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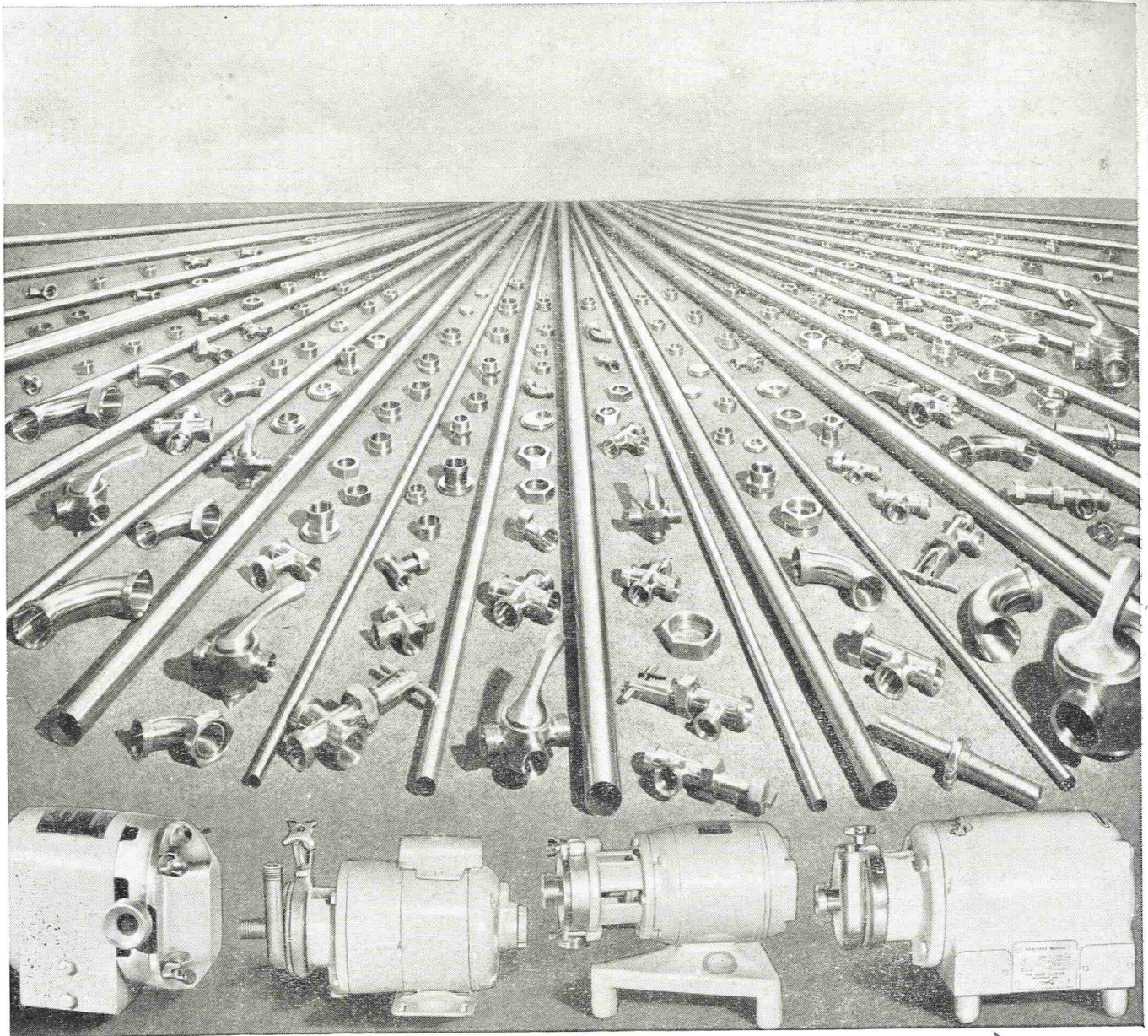
FEBRUARY, 1957

Journal of

MILK and FOOD TECHNOLOGY

Official Publication

International Association of Milk and Food Sanitarians, Inc.



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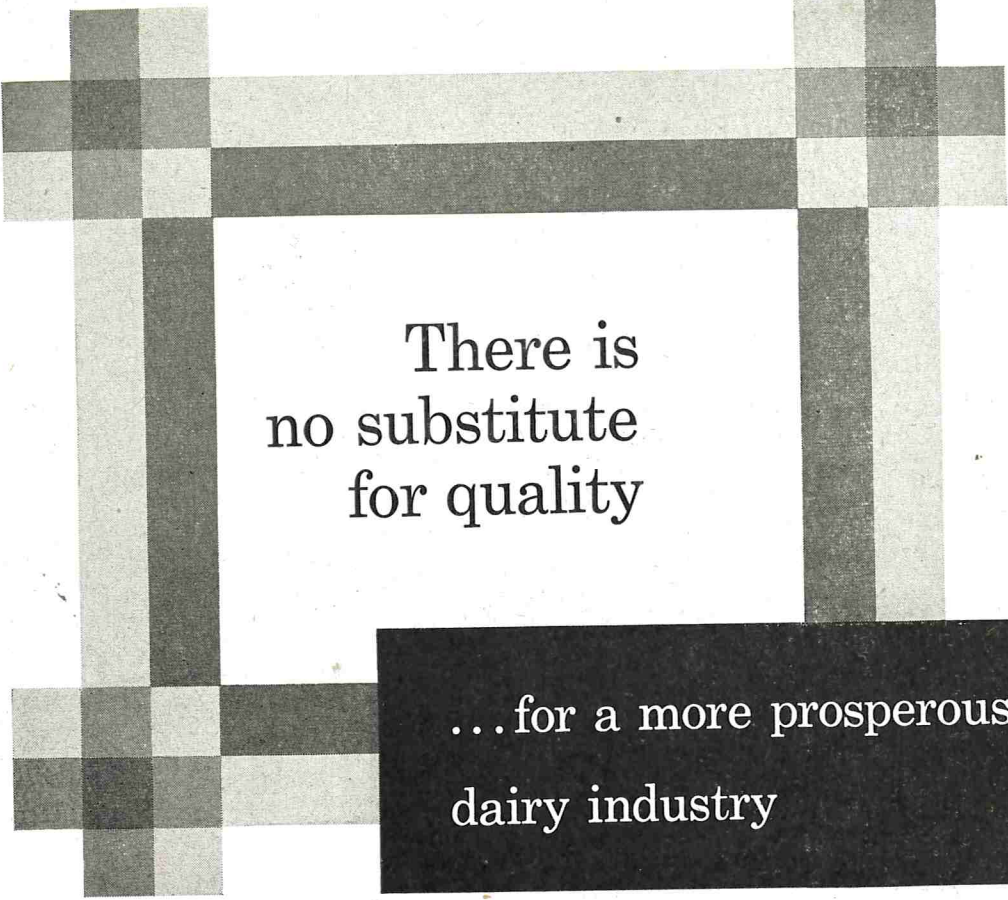
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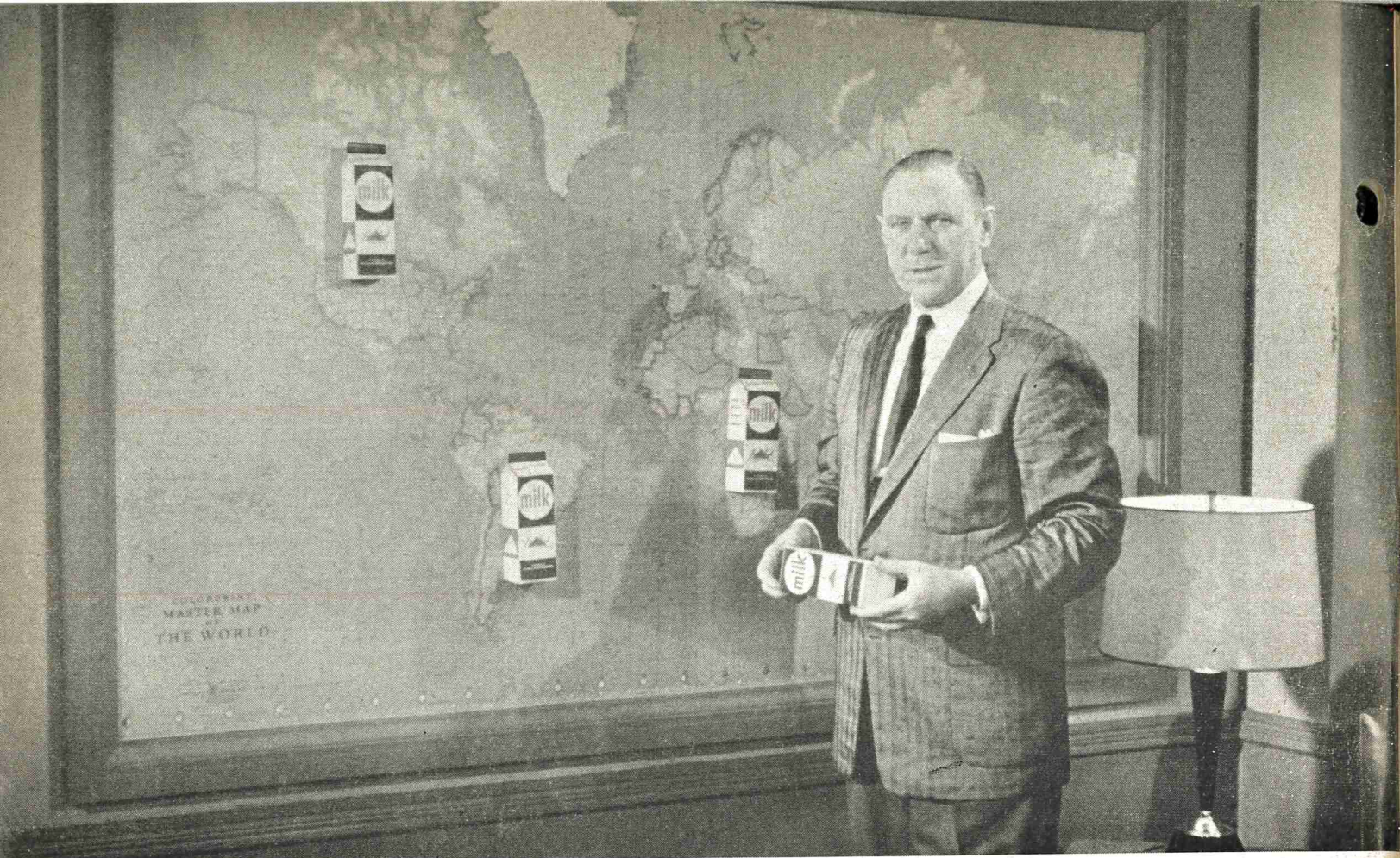
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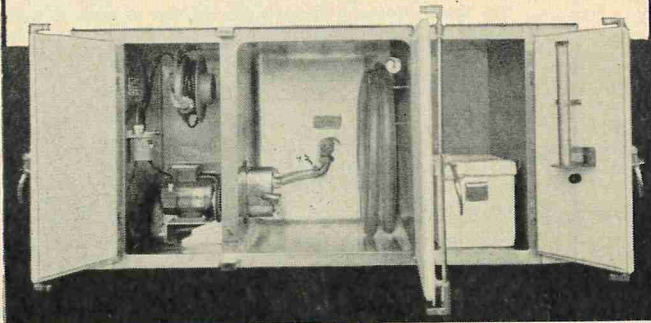
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February

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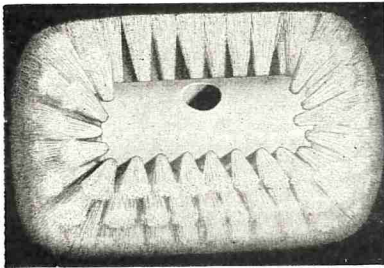
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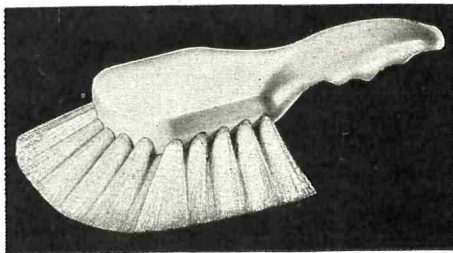


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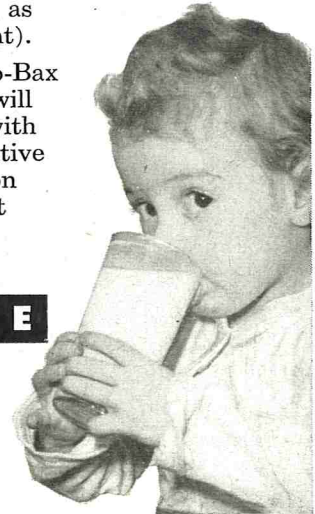
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BACTERIOLOGY OF PRECOOKED FROZEN FOODS¹

H. H. WEISER

Department of Bacteriology
Ohio State University,
Columbus, Ohio

The precooked frozen food industry involves many problems of production, distribution and merchandising of these food products. All or a combination of these problems may alter the physical properties of these foods or change the flavor, odor and color of the product. Lastly, the biological and biochemical activity may determine the acceptability of frozen foods by the consumer. The activity of microorganisms in frozen foods should not be underestimated.

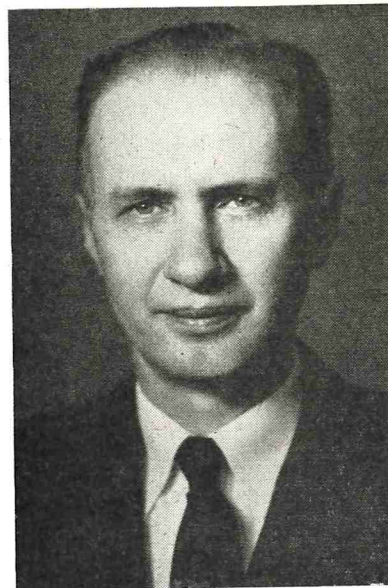
Microorganisms are widely distributed in nature so their presence in foods is not unusual. They respond to their environment such as temperature, oxygen, moisture and food supply. However, the nature of raw food products and the manner in which they are used, such as frozen fruits and vegetables served in raw salads, will influence the microbial content and may also be a source of infection if pathogenic organisms are present.

