge, oral misapplication of available knowledge, and need for greater confidence in many procedures.

We who share a great responsibility to the public and who, in our years, are given the great advantage of modern technology, should in haste get our heads together. We should be identifying the gaps in knowledge where guessing and assumption continue to fill in for facts, and the gaps in the transmittal and use of that knowledge by those through whom this public trust is finally executed.

THE FIELDMAN'S RESPONSIBILITIES IN MILK QUALITY AND PROCUREMENT[1]

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Webster's Unabridged Dictionary defines a fieldman as, "One who works in the field; a traveling representative of a business organization (as a man who negotiates with farmers for the raising of crops under contract for a food processing company); An investigator or advisor who works outdoors or away from the center of administration or activity (as a man who conducts educational programs for milk producers in an assigned territory)."

The last part of Webster's definition spells out an important responsibility for the dairy plant fieldman who works with procurement and quality improvement.

The five areas of a fieldman's responsibility that involve milk quality control and procurement may be indicated as follows:

1. His responsibility for the milk supply needs of the plant or organization he represents.
2. His responsibility for the quality control of milk as it is delivered from producers.
3. His responsibility to the Grade A enforcement agency.
4. His responsibility in developing and maintaining good public relations for the organization he represents as well as with the industry as a whole.
5. His responsibility in educational work cooperating and coordinating programs with other educational agencies.

THE FIELDMAN AND THE MILK SUPPLY

In many areas, maintaining an ample milk supply requires all of a fieldman's time. When any organization must obtain a large volume of milk in a minimum of time, procurement is of the utmost importance. So fieldmen, and perhaps other workers for the organization, become full-time procurement personnel.

But when a fieldman spends all his time procuring, the quality of milk obtained from newly acquired producers may be lower than desirable. If a fieldman works on the theory that volume is needed regardless of quality, the plant may well end up being degraded from Grade A marketing.

We often hear it said that, "A quality control fieldman cannot do both quality and procurement work." On the other hand, neither can a procurement fieldman maintain milk quality if he is not informed about quality requirements.

This brings us directly to the kind of people hired to do field work. Some fieldmen *are* capable of doing both quality and procurement work, although most find it difficult to do both jobs well. For this reason many of the larger organizations employ two types of men – one best suited for quality work and the other best suited for procurement. Smaller organizations must often rely on the quality control fieldmen to do both jobs in the field, regardless of the disadvantages.

In many medium or large-sized plants, organization is on a departmental basis. This makes the field service personnel responsible for volume *and* quality. In many cases, one person is appointed supervisor. When a dairy needs more volume, the field service supervisor can select persons qualified through past experience to carry out the procurement assignment.

When any organization finds it necessary to hire one man to do both procurement and quality control work, it should pay utmost attention to the man's qualifications.

THE FIELDMAN AND QUALITY

Many of the early fieldmen worked almost 100 per cent of their time on procurement, and in these cases sanitarians employed by regulatory organizations did most of the quality control field work. As the Grade A program grew, however, it was impossible for the sanitarians to carry out complete quality programs, so fieldmen were hired by dairies to help handle quality.

Remnants of this type of program – where the sanitarian is doing field work – are still in evidence in some areas of the United States. But the program has largely disappeared, mainly because the regulatory agencies could not support the cost of keeping sanitarians in the field.

The dairy industry itself has had to take on these follow-through field services using competent fieldmen. Mutual trust between regulatory agencies and industry requires that fieldmen have the same quality goals and enforcement standards for their organization that the sanitarians do. In areas where this type of cooperative program has been carried out, quality control work with producers has been very

[1]Presented at the 49th Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., October 24-27, 1962, at Philadelphia, Pennsylvania.

successful. The quality control follow-through work with milk producers is now being done primarily by fieldmen. Fieldmen become the link between industry and milk producers and also between producers and the sanitarians.

A fieldman should seek all the services at his disposal to help him in his quality work. Milk haulers, especially those hauling bulk tank milk, have been brought into the quality control program with a great deal of success. This is a group that fieldmen can work with directly on a day-to-day basis.

THE FIELDMAN AND THE SANITARIAN

In order for fieldmen to carry out good quality control programs, it is necessary that they and sanitarians cooperate fully. Where this cooperation is lacking, distrust arises between regulatory agencies and industry – and confusion arises among producers.

Any differences between fieldmen and sanitarians must be settled in a conference or with an arbitrator before a successful quality control program can be carried to milk producers. If this is not done, producers become irate and Grade A programs lose prestige with both producers and the public.

Where serious differences exist, the fieldman and his sanitarian should consult an arbitrator, such as the state survey officer. In order to have harmony in interpretations of regulations, the fieldman should accompany the sanitarian and state survey officer when surveys are made on producer farms. This also helps the fieldman see weaknesses in his program.

It is the responsibility of the fieldman to make certain that producers coming onto the market are ready for inspection before he asks the sanitarian to grade the farms. Any time it is necessary for the sanitarian to make more than one visit to a farm, grading becomes a costly process. Penalties have been set up in some areas for farms that fail to pass on first grade inspection. For instance, a farm may not be reconsidered for at least a month. Where a fieldman is conscientiously doing his job, penalties are unnecessary.

Whenever a dairyman produces poor quality milk, the sanitarian should notify the fieldman, who should follow through with the producer until the situation is corrected.

THE FIELDMAN AND PUBLIC RELATIONS

With the keen competition that exists today between dairy plants and marketing organizations, public relations can mean success or failure for procurement and sanitation programs.

The dairy fieldman is responsible for developing and maintaining good public relations for the organization he represents. Most of his public relations work is directly with producers. The attitude of producers toward Grade A programs and the attitude of the community toward the dairy organization reflects the fieldman's success as a public relations man.

Public relations is sometimes referred to as, "being just a good Joe and getting along well in the community." This, of course, is only part of the story. Sometimes the fieldman must step forward with a program to improve public relations. It might be in the form of sponsoring some worthwhile community activity or perhaps making the company well known through dairy promotion programs in the community, such as June Dairy Month celebrations.

THE FIELDMAN AND EDUCATION

The last part of Webster's definition of a fieldman stresses the importance of education. Webster described the fieldman as one who conducts education with milk producers.

The extent of carrying on an educational program varies greatly among different dairy plants and organizations. Within the larger organizations, "house organs" are published regularly and these give the fieldman an opportunity to write an educational column. Local newspapers will carry stories about producers or marketing that a fieldman can take advantage of to promote his educational program. Some dairy plants use advertisements regularly that carry articles about producers and the organization.

Meetings held by the fieldman for haulers and producers offer excellent opportunities for educational programs. In most organizations it is the responsibility of the fieldman to organize and conduct such programs. This is a profitable way to reach producers with a quality story that is carefully selected and timed.

OTHER COOPERATING AGENCIES

Many individuals and agencies can support the fieldman in his educational work. Some of these are the vocational agriculture instructor, the county extension agent, city and county health departments and local 4-H organizations.

Vocational agriculture instructors in local high schools teach courses to farm boys. In most schools these courses cover milk quality control programs. The vocational agriculture instructor is also an advisor to the local Future Farmers of America chapter, which has an activity each year called "The Dairy Products Contest." The boys score milk for flavor and odor, grade sediment discs and head parts of milker units. Each state has a contest and the national contest is held each year at the National Dairy Cattle Congress. These contests offer excellent opportunies for cooperation between fieldmen and vocational agriculture departments in quality control education.

The county extension agent conducts educational programs for farmers and will aid the fieldman in setting up his educational programs. The agent is the local education arm of the state land grant university. The 4-H programs can also aid the fieldman, and vice-versa, in dairy education work. There are many local 4-H leaders who need help in these areas.

Ask yourself these questions:

1. Do I know the names of the vocational agriculture instructors in my area?
2. What subjects are offered by the vocational agriculture instructors which might aid my quality control work? Do their F.F.A. groups have a dairy products team each year?
3. Do I know my county extension agent?
4. What does he have in his program of work that will aid my quality control program?
5. Am I familiar with the local departments of health and other educational agencies? Do their programs concern my area?

SUMMARY

In summary, the fieldman will continue to carry on his responsibilities in both quality and procurement. Some quality control fieldmen will be held responsible for procurement. The fieldman will continue to be held responsible for the entire field program including quality and volume. This will be one section under his control, and he will answer to management for quality in procurement.

An atmosphere of close cooperation should be characteristic of future relationships between the fieldman and the sanitarian. The fieldman will be doing more follow-up servicing to the Grade A program.

Public relations need to be interwoven into the entire program. The fieldman needs to promote an educational program for producers aimed at improving quality and keeping the producer informed. It is necessary to cooperate with other agencies in promoting a sound, beneficial program.

SPECIAL FEATURE

OUR HERITAGE — 50 YEARS IN RESTROSPECT[1]

The Third Decade 1931-1941

R. R. PALMER[2]
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A name well-known to those active in the International during the forties, as well as others since that time, is that of Russell R. Palmer, two-year past-president of the Association who served as the chief executive in 1945 and 1946.