The greater the microbial contamination of the raw product the more numerous the organisms will be in the product to be processed. Obviously any method used to reduce the numbers of organisms in the product prior to processing will reflect in fewer microorganisms in the finished product. This in turn may be an important factor in determining the keeping quality of the foods.

Procter and Phillips (4) examined more than 125 different kinds of commercially prepared cooked foods and reported that the bacterial plate count ranged from 50,000 to 1,000,000 per gram. The direct microscopic count ranged from 500,000 to 40,000,000 per gram on similar samples.

Buchbinder *et al.* (1) studied the bacterial content on 40 samples of frozen foods at the retail outlets. They reported more than 1,000,000 bacteria per gram of viable organisms and over one-fourth of the samples showed the presence of enterotoxin type of *Staphylococcus*.

There is evidence to indicate that some microorganisms may remain viable in freezing storage for two years with no appreciable loss in viability or virulence of the organisms, that is, their ability to produce disease.



Dr. H. H. Weiser received the B. Sc. and M. Sc. degrees from Ohio State University in Dairy Technology and Agricultural Biochemistry. He received the Ph. D. degree in Dairy Bacteriology at Iowa State College. He is professor of food microbiology at Ohio State University.

The cooking process may destroy many organisms, but there are some kinds of bacteria that are capable of withstanding the heat treatment during processing. However, the temperature used will determine the numbers and kinds of bacteria that survive. Fortunately, the organisms that remain after the heat treatment used in the preparation of the precooked food may not be of any great significance in the frozen foods because the temperature is unfavorable for their metabolic activity. This, of course, will depend very largely on the way in which the food is handled prior to freezing. The food may be cooked, cooled before freezing and allowed to stand or handled in such a way that gross contamination may be involved. In this case cooking the food will not correct contamination. Clean sanitary conditions must prevail throughout the entire process if a good quality product is to be produced.

DISTRIBUTION

Precooked frozen foods produced under good sanitary practices is not a guarantee that such products will reach the consumer in a high quality state.

¹Presented at the 43rd Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC. at Seattle Washington, September 5-7, 1956.

Channels of distribution can be an important factor in the ultimate quality of the food. Inadequate refrigeration in warehouses, retail delivery trucks and retail stores may create favorable conditions for the growth of microorganisms which are usually present in such foods.

FREEZING

The freezing process should not be relied upon to effectively destroy all of the microorganisms present in the food product. Low temperature slows up the metabolic activities of the organisms without any immediate destruction of them. Moreover, there is very little multiplication of the organisms at low temperature. The inherent enzymes normally present in the food and enzymes produced by the microorganisms present in the product respond to temperature changes. Hence enzyme activity is appreciably affected by low temperature.

The lower the temperature the more effect freezing will have on the keeping quality of the food. A temperature around 0°F. or sub-zero storage of the frozen food will reduce the microbial count rapidly during the first 10 to 15 days and then the reduction will be much slower. Presumably through the process of genetics, the more resistant organisms survive the low temperature better than the less resistant types.

Low temperature should not be relied upon to replace poor sanitation. In such a situation the quality of the product may be unacceptable due to the excessive number of bacteria present. If the organisms present are toxigenic, toxins may have been formed during the initial stage of microbial growth in the food. The preformed toxin is not appreciably affected by the low temperature. Therefore, the reduction in viable bacteria by zero storage has limited value and fosters a false sense of security from the public health standpoint. Many investigators believe that pathogenic or disease producing bacteria as well as other microorganisms can survive several months at sub zero temperatures.

Recently Salch and Ordal (6) have shown that *Clostridium botulinum* in precooked frozen chicken a-la-king produced botulinus toxin when the food was defrosted and held at 86°F. for two days. They concluded that botulism is potentially dangerous when precooked foods are not properly handled from the public health standpoint. Similarly, *Salmonella* and *Staphylococcus* could be more dangerous when the food is held under comparable conditions.

Procter and Phillips (5) inoculated a food poisoning strain of *Staphylococcus* and *Salmonella enteritidis* separately into cooked foods of various kinds and then froze the samples and stored them at 0°F for

several months. Approximately 10 per cent of the pathogens used survived for more than six months in the foods.

Studies were conducted by Winter, Weiser, and Lewis (7) on the control of bacteria in chicken salad. Standard plate and *Salmonella* bacterial counts did not show any appreciable increase in shallow pans of chicken salad held alternately six hours in a kitchen at 80°F. and 18 hours in a refrigerator at 41°F. during a three day holding period. Both the standard plate and *Salmonella* bacterial counts increased rapidly during the first 36 hours when held continuously in a kitchen at 72° to 80°F. for three days.

It is common practice in institutional kitchens to store diced chicken, without refrigeration for several hours, thus making environmental conditions favorable for microbial growth. The personal handling of the product by weighing and mixing prior to entering the unbaked pie can be an important factor in gross contamination.

Time and temperature are important factors in controlling the growth of microorganisms. It is not uncommon to have several million bacteria within a short time when conditions are favorable for microbial growth.

Therefore, improper storage of food at temperatures around 70° to 90°F. for a short time can result in gross contamination. All good sanitary practices will be cancelled out if other phases of the processing is conducive to maximum bacterial growth.

COOKING

The cooking of raw food destroys many microorganisms that may be present in meats, poultry, vegetables and other products. A high bacterial contamination in the raw product may result in poor quality of the finished product because microbial activity may have caused excessive decomposition. Another important consideration is recontamination when the cooked foods are further processed prior to final freezing. A good example is chicken pies, when the meat of the chicken is cooked and then allowed to cool before the meat is removed from the carcass, usually by hand. Hence the human element may be an important factor in contamination. The dicing of the picked meat mechanically adds more organisms because these machines are difficult to clean and sanitize.

MICROBIAL STANDARDS

Many undesirable organisms under favorable environment may induce spoilage and some bacteria may be significant from the public health standpoint. Ob-

viously the more sanitary practices emphasized the fewer undesirable organisms will be present in the food. There are microbiological standards for some foods in order to safeguard the public. Therefore, similar standards should apply to foods not regulated at the present time. The Quartermaster Food and Container Institute suggest a standard of not more than 100,000 viable bacteria per gram of precooked frozen food and a coliform count of less than 10 per gram.

Several investigators have recognized the need for standardized methods for the examination of frozen foods. Test organisms such as *Escherichia coli*, *Salmonella typhosa* and *Streptococcus faecalis* have been studied and only the latter culture was able to survive when all were inoculated into pasteurized orange concentrate and frozen.

The presence of fecal streptococci on vegetable samples in appreciable numbers seem to be sufficient evidence that this organism could be used as a test culture in checking the sanitary quality of various frozen products. The inference implies that the fecal streptococci are present in uncooled frozen foods. It may be possible that other intestinal types of bacteria may be present as well.

SUMMARY

The quality of the raw product, processing, added ingredients, storage and temperature are factors that will determine the shelf life of all precooked frozen foods. Usually the storage life of precooked frozen foods is much shorter than comparable frozen foods uncooked. The latter suffers a loss of the freshly cooked aroma and flavor of many seasoned products during freezing storage. The rancidity of fats may contribute to the loss of the product.

The composition of precooked foods will determine how long they may be stored. Stewed and sweetened fruits, seasoned beef stew, fruit cake and cookies may be stored for twelve months without any appreciable deterioration in flavor. Cooked vegetables, fried chicken or fish, barbecued pork and many bakery products cooked in deep fat, and left overs are stable for only a few weeks in freezing storage.

A bacteriological summary was made on frozen foods by E. P. Larkin *et al.* (2) at the University of Massachusetts. They stressed the fact that frozen foods, as possible health hazards, have been relatively free from suspicion. However, frozen fruits and vegetables served in raw salads could be a source of infection.

Ostrolenk and Hunter (3) found fecal streptococci

in all vegetable samples examined and these organisms were present in significant numbers to be a public health hazard. Streptococci were found in citrus concentrates, although in much less numbers than in vegetables. This is a significant observation since frozen juices are not heated while frozen vegetables are usually cooked before they are eaten.

CONCLUSIONS

The production, processing, storage and distribution of precooked frozen foods must have a low microbial content if the quality of the product is to be maintained.

The ingredients used in precooked frozen foods are perishable and usually will support microbial growth especially, if the temperatures are above freezing, or growth can increase very rapidly if the temperature approaches 68-70°F.

If the temperature is favorable for increased growth the metabolic activity will produce off-flavors, off-odors, off-colors and may be an ultimate cause of certain types of infection.

Obviously a few careless producers or distributors can do much harm in creating a false security on the part of the consuming public in the whole precooked frozen food industry.

A need for reasonable high standards should be maintained. The dissemination of basic principles of microbiology should be encouraged, thus instilling a sense of respect, loyalty and devotion to the maintenance of high quality from the raw product to the finished product and ultimately into the hands of the consumer. Lastly the consumer will be the final judge in accepting or rejecting precooked frozen foods.

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FARGO'S MUNICIPAL INSECT AND RODENT CONTROL PROGRAM¹

C. L. BRADLEY

City of Fargo Health Department, Fargo

This subject will be discussed under three main topics; (a) mosquito and fly control, (b) rodent control, and (c) sanitary land-fill as it relates to rodent control.

MOSQUITO AND FLY CONTROL

There appears to be a distinct public health aspect to the problem of mosquito control in the State of North Dakota as a whole, in addition to the readily admitted nuisance problem that is involved. To begin with, there are approximately thirty-eight species of mosquitos, representing nine genera in North Dakota. Of these, *Aedes vexans* and *Aedes dorsalis* are the two dominant species; *Aedes* of the floodwater type seem to be the most prevalent in the Fargo area; *Culex tarsalis* is the third most numerous species. The latter has been found to be naturally infected with both the St. Louis and Western types of encephalitis.

North Dakota, one of the smallest states from a population standpoint in the Missouri River Basin, according to records from the Virus Investigations Unit of the Communicable Disease Center, for the period 1930-1948, led all the states in the basin in the number of cases of human encephalitis for that period. The total number of cases for the nineteen year period was, 1,586, the second highest in the country; the State of Missouri was first with 2184 cases. In 1941 there were 134 deaths in North Dakota due to encephalitis, a fatality rate of 12 per cent.

In 1950 mosquito control operations in the City of Fargo were begun on May 31 and involved the use of a Todd-Tifa fog generating ground unit. Fogging operations were carried on between the hours of 8:00 P. M. to 12:00 midnight each day, provided atmospheric conditions were favorable, using a 5 per cent DDT solution combined with No. 2 fuel oil. The city was divided into sections and one section was completed at a time.

A New Jersey Light Trap was set up to collect the mosquitos that were attracted to the light. This proved valuable as a means of indicating the efficiency of the local control operations. Identification of the various species was made through the cooperation and facilities of the Department of Entomology, North Dakota Agricultural College, (NDAC).



Mr. Bradley was educated at the University of Minnesota and the North Dakota Agricultural College. After Military Service during World War II, he served as Sanitarian in the Bismark Health Department and, later, the Fargo City Health Department. In 1949 he became associated with the Manchester Biscuit Company as Plant Sanitarian and Safety Director. In 1950 he returned to the Fargo City Health Department as Head of the Division of Sanitation.

In June of 1950 Fargo was plagued by a concerted attack of canker worms, and an invasion of small black flies called "no-seeums" added to the problem. In an attempt to remedy the situation, arrangements were made to have the city sprayed by air. Spraying operations began on Wednesday, June 14 at 6:00 P.M. and were completed the following day. The area covered was 1,260 acres in the city and approximately one-eighth of a mile beyond its borders. A mixture of 25 per cent DDT emulsifiable concentrate to three parts of water (by volume) was used. The planes were calibrated to apply the DDT at the rate of one pound per acre. The city parks were also covered in the operation. This cost the city \$1.00 per acre for spraying. The chemicals cost \$1,380. Total cost of the operation was \$3,000 or eight cents per capita. The project, financed from the city's "contingent fund" was considered highly successful.

Along about the middle of July, the community began to indicate interest in a second aerial spraying. Fly control was advanced as the reason for this second

¹Presented at the Fifth Congress of Sanitary Engineering at Lima, Peru, in March, 1956.

project. Although the fly population was not at a high level at the time, the populace apparently felt a plan of attack should be formulated in advance of the peak of the fly season. It was pointed out that the most important factors in fly control are satisfactory sanitation methods, and that if the public would follow proper methods of handling garbage and allied refuse, there would be no great fly problem. The City Commission, however, approved a second city-wide aerial spray, the funds for which were to be raised through a public "Tag Day." The local Chamber of Commerce, newspaper and radio stations contributed time and effort to the project while teams of volunteer women canvassed the city. Approximately \$3,000 was collected and the second aerial spraying of the city was begun on August 17 and completed on August 18.

In the subsequent seasons of 1951, 1952, 1953, and 1954, we continued ground fogging of the city proper and supplemented it by city-wide aerial spraying. Routine larvae checks made during these seasons indicated that a most satisfactory and nearly complete control of the areas treated had been obtained.

It was the feeling of the NDAC Entomology Department that perhaps enough emphasis had not been put on the control of the "flood water" or *Aedes* type of mosquito, therefore, during the 1954 and 1955 seasons, major attention was paid to temporary water areas. Special effort was made to obtain control by larviciding all breeding areas and by eliminating the mosquitos *before* they became adults. Aerial photos and ground surveys were made to provide data for preparation of detailed maps of Fargo and the surrounding territory. All permanent and semi-permanent water collections were recorded. A continuous survey of these localities was carried out from the middle of June until September first. Any areas found infested with larva at the rate of one or more per dipper were sprayed. Dieldrin and Aldrin were supplied by the NDAC for larviciding a total of eighty-five areas. Most of the tracts were treated by using a small compressed-air sprayer mounted on a jeep. This equipment was provided by the city. In the few instances where it was impracticable to handle the job with the ground rig, aerial larviciding was done.

In the 1955 aerial application, different parts of the city were sprayed with DDT at 0.5 lbs. per acre and at 0.25 pounds per acre. Certain areas were treated with Heptachlor at 0.1 pound per acre. It is quite conceivable, however, that since apparent satisfactory results were obtained with these experimental concentrations, a lower concentration of DDT might have been effective. Heptachlor could possibly be substituted for DDT. Additional work must be done, though,

before any actual changes in current procedures can be recommended.

In summarizing the mosquito control phase of the project there could be a tendency to give the entire credit for the rather spectacular success of that portion of the program to the aerial spraying operations. That, of course, would not be fair, nor would it be a true evaluation of the combined program because there are so many variable factors involved. It cannot be denied that the aerial spraying part of the local program was the most popular and had the greatest public support, yet the other phases, i.e., larviciding, ground spraying and fogging, all had an important part in the over-all result. In general, the larviciding appeared to be satisfactory, if the weather factor is considered. In other words, where the areas were treated, the larvae were killed; whereas, untreated areas apparently produced noticeable numbers of adult mosquitos. It is to be hoped, however, that the present program of primarily treating the temporary catch basins, rather than treating the standing water collections, will provide a mosquito control program that will permit effective control of the insects at their *source* and reduce the need for frequent city-wide destruction of adult insects.

The basic principles of sanitation are the corner stone to any insect control program. It is, therefore, mandatory to insure either adequate drainage or satisfactory sanitary conditions since the local topography favors the formation of and the retention of numerous pools of water capable of breeding large numbers of mosquito larvae. The large area involved renders satisfactory enforcement of adequate sanitary regulations most difficult.

Fly control in the City of Fargo, generally, has never posed much of a problem, at least during the last several years. This, perhaps, can be attributed in part to the fact that the local Health Department, through its Division of Sanitation, has been carrying on a rather concentrated campaign to eliminate the privy or "outdoor toilet" within the city limits as well as in the fringe areas surrounding the city. Also, in 1951, the City of Fargo adopted a modern refuse collection system by purchasing a fleet of trucks with packer type bodies and later converted its disposal method from the old city dump style to that of a sanitary landfill. Only kitchen garbage was collected by the city, but a twice-a-week pickup was made in residential areas during the summer months and once a week during the rest of the year with daily service being given to restaurants.

In the Fargo area, the house fly, *Musca domestica* L. generally becomes noticeable the later part of August and remains until the first killing frost comes about the middle of September. During this period, special

emphasis is put on this phase of environmental sanitation by the field sanitarian as he makes his inspections of the various establishments and areas under his jurisdiction. These "reconnaissance surveys" indicate whether or not supplementary work by the Todd-Tifa ground unit is needed and whether more stringent enforcement of existing sanitary regulations designed to reduce probable breeding places of the house fly would be necessitated.

RODENT CONTROL

There are three species of rats common to the North American continent. They are the "brown rat" or the Norway rat, *Rattus norvegicus*; the "roof rat" or Alexandrian rat, *Rattus rattus alexandrinus*, and the "black rat" or ship rat, *Rattus rattus rattus*. The City of Fargo is concerned only with the Norway variety, as the Alexandrine rat is a southern rodent and is seldom found as far north as North Dakota. The "ship rat" is obviously not indigenous to the landlocked "Great Plains Area."

The Fargo rat control program is divided into three phases. First, a campaign to build out and starve the rats is undertaken. Field sanitarians, upon inspection of buildings, give helpful information to the property owner or tenant in the art of building out rodents by eliminating all of the enclosed spaces such as openings in hollow walls, between floors and under foundations where rodents may live and breed.

Rodents may be starved out of an area of infestation simply by keeping food away from them. Therefore, city regulations require that garbage be stored in tightly covered metal containers kept at least 18 inches off the ground, that premises should be kept free from rubbish, and that feeding stations for birds be eliminated if the householder desires to keep rats from using his premises as a free lunch ground.

The second phase of the program involves the poisoning and the trapping of the rats. The bait that has been found most effective against rats in this community is oatmeal, dog food, horse meat or hamburger combined with rodenticides such as Fortified Red Squill and Warfarin.

SANITARY LAND-FILL

The third and last phase of a well-rounded rodent control program is the establishment of a satisfactory method of refuse disposal.

On October 5, 1954, the City of Fargo's intra-city Sanitary Landfill was put into operation. The landfill was located in the industrial area of the city, approximately two blocks from a residential district. It covered about three and a half acres of what was for-

merly waste land along a county drain. The land is owned by the City of Fargo and as a reclaimed section will be of considerably greater value to the city than it was previously as it can be used as a recreation area, parking lot or as a site for light industrial purposes.

In the Fargo operation, enough dirt was dug from the bottom of the area by an HD-9G crawler type tractor with a two-yard front end loader, to form sides for the trench or dikes and cover for the entire operation. Refuse was dumped at the bottom of a ramp or slope, then the material was compacted against the sloped section in layers. This placing and compacting operation was continued throughout the day as additional truck loads were dumped. At the end of the day, the daily accumulation of refuse was covered with a protective skin of dirt six inches thick. This prevented the cell from becoming a nuisance. A series of these cells were built up until the trench neared completion and was approximately one and a half feet from grade level. Then a final cover of dirt two feet thick was applied. The completed fill was then six inches above grade level. This additional six inches was to allow for future settling. Stock-piled cover material was protected from frost by a layer of leaves gathered from Street Department sweepings during the Fall.

It is felt that the Sanitary Landfill method of refuse disposal is a very satisfactory method in a northern climate and is a most effective tool in the rodent and insect control program for the City of Fargo. It gives the city a profound psychological advantage to point out that it has taken the lead in removing a focal point of vector infection, and in addition, has turned what used to be an insanitary, odorous, fly and rat breeding haven into a clean and eventually useful area of land. Since initiation of the Sanitary Landfill program, rats have proved a minor problem at the disposal area.

In conclusion, it would not be amiss to say again that if the corner stone of any insect or rodent control program is laid upon basic sanitation principles, such a program should prove successful in any location provided satisfactory enforcement of sanitary regulations can be obtained.

ACKNOWLEDGEMENT

The cooperation of the Department of Entomology, North Dakota Agricultural College, for their assistance in the insect control program was greatly appreciated.

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THE FIELD APPLICATION OF THE "SUGGESTED PROCEDURES FOR THE INVESTIGATION OF FOODBORNE DISEASE OUTBREAKS"^{1 2}

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Let us begin this discussion by reviewing the purposes and uses of investigations of outbreaks. It is worthwhile to do this because, in reviewing reports of many investigations, we get the impression that the investigators frequently have not had clearly in mind the objective of the investigation.

The ultimate purpose of an investigation is to determine *how* food materials become contaminated, in order to use this information to prevent a repetition of the same set of circumstances. A means toward this end is the location and identification of the causative agent and vehicle of transmission. But this is only a preliminary step in the procedure — it is not the final goal. Too frequently investigators do not attempt to learn just *how* and when the food became contaminated, nor do they take full advantage of the use of the incident as a teaching tool to prevent similar outbreaks in the future.

ADDITIONAL VALUES TO BE OBTAINED FROM INVESTIGATION

Outbreaks of disease are unusual and dramatic. The general public is keenly interested in matters affecting health. An outbreak of disease is news, and newspapers, radio and TV are alert to report such news. After it is reported, the public wants to know what happened and what is being done about it. People pay taxes to support health departments with the expectation that public health workers will insure that proper measures are taken to protect them against such health hazards as food-borne disease.

There are times when health officials need evidence to support the enactment of ordinances or regulations designed to eliminate or minimize potentially hazardous conditions or practices in the preparation, storage, or service of food. Evidence collected locally (or within the state) is much more effective in convincing those who need to be convinced, than is evidence



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cited from textbooks of circumstances reported from far-off places. So it is important to obtain complete and reliable records of outbreaks which can be used for this purpose. The health department will not be able to give the community the type of service and protection it expects if outbreaks are not investigated properly and thoroughly.

DETAILS OF OPERATIONAL PROCEDURES

Reporting of food-borne disease

In investigations of outbreaks of food-borne disease, time is an exceedingly important and often critical factor. It is important to obtain specimens for laboratory examination while such specimens are still available and in proper condition. Furthermore, information obtained early after the development of the outbreak is apt to be more reliable than that obtained after a considerable lapse of time. Also, it is oc-

¹Presented at the 43rd Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS INC., at Seattle Washington, September 5-7, 1956.

²The manual *Suggested Procedure for the Investigation of Food-borne Disease Outbreaks* which has been prepared by the Committee on Communicable Diseases affecting Man, INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., is now in editorial process. Copies will be available soon at the ASSOCIATION offices in Shelbyville, Indiana.

asionally possible, through early intervention, to prevent additional cases from developing.

When and how do health departments usually learn that an outbreak has occurred? Too frequently the news reaches them several days after the event. There are many and complex reasons why the health department is not notified of such outbreaks as soon as they are recognized. It does require a certain amount of time after an outbreak occurs for it to become recognized as such. Physicians may be called to attend persons who have become ill with food poisoning but if they see only one or two isolated cases they may not even suspect food-borne disease. A physician's first and immediate concern is the care of his patients, and even after the physician suspects that he is dealing with food-borne disease, the health department is not automatically the first thing that comes to his mind.

Therefore, health departments must remain alert to obtain reports of outbreaks from all possible sources, including physicians, hospitals, news agencies, or any other reliable source of information. Even rumors of outbreaks should be checked. In public health, it is not unusual to discover situations which would have passed unnoticed if a special effort had not been made to find them.

One last comment about reporting: It is not surprising that outbreaks frequently occur during holidays or week-ends. That is when people celebrate by indulging in picnics or special dinners. At such times, someone may attempt to reach health department workers to report an outbreak or to request assistance but may not be able to do so because of inability to locate members of the health department staff. The health department must have a well established policy and procedure whereby telephone operators will always know where the key personnel may be reached — and such members of the staff must keep designated persons informed of their whereabouts.

Being ready and prepared to carry on an investigation

Let us now assume that the health department has been notified that an outbreak of food poisoning has occurred. How does the investigation get under way? Does each member of the staff have a good understanding of the responsibilities each is to cover? Is the staff organized to proceed intelligently and cooperatively? Are the working tools available and ready — meaning laboratory specimen containers, instruments for obtaining specimens, thermometers, and the various history and record forms. Above all, is the captain of the team prepared to direct the operation?

The first step to take in an investigation is to be prepared to go into operation. It is necessary to have

one person in charge to whom all will report, and who has authority to direct others. Of course, the person in charge must have sufficient knowledge of the general epidemiology of food-borne diseases to be able to give intelligent direction. This means that he must be well acquainted with the clinical characteristics of diseases caused by the various agents usually responsible for such outbreaks, including particularly the length of the incubation periods of each, as well as the possible avenues of transmission and other characteristics produced by each particular causative agent.

While this appears to be a formidable amount of information, it is quite readily available in handy form, such as in the handbook on the *Control of Communicable Diseases in Man* published by the American Public Health Association, as well as the booklet under discussion here (see Part V — Classification of Illnesses Attributable to Foods).

Investigation must begin on the basis of information that is obtained usually at the time the report of the outbreak is received, which usually includes such information as the location of the outbreak, approximately when the suspected food or drink was consumed; roughly, how many people were involved, and the general nature of the illness produced. Whoever answers the telephone to receive a report of an outbreak should attempt to obtain this information from the person reporting it.

As soon as sufficient additional information is obtained in regard to the chief symptoms of some of the patients, and the approximate incubation period, a tentative working diagnosis should be made which will delineate the approach to the problem; that is, it should be tentatively decided that the outbreak may be due to chemical poisoning, botulism, staphylococcal intoxication, food infection, or some other type of agent.

On the basis of this much information, assignments of specific tasks should be made.

Selecting and obtaining laboratory specimens

Of course, one of the first things to be done is to get to the premises where the common exposure took place to obtain as quickly as possible specimens of material for laboratory examination. Comment is in order in regard to the importance of the type, condition, and manner of collection of laboratory specimens.

It is best to obtain samples from the containers from which the suspected food was originally served. Sometimes it is necessary to take the container itself, or to obtain food scraps from plates upon which served. If samples of food from the serving containers or dishes are not available, the next best specimen is a

sample of food prepared in the same manner at the same time. In any case, the record of the sample should include a detailed statement of its source.

It is better to obtain too many samples than to neglect to take some because of apparent lack of significant possibilities. Final selection of samples to be examined can best be made later in consultation with the laboratory worker. If specimens of doubtful value are picked up, be sure to advise the laboratory technician of your opinion as to which specimens are most likely to yield helpful results. It may not be necessary to examine all specimens brought in, so it is well to establish a priority of importance.

Sometimes rather large food items are involved, such as a large ham or carcass of a turkey. It is better to bring in the entire specimen and let the laboratory worker select the sample for examination. If specimens are in small containers or packages, it is advisable to take the entire sample in its original container.

In obtaining the samples, it is imperative to take every precaution to avoid cross contamination from one specimen to another, or to add contamination through handling. Specimens must be handled with sterile instruments, and after an instrument, such as a knife, spoon, or forceps has been in contact with one sample, it cannot be used for another without re-sterilization. One way to re-sterilize such instruments in the field is to wipe them with alcohol and then flame the surfaces that will come in contact with the food items.

If the suspected food is canned, ascertain whether home or commercially canned. If home processed, attempt to obtain the exact method used in canning. If a pressure cooker was used, have the steam gauge tested (County Extension Agent may be of help here). If commercially canned, get brand and lot number. If possible, obtain part of a used can. If not available, get a sample from a lot prepared at the same time.

Particularly in the case of suspected chemical poisoning, or where legal action is apt to be likely, samples picked up must be properly labelled and sealed in the presence of witnesses, who should be asked to acknowledge that the specimen is authentic.

Refrigeration of Specimens for Bacteriological Examination

If more than an hour or two will elapse between the time the samples are obtained and the time they can be delivered to the laboratory, the samples must be kept refrigerated at a temperature not exceeding 50°F. This can best be accomplished by placing the specimens in an insulated carrying box, such as the

popular picnic lunch coolers, which, of course, must also contain a refrigerant, such as ice or the convenient frozen jel-packs generally available in sporting goods stores.

If specimens must be shipped to a central laboratory, it is necessary to ship them under refrigeration in order to obtain approximate quantitative estimations of the number of organisms present.