Palmer has devoted his life's work to milk quality and sanitation principally in the Detroit, Michigan area, although the effects of his work have not been confined to that area. He began his academic training at Michigan Agriculture College (now Michigan State University) where he was graduated with a B.S. in Agriculture. Following his four years of undergraduate study, he began on his Master's program which he earned in 1924.

Upon receiving his Master's degree, Russell, a Detroit native, began during the summer of 1924 working as a milk inspector with the Detroit Department of Health. In a matter of three years, he was promoted to the position he now holds, Head Health Inspector (Milk), Detroit Department of Health.

Besides having served two years as president of IAMFS, Palmer has also been president of the Michigan Sanitarians Association and is an active member in various other professional organizations. He has been a guest lecturer on milk control at Ohio State University, Wayne State University and Michigan State University.

The true international aspect of the Association, known in 1931 as the INTERNATIONAL ASSOCIATION OF DAIRY AND MILK INSPECTORS, was again shown in this year with the meeting in Montreal, Canada, under the Presidency of A.R.B. Richmond of Canada.

At this time the annual question of eligibility for membership was thoroughly discussed and a decision reached to submit to the membership an amendment to the constitution to create two classes of membership; *(a)* active, those engaged in official inspection, experimental or control work; and *(b)*, associate, those interested in the work but not officially engaged. This brought to a close the continual argument as to eligibility for membership, one group wanting a closed official group and others favoring expansion to include industry and other allied workers so as to utilize their experience and capabilities. The amendment, officially passed in 1932, provided the basis for the expansion of the Association during the following years.

During the early part of this decade, 1931 to 1941, the recession or depression was endured. Although a tightened dues payment policy with the dropping from the rolls of the association those in arrears resulted in losing some of the listed membership, the Association weathered this period and started its upward swing.

[1]The third of a series of reports covering each of the five decades of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC.

[2]President of IAMFS 1945-1946.

The early years of this period found many meetings, official and unofficial rump sessions, often late at night, discussing the pro's and con's of the U. S. Public Health Service Ordinance and Code as fostered by the late Leslie H. Frank. Discussions and arguments, though very hot at times, did not disrupt the organization or swerve it from its original aims, the improvement of the milk supply for the general public, both in quality and safety.

In 1936 at the Atlantic City Meeting, the constitution was again amended to change the name of the Association from the INTERNATIONAL ASSOCIATION OF DAIRY AND MILK INSPECTORS to the INTERNATIONAL ASSOCIATION OF MILK SANITARIANS, the membership feeling that this name was more descriptive of the aims and work of the Association.

Came the year of 1937 and a real move was made by the Association through a committee that produced for the Louisville meeting the experimental and first copy of the *Journal of Milk Technology*. This journalistic endeavor was mainly the product of the unceasing work of late "Bill" Palmer of the Oranges, N. J. and Dr. J. H. Schrader of East Orange, N. J. "Bill" was the promoter and Dr. Schrader the editor; both did a marvelous job.

The Association voted to try the *Journal* for a year on a bimonthly basis. This provided a means of publicity for the Association and brought the work and reports quickly to public and membership attention. This move marked the beginning of a real upsurge in membership and influence of the Association.

The *Journal* success coupled with a dues reduction in 1939 to $3.00 for active members and $2.00 for associate members were major factors in the total membership growth from 271 in 1931 to 1146 in 1941.

We would be amiss if we didn't mention the noble work done during this period by Dr. Brooks of New York as secretary, followed by Sidney Leete in the same capacity. They both set examples of unfaltering interest and devotion to the Association. These men and the consistent work of officers, committee chairmen and the many committee members, put the Association into the limelight through the *Journal* publicity and brought the merited recognition for basic work done by the Association to improve the milk and dairy product supply of the nation.

The old statement, "A wrangling, quarrelling crew is a good crew, one that becomes united when common problems are faced," describes the Association during this period. The membership problem was solved; dues were changed; the name was changed; the *Journal* was started and definite progress was made in standardization of equipment requirements, to mention but a few common problems met and solved. The INTERNATIONAL ASSOCIATION OF DAIRY AND MILK INSPECTORS began this decade strongly, even in the depression period, and through the sincere efforts of the officers and the hard-working members emerged during better economic times a stronger more progressive Association, known as the INTERNATIONAL ASSOCIATION OF MILK SANITARIANS, ready for the next decade.

IAMFS STATISTICS

Year	Meeting Place	President	Active Members	Associate Members	Total
1931	Montreal, Canada	A. R. B. Richmond	271	---	271
1932	Detroit, Michigan	W. B. Palmer (Deceased)	231	4	235
1933	Indianapolis, Indiana	H. N. Parker (Deceased)	201	13	214
1934	Boston, Massachusetts	P. F. Krueger	158	19	177
1935	Milwaukee, Wisconsin	C. K. Johns	173	42	215
1936	Atlantic City, New Jersey	G. W. Grim (Deceased)	163	61	224
1937	Louisville, Kentucky	J. C. Hardenbergh (Deceased)	---	---	---
1938	Cleveland, Ohio	A. R. Tolland (Deceased)	196	132	328
1939	Jacksonville, Florida	V. M. Ehlers (Deceased)	233	67	300
1940	New York City	P. B. Brooks (Deceased)	285	622	907
1941	Tulsa, Oklahoma	L. C. Frank (Deceased)	318	828	1146

News and Events

Leading Health Personalities Participate In UNC Dedication

The accomplishments, the challenges and the promise for schools of public health were examined by twenty-four outstanding authorities in the public health discipline at *Dedication Ceremonies* for the University of North Carolina's new School of Public Health Building, April 6.

A four-fold discussion session, part of the first day's activities for the two million dollar structure at UNC, considered "Schools of Public Health — Past, Present and Future," with the help of deans and former deans of the nation's other public health schools. There was also a host of other public health authorities on hand for the dedication.

The four sessions were held concurrently on Saturday afternoon prior to an evening reception at the home of Consolidated University President and Mrs. William C. Friday.

Dr. John Wright, professor of public health administration and former department head at UNC, served as chairman of the first session. Participants were Dr. Henry Vaughan, former dean of the University of Michigan, School of Public Health; Dr. Ernest L. Stebbins, dean, Johns Hopkins, School of Public Health; Dr. Guillermo Arbona, Secretary of Health, Commonwealth of Puerto Rico; Dr. Donald Galagan, chief, Dental Public Health and Resources, U. S. Public Health Service; and Dr. Brewster Snow, head of Sanitary Engineering, Rutgers University.

The second group was chaired by Mrs. Margaret Dolan, head of UNC's Department of Public Health Nursing and the president of American Nurses Association. Participants were Dr. Wilson Smillie, former dean, School of Public Health, Cornell University; Dr. James Crabtree, dean, School of Public Health, University of Pittsburgh; Dr. Ruth Freeman, professor of Public Health Administration, Johns Hopkins; Dr. Fred Mayes, public health administrator, Public Health Service; and Dr. Marion Murphy, head, Public Health Nursing, School of Public Health, University of Minnesota.

Dr. John Larsh, chairman of UNC's Department of Parasitology, presided over the third group. Participants included: Dr. George Rosen, editor, American Public Health Association Journal and a historian of public health, Columbia University, School of Public Health; Dr. Gaylord Anderson, dean, University of Minnesota, School of Public Health; Dr. Cecil Sheps, professor, University of Pittsburgh, School of Public Health; Dr. Leroy Burney, former Surgeon General of the United States, and vice-president of health sciences, Temple University, Philadelphia; and Dr. Helen Martikainen, chief, Public Health Education, World Health Organization.

Dr. Lucy S. Morgan, professor of public health education, chaired the fourth of the discussion groups. Participants in this discussion included: Dr. Ira Hiscock, former dean, Yale, School of Public Health; Dr. Myron Wegman, dean, University of Michigan, School of Public Health; Dr. Hugh Leavell, professor of public health administration, Harvard; Dr. Malcolm Merrill, California Commissioner of Public Health; and Dr. William Frye, dean, School of Medicine, Louisiana State University.

The discussion sessions terminated with a summary panel which was held in the auditorium of the new public health building. Presiding over the closing session was Dr. Edward G. McGavran, dean, UNC, School of Public Health.

Ralph R. Brubaker (left) of Carnation Company, president of the Evaporated Milk Association, presents to Elliott H. Parfitt upon his retirement as executive secretary of the association, a golden evaporated milk can, and a citation for 23 years of meritorious service. The presentation was made at the evaporated milk industry meeting in Chicago, December 13, 1963. Dr. Parfitt joined the association staff in 1940 and became its executive secretary in 1954.

Three Thousand Expected At IFT Annual Meeting At Detroit In May

Scheduling of five symposia and approximately 165 scientific papers touching on the many dramatic developments in food science and technology is expected to attract more than 3000 registrants to the Twent-third Annual Meeting of the Institute of Food Technologists in Detroit's Cobo Hall, May 26 through 29.

The food technologists, trained professionals who apply science and engineering to the processing of food products and who are responsible for the infinite variety of "convenience foods" so popular with "Mrs. Homemaker," are now developing and perfecting food items that will be on the supermarket shelves in the 1970's.

Out of the papers delivered at the food technologists' meetings, will come indications of the foods of the future, the flavor modifications that will enhance the goodness of old favorites, and the improvements that will add to food's natural nutritive value.

Advancements in the latter field are expected to be fully explored in one of the five symposia which will be chaired by Dr. John M. Jackson, president of the Institute of Food Technologists. He, together with other distinguished scientists, will report on *"Progress Toward Overcoming World-Wide Nutritional Deficiencies."*

Other subjects to be explored at the symposia include *"Continuous In-Plant and Statistical Quality Control," "Food Engineering," "FDA and the Food Industry," and "Food Proteins."*

Calvert L. Willey, executive secretary of the IFT, reports that more than 160 exhibits will be seen in spacious Cobo Hall during the May meeting.

NEBRASKA TO AWARD STIPEND

The University of Nebraska has been selected to award the sixth Fairmont Foods Company Dairy Technology scholarship. Valued at $2400 over a four-year period, the stipend is open to students enrolling next fall as freshmen in the field of dairy technology at Nebraska.

Although offered through the department of dairy husbandry, the scholarship is open to both city and rural students. No farming experience is required. The award is intended for students interested in a career in dairy food processing and plant management.

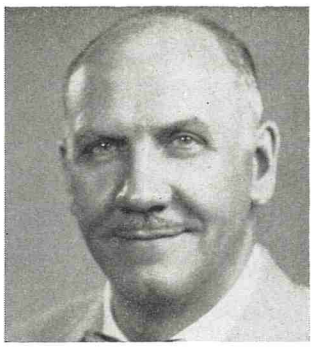
Scholastic ability, character and leadership potential are the criteria for selection of the winner. Financial need is not a primary consideration. The Fairmont scholarship originated in 1958 and is offered each year to a deserving student at one of the nation's outstanding dairy technology schools. The purpose of the award is to assist the universities in attracting young men of high potential to the dairy processing field.

Nebraska was the first school selected for the scholarship in 1958. Since that time, the award also has been given to Ohio State University, the University of Wisconsin, Pennsylvania State University, and most recently, the University of Minnesota. Acceptance of the scholarship does not imply an employment commitment by either Fairmont or the student. However, Roy Arnold, the 1958 recipient, joined Fairmont's product research laboratory staff following his graduation last June.

Michigan Affiliate Honors Roth With Service Citation

Mr. Armin A. Roth of Wyandotte Chemicals, has received the Michigan Association of Sanitarians eighth annual Service Award according to a recent announcement by his firm.

Given "In appreciation of his . . . contributions toward the progress . . . of the Michigan Association of Sanitarians," the award recognizes Mr. Roth's many years of service as a sanitarian, and his efforts in helping build a strong, professional and highly esteemed group.



Among his efforts in this behalf are his participation in training programs for public health students his 1961 presidency of the Michigan Association, and his many years of work in the field of sanitation.

Roth has been a member of Wyandotte Chemicals' Technical Service Department for the past fifteen years. The company is a producer of sanitizers and chemicals cleaners. Product applications, service and development of electronic control equipment are Roth's main areas of work. He is also the editor of the quarterly "Sani-Facts," a company publication of specific topics of sanitation applied to the food handling field.

An active participant in professional societies, Roth belongs to the International Association of Milk and Food Sanitarians, National Association of Sanitarians and is a Fellow of the American Public Health Association. He is a former health engineer of the W. K. Kellogg Health Foundation, a member of the U. S. Public Health Service, and the Michigan Department of Health.

FEATURE

INSPECTING AUTOMATIC VENDING OPERATIONS

DAVID E. HARTLEY
PUBLIC HEALTH COUNSEL
NATIONAL AUTOMATIC MERCHANDISING ASSOCIATION
CHICAGO, ILLINOIS

With the recent growth of automatic food and beverage vending, many sanitarians have taken an interested look at this industry for the first time.

This paper is intended to offer suggestions to the sanitarian so that his initial vending company contacts and subsequent inspectional work in vending will be most economical of time and beneficial to the vending customer and the vending operator.

To this end, it is probably in order to begin with a few introductory comments about the vending industry's composition and practices.

How vending operates

Vending machines are usually sold by the machine manufacturer to vending companies who install and operate them at locations within a reasonable radius of the company headquarters – or its branches. Locations serviced by one company may be, and frequently are, situated in several different health jurisdictions. Each vending company provides the personnel, merchandise, vehicles and maintenance necessary to guarantee around-the-clock service from each of its machines.

Some manufacturers sell machines, such as bottled drink venders, to *non-vendors* for operation on their own premises. These "location-owned" machines are usually of a simple type which can be maintained and serviced by non-technical personnel. However, an inspection or survey program should not overlook location-owned machines on the assumption that they are always of the packaged, non-perishable product type. Such machines may include cup beverage or perishable product venders which demand specialized personnel and shop facilities for their proper maintenance.

Types of vending companies

Of an estimated 6,000 vending companies in the United States, a majority offer a fairly complete line of vended products. These "full line" companies may be vending companies exclusively or divisions of a bottling company, dairy, restaurant chain or caterer which combine vending with related food interests.

In addition to full line companies, there are many which specialize in limited product offerings. These include: candy and tobacco operators; "bulk vendors" who operate ballgum, nut and candy machines; dairies with their own milk (and sometimes ice cream) machines; and, bottlers who may operate bottled drink venders only, bottled, canned and "pre-mix" venders, or full line vending services.

It would be misleading to suggest that these are the only types of vending companies. They are merely the most common. In addition, there are a number of companies specializing in sandwich vending, candy vending, coffee services and other product categories which lend themselves to specialization under the conditions which may prevail.

Machines requiring inspection

In many health jurisdictions – particularly in non-industrial areas – vending operations are still relatively simple, involving refreshment and snack-type services which are of minimum public health concern. But in other areas, the increase in automatic feeding installations has created an interest in inspection programs and, in ten states, to the adoption of uniform vending sanitation regulations.

Thus far, opinion among health authorities as to the types of vending machines which warrant inspection has been surprisingly uniform. Pre-packaged, non-perishable product venders have generally been exempted from mandatory or routine inspection (required for perishable product venders) *or* have been excluded entirely from program coverage by selective definition of the term "vending machine."

Following are the major machine categories, by product, listed in the generally-accepted *descending* order of their public health significance:

Bulk Milk Venders
Hot Beverage Venders (with liquid cream)
Packaged Sandwiches, Entree and Meal Venders
Cartoned or Bottled Milk Venders
Ice Cream Venders
Hot Beverage Venders (non-perishable ingredients)
Post-mix and Pre-mix Soft Drink Venders
Bulk Popcorn and Chip Venders
Hot Canned Food Venders
Pastry Venders (not cream-filled)
Ballgum, Nut and Candy Machines (bulk)
Packaged Popcorn and Chip Venders
Packaged Confection, Cookie and Cracker Venders
Bottled and Canned Soft Drink Venders

It is not intended here to suggest the exact machine categories which warrant the expenditure of inspection personnel. The professional sanitarians who peruse this "Journal" are the least likely to allo-

cate program time to machines whose effect on the public health is negligible.

However, it *is* suggested that the sanitarian carefully consider the machine and company categories for which staff time can be justified *before* adopting a permit-type program; otherwise, every service station with a bottled drink machine may become a "vending company," and hundreds of other unimportant machines may needlessly pre-empt a large part of the administrative and inspectional time available for the program.

Making the inspection

The areas of interest to the sanitarian in a full-line, or fairly diversified, vending operation include: (a) the shop or headquarters; (b) the route vehicles; and, (c) representative locations and machines.

The Headquarters

The vending inspection logically starts at the company headquarters, since this is the location of management, machine records, location listings and the

Sandwich preparation in Chicago Division of Automatic Retailers of America—a full line vending company.

site of various food-type operations. If the company headquarters are outside the health jurisdiction, inspection reports from the responsible health authority having jurisdiction should be obtained routinely. In such cases, the vending company will usually designate a local location or person as the responsible agent for health department contacts and for retention of location lists for the jurisdiction.

The operations conducted at vending headquarters may vary considerably from company to company. The *least complex* companies are those which purchase all of their vendible products from outside sources. A company of this type will have only limited product storage, canister washing and machine servicing facilities – all quick and easy to inspect. The *most complex* may have several or all of the following: food commissary; syrup-making room; bakery; utensil sinks for exchanging machine parts; product storage rooms; and, machine maintenance shops.