Supplies and Equipment needed

Each health department should have ready and accessible for immediate use, a kit of equipment and supplies prepared to use in the investigation. Such a kit should include the following items:

- a. Six sterile wide-mouth glass jars, 4-6 oz. capacity, with screw cap.
- b. Two sterile 1-quart mason jars with caps.
- c. A sharp knife (butcher knife) wrapped, labeled and sterilized.
- d. Three tablespoons, wrapped, labeled and sterilized.
- e. One or more pair of forceps or tongs, wrapped, labeled, and sterilized.
- f. 4-oz. bottle of alcohol.
- g. Alcohol lamp.
- h. A dozen individually wrapped, sterile cotton swabs, with a dozen screw-capped tubes each containing about 5 ml. of sterile saline solution for making swab rinse suspensions.
- i. Heavy wrapping paper, folded and wrapped in an outer cover and sterilized, to be used for covering and transporting large items, such as the carcass of a roasted turkey or a ham.
- j. Two or three water specimen bottles.
- k. A roll of ½ inch wide adhesive tape.
- l. Thermometer for checking temperature of refrigerator, etc.
- m. Wax pencil.
- n. Paper towels (sterile and wrapped).
- o. An insulated chest in which to transport samples under refrigeration.
- p. Supply of all the forms needed upon which to record the information obtained and to identify the specimens for laboratory examinations.

Admittedly, the above is a rather comprehensive and somewhat formidable list of supplies and it is probable that such a complete outfit would not be needed on some occasions; nevertheless, having such a kit ready for use should be conducive to carrying out more thorough and, therefore, more useful investigations.

Recording the findings of the investigation

The contents and use of record forms deserve detailed consideration. In the first place, it is difficult to draw up a form that is effectively applicable to all outbreaks because the circumstances vary so much from one outbreak to another. If the element of time were not so critical in most investigations, record forms could be drawn up and prepared to fit the particular circumstances involved. Since this is usually not practicable, or because it is more convenient to have necessary forms ready for immediate use, many health departments have developed general forms for this purpose, and it might be added that practically no one is ever completely satisfied with a form that someone else has composed.

The following is a list of the functions and values of investigation record forms:

a. The forms provide a means of systematically recording the circumstances relating to the outbreak and from this may be prepared an official report of the incident, which also serves as evidence that an investigation was actually made.

b. The forms provide a guide to the investigator as well as a checklist of items to be observed.

c. The quality of the information and the completeness of the record furnish an indication of the thoroughness or the superficiality of the investigation. Many state health departments rely upon such records to determine how well the local health department has fulfilled its responsibility. If a thorough investigation has been made but poorly recorded, the records will be misleading.

From time to time long-range studies are made of compiled records to obtain an over-all view of the problems of food-borne disease and to discover areas needing more attention or changes in procedure. If the reports of outbreaks are incomplete or poorly prepared, the use of valuable information is lost.

It is helpful and convenient to record the findings of investigations on several types of forms. Generally, one type of form is used to record information about persons who participated in the common event leading to the outbreak; on this form are recorded the symptoms and incubation period of the illness, the food items consumed and the results of laboratory examinations of the persons. Another type of form is generally used to record the status of sanitation on the premises involved, as well as the history of the source, preparation, storage and service of the various food items, a list of the food handlers and their respective responsibilities, plus the results of laboratory examinations of suspected food items and specimens obtained from food handlers. It is useful to have a special form for use in identifying laboratory specimens and to furnish information or instructions to the laboratory.

In addition to these forms, it is helpful to have work sheets that can be used to cross-check illness against the various food items, and finally a summary tabulation form upon which the findings of the investigation may be summarized, both in tabular and narrative form, with a statement of the epidemiologic conclusions indicating the causative agent and vehicle of transmission, the probable manner in which the food was contaminated and the probable source of the contamination.

In the booklet *Suggested Procedures for the Investigation of Food-borne Disease Outbreaks* illustrations of model forms that may be used to record and summarize the findings of outbreaks are presented. Undoubtedly much work and thought has been devoted to the preparation of these forms. However, from our own experience in attempts to use these forms to record the findings of several outbreaks, we found it desirable to make extensive revisions of each of them to conform more closely to practices and procedures followed in this state.³ If anyone is interested, we will be glad to make copies of our revisions available.

Development of skill in investigation

The success or failure of an investigation depends a good deal upon the skill of the investigators and the direction they receive (if a number of persons are involved in carrying on the investigation). Some persons are endowed with natural ability which helps to make them good investigators — most of us have to develop this talent. To be a successful investigator, the following characteristics are needed: (a) interest in and curiosity about the problem, (b) ability to observe keenly, (c) the ability to imagine situations and sequences, (d) ability to think systematically and clearly, above all, (e) persistence and determination to obtain the evidence to support a thesis. Following are a few suggestions that may improve the skill of the investigator.

Before questioning people, the investigator should put his informant at ease by establishing a friendly confidence or rapport. Explain why you wish to question the person. Be at ease yourself. Don't talk too much, but be prepared to do some listening. Be patient. People frequently tell much that is not related to the investigation, but let them tell their story. However, to save time and to get to the information that is being sought, guide the person's conversation with occasional pertinent questions. Help to fix dates or time of day by relating them to incidents in their life or of the community.

³Forms originally included in the "Manual" have been revised.

It is quite likely that the stories obtained from a number of persons will differ in detail. Don't assume that the first story you get is entirely accurate, especially if the information comes second-hand. Check and recheck stories with persons who have been involved in one way or another. Be careful to word your questions in a way that will not be too suggestive of the answer that fits your suspicion. Be careful not to ask questions that are answered too readily with a "yes" or "no" — and don't accept such answers too readily — persist by changing the question or repeating it later.

Don't be discouraged if first attempts do not solve the problem. Keep thinking over the circumstances, discuss the matter with your colleagues, requestion persons involved, and attempt to obtain a perspective view of the situation.

It is important to point out an error in sampling that is frequently made; namely, that only persons who have become ill are interviewed, or at least too few of the persons are interviewed who participated in the common event but did not become ill. Fortunately, this error may be corrected by locating and questioning more persons involved. How many persons should be interviewed to obtain a representative and significant sample of findings? We have used the following rule of thumb to determine this: In outbreaks where twenty or less persons are involved, an attempt should be made to question all of them; if the number of persons is about 50, we suggest that about half of them be questioned, dividing the number roughly into equal numbers of those who became ill and those who did not become ill. When the number of exposed reaches 100 or more, we feel the sample should be equal to approximately 25 per cent of them.

Finding the real "cause" of the outbreak

The practice of carrying out rather superficial investigations of outbreaks should be discouraged. The results of such investigations are misleading and frequently useless. Again, all of the emphasis should not be placed upon finding the causative agent and the vehicle of transmission; but more emphasis should be placed upon determining *how* the food was contaminated and who or what was the source of the contamination.

Most frequently *a person* is involved in introducing the causative agent into the food or drink that has served as the vehicle of transmission. If the causative agent is bacterial, the bacteria usually have originated

from a person — sometimes directly from a skin, nose or throat or intestinal infection. How did the person transfer his infection, and what might have been done to prevent this transfer? Sometimes a person is involved indirectly — as when the procedure for dressing poultry is such that organisms from infected poultry are spread over cutting blocks, knives, and other kitchen equipment. Even where water or milk are the sources of disease, the investigator has not completed his assignment until he has obtained the evidence to demonstrate where, when, and how the vehicle was contaminated.

Demonstration of sources of infection usually requires physical examination and appropriate laboratory studies of suspected persons.

SUMMARY AND CONCLUSIONS

1. The purpose of an investigation is to determine *how* food materials become contaminated in order to use this information to prevent the occurrence of similar incidents. In order to determine who or what was the source of contamination, it is necessary to continue the investigation beyond the point of identifying the causative agent and the vehicle of transmission. Most frequently this requires the demonstration of infection in a person.

2. The value of findings of thorough and complete investigations depends upon obtaining a proper and complete record. Good record forms provide the means of systematically recording the circumstances involved in an outbreak, and serve also as a guide to the investigator, a check-list of observations to be made and a permanent record of data that is then available for future use.

Record forms should be flexible to enable them to be adapted to each outbreak.

3. Investigations may be facilitated in the following ways:

a. By stimulating all concerned to make prompt reports of outbreaks, being sure that the mechanics of reporting is well understood by the public and that key personnel of the health department can be reached at all times.

b. By being properly prepared to carry on an investigation by having a good understanding of the epidemiology of the various types of food-borne disease, by having ready and available the equipment and materials that will be needed, and by having the investigation team organized, trained, and under competent direction.

ASPECTS OF CHEMICAL ADDITIVES IN FOODS¹

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The history of man is closely associated with his food supplies; survival, migrations, community development, formation of government, military campaigns, religious worship, functions of politics. The ability of man to produce food in quantity for increasing populations is dependent upon effective use of fertilizers, insect, rodent, fungicide, miticide, weed, and simular controls, and mechanization. Insect control is an intense problem. The American farm enterprise is rapidly changing characteristics, in population, manpower output, available acreage, and acreage output. Food distribution practices also have changed markedly in the past decade. Military logistics have strong impacts on food production and utilization practices. The necessity for new forms of foods for shifting populations has resulted in re-evaluation of regulations governing the use of chemicals in foods, their functions, and effects.

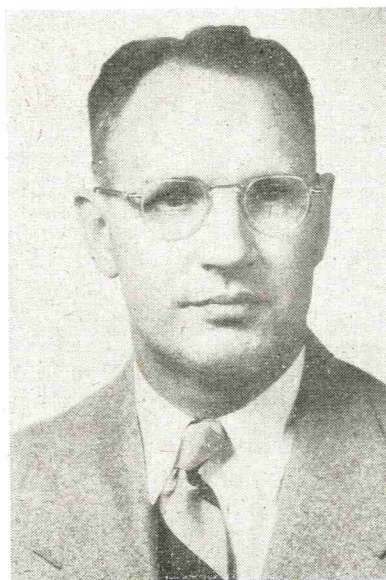
"Chemical food additives," as an expression, has become increasingly important in many respects. The use of chemicals must be appraised against the background history of man, and of his food requirements, and of his health. Their role must be appraised also in the newer knowledge of chemical substances, including foods, in food manufacture, and in physiology.

MAN AND FOOD

Food, per se, can be associated with every historical development of man; in his survival, his migrations, in the formation of domestic rather than migrant, communities, in the formation of governments, in the status of campaigns of war, in the commerce of nations, in man's freedom from toil and opportunity for development of cultures, in his religious worship, and in the functions of politics.

FOOD SUPPLY

Availability of food has always been one of man's greatest problems; its lack has determined the fall of empires, in government revolutions, and in social unrest. Literally, millions of people have perished in famines, and their aftermaths of plagues and scourges. History records these occurred as frequently as decennially only several hundred years ago. Food surpluses is for our generation and nation, momentarily, a social and political problem. It probably shall not always be so. It has been estimated the ill-fed people of the



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world outnumber the well fed two to one. For millions, physiological pain of hunger is a daily stark reality. It is apparent, as our knowledge improves, that virtually everyone suffers some degree of nutritional inadequacy. The perfect physiological balance has yet to be understood, less well, attained.

It has been only within the preceding century that Lavoisier established the oxygen balance resulting with the ingestion, and digestion of food. It has been only recently, historically, that John Beaumont's studies with the wounded Alex St. Martin provided information on what happened in the digestion of food. In the last 100 years, man has established some facts on the amount of food necessary for physiological work. In the past 30 years, biologists have elucidated information on the kinds of foods needed for improved health.

FOOD PRODUCTION AND CHEMICALS

The subject of chemical additives in foods must be considered also in the light of certain other aspects.

¹Presented at the Annual Meeting of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC. at Seattle, Washington, September 5-7, 1956.

The ability of this nation to produce food in abundance is dependent in great part upon several factors among them specifically, (a) mechanization of agriculture, (b) the use of chemical fertilizers, and (c) in agronomic techniques of insect, rodent, fungicide, miticide, weed, and similar controls. The control of insects is extremely important to food production. No plants, few, if any, animals are immune to them. The estimated values of the destruction of crops by insects ranges from 4 to 8 billion dollars annually. The per capita cost of such destruction has been suggested to be as much as \$100 annually. As much as 10 per cent of stored grain is lost or destroyed by insect damage (19). Currently, some 460 million pounds of pesticides are used annually in the control of crop insects (14). The necessity for these applications is so great that experimenters have come to admit untreated control crops are difficult to raise to maturity. The net effect of the use of the various insecticides has been estimated by some to account for the salvation of as much as 30 per cent of the total crop. In spite of the extensive use of the pesticides, the threat of newcomers in the insect world is ever with us (21). There has been a reappearance of the Mediterranean fruit fly in the citrus belt; the Khapra beetle, a grain destroyer, was found in 1953 in the far southwest states area; the spotted alfalfa aphid which is causing as much as 50 per cent destruction in southwestern states, has now appeared in the central and southeastern states; the citrus blackfly, a resident of Mexico, threatens infestation yearly. Some potential insect threats which have not arrived but which have caused devastation to crops elsewhere, include the Dura stem borer, the olive fly, the oriental fruit fly, the spiny bollworm, and the melon fly. Control of these pests ultimately will require further extensive use of pesticides to protect the food crops.

CHANGING NATURE OF THE FARM ENTERPRISE

Still another aspect of this problem of man and his food supply is in the changing nature of the American farm enterprise (4). In the past 15 years, the total output of American farms has increased one-third. The output per man hour has doubled. The number of farms, however, has decreased 15 per cent; the number of people on farms has decreased 27 per cent. In 1800, 80 per cent of the people of the nation lived on farms. In 1940, 25 per cent of the people lived on farms, and in 1956, only 12 per cent lived on farms. Since 1940, about 17 million acres of the nation's better lands have been taken out of production. Some 40 per cent of the nation's farmers now produce 90 per cent of the total agricultural output. It is, therefore easier to sell to, and to transfer to

the fewer agricultural producers, new techniques and new materials for more intensive agricultural production. Not only are fundamentals on insecticides and fertilizers transmitted to farmers, but facilities and know how for the use of rodenticides, fungicides, miticides, weedicides, herbicides, antibiotics, plant bactericides, growth regulators, thinners, and so forth, have become standard tools in farm practices. Literally dozens of such materials have been found useful, necessary, and proven satisfactory within the past decade. Dozens more will be conceived and tested (16, 18, 19). On a world basis, food production has never been geared to the full of its potentialities.