A vending headquarters inspection has approximately the same components as a restaurant inspection except that dishwashing and customer dining facilities are absent. The headquarters visit is the best occasion to observe newly-purchased machine models, conversions made on existing machines and the maintenance procedures which are used to refurbish machines brought from location. The headquarters is also the repository of constantly changing machine and location records which are useful in planning inspections or spot-checks.

Route Vehicles

Each vending routeman has an assigned truck which may be checked at the headquarters before the early morning starting time as a part of the headquarters inspection. However, it is probably easier to check these vehicles singly during route and location visits.

Many companies use optional trucks, often fully refrigerated, to deliver perishable foods to feeding-type locations so that these items will not have to be hauled for long periods on individual route trucks. The inspection of these vehicles may be timed to coincide with periodic headquarters inspections.

Locations and Machines

A vending "location" may consist of a single machine, a complete bank or combinations of the two. The location may or may not be attended by an employee of the vending company, depending on the extent of the feeding and supplemental services offered.

During the early phases of a vending inspection program, it is desirable to spot-check major locations to determine their conformity with the vending regulations. Inspections to observe the general condition of machines and machine areas can be made most rapidly with a route supervisor, picking the places to be inspected from a location listing at random.

A complete vending inspection will include, sooner or later, route visits with each routeman who services machines which have health significance. Such route visits are for the purpose of determining primarily the methods used by each routeman in servicing his equipment.

It is generally agreed that route inspections made on a random sampling basis reveal the abilities of

the routemen and the conditions obtained. A representative sampling is usually considered the square root of the number of machines on the route. Although an appointment for route inspections must be made slightly in advance, the element of an "unannounced inspection" is not lost if the company has more than one route. The sanitarian should provide his own transportation when accompanying the routemen to allow the best use of the sanitarian's time and to avoid insurance liability problems for the vending company.

Sanitation standards

The sanitarian needs at least two specialized standards for a complete vending company inspection — one for the headquarters and the other for vehicles, locations and vending machines.

The restaurant regulation in effect in most communities is generally adequate for inspecting even the most complex full-line vending headquarters. "The Vending of Foods and Beverages, A Sanitation Ordinance and Code, 1957 Recommendations of the Public Health Service," is recommended as a specific guideline for vehicles, locations and machines, and also for its administrative procedures. The "Vending Code" covers the unique aspects of vending which cannot be obtained by the analogous use of other regulations.

Inspection forms

Because it is a rather new field, the experience with specialized vending inspection forms is limited. The Public Health Service and several local health agencies have developed comprehensive forms which contain all of the requirements of the PHS Vending Code.

When it is considered that most of the specialized forms deal with basic machine design and construction features which it is impossible to check during the field inspection of fully loaded machines, it is possible that separate score sheets should be provided — *one* for the basic design and construction of the machine and *the second* for machine upkeep, servicing and external location conditions which may change from day to day.

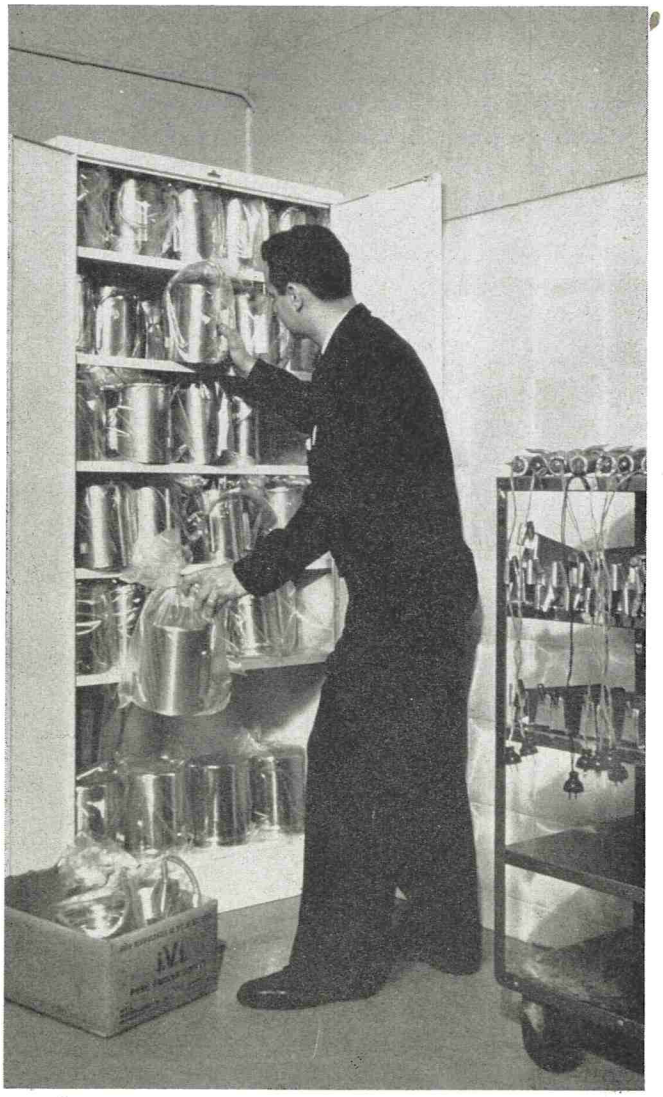
The two machine evaluating agencies retained under the National Automatic Merchandising Association Vending Machine Evaluation Program employ a five page Check List in the evaluation of new machines. Although most health jurisdictions accept the evaluation results of the NAMA and NSF testing programs, the sanitarian may periodically want to examine new models or other machines at the operator's shop where they are completely accessible for such an examination. Copies of the "Machine Evaluation Check List" will be provided by NAMA to any sanitarian desiring a supply for his own use.

Questions and answers about vending inspection

As a concluding feature of this article, several of the questions most frequently asked at sanitarian vending seminars are discussed in the paragraphs which follow:

Q: How can the approval status of a machine be checked?

A. Vending machines tested and approved under the nationally accepted NAMA and NSF testing programs are periodically listed by these organizations. Each approved machine is listed by its manufacturer and model number as stated on the machine cabinet nameplate. Machines can either be checked individually on location or the machine record cards



Vending routeman selecting machine replacement canisters in poly-wrappers, stored in "sanitation room" at company headquarters.

at the headquarters can be used to obtain this information for the entire operation. (Cabinet nameplates frequently are obscured by side-to-side installations. Several manufacturers have started adding a supplemental nameplate to the cabinet front for the sanitarian. This trend is being promoted now among all manufacturers.)

Q: How can the sanitarian determine ownership of a machine reported on a complaint?

A: The PHS Vending Code and all uniform regulations adopted thus far require an operator's name and address on each vending machine. Most operators also list their service phone numbers for emergency calls. Operator name tags are recommended on all vending machines, whether by regulation or voluntary action.

Q: Can a vending machine be properly inspected while in use?

A: To make a complete design and construction examination requires a leisurely study at the shop when the machine is not loaded. Once familiar with the model used, field inspections are directed at servicing methods, machine cleanliness and repair. There are, of course, determinations to be made in the field such as temperature checks, workability of cut-off controls, etc. The route supervisor or shop specialist can advise on or perform these field tests when requested.

Q: How can a sanitarian learn the details of vending machines?

A: Once again, the best place to observe and study machines at length is at the company headquarters. Some operators routinely invite the sanitarian in to see each new model and to inquire about cleaning problems or special maintenance procedures. By getting acquainted at the shop, the sanitarian can also discuss parts replacement, conversions and other shop procedures which may be of sanitation importance.

Q: Why not make machine thermomenters visible from the outside?

A: In some of the new glass front venders, the thermometer can be read from outside. However, in most machines, this would create engineering difficulties and operational problems. For example, the sensing element would have to penetrate two doors, be flexible and be detachable during servicing. The sensing tube could not extend through a side wall since an exterior thermometer on the side of the machine would frequently be invisible. From the inspection viewpoint, an external thermometer would probably promote "walk-through" inspections rather than a thoroughgoing inspection in company with the vending routeman or supervisor.

Q: Is there a rapid field test to determine whether the manual reset cut-off mechanism is properly operating?

A: The sensing bulb of most so-called "health code cut-offs" can be grasped by hand and allowed to warm up from body heat. Within a short time, the machine's "sold out" light should come on or the vending relay should click "off." If the sensing bulb is in a cold wall or otherwise inaccessible, the only test is to allow the storage compartment to warm up above 50 F or (in hot machines) to cool below 150 F. In making such tests, the 30 minute delay timer should not be activated or the test results will be inconclusive.

Q: Has a multiple machine inspection sheet been developed?

A: Most official vending forms developed thus far can be used for only one machine. However, several departments are reported to be experimenting with a form which contains three or four squares for each item of sanitation so that more than one location or machine can be recorded on each sheet. NAMA has employed this method in its experimental "Self Inspection Form for Vending Operators" which is being field tested by operators at the present time.

Q: How many location inspections or machine inspections can be made in one day?

A: The answer depends on whether the sanitarian is accompanying a routeman or a supervisor. In inspecting with a routeman, the sanitarian must follow the routeman's closely controlled schedule. A routeman will normally service from 8 to 12 brewed coffee machines while a candy routeman may cover as many as 35 or 40 machines. In making inspections with a supervisor, it is not difficult to cover several dozen locations and as many as 75 machines. The deployment and individual condition of machines also affects the rapidity of coverage.

Conclusion

The inspection of vending operations is relatively new to most sanitarians and to most vending operators. Through its national trade association, NAMA, the vending industry has initiated and carried on several programs of a public health nature which are aimed at minimizing inspection problems and acquainting operators with their responsibilities.

Comments and inquiries from sanitarians are always welcomed by NAMA and its several State Councils toward the end that an even closer degree of understanding and cooperation will result in the future.

F D A FINDS TUNA CAUSES DEATH OF DETROIT WOMEN

Commissioner of Food and Drugs, George P. Larrick, announced March 26 that investigation and laboratory tests justify the conclusion that two Detroit women died as a result of eating a single can of tuna fish contaminated with Type E botulinus toxin. The can bore the code number WY3Y2 over 118X.

Commissioner Larrick praised the action of the A & P Tea Company in immediately withdrawing its tuna as soon as reports from Detroit suggested that the product might have caused the deaths there.

The State of California Health Department has located another can of this code which their examination shows to be similarly contaminated. The can was clearly defective and the contents obviously spoiled.

While this is, in the United States, a rare type of botulism, canning processes are specifically designed to destroy botulinus organisms of any type. The records of the California Cannery Inspection Service, under whose supervision this tuna was canned, show that the lot was properly processed.

FDA has examined 150 additional cans of tuna under code WY3Y2 over 118X. In each case the product was normal and the results were negative. Notwithstanding this, Commissioner Larrick agrees that any can bearing this code number should not be eaten. The packer and the A & P Tea Company have assured that recalled stocks of this code will be used only for laboratory examinations in connection with additional studies, which are continuing, in an attempt to discover the exact cause of the contamination.

A limited number of cans of other lots bearing the codes starting "WY2" or "WY3" embossed on the covers of the cans, which identifies this packer, the Washington Packing Corporation of San Francisco, California, have been examined with negative results. Both the FDA and the California Department of Public Health are continuing additional examination of this packer's output.

The Food and Drug Administration has no reason to be concerned about the output of other canned tuna packers.

This is the first botulism poisoning to come to FDA's attention in over 35 years where canned foods commercially packed in the United States were concerned. Despite all the precautions which are taken, Mr. Larrick urges all housewives, as a matter of course, to smell any food — whether prepared in the home or in a commercial plant — and to discard without tasting, any which appear "off." The contents of any swelled or bulging can should never be accepted as suitable for use.

Plastics Standards And Air-Under-Pressure Adopted By 3-A Committees In Atlantic City

Three-A Sanitary Standards for Multiple-Use Plastics and the 3-A Accepted Practice for Air-Under-Pressure were completed at the regular semi-annual meeting of the 3-A Sanitary Standards Committees, March 12-14, at the Claridge Hotel, Atlantic City, New Jersey. Nearly 100 participants representing equipment manufacturers, processors, and regulatory officials attended the session.

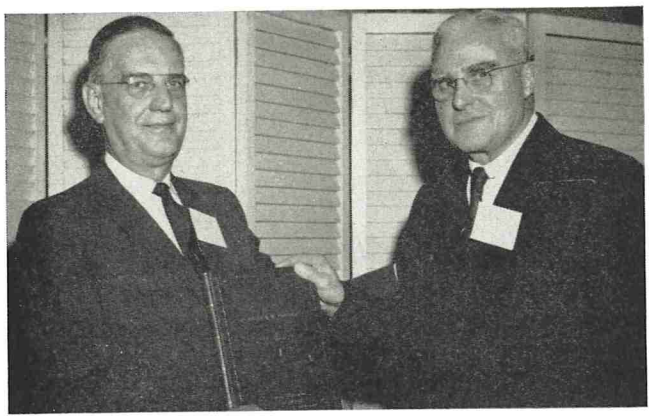
The new standards are now undergoing minor editorial revisions, but 3-A spokesmen predict that all signatories will approve them during the month of April, 1963. Thus, the new standards will become effective 12 months later, April, 1964.

The new plastics standard covers only multiple-use plastics used for single-service applications. Therefore, if equipment is to carry the 3-A Symbol after the April, 1964, effective date, equipment parts to be made from plastics must comply with the new standard as well as existing 3-A Standards covering equipment for which the parts are intended. The newly adopted Plastics Standards will not cover multiple-use plastic milk bottles, since there are no 3-A Standards for milk containers of any material.

The new 3-A Accepted Practice for Air-Under-Pressure establishes guide lines for sanitary compressing equipment, check valve location and filter performance.

Other business coming before the 3-A delegates included approval of amendments to published Standards to provide cross-references for the recently approved 3-A Rubber Standard, which became effective April 14, 1963. Existing Standards for sanitary fittings were also amended to provide for rubber-covered plug valves, and the Standards for pumps were further amended to provide for rubber stators or cases.

The group also considered, but returned to Task Committees for further work, a proposed revision of



Retiring Vice President George W. Putnam, The Creamery Package Mfg. Company, right, here receives a book of testimonial letters from his co-workers in the 3-A Sanitary Standards for Dairy Equipment program, presented by Paul K. Girton, Girton Manufacturing Company, President of Dairy Industries Supply Association. Presentation was made March 12 in Atlantic City, N. J.

the Bulk Dispenser Standard, tentative standards for silo-type storage tanks and welded pipelines, and an amendment to the Transportation Tank Standard.

A testimonial dinner on March 12 honored George Putnam, retiring vice president of The Creamery Package Manufacturing Company, who has been a prominent participant in 3-A Standards development since the inception of the program. For many years, Mr. Putnam was chairman of the Technical Committee of Dairy Industries Supply Association, which represents equipment makers in 3-A activity. Mr. Putnam was presented a book of commendatory letters from his 3-A colleagues.

The 3-A Sanitary Standards Committees are comprised of representatives from DISA's Technical Committees, representing manufacturers; the Sanitary Standards Subcommittee of the Dairy Industry Committee, representing dairy processors; the Committee on Sanitary Procedures of the International Association of Milk and Food Sanitarians, representing regulatory sanitarians, and representatives of the U. S. Public Health Service Milk and Food Program.

Head table at George Putnam Testimonial Dinner, sponsored by 3A committees, Atlantic City, March 12, 1963. From left to right: C. A. Abele, vice chairman of Committee on Sanitary Procedures, IAMFS; Paul Girton, president, DISA; George W. Putnam; Dean Stambaugh, chairman 3A Sanitary Standards Committee; E. L. Ruppert, Chief, Milk and Food Program, USPHS; A. T. McPherson, Association Director, Office of Technical Service, U. S. Dept. of Commerce; Dick B. Whitehead, chairman, Committee or Sanitary Procedures, IAMFS; G. A. Houran, chairman, DISA Technical Committee.

Seated here left to right at the 3-A Sanitary Standards Symbol Administrative Council are: C. A. Abele, Diversey Corporation; William Dean, Bowman Dairy Co.; K. G. Weckel, University of Wisconsin; H. S. Christiansen, Carnation Company; George Putnam (retired) Creamery Package Mfg. Co.; and David Cleveland, City-County Health Department, Oklahoma City. The Symbol Council met March 11 preceding the 3-A Committee Meeting in Atlantic City.

Standard Methods Agar Soon To Be Available To Labs Says APHA

The American Public Health Association announced that "Standard Methods Agar" for milk plating which has been checked against a Standard Reference Media will soon be available to laboratories testing milk and milk products.

The need for greater uniformity in culture media used to make bacterial counts of milk and milk products has been apparent for some time. Repeated analyses of split samples of milk have often demonstrated that the varying results obtained by different laboratories may be due to differences in culture media.

In 1961, the APHA's Coordinating Committee on Laboratory Methods established an Ad Hoc Committee on the Standardization of Milk Plating Media. This committee, with the cooperation of media manufacturers and other interested groups, selected a Reference Media and prepared a protocol for testing "Standard Methods Agar" against this Reference Standard. Since March 15 of this year, media manufacturers have been using the Reference Standard and the approved procedures for producing uniform "Standard Methods Agar" for milk plating.

It is recommended that all laboratories testing milk or milk products use "Standard Methods Agar" which carries a statement that it was subjected to the quality control test outlined by the APHA and has met all APHA requirements.

Meeting To Open With Dr. Carl Byers

Keynoting the 50th Annual Meeting of the International Association of Milk and Food Sanitarians will be Dr. Carl C. Byers of General Motors Corporation, according to a recent announcement by the Program Committee. The meeting will begin October 22 at the Royal York Hotel in Toronto, Ontario.