FOOD DISTRIBUTION CHANGES

The manner in which food is distributed has undergone tremendous change in the past 15 years. There have been also, marked shifts in the per capita consumption of various crops; declines in potatoes, and cereals goods, increases in processed packaged juices, and canned and frozen fruits and vegetables. Pre-cooked foods and pre-packaged fruits, vegetables, cereal mixes, meats, sea foods, are now standard diet items. The some 1500 items of the serve and delivery store of a few years ago has increased to 4 to 6 thousand items of the supermarket self service store of today. The social security of the food stock formerly in the home cellar has given way, in our current scheme of life, to a compressed kitchen cupboard, to be implemented with a constant flow of the new and convenient.

It should be noted that the volumes of food in raw crude form in the citrus fruit, or vegetable, areas or in the grain fields and on the hoof, on the western plains, is of no value unless transposed into a useful form, and delivered to the dependent masses elsewhere. Transposition of foods, in a modern concept, involves extensive refining. Moreover, there is an increased time-space interval between processing, distribution, and consumption, that imposes many technical problems.

FOOD AND MILITARY REQUIREMENTS

The impact of food science coupled with the demands of military logistics on food processing is too frequently not recognized. Military campaigns must include consideration of food supplies, both as force material, and as enemy target. Historical nuances in this area might be recalled in the light of the dual use, by Ghengis Khan, of brood mares as beasts of burden, and for fresh milk, and of Napoleon's stimulation of development of synthesized fats, and the genetic up-breeding and extraction of beets for sugar

following the British fleet embargo. Modern warfare, with large masses of personnel, involves tremendous demands on quartermaster qualifications. Among these may be cited the integration of food stores to the timing of campaigns; the logistics of storage, packaging for shipment, of food transportation, adaptability to mobility of forces, dispersion of personnel, of problems of space, of weight, of ease of preparation, of stability of palatability, of variety, and of being served hot. The inventions of the tools of war demand counterparts in foods for the armed forces. Availability, and acceptability of food for the civilian forces now appears to be an increasingly greater problem of military defense logistics. The research developments in foods for military purposes, and in specifications for quartermaster procurement, has its ultimate and lasting effects on foods, and their processed packaged forms, for domestic purposes.

FOOD REGULATIONS

In the light of these aspects, it is necessary to review briefly the development and status of regulations, particularly as they relate to chemicals used in food processing. The use of chemicals in food processing is not new; nor are many of the basic principles of food preservation as used today really new, such as acidification, salting, smoking, drying, cooking and roasting. Many of the techniques of modern food processing are merely extrapolates of so called "natural" techniques used formerly. The laws of Congress on foods are relatively few in number: the Tea Act of 1800; the Federal Meat Inspection Act of 1890; the Adulterated Food Import Act of 1890; the Butter Law of 1923; the Wiley bill of 1906; the Food Drug and Cosmetic Act of 1938, and its subsequent amendments; the Federal Insecticide, Fungicide, and Rodenticide Act of 1947, the Nonfat Dry Milk Law of 1944 and 1956 and the recent Miller Pesticide Residue Amendment to the Federal Food Drug and Cosmetic Act.

The Wiley bill is notable for its specific prohibition of harmful adulteration, and of mis-branding of foods. It was developed to meet problems of extensive economic adulteration of foods. Two outstanding events of the period of development and use of this act were in the methods of proof of harm of chemical preservatives, and in the public debates on the use of certain chemicals as alum in leaveners, and as conditioners of bread dough. The controversies which culminated in the technical and news press of the times affected the thinking about chemicals in foods over a period of many years. The Food Drug and Cosmetic Act of 1938 is notable for the change in concept of law from a premise of "caveat emptor" to that wherein a consumer or user of foods has every right in court

to assume its safety and healthfulness. This act, as it pertains to chemicals: (a) specifically prohibits the shipment of foods containing poisonous or deleterious substances; if these are naturally occurring the shipment is forbidden unless it is not injurious, and (b) the use of added substances, if poisonous, or deleterious, is forbidden altogether, except where they cannot be avoided in production or in good manufacturing practice, and then only to the extent permitted by tolerances. The administration is empowered to establish tolerances limited to safe levels of the quantity of additives remaining in foods. Where a poisonous or deleterious substance is not necessary, it cannot be used in any amount, regardless of whether it might be used at a "safe" level. In the two decades of use of the act, during which tremendous changes have occurred in food production and processing practices, in population characteristics and requirements, experience has brought light on several major problems (1, 2, 3, 5, 6, 7, 8, 9, 10, 12, 15, 17). Among these may be cited the following:

1. The blanket terms of prohibition against the use of poisonous and deleterious substances in foods is difficult of interpretation. There is provided no specific delineation between a hazard, and toxicity of chemical substances. Virtually every substance consumed by man has a toxic limit. It is difficult to establish absolute freedom of toxicity of chemical substances except in a relative manner. Ultimate tests would require large population samples of varying age ranges, freedom of usage of foods, and variations of diet.

2. The ultimate decision, in disputes, is left to courts; the evaluation of toxicity tests in themselves is frequently very difficult, and the possible legal distinction between harmless, and poisonous or deleterious, is difficult to appraise in advance.

3. The act requires no one to give advance information to the government of the intent to use or distribute a new chemical additive in foods; consequently, an unsafe or inadequately tested chemical could be used for a considerable period prior to its detection, and even then there would have to be developed the evidence that the chemical had poisonous or deleterious, characteristics.

4. The hazard or toxicity of chemical substances to man must be determined by translation from tests with animals; in many instances the effects may be clear-cut, but in others, there can be involved problems of statistical sampling, the mode of application of the chemical, the level and frequency of dosage, the criteria of measure, and, if necessary, extrapolation of results.

Because of the many interwoven and new problems

involved in the administration of the 1938 Act, and in the procurement and distribution of foods for an expanding and shifting population, the Congress in 1950, established a Committee known as the Delaney Group Committee, to investigate its uses. In the 1950-1952 period, it held 59 public hearings in various sections of the country and heard 217 witnesses representing various national and smaller organizations. The reports of the Delaney Group Committee were extremely critical, by implication, of the use of chemicals in foods processing, and resulted in a large number of popular press and technical reviews of the problem. Much apprehension evolved because of statements in the reports. In the lay press, for example, a statement, such as that a definite large number of chemicals were used in foods did not clarify the consumers' minds that many of the chemicals are approved for use, nor that the extent to which they are used, and the frequency of use in a diet, should be considered in their evaluation. The Delaney report stated some 704 chemicals were being used in foods.

In the light of importance of the problem, The National Research Council, through its Food and Nutrition Board and its Food Protection Committee, and established subcommittees, undertook a review of certain aspects of the use of chemicals in foods. The Council has published, through its deliberation, several publications evaluating the problem (11). The publication, "The Use of Chemical Additives in Food Processing" deals with a survey of the extent of use, and functional benefits of use, of intentional chemical additives, including transient chemicals, and naturally occurring substances used as additives. The publication, "Safe Use of Chemical Additives in Foods" undertook to delineate the basic principles involved in evaluating safety in the use of chemical additives in foods, basic considerations in evaluating hazards encountered in the use of pesticides on foods, and in the development of new agricultural pesticides for food production. The publications: "Principles and Procedures for Evaluating the Safety of Intentional Chemical Additives in Foods," "The Safety of Artificial Sweeteners for Use in Foods," "The Safety of Polyoxyethylene Stearates for Use as Intentional Additives in Foods," and "The Safety of Mono- and Diglycerides for Use as Intentional Additives in Foods" are further considerations of this large problem. These have become guiding references in appraisal of the subject.

During the past session of Congress, a number of bills have been introduced for the purpose of clarifying the use of chemicals in or on foodstuffs. The Pesticide Chemicals Amendment was enacted in 1954. This amendment applies primarily to incidental additives and recognizes forthwith that dusts and sprays are

necessary to a continuing supply of food, and is designed to permit effective use without hazard to the consumer. The procedure required in the Act of 1938 involved a requirement of hearings to establish need for the chemicals. The 1954 Amendment provides that a raw agricultural commodity bearing a chemical residue shall not be marketed unless (a) the chemical is recognized as safe under conditions of use, (b) on the basis of scientific evidence, a safe tolerance for residues is established, or the chemical exempted and, (c) if tolerances are established, the residues remaining are within the tolerance level. Several proposed bills (Priest, O'Hara and Miller) on intentional additives in foods were not passed, and are subjects of much review. The areas of consideration center upon:

1. The definition of an additive.
2. The adequacy of pretesting of an additive.
3. Safety standards, and the establishment of tolerances.
4. Methods of appeal from decisions concerning the safety of proposed additives: both injunctive procedures to prohibit use of specific chemicals by the enforcement agency and, declaratory judgment by the court requiring evidence for consideration, and license procedure, have been proposed.
5. The use of reference scientific advisory Committees to evaluate submitted scientific evidence; this technique already has been provided for, and used, in the Pesticide Amendment.
6. The provision of a time limit within which decisions upon applications for use of chemicals must be considered.
7. Evidence of the utility of a chemical whether of toxic character, or not.

Undoubtedly, further proposed legislation will be considered on the need for and mode of use of intentional food additives. The beneficial use of nutritional additives has been well established. It is certain that with increased problems of translating raw food materials into forms for use at some other time and place, food technology must be encouraged to make the best and realistic use of every facility, with every reasonable safeguard, in the development of foods for public health at low cost, and with the enjoyment of high nutritional quality.

Many new chemicals have been produced in the past decade, and more are in prospect. Functions of these chemicals are uncovered applicable to foods uses. Much research is necessary to establish the facts required on the safety, hazard or toxicity of the individual chemicals. Generally speaking, the nutritional and other economic qualities of foods have been improved through the use of chemical additives.

There need be no hazard in the use of chemical additives in foods provided appraisal of their characteristics and biological limits is made prior to their use. The aspects in the requirements of man for food must be considered in our evaluation of food provided to man.

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NEWS AND EVENTS

ANNOUNCEMENT CONCERNING THE SANITARIANS AWARD FOR 1957

Announcement is made that nominations will be accepted for the annual Sanitarians Award until May 1, 1957 and the members of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., are requested to give consideration to the nomination of individuals whose professional work in the field of milk and food sanitation in their communities has been outstanding.

The award consists of a Certificate of Citation and \$1,000 in cash, and is sponsored jointly by the Diversery Corporation, Klenzade Products, Inc., Oakite Products, Inc., Pennsylvania Salt Manufacturing Company, and the Olin Mathieson Chemical Corporation. It is administered by the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., and is presented annually. The next presentation will be made at the 44th annual meeting of the ASSOCIATION which is to be held at Louisville, Kentucky, in October 1957.

The Sanitarians Award was initiated in 1952, and was presented in 1956 to Jack Fritz, Chief of the Milk and Food Section of the Kansas City Board of Health, Kansas City, Missouri.

The Executive Board of the ASSOCIATION has established the following rules and procedures governing the Sanitarians Award.

Eligibility

The rules concerning eligibility of candidates for nomination are:

(1) Any living citizen of the United States or Canada who, at the time of nomination, is employed as a professional milk and food sanitarian, or both, by a county or municipality, is eligible for the Award, except members of the Executive Board and members of the Committee on Recognition and Awards of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., Employees of State or Federal agencies

and of industry are not eligible for the Award. Membership in the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., is not a prerequisite of eligibility; and there are no restrictions as to race, sex, or age.

(2) A candidate shall have made a meritorious contribution in the field of milk and food sanitation to the public health and welfare of a country or municipality within the United States or Canada.

(3) The achievements and contributions on which the Award is to be based, must have been completed during the five-year period immediately preceding January 1 of the year during which the Award is to be made. Under special circumstances, consideration will be given to related work accomplished by the candidate during the seven-year period preceding January 1 of the year during which the Award is to be made. Under this rule, the principal work to be considered for the 1957 Award must have been performed during the period January 1, 1952 to January 1, 1957, and the related work during the period January 1, 1950 to January 1, 1957.

(4) Co-workers are eligible for nomination if both have contributed equally to the work upon which the nomination is based.

(5) No person who has once received the Award shall be eligible for nomination.

Nominations

Nominations of candidates for the Sanitarians Award may be submitted by the Affiliate Associations of the IAMFS, or by any member of the ASSOCIATION in good standing except members of the Executive Board, members of the Committee on Recognition and Awards, and employees of the sponsoring companies. Nominations from persons who are not members of the ASSOCIATION cannot be accepted. No member or Affiliate may nominate more than one candidate in any given year.

Each nomination must be accompanied by factual information concerning the candidate, a resume of his work and achievements, evidence supporting his achievements and, if available, reprints of publications. A form for the submission of nominations may be obtained upon request from I. E. Parkin, Room 213 Dairy Bldg., Penna. State University, University Park, Penna., or H. L. Thomasson, Executive Secretary, INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., P. O. Box 437, Shelbyville, Indiana.

Deadline for submission of nominations

The deadline for submission of nominations is May 1, 1957, and all nominations and supporting evidence

must be postmarked prior to midnight of that date.

Selection of the recipient

The Committee on Recognition and Awards of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., has full responsibility for selecting from among the candidates nominated the recipient of the Sanitarians Award. In judging the contributions of each candidate, the Committee will give special consideration to (a) originality of thought, mode of planning, and techniques employed, (b) the comprehensive nature of the candidate's achievements, and (c) their relative value as they affect the health and welfare of the candidate's community. The Committee will give consideration also to the efforts of the candidate to establish professional recognition in the community in which he serves, as well as to his research and development, administrative, and educational achievements. Additional information or verification of submitted information will be requested when considered necessary by the Committee. Testimonial letters in behalf of a candidate are not desired.

If, after reviewing the nominations and supporting evidence, the Committee should decide that the work and achievements of none of the candidates have been significantly outstanding, the Award shall not be made. In this connection, it is fundamental that if meritorious professional achievement cannot be discerned the Award shall be omitted for a given year, rather than to lower the standards for selection of a recipient.

The 1957 Committee on Recognition and Awards consists of I. E. Parkin, *Chairman*, University Park, Pennsylvania; H. S. Adams, Indianapolis, Indiana; C. G. Leonard, Columbia, South Carolina; Richard M. Parry, Warrick, Rhode Island, Wm. V. Hickey, Salt Lake City, Utah, John H. McCutchen, Jefferson City, Missouri.

ANNOUNCEMENT CONCERNING THE CITATION AWARD

The International Association of Milk and Food Sanitarians, Inc., has had established since 1952 a Citation Award that is designed to bestow well deserved recognition upon members of this Association who through long and distinguished service have contributed greatly to the professional advancement, growth and reputation of the INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC.

As to the rules of eligibility the recipient must be a member in good standing of INTERNATIONAL ASSOCI-

ATION OF MILK AND FOOD SANITARIANS, INC.

Any member of our ASSOCIATION or an Affiliate Association can nominate an individual for the Citation Award.

Such Nomination must be accompanied by supporting evidence of the individual's past contributions and services to the ASSOCIATION. Nominations for the 1957 Citation Award should be sent to I. E. Parkin, Room 213 Dairy Building, Penna. State University, University Park, Pennsylvania, or to H. L. Thomasson, Executive Secretary, INTERNATIONAL ASSOCIATION OF MILK AND FOOD SANITARIANS, INC., P. O. Box 437, Shelbyville, Indiana, not later than April 15, 1957.

Selection of the recipient of the Citation Award will be made by the Committee on Recognition and Awards.

REPORT OF IAMFS COUNCIL MEETING, SEATTLE, WASHINGTON, SEPTEMBER 5-7, 1956

1. Ivan Parkin, Chairman of the Council, called the meeting to order at 2:40 P.M., Tuesday, September 4, 1956, in the Olympic Hotel, Seattle, Washington. He read certain portions of the Constitution and By-Laws pertaining to the Council with regard to its functions and objectives.

2. The people present introduced themselves by name, where from, and whom they represented. The attendance list is attached.

3. P. E. Riley moved that K. G. Weckel of the Wisconsin Association, H. J. Barnum and Mr. Quinn of the Rocky Mountain Association be invited in as delegates of the respective Associations. Motion to approve was made by Paul Corash and seconded by L. E. Nisson. The motion was amended by John Faulkner, seconded by H. S. Adams that they could not be entitled to vote (since they were not duly authorized as representatives by their respective Associations). The amendment passed and the motion as amended was approved.

4. The minutes of the last Council meeting and a list of four corrections prepared by the Secretary for further clarification were read and approved by motion of P. E. Riley, seconded by George Steele and carried.

Corrections and additions to the minutes of the Council meeting in Augusta, October 3, 1955 are as follows:

a. The Chairman appointed Bill Hoskisson and John McCutcheon as members of the Steering Committee for three-year terms to replace Wayne Brown and Loretta Gailliard whose initial appointments for one year had expired.

b. The question was raised as to whether the Chair-

man had the authority to make appointments to the Steering Committee. Upon review of the Constitution it was established the immediate Past President of the Association as Chairman of the Council shall appoint all Committees unless otherwise directed by vote of the Council. The Council then voted approval of the right of the Chairman to make such appointments.

c. The Chairman appointed Clarence Weber as Chairman of the Committee on Committees, and requested him to designate two other members whom he would like to have serve on this Committee. Clarence Weber later recommended Karl Jones and H. L. Thomasson (ex officio). The minutes showing the appointment of John McCutcheon to this committee were in error inasmuch as his appointment was to the Steering Committee.

d. A discussion took place concerning clarification of the rules covering nominations for the Sanitarians Award to make clear the fact that Affiliate Associations, as well as individual members, could submit nominations. The Council favored broadening the base, and a further discussion took place with regard to the Affiliates appointing their own Committee on Recognition and Awards, one of whose functions would be to consider persons within their own States who qualified for the Sanitarians Award and to nominate such persons to the IAMFS. In this connection, it was stressed that an Affiliate could not submit more than one nomination in any given year.

5. John Sheuring, Chairman of the Steering Committee, presented the agenda as prepared by the Steering Committee. He stated that some suggestions came from a meeting held last year in Augusta and others by solicitation by mail. Motion to accept was made by P. E. Riley, seconded by Karl Jones and carried.

6 P. E. Riley moved that the Executive Board and Program Committee establish the policy of holding the meeting of the Council at least the day before the opening of the annual meeting of the International. The motion was seconded by John Sheuring and carried.

7. George Steele brought up the question of how the matter of quorum is handled. The Constitution was read relative to this matter. It was agreed the proper interpretation of the Constitution would be that the majority rule of those present would prevail.

8. The question was raised regarding whether the Steering Committee recommendations need be considered by the Executive Board before presentation to the Council. It was the feeling of the Steering Committee that all matters may be presented to the Council without approval of the Executive Board. The Exe-

cutive Board also may present items for the agenda to the Steering Committee. It was emphasized that the purpose of the Steering Committee was to prepare the agenda in order to make the work of the Council more effective. John Sheuring moved the recommendations of the Steering Committee do not have to be approved by the Executive Board before presentation to the Council. The motion was seconded by John Faulkner. In the discussion it was pointed out this procedure is already being followed and the motion was not necessary, and upon vote was defeated.

9. H. L. Thomasson read in detail the proposed budget for the coming year based upon last year's costs of operations. The budget allowed approximately fifteen thousand dollars for the Association activities and twenty-five thousand dollars for the Journal. President Adams pointed out that dues have not been raised for some time and it is the intention of the organization to operate on an efficient basis on a modest and realistic budget. H. C. Goslee moved the budget as presented was acceptable to the Council. The motion was seconded by P. E. Riley, who further amended the motion to the effect that the budget be presented to the Council at all future annual meetings. The amendment was seconded by John Sheuring and the amendment and motion were adopted.

10. A discussion took place regarding the Chairman of the Council. It was pointed out the Constitution directed the immediate past president of the Association as Chairman of the Council and if any change is made it would have to be by Constitutional amendment. A motion to table the matter was made by P. E. Riley, seconded by George Steele and carried.

11. Karl Jones discussed the matter of having a committee of the Council to study the Constitution and recommend changes. P. E. Riley moved the Chairman of the Council appoint a committee to study the Constitution and By-Laws to determine whether improvements and changes should be made and report at the next annual meeting. The motion was seconded by John Faulkner and carried.

12. Proxy voting was discussed. It appeared that this should be a matter of concern for the new Council Constitution if they choose to consider it. A motion to table the discussion was made by H. C. Goslee, seconded by George Steele and carried.

13. A motion was made by P. E. Riley, seconded by George Steele and unanimously carried to express a vote of thanks to Chairman John Sheuring and the members of the Steering Committee.

14. Dr. Joe Olson discussed the matter of interchange of information among the various affiliate Associations. He pointed out that fifteen local programs were published last year out of a possible 28 associations. He urged further cooperation with the

Journal Editor in this matter by sending (a) news items before the local meeting is held, (b) a copy of the program and (c) a post write-up of the meeting.

15. Karl Jones reported for the Committee on Committees. He reported they were making a survey of the Committees now existing in the various Affiliate Associations. Thirteen have replied and others were urged to cooperate on this project. The report was accepted and upon motion by Paul Corash, seconded by John Faulkner and carried, the committee was directed to continue the work for the next year.

16. Harold Adams pointed out work on education and professional development is being handled by that committee of the International. Regarding other Associations, it was recognized they exist and that we are aware of their activities. He further discussed a letter from H. C. Goslee and pointed out the working procedures of the Executive Board and Council and accomplishments of the Association. Mr. Goslee also expressed his views on this matter.

17. John Faulkner discussed the procedures for nominations for the Sanitariums Award and urged greater interest in submitting nominees. He discussed the question which had been raised by a telegram from C. K. Smith of Michigan of whether the base should be broadened with respect to eligibility to include State, and Federal sanitarians. It was pointed out this matter had not been thoroughly explored by the Executive Board nor the Committee on Awards. It was pointed out that the method of payment should not be considered in determining the eligibility of local sanitarians.

18. New Business. P. E. Riley described how the members and the association might better improve in professional efforts. A lengthy discussion took place. It was pointed out that exploratory meetings by representatives of IAMFS are being held with NAS and APHA representatives to determine whether a Joint Council could be formed to establish a National Registry.

19. The Chairman, Ivan Parkin, stated committee appointments would be made at a later date, and the meeting adjourned at 5:15 P. M.

Respectfully submitted,

H. H. WILKOWSKE, Secretary of the Council

The Council Constitution Study Committee, appointed by new Chairman Harold Adams, is as follows:

P. E. Riley, Illinois, *Chairman*
John D. Faulkner, Washington, D. C.
Harold J. Barnum, Colorado
Alan Miller, Pennsylvania

Appointments to the Steering Committee for three year terms and the year to expire are:

C. G. Leonard, South Carolina, (1959)

George Steele, Minnesota, (1959)

Other members of the Steering Committee are J. J. Sheuring, (1957), *Chairman*, H. C. Goslee (1957), John H. McCutchen, Missouri (1958) and J. E. Quinn, Wyoming (1958), as replacement for Bill Hoskisson.

Attendance: George H. Steele, Minnesota; Charles P. Halloran, South Dakota; Joseph C. Olson, Jr. — Editor, Minnesota; Karl K. Jones, Indiana; Paul Corash — President Elect, New York; John D. Faulkner — Senior Past President, Washington, D. C.; C. G. Leonard, South Carolina; John Sheuring, Georgia; B. W. Hartman, Missouri; Leonard E. Nisson, California; P. E. Riley, Chicago, Illinois; John E. Quinn, (Rocky Mountain Association), Wyoming; Carl B. Rasmussen, Wyoming; H. Clifford Goslee, Connecticut; Frank W. Logan, Washington; Charles Holcomb, Minnesota; K. G. Weckel, Wisconsin; H. J. Barnum, Colorado; Ivan Parkin — Immediate Past Pres. and *Chairman*, Pennsylvania; H. H. Wilkowske — Secretary, Florida; H. L. Thomasson — Executive Secretary, Indiana; H. S. Adams — President, Indiana; H. B. Robinson — First Vice President, Washington, D. C.

SANITARIANS AND LABORATORIANS TO MEET IN GAINESVILLE

March 20 and 21 will be the dates of the meetings at the University of Florida at Gainesville sponsored by the Florida Association of Milk and Food Sanitarians. President Sam Noles and the directors are planning an attractive program which will be of interest to dairymen as well as sanitarians. The laboratorians program is under the direction of Dave Fry of T. G. Lee Dairy of Orlando and Hugh Butner of the State Board of Health. Dr. H. H. Wilkowske of the University staff is in charge of local arrangements.

Outstanding speakers will discuss at the Sanitarians program such topics as Federal Milk Marketing Orders, Coordinating Sanitary Regulations, Bulk Milk Handling, Bulk Milk Tanks, Milk Spoilage, Plastics in the Dairy Industry, Instrumentation, Sanitization, and Animal Disease Control.

The Laboratory section will feature topics on Acidity and pH testing, Chlorine and Caustic Tests, Sediment Testing and the Phosphatase Test.

The annual business meeting and banquet will be held as usual and Ten-Year Sanitarians Awards will be made. The meeting is open to all who wish to attend.

FEDERAL COURT RULES ON FORT COLLINS, COLORADO, MILK ORDINANCE

A judgement rendered by the Federal Court in Denver, Colorado on December 19, 1956, disclosed

“an arbitrary and unreasonable abuse of discretion,” by a Fort Collins food inspector.

The case in question involved the Lucerne Milk Company of Denver and the city of Fort Collins, Colorado. The Lucerne Milk Company has been refused a license to sell milk and dairy products in Fort Collins. Basis for refusal was a recent amendment to the local milk ordinance passed by the Fort Collins City Council calling for monthly inspections of milk producers. Testimony indicated that the monthly inspections were of a cursory nature and did not improve the sanitary quality of Fort Collins milk; Lucerne Milk Company's products were shown to be safe and wholesome, produced and processed under proper and efficient supervision by the City and County of Denver Department of Health.

On the basis of the court's decision, the Lucerne Company was issued a license and given authority to sell its products in Fort Collins.

PUBLIC HEALTH LEADER CITED FOR ANTI-LITTER LEADERSHIP

Paul Corash, Chief, Milk Division, New York City Department of Health, was among the public health leaders who received a special citation at the close of 1956 from Donald J. Hardenbrook, President of Keep America Beautiful, Inc., for “Volunteer Service” in the war on litterbugs. Mr. Corash represents the International Association of Milk and Food Sanitarians on the KAB National Advisory Council.

A medallion bearing the official Keep America Beautiful symbol was presented to Mr. Corash “in recognition and appreciation of his willingness to lend his professional experience and leadership in advancing the objectives of the nationwide educational program to stimulate individual responsibility and pride in clean, healthful and attractive surroundings.”

Commending the International Association of Milk and Food Sanitarians for its role in the KAB movement, Mr. Hardenbrook said: “Public health agencies, together with major public and private non-profit organizations, are concerned about the litter potentials that are inevitably linked with our expanding economy and our increasing use of outdoor recreational facilities. They are in the vanguard of one of the most important public service campaigns ever launched. We rely on accelerated participation, in the future, by Government, business and civic leaders, for the achievement of our common goal.”

Founded in December 1953, Keep America Beautiful, Inc. is supported by a group of the nation's most influential business firms, national trade associations and labor unions, representing some 50 major industrial categories, together with over 40 national civic and public interest organizations and four Federal

Government Departments, all pooling their educational resources in one vast, coordinated effort to preserve and improve America's scenic beauty.

PROFESSIONAL ANNOUNCEMENT

Department of
HEALTH, EDUCATION, AND WELFARE
Public Health Service
Washington 25, D. C.

The new Food Establishment Sanitation Advisory Committee of the Public Health Service held its first meeting November 27-29 in the Department of Health, Education, and Welfare Building in Washington, D. C.

Of the 16 members who constitute the committee, appointed by Surgeon General Leroy E. Burney, five represent national public-health associations; four, State and local health organizations; two, educational institutions, and four represent the National Restaurant Association, National Licensed Beverage Association, and the American Hotel Association. Mr. John D. Faulkner, Chief of the Milk and Food Program in the PHS Division of Sanitary Engineering Services, as Chairman of the Committee, stressed the importance of industry — Government cooperation in the interest of the health of the consuming public. The new advisory committee reviewed and evaluated the applicability of food and beverage sanitation procedures in the light of modern industry practices and a rapidly changing technology. Future work of the committee will provide technical consultation and guidance to the Service in development of model sanitation standards for restaurants and other food and beverage service establishments, for use by interested States and municipalities. This will serve as a means of providing a uniform approach to the service of safe foods and beverages to the public.