Dr. Byers, during the past twenty-five years, has served as an outstanding Ohio school administrator.

DR. CARL C. BYERS

For fifteen years, from 1942 to 1957, he was Superintendent of Schools in Parma, Ohio, where he gained nationwide acclaim for his forward-looking ideas in school administration.

He holds degrees from Otterbein College in Ohio (B.S.) and Ohio University (M.A.) an did additional graduate work at Ohio State University. In 1956, he received two honorary degrees: Doctor of Humanities, Salem College, West Virginia and Doctor of Education from Otterbein College. An active participant in professional education organizations, he holds life memberships in the National Education Association, the Ohio Congress of Parents and Teachers, and Family Service Association of Cleveland.

During his period of graduate study at Ohio State, he co-authored with Dr. D. H. Eikenberry, "The Ohio Plan of Using Evaluative Criteria." He has also written and published recently, two booklets, "Prescriptions for Happy Teaching," and "Prescription for Happy Living," plus fifty-seven articles which have been published in leading educational magazines and journals.

While selling education, Dr. Byers was gaining a national reputation on the American platform as an educator-counselor and a humorist-philosopher. He combines ready wit with thought-provoking commentary, selling, in his own words, "education, better human relations, practical Christianity, and good sane Americanism." In 1957, he left his position as superintendent to become a lecturer on topics of communications such as education, human relations, and sales motivation.

With an outlook on life which is refreshing and spontaneously stimulating, Dr. Byers appears in the mold of Will Rogers. His homespun philosophy reflects his belief that there can be no straight thinking without the mental and physical panacea of a grin or hearty laugh. He is very seriously a fun-maker who sprinkles all of his subjects with new humor and witticisms for happy useful living.

PENN STATE TO HOLD DAIRY COURSES

Babcock and Gerber methods, Mojonnier Testing, and Fiske freezing point, are some of the subjects to be covered in the Testing Milk, Cream, and Dairy Products Course to be offered July 15 to 19, 1963, at Penn State University.

A complete list of subjects to be covered in the course includes: Milk fat testing by both the Babcock and Gerber methods, Mojonnier Testing for fat and solids in ice cream, determination of adulteration of milk with water using the Fiske freezing point method, determination of hydrolytic rancidity, and laboratory work on milk flavors. Bulk milk handling procedures, including calibration of bulk milk tanks and milk sampling procedures will also be covered.

The registration fee for Pennsylvanians is $15.00 and for non-residents, $20.00.

Since laboratory personnel is the group toward which the material in this course will be directed, it is suggested that consideration be given to attending the three-week Dairy Laboratory Directors course which follows the testing program. The two courses are designed to supplement each other.

To enroll, or for additional information, write: Director of Short Courses, 211 Armsby Building, College of Agriculture, The Pennsylvania State University, University Park, Pennsylvania.

SPECIAL FEATURE

LAST CHANCE?

Yes, this is it!

The next two weeks will determine if the International Association of Milk and Food Sanitarians, Inc. will have their own group insurance program, offering as an added membership benefit needed insurance protection at low group rates. Currently, Income Replacement Insurance coverage is being made available with the Charter Enrollment Period ending as of May 15. The response on the part of the membership has been most disappointing, and is primarily due, we feel, to the lack of complete understanding on the part of the members.

You have all received brochures describing this plan in detail. If you will compare it with similar plans you might possibly now have on a personal basis, you will greatly appreciate the savings in premium available to you without sacrificing any quality in coverage. We know, for example, of one member who is currently paying an annual premium of $132.00 for a monthly disability benefit of $150.00, while an even lower premium under our proposed plan would more than double his monthly benefit in the event of his total disability due to accident or illness. This could very well be true in your own case.

Perhaps you feel that you are unable to pay the premium on two disability policies at the same time. We would like to bring to your attention that you may complete and submit your application to participate in our plan, noting thereon that you do not desire your coverage to become effective until the renewal date of your present policy. This procedure is perfectly acceptable to both our administrators and the underwriters, and you will not be billed until the date you specify. However, your application will count toward meeting the participation goals required to place this plan in force and that is why we urge you to submit your application now, —without further delay.

Like any other Association sponsored activity, the support and participation of the members is required to insure its success. Your participation will be of benefit not only to yourself, but to your fellow members and to the Association itself as well. The time is short and the decision will soon be made. May we count on you to lend your support to this new Association activity so that in turn, your Association may better serve you?

Send in your application today.

Events In May And June

May 6-10—Annual American Industrial Hygiene Conference, Sheraton-Gibson Hotel, Cincinnati, Ohio. Write: George D. Clayton, 14125 Prevost, Detroit 27, Michigan.

May 7-9—Pennsylvania Association of Milk Dealers, Annual Convention, Bedford Springs Hotel, Bedford, Pennsylvania. Write: Henry R. Geisinger, 303 Telegraph Building, Harrisburg, Pennsylvania.

May 8-9—Annual Meeting, Florida Association of Milk and Food Sanitarians, University of Florida, Gainesville, Florida. Write: Dr. Kenneth L. Smith, Dairy Lab., Florida Agriculture Experiment Station, Gainesville, Florida.

May 15-16—National Dairy Council, Board of Directors Meeting, Drake Hotel, Chicago, Illinois. Write: Milton Hult, 111 North Canal Street, Chicago 6, Illinois.

May 19-21—National Association of Dairy Equipment Manufacturers, (Members Only) Kenwood Golf and County Club, Bethesda, Maryland. Write: John Marshall, 1012 14th Street, N.W., Washington, D. C.

May 26-29—23rd Annual Meeting and Industrial Exhibit, Institute of Food Technologists, Cobo Hall, Detroit, Michigan. Write: Mr. Calvert L. Willey, Executive Secretary, IFT, 176 West Adams Street, Chicago 3, Illinois.

June 4, 5, 6—Annual Meeting, Indiana Association of Sanitarians, Rice Hall, Indiana State Board of Health, Indianapolis, Indiana. Write: Karl K. Jones, Secretary, Indiana Association of Sanitarians, Indiana State Board of Health, 1330 W. Michigan, Indianapolis, Indiana.

June 17-19—American Dairy Science Association, Annual Meeting, Purdue University, Lafayette, Indiana. Write: H. F. Judkins, 32 Ridgeway Circle, White Plains, New York.

June 20—Evaporated Milk Association, Bimonthly Meeting of the Industry, Chicago, Illinois. Write: Fred J. Greiner, 228 N. La Salle Street, Chicago 1, Illinois.

Dr. Merle Baker Is Honored At Iowa Affiliate Meeting

A dual tribute was paid Dr. Merle P. Baker at the 22nd Annual Meeting of the Iowa Association of Milk Sanitarians, held in cooperation with the Iowa Dairy Products Improvement Association at Iowa State University, March 26, 1963.

In honoring Dr. Baker, the Iowa Association has established the "Merle P. Baker Sanitarian's Award" to be presented to "a person who has made an outstanding contribution in the field of milk, food, or environmental sanitation." The second tribute given Dr. Baker was the presentation, by H. L. "Red" Thomasson, IAMFS Executive Secretary, of an honorary life membership in the Iowa Association, the first such award ever to be given.

As Dr. Baker was unable to attend the Annual Meeting because of ill-health, Dr. V. H. Nielsen, head, Dairy and Food Department, Iowa State University, accepted the awards for him.

Included also in the presentations to Dr. Baker were a marble desk weight crested with the Association seal and a deluxe spinning outfit, the latter being given by Ray A. Belknap, IAMFS President, in recognition of Dr. Baker's service to the Iowa Affiliate.

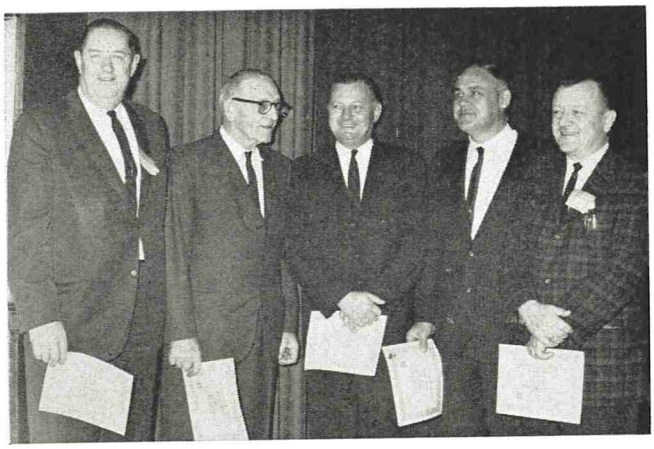
The Sanitarian's Award was established November 15, 1962, by the Executive Board of the Iowa group and it was decided that the recipient of the award would be presented with an appropriate certificate of achievement and a $50 savings bond. The award can be made to any outstanding Iowan in industry, state, city or county public health work or education. The award is to be made not more often than annually, but only when the Awards Committee determines that a nominee meets all of the requirements and is worthy of the award.