Representing National Health Organizations

Dr. Mack I. Shanholtz, Virginia Commissioner of Health, Richmond, Virginia; Association of State and Territorial Health Officers.

J. Robert Cameron, Associate Manager of Health, Denver, Colo.; Conference of Municipal Public Health Engineers.

A. H. Fletcher, Director, Division of Environmental Sanitation, N. J. Department of Health, Trenton, N. J.; Conference of State Sanitary Engineers.

John Fritz, Chief, Milk and Food Section, City Health Dept., Kansas City, Mo.; International Association of Milk and Food Sanitarians.

A. Harry Bliss, School of Public Health University of California, Los Angeles, Calif.; National Association of Sanitarians.

Representing National Industry Organizations

S. A. Coleman, New York, N. Y.; American Hotel Assn.

James J. Donovan, Cincinnati, Ohio; National Licensed Beverage Assn.

Cyril L. Kegler, Cedar Rapids, Iowa; National Restaurant Assn.

Armin Kusswurm, Chicago, Ill.; National Restaurant Assn.

From Health Agencies

John Andrews, Chief, Sanitation Section, Division of Sanitary Engineering, North Carolina State Board of Health, Raleigh, N. C.

H. J. Dunsmore, Public Health Engineer, Pittsburgh Dept. of Health, Pittsburgh, Pa.

W. V. Hickey, Chief Sanitarian, Division of Foods and Sanitary Engineering, City Board of Health, Salt Lake City, Utah.

C. L. Senn, Engineer-Director, Bureau of Sanitation, Los Angeles Health Dept., Los Angeles, Calif.

From Educational Institutions

H. S. Adams, Director of Sanitary Science Courses, Indiana University Medical Center, Indianapolis, Ind.

Dr. W. L. Mallman, Professor, School of Sciences and Arts, Dept. of Bacteriology, Michigan State College, East Lansing, Mich.

PROGRAM FOR INTERSTATE MILK SHIPPERS MEETING IN MEMPHIS ON APRIL 23-25 IS ANNOUNCED

The program for the Sixth National Conference on Interstate Milk Shipments, which will be held April 23-25 at the Hotel Peabody in Memphis, Tenn., has been announced by the Program Committee.

The NCIMS, which now meets bi-annually and which has as its objective the development of procedures for facilitating interstate milk shipments, will likely be attended this year by men from 33 states and the District of Columbia, representing almost 500 shippers of milk in interstate commerce, and sanitarians and other public officials concerned with interstate milk shipment.

Reports of specialized committees and task groups, as well as panels and discussions of current problems of interstate milk shipping will be presented.

Included in the committee reports to be heard are reports by Dr. Luther Black, U. S. Public Health Service, Cincinnati, Ohio, Chairman of the Laboratory Committee; Dr. R. G. Ross, Tulsa (Okla.) Health Department, Chairman of the Industry Inspection Committee; M. E. Held, U. S. Public Health Service, Kansas City, Mo., Chairman of the Bulk Milk Sampling Committee; Glenn C. Fulkerson, Tennessee Department of Public Health, Nashville, Chairman of the Concentrated Milk Committee; and M. C. Peterson,

Minnesota Department of Health, St. Paul, Chairman of the Constitution Revision Committee.

Task groups which will meet during the Conference and later make reports to the assembly include the Task Force on Regulations and Supervision, the Task Force on Certification Procedures, the Task Force on Utilization of Conference Policies, the Task Force on Channeling Information, and the Task Force on Laboratory Certification Procedures.

H. L. Hortman, Louisiana Department of Health, New Orleans, who is Chairman of the Executive Board of NCIMS, will preside at the general sessions. The Program Committee, which drew up the program, is composed of Dr. K. G. Weckel, University of Wisconsin, Madison, Chairman; Harold Barnum, Bureau of Health and Hospitals, Denver, Colo.; and Harold Robinson, U. S. Public Health Service, Washington, D. C.

A Local Arrangements Committee, headed by Everett C. Handorf of the Memphis-Shelby County Health Department, is making plans to welcome participants in the Conference. Reservations for hotel accommodations should be sent directly to the Hotel Peabody, Memphis, Tenn., indicating that the guest will be taking part in the Conference.

Printed copies of the complete program are available, on request, from Dr. K. G. Weckel, Department of Dairy and Food Industries, University of Wisconsin, Madison, Wisc.

SYMPOSIUM ON FOOD PRESERVATION

A Symposium on Future Developments in Food Preservation, sponsored by Midwest Research Institute, will be held at the Hotel Muehlebach, Kansas City, Mo., on Tuesday and Wednesday, April 2-3.

William W. Niven, Jr., Manager of the Chemical Engineering Division and Chairman of the Symposium, today announced that topics have been selected and outstanding authorities invited to participate. He said the symposium should be of interest to anyone connected with the food industry: producers, processors, equipment manufacturers, home economists, and those in food service.

The emphasis the first day will be on expected future developments in food preservation, including methods of packaging. The speakers will consider refrigeration and freezing, dehydration, dehydro-freezing, heat sterilization, high energy sterilization (irradiation), and chemical preservation (antibiotics, additives, etc.).

Aspects of food preservation to be covered on the second day are the expected advances in economics and home economics, nutrition, public health, and other physiological considerations.

For registration cards, programs, or further infor-

mation, write "Food Symposium, Midwest Research Institute, 425 Volker Blvd., Kansas City 10, Mo."

NEW YORK STATE ASSOCIATION OF MILK SANITARIANS ANNOUNCES PERSONNEL CHANGE

Donald H. Race — Editor for New York State Association of Milk Sanitarians Field Director for Dairy Products Improvement Institute, Ithaca, New York. Formerly, Sanitarian with the Pennsylvania Department of Health, Graduate of Pennsylvania State University in Dairy Manufacturing. Duties — Publish the Annual Report of the Association; Publish a Quarterly News Letter.

Richard P. March — Secretary-Treasurer for the New York State Association of Milk Sanitarians replacing Clarence W. Weber who is retiring from the New York State Department of Health. Extension Professor for the Dairy Industry Department at Cornell University. Was Secretary for five years for the Dairy Industry Equipment Committee and two years for the Farm Practices Committee, both of the New York State Association of Milk Sanitarians.

SOMETHING NEW HAS BEEN ADDED

When sanitarians want answers to problems they usually ask others who have been faced with similar problems. The best time and place to do this is at the meetings of their state association, or at the annual meeting of the International, which now has more than 4300 members. However, not all the members can get to the annual meetings of the State or International Association and yet they have questions they want answered. The Executive Board of International took action on this by creating a committee whose primary function is to serve the man in the field.

The Committee on Research Needs and Application is composed of the following eleven men: C. K. Johns, L. C. Peckham, K. G. Weckel, W. C. Lawton, F. C. Baselt, W. Litsky, W. K. Moseley, H. J. Barnum, J. E. Guinn, H. Froiland and S. H. Hopper, *Chairman*. This group serves as a clearing house for new ideas and as a panel of experts who are requesting questions and proposals from membership. They are guided by a spirit of fellowship, sincerity, and willingness to help and be helped. An attitude of mutual assistance is in the background of all decisions.

MARKET MILK AND ICE CREAM MEETINGS TO BE HELD AT PURDUE

Two one-day meetings to be held in April, 1957 at Purdue University have been announced by Professor H. W. Gregory, Head, of the Dairy Department. These meetings are as follows: Market Milk Conference, April 10, and Ice Cream Institute, April 11.

The conferences are a continuation of the series held annually in cooperation with the Indiana Dairy Products Association. Specialists from the dairy industry and universities will be on the programs. Current problems relating to the processing and sale of market milk and ice cream will be discussed at the conferences. A clinic will be held in connection with the milk conference on commercial samples of market milk brought in by the participants. Ice cream samples submitted by plants to Purdue for analysis and scoring will be examined and discussed as a part of the ice cream meeting.

For further information write to: Prof. V. C. Manhart, Smith Hall, Purdue University, Lafayette, Indiana.

26th ANNUAL INSTITUTE OF DAIRYING

The State College of Washington will present its 26th Institute of Dairying and Dairy Products Scoring and Judging Contests on March 11-14, 1957, with another fine array of topflight speakers, including such men as Dr. H. E. Calbert of the University of Wisconsin; Dr. E. L. Jack of the University of California; Dr. R. E. Hodgson, Chief of the Dairy Husbandry Research Branch of the Agricultural Research Service, Washington, D. C.; D. H. Williams, Dairy Technologist of the International Association of Ice Cream Manufacturers, Washington, D. C.; Harold Wainess, Milk, Food and Sanitation Consultant of Chicago, Illinois formerly with the U. S. Public Health Service; C. J. Babcock, Chief of the Foreign Marketing Branch of the U. S. Foreign Agricultural Service, Washington, D. C.; Walter Ahlstrom of the Carnation Company, Los Angeles and numerous other speakers of national and international reputation, of experts in various fields of the dairy industry and industry leaders discussing current problems and new technological developments.

Talks, round table discussions, moving pictures and demonstrations will center around such current developments as high temperature processing techniques, flavor control, waste disposal, operating economics, new market development, automation in equipment sanitization, cultures and their care, packaging, protection of water supplies, the role of food processors in civil defense, milk, ice cream, cheese and butter problems and quality clinics. Trophies, cash and many other fine prizes will be offered in the ever popular scoring and judging contests.

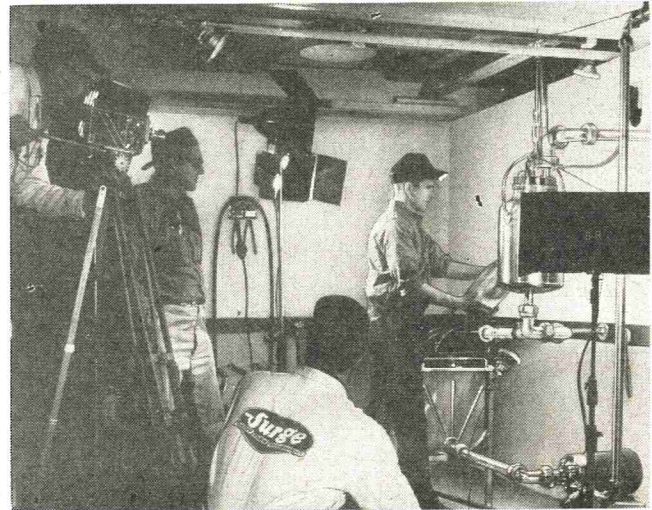
Coperating with the State College of Washington will be the State Department of Agriculture, Washington State Dairy Foundation and all other local dairy organizations. It is urgently requested that room reservations be made at once. Write to Dr. H.

A. Bendixen, Department of Dairy Science, State College of Washington, Pullman, Washington.

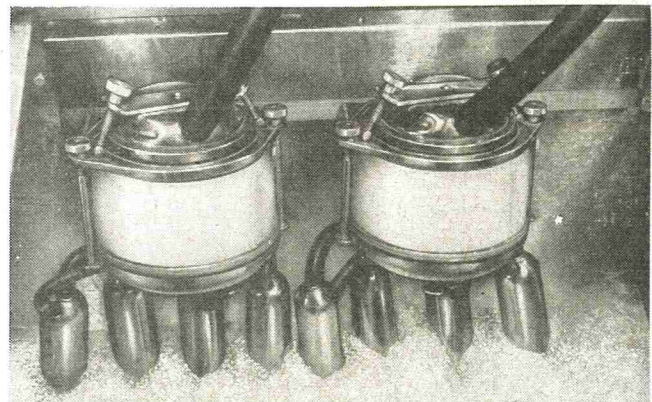
CLEANED IN PLACE

Good cow milking is one thing . . . safeguarding the quality of milk is something else again. To dramatize the latest methods of protecting milk by proper cleansing, a new movie is being released entitled "C.I.P. — Cleaned in Place." This full color, 40-minute movie demonstrates how modern pipe line milking equipment can be washed with push button simplicity . . . thoroughly . . . safely.

Babson Bros. Co., makers of Surge Dairy Equipment, are distributing "C.I.P." free of charge for meetings. Copies of the film may be obtained by writing to Babson Bros. Company Film Library, 2843 West 19th Street, Chicago 23, Illinois.

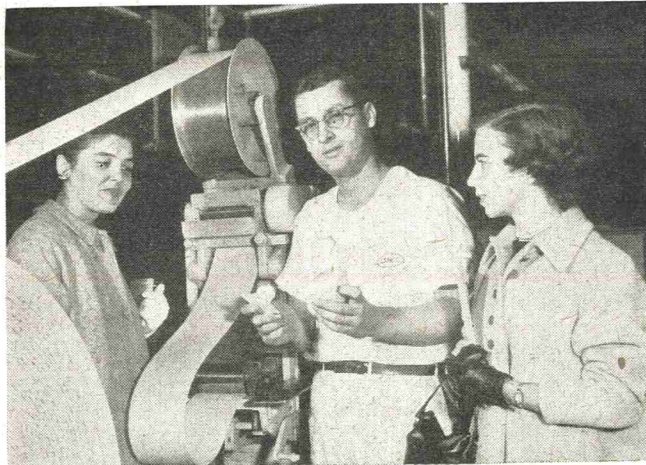


MOVIE CREW AT WORK . . . Babson Bros. Co. demonstrates in a 40-minute color movie how pipe lines and other pieces of modern dairy equipment can be safely and thoroughly cleaned in place. The movie, on 16 mm film, is entitled "C.I.P. — Cleaned In Place." It will be distributed for meetings without charge.

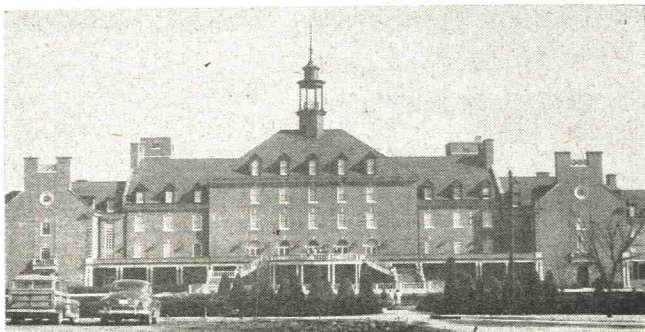


BREAKER CUPS CLEANED IN PLACE — All

pieces of a pipe line milking system can be Cleaned in Place when properly designed and properly installed. Time, velocity and the right kind of cleanser have been substituted for elbow grease and the scrub brush. These cups in the wash tank illustrate the washing action that cleans them so thoroughly.