Dr. Baker and eight other charter members were presented 20-year service awards. Dr. Baker served as the first president of the Iowa Association when it was formed in 1942. The eight others honored are: Edwin R. Armil, Davenport; Floyd W. Kreamer, Des Moines; Francis J. Donovan, Webster City; Larry S. Woodman, Janesville, Wisconsin; Marcus P. Powell, Iowa City; William F. Schlenker, Waterloo; Carl J. Bartlett, Ottumwa, and Milton E. Held, San Francisco, California. The 20-year certificate presentations were made by the Affiliate's Immediate Past-President, Dale Cooper.

Dr. V. H. Nielsen, left, accepts a deluxe spinning rod and reel for Dr. Merle P. Baker, presented by Ray Belknap, President of IAMFS, in recognition of Dr. Baker's valuable contributions and service to the Iowa Association.

The meeting, attended by 140, featured an emphasis on and technical aspects of milk sanitation. Included in the program were: *Cow Health and Milking Machines*, by Dan O. Noorlander, research director, Dairy Equipment Company, Madison, Wisconsin; *Uniform Labeling of Dairy Products*, Harold J. Barnum, secretary, National Labeling Committee, Ithaca, New York; *Food Contaminates Other than Staphylococcus Organisms*, Homer Walker, associate professor, Department of Dairy and Food Industry, Iowa State University; *Quality Control Programs* (two parts) — *Raw Milk Through Powder*, A. P. Hove, director of quality control, Des Moines Co-op Dairy, Des Moines, and *Raw Milk Through Bottled Grade "A,"* Charles Yeager, quality control director, Anderson-Erickson Dairy, Des Moines; *Do Present Quality Tests Tell the Story?*, J. C. Olson, professor, Department of Dairy Industries, University of Minnesota, St. Paul, Minnesota. H. L. Thomasson, executive secretary, IAMFS presented a *Report from International Association of Milk and Food Sanitarians.*

Officers for the coming year were elected at the Business Meeting and are: *President*, Earl O. Wright; *President-Elect*, H. A. Bayes; *First Vice-President*, Ed Wegermann; *Second Vice-President*, Ernest Smith; *Secretary-Treasurer*, Richard E. Stedman, and *Faculty Advisor*, Dr. M. P. Baker.



Pictured here are five of the nine recipients of the 20-year service award given at the Twenty-second Annual Meeting of the Iowa Association of Milk Sanitarians. Left to right are: Larry Woodman, Ed Armil, Frank Donovan, Bill Schlenker and F. W. "Pete" Kreamer.

INDEX TO ADVERTISERS

Annual Projects Are Viewed By DRF Board At Washington

The Board of Directors of the Dairy Remembrance Fund held its 1963 Annual Meeting April 23, at the Hotel Burlington in Washington, D. C., announced Joseph S. Cunningham, DRF Executive Secretary.

On the agenda was a consideration of projects which the fund could initiate or support in the upcoming year. Cunningham noted that no new loans from the Student Loan Fund maintained by DRF had been authorized in the past twelve months. Whether this was due to a decline in aid need, or a decline in dairy industry students, the result has been that DRF monies have not been used as fully as the Board might wish.

The Dairy Remembrance Fund is sponsored by every national and most state and local dairy industry associations in the United States and Canada. It provides a method for memorializing individuals and signalizing events — the funds thus realized being used for industry-building purposes on a broad national scale. Fund monies in the past have been used for student loans, purchase of recruitment films, purchase of books and periodicals for the National Dairy Council Library, and, in a continuing project, support of a program to gather and index the papers of a noted educator and dairy scientist. Contributions may be in any amount and should be sent to the Dairy Remembrance Fund, 1145 19th Street, N.W., Washington, D. C.

New Members of International

MARCH 1 TO MARCH 31

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Robert Erickson	Steve Ginakos
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Karl Scharms	Lloyd Nelson
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Raymond Vande Zande
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Joseph Fitzsimmons
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Connecticut Association of Dairy and Food Sanitation

Richard B. Cornwell
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Daniel W. Gregory
Danville

A. Pete Donaldson
South Bend

Aaron Crank
Terre Haute

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Arthur Eckerman
Marshalltown

Jon Stanwick
Sioux City

Dr. Ralph W. Mahri
Ames

Homer Hansen
Waterloo

Ralph Baughman
Iowa City

Walter Jensen
Dayton

Gregory Nauman
Dubuque

Herb Hanson
Cedar Rapids

Lowell Squire
Jesup

Kentucky Association of Milk and Food Sanitarians

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Frankfort

John H. Woodfin
Covington

Sure-Pure Milk Co.
Louisville

Karl Greenrose
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Louisville

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New York State Association of Milk Sanitarians

Michael C. Gaffney
Buffalo

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Delmont J. Lohius
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Pennsylvania Dairy Sanitarians Association

A. L. Dunkelberger
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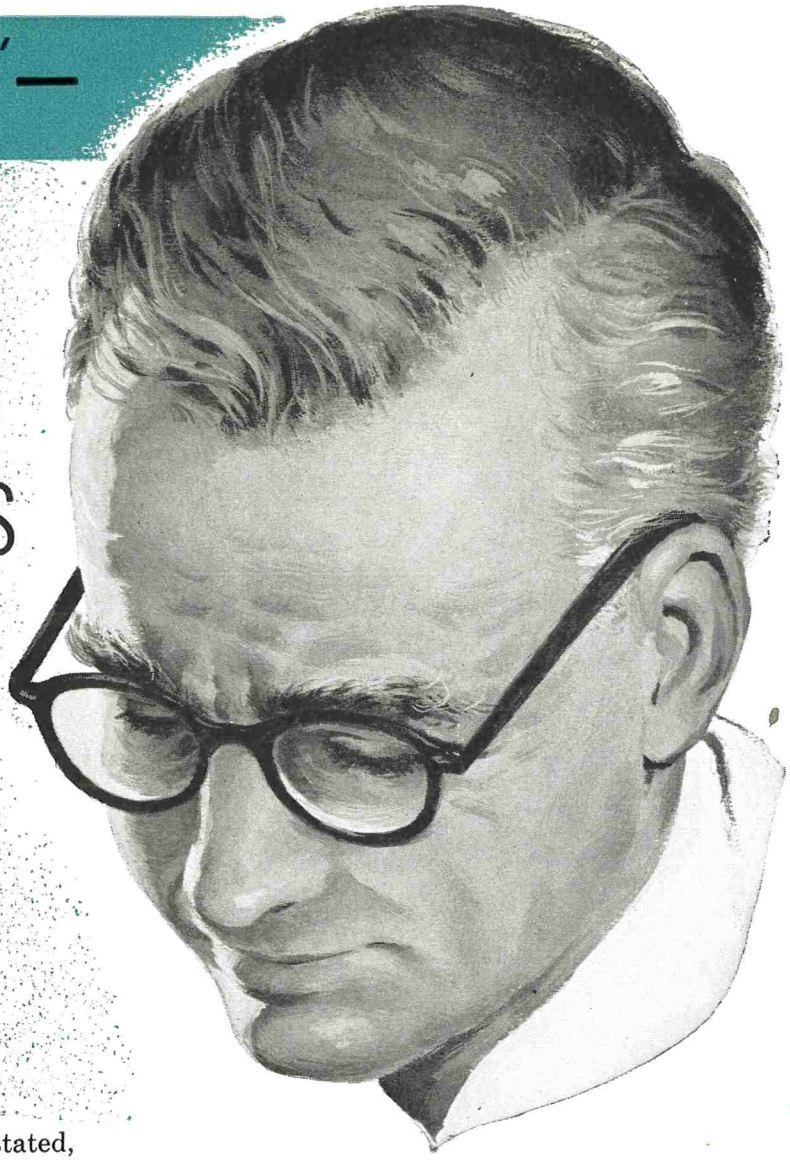

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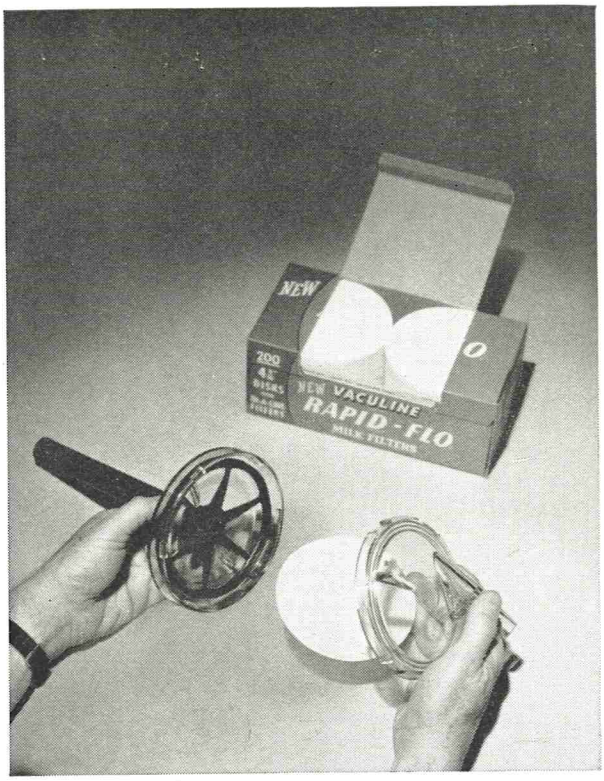
Single Service milk sample tubes. For further information and a catalogue please write, Dairy Technology, Inc., P. O. Box 101, Eugene, Oregon.

Another first from Johnson & Johnson

RAPID-FLO® filter holder complies with applicable items of milk ordinance and code of U.S. Public Health Service



No more guesswork! You can *see* how clean your milk from each cow really is. And you have an every-cow check on mastitis. This new RAPID-FLO® Filter Holder by Johnson & Johnson is made of tough, transparent plastic, lets you spot sediment and garget build-up on milk filters—at a glance. You can single out the cow showing flaky quarters, mastitis flare-ups, or excessive sediment.

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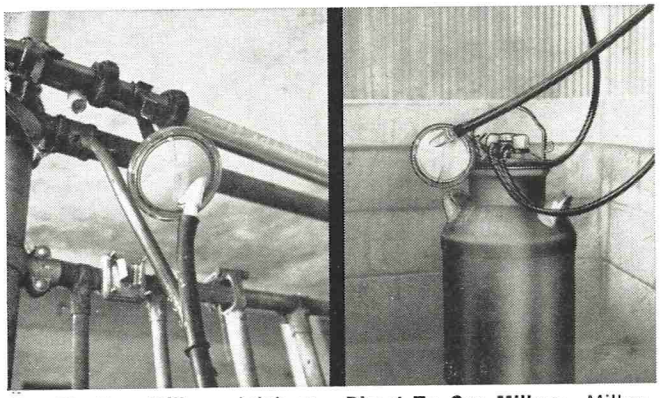
Put the new see-thru RAPID-FLO® Filter Holder to work in your dairy barn right now. Only $8.95 complete!



For Pipeline Milkers—Inlet on Filter Holder attaches to milker; outlet plugs into pipeline.

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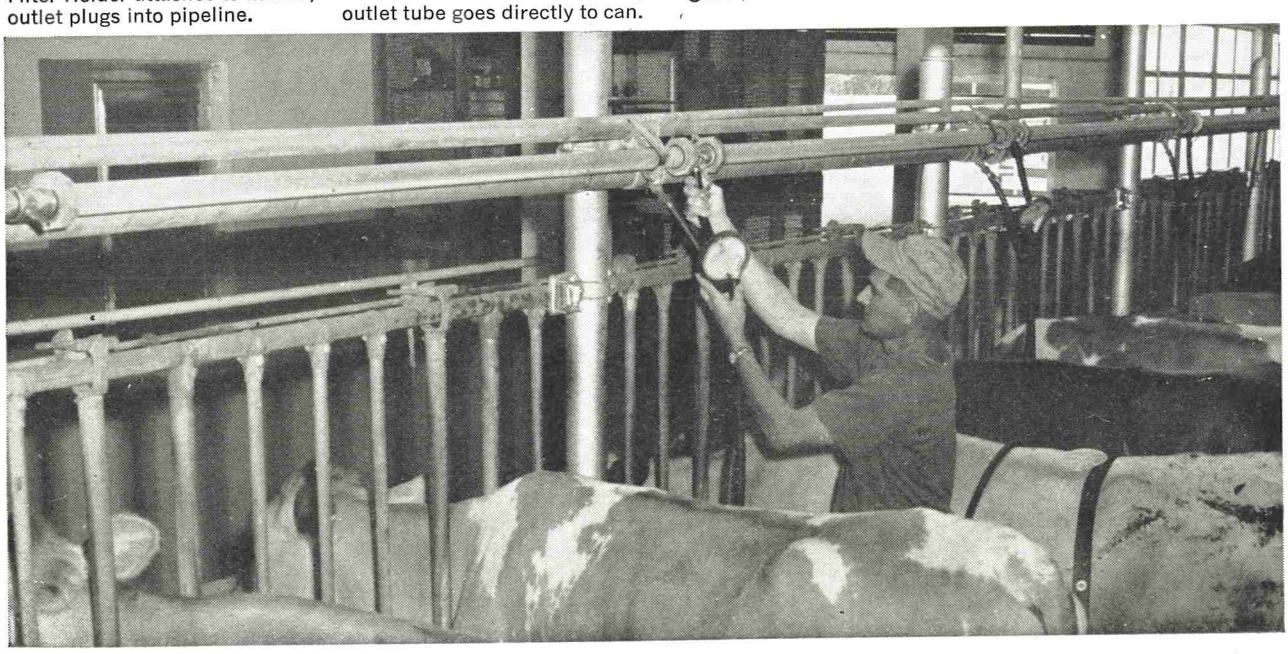

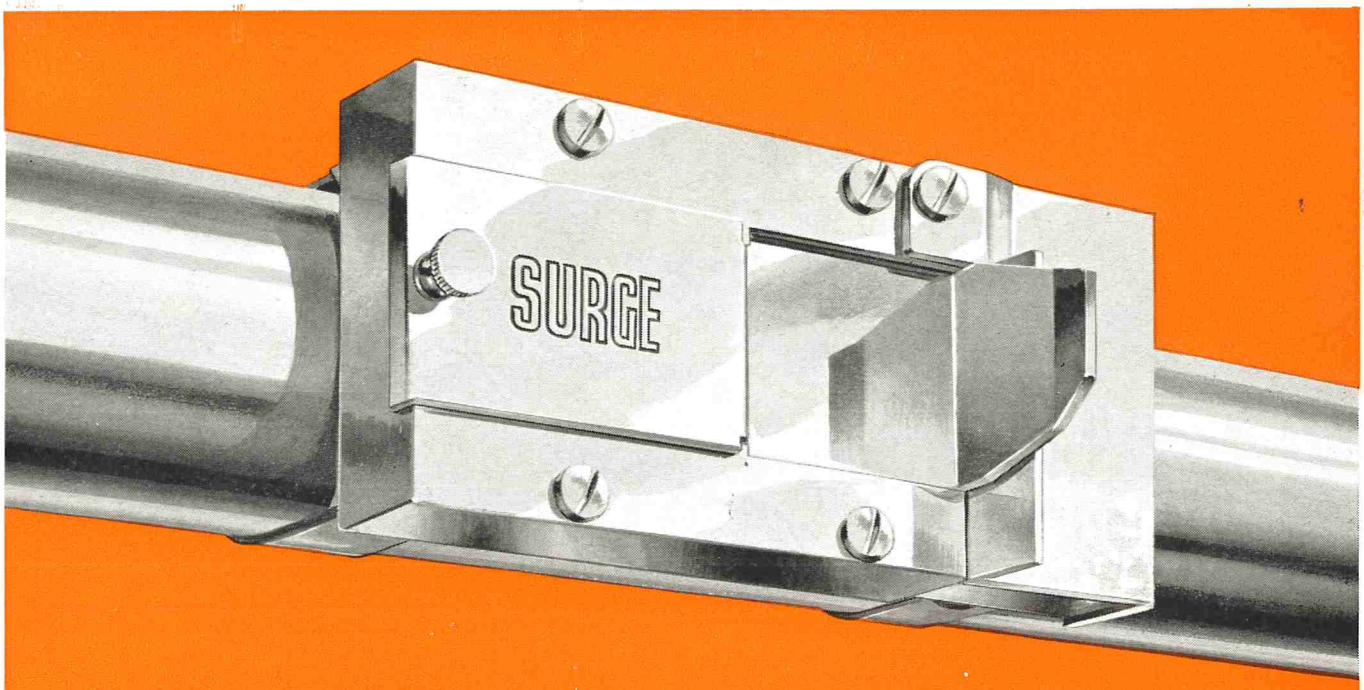

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2. Clamps onto pipeline. Eliminates two joints that many valves require. All joints with crevices should be eliminated.
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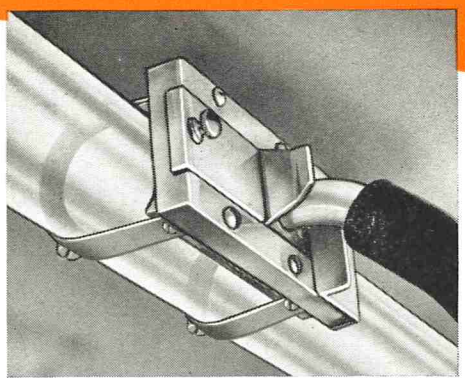
4. Prevents loss of vacuum caused each time a unit is attached or removed. (CONSTANT VACUUM IS IMPORTANT IN MASTITIS CONTROL.)



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