TEACHERS LEARNED how fibre milk containers are assembled at American Can Company's plant in Needham, Mass. during a recent Business-Education Day tour. Charles Perry of Canco here demonstrates for Janice Kellert (left) and Mary MacIver how his stitching machine fashions plugs for Canco milk cartons and attaches the plugs to tops. More than 600 Greater Boston school teachers visited the Canco plant, in the New England Industrial Center.



PLANS UNDERWAY FOR ADSA MEETING

Oklahoma A & M College is looking forward to welcoming members of the American Dairy Science Association to their 52nd annual meeting, June 26-29, 1957. The meetings will center around the Student Union and Classroom Buildings, which are new air-conditioned structures.

This is the first time the annual meeting has been held in the Southwest and a large number of delegates and their families are expected to attend. An interesting program of entertainment is planned which includes a barbecue and an Indian dance.

This year Oklahoma is celebrating its 50th year of statehood and visitors to the state may be interested in seeing some of the special events connected with this celebration.

39th ANNUAL CONVENTION INDIANA DAIRY PRODUCTS ASSOCIATION, INC.

March 19, 20, and 21 are the dates selected for the 39th annual convention of the Indiana Dairy Products Association to be held at the French Lick-Sheraton Hotel, French Lick, Indiana, it was announced today by John Sutter, Sutter's Pure Milk Company, Marion, Indiana, and President of the association.

As in the past, the convention will open Tuesday evening, the 19th, with a specially planned dinner and evening of entertainment. Business sessions start Wednesday morning, the 20th, and continue through the 21st. Highlights in the convention activities will be the Annual Booster Night on Wednesday evening, and the big cocktail party, banquet, and floor show closing the convention Thursday evening.

Speakers already scheduled are J. Sydney Johnson, noted Food Store Merchandising Consultant; Dr. I. Lynd Esch, President of Indiana Central College; Professor John Roberts, Economist, University of Kentucky; and Rex Paxton, Sutherland Paper Company, Kalamazoo, Michigan.

APPOINTMENT TO FOOD STANDARDS COMMITTEE ANNOUNCED

Appointment to the Food Standards Committee of the Food and Drug Administration were announced today by Commissioner George P. Larrick. The committee is an advisory group of State and Federal officials which makes recommendations to the Commissioner of Food and Drugs in regard to food standards.

Mr. Larrick said that industry groups and consumers have been urging that the Food and Drug Administration resume active work in the food standards field.

A meeting of the committee is planned early in 1957 to discuss problems and situations now requiring attention. Consumers, officials, and members of the food industries who have suggestions for consideration by the committee are invited to send them to Mr. Joseph Callaway, Food Standards Branch, Food and Drug Administration, Washington 25, D. C.

Mr. Frank A. Vorhes, Chief of the FDA Division and a member of the committee, has been designated as Chairman. Mr. Malcolm R. Stephens, Director of the FDA Bureau of Enforcement, has been appointed as the second FDA member, to succeed William A.

Queen. Mr. Callaway will continue to serve as Secretary.

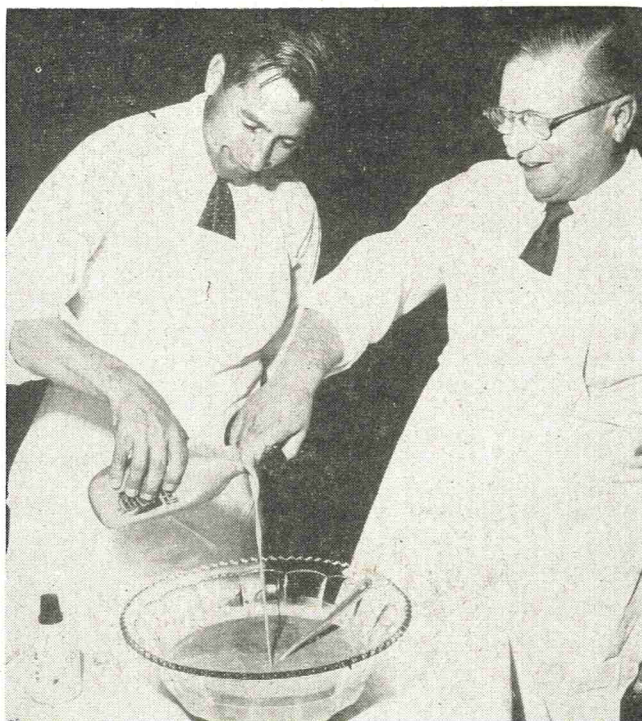
Other members of the 7-man committee are —

Gilman K. Crowell, Chief, Division of Food and Chemistry, State Department of Health, Concord, New Hampshire.

Joe F. Lakey, Director, Bureau of Food and Drugs, State Department of Health, Austin, Texas.

T. E. Sullivan, Director, Division of Food and Drugs, State Department of Health, Indianapolis, Indiana.

Orlen J. Wiemann, Chief, Milk, Food and Drug Section, State Department of Health, Denver, Colorado.



SALES PROMOTION WITH A PUNCH. Dramatizing a "Hot Chocolate Milk" promotion in Indiana during January and February, Indiana State Dairy Product association officers served a "Wabash Cannonball" chocolate milk punch at seven regional meetings. Ward K. Holm, executive secretary, left, and John Sutter, state president, are shown mixing the punch. The promotion will be given statewide publicity and advertising support. All-expense trips to Miami, Florida for two, will be awarded to the winning retail and wholesale route salesmen, for biggest increases in chocolate milk and chocolate drink sales during the campaign.

STANDARD METHODS MANUAL TO BE REVISED

Dr. Luther A. Black, Chairman of the APHA Sub-

committee on Standard Methods for the Examination of Dairy Products has advised that committee members are revising material in preparation for the 11th Edition. The committee hopes to prepare a first draft by the summer of 1957 and a final draft a year later. Constructive suggestions from anyone interested would be welcome, and may be sent to any member of the nine reference committees, the chairman and members of which are as follows:

Reference Committee on:

Milk Sampling and Analysis — A. H. Robertson, *Chr.*, George H. Steele and A. C. Fay

Cultural Methods, Coliforms and Psychrophiles — Marvin L. Speck, *Chr.*, Jacques Archambault, J. Lloyd Henderson and G. T. Knowles

Microscopic and Reduction Methods — Cyril K. Johns, *Chr.*, Mrs. Marie Mulhern and Neil T. Gray

Detection of Pathogens — C. C. Croft, *Chr.*, I. H. Borts, R. A. Packer and Ralph V. Hussong

Butter, Cheese, and Cultured Milks — Ralph P. Tittsler, *Chr.*, F. E. Nelson and George W. Shadwick

Frozen Deserts — Leon Buchbinder, *Chr.*, M. T. Bartram and Edward J. Tjarks

Sanitization of Equipment, Air, and Water Supplies — David Levowitz, *Chr.*, M. S. Campbell, Paul W. Purdom and Burdet Heinemann

Sediment Tests — Curtis R. Joiner, *Chr.*, O. A. Ghigoile, E. H. Parfitt or John C. Flake

Chemical Methods — Norman E. Yongue, *Chr.*, Blaine L. Glendening and J. L. Hileman



Left to right: Ralph C. Charbeneau, Detroit, Pure-Pak public relations director, Russel S. Waltz, Seattle, President of Federation and E. M. Norton of Washington, secretary of the Federation.

PURE-PAK WINS PUBLIC RELATIONS AWARD HOLLYWOOD, FLORIDA

The National Milk Producers Federation at its 40th Annual Convention made a special appreciation award

to Pure-Pak Division of Ex-Cell-O Corporation for the company's outstanding efforts in advertising and public relations for the nation's milk industry.

It was the first such award to a commercial company in the Federation's history.

The NMPF commended Pure-Pak particularly for its national advertising promoting the use of more dairy products and for the company's production of two new motion pictures dedicated to dairy producers and processors. The award winning programs were produced with the assistance of The Fred M. Randall Advertising Agency.

The award plaque was accepted on behalf of the EX-CELL-O CORPORATION by Ralph C. Charbeneau advertising and public relations director of Ex-Cell-O's Pure-Pak Division at a ceremony December 3, in Hollywood.

PUBLIC HEALTH TRAINEESHIPS FOR PROFESSIONAL HEALTH PERSONNEL

Title I of the Health Amendments Act of 1956 (Section 306 Public Health Service Act) authorizes the Public Health Service to establish a program of traineeships for graduate or specialized public health training for professional health personnel, such as physicians, nurses*, sanitary engineers, nutritionists, medical social workers, dentists, health educators, veterinarians, sanitarians, and others whose professional skills are required in modern public health practice.

PURPOSE

The primary objective of this program is to bring new people into the field of public health through providing postgraduate training opportunities for men and women *who have completed their basic professional education.*

The training program is designed to supplement, and not to replace or reduce, the public health training activities currently being sponsored by State and local governments.

REQUIREMENTS

Applicants must be citizens of the United States or have filed a Declaration of Intent. In addition, applicants must meet the following requirements:

*Traineeships for nurses under this program include only graduate training of beginning (staff level) public health nurses. Graduate nurses preparing for supervision, teaching, or administration in public health nursing are eligible for traineeships under Title II of the Act, administered by the Division of Nursing Resources, Bureau of Medical Services, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D. C.

Post-doctoral candidate — A doctoral degree from an accredited college or university.

Post-master's candidate — A master's degree from an accredited college or university.

Post-bachelor's candidate — A bachelor's degree from an accredited college or university.

Pre-bachelor's candidate — Professional personnel, such as nurses and dental hygienists, who have completed their basic professional training, are currently licensed in one State, and are eligible for graduate or specialized public health training.

An individual may select the educational institution of his choice which offers a nationally recognized graduate or specialized public health training program in his professional field. It is the responsibility of the individual to make all the necessary arrangements with the training institution. This means that an individual desiring a public health traineeship must be found acceptable for training by the institution before his application can be considered by the Public Health Service.

Preference will be given to qualified individuals who have had no more than two years' experience in public health work, who have had less than one year of graduate or specialized public health training and who are under 35 years of age (only under exceptional circumstances will a traineeship be awarded to a candidate over 45). In addition, consideration is given to the following: geographical distribution; replies received from references; candidate's plans for using the training provided; proposed training program; and shortages of trained personnel in the candidate's field.

FINANCIAL LEVEL OF AWARDS

The academic degree held by the individual determines the traineeship stipend level.

The annual (12 months) amounts for traineeship awards (to be prorated and paid on the basis of onetwelfth for each full month of training) are as follows:

Stipend — Regular	Annual Amount
Post-doctoral candidate	\$4800
Post-master's candidate	3600
Post bachelor's candidate	3000
Pre-bachelor's candidate	2400
Stipend — Special	

The Public Health Service will give consideration to approving a stipend level different from those above in cases of unusual need and on the basis of justification submitted by the applicant.

Allowances for Dependents

An additional \$360 for each legal dependent (as defined for Federal income tax purposes) is allowed for a 12-month period, to be paid in monthly installments over the period of actual training. Stipends are not affected by a change of dependency status during the award period.

Travel Allowance

Transportation at the rate of six cents per mile as computed by standard mileage charts is allowed to trainees between their present station and the training institution. No allowance is made for return travel, travel of dependents, or shipping charges for personal effects or household goods.

Tuition and Fees

Actual cost of tuition and fees depending on standard charges of the school.

The financial level of award is the same whether awarded by a training institution or by the Public Health Service.

TERMS OF TRAINEESHIPS

Traineeships are awarded for a period not to exceed twelve months. Support for training will, in all cases, depend upon the availability of funds appropriated by the Congress for this program.

The Surgeon General may terminate an appointment before its expiration date. This may be done on request of the trainee, on request of the training institution, or because of unsatisfactory performance, unfitness, or inability of the trainee to carry out the purposes of the traineeship.

The award of a traineeship to an individual does not make the trainee an employee of the Public Health Service.

An applicant may not be concurrently receiving financial support for training from any other Federal source, including Federal grants to States.

HOW TO APPLY

Public health nursing traineeships will be awarded *only* through grants to nationally recognized schools which prepare registered nurses for beginning positions in public health nursing. Applicants for these traineeships should apply directly to the school of their choice having a traineeship grant.

A number of traineeships will also be available through grants to the schools of public health. Individuals, except for nurses, interested in securing a traineeship award from a school of public health should apply directly to the school of their choice having a traineeship grant.

Traineeship awards will also be available directly from the Public Health Service for all categories of professional health personnel, except nurses. Applicants for such individual traineeships may secure application forms and additional information from any of the Regional Medical Directors of the Public Health Service (see list below) or from the Chief, Division of General Health Services, Bureau of State Services, Public Health Service, U. S. Department of Health, Education, and Welfare, Washington 25, D. C.

Applications for traineeships to begin in the fall semester should be submitted by April 1, However,

traineeships will be awarded as vacancies occur. Applications for training to start at other than the beginning of the normal academic year should be submitted at least three months prior to the time the applicant wishes to begin training.

**PUBLIC HEALTH SERVICE
REGIONAL MEDICAL DIRECTORS**

Richard F. Boyd, M.D., Room 1200, 42 Broadway, New York 4, New York

Eugene A. Gillis, M.D., 700 East Jefferson Street, Charlottesville, Virginia

Will H. Aufranc, M.D., 50 7th Street, N.E., Room 164, Atlanta 23, Georgia

Harald M. Graning, M.D., 69 W. Washington Street, Room 200, Chicago 2, Illinois

Lewis H. Hoyle, M.D., 911 Walnut Street, Federal Office Building, Room 2305, Kansas City 6, Missouri

Maurice A. Roe, M.D., 1114 Commerce Street, Room 904, Dallas 2, Texas

Francis J. Weber, M.D., 19th and Stout Streets, New Customs House, Room 528, Denver 2, Colorado

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DAIRY SOCIETY INTERNATIONAL THREE-MAN MISSION TO CHILE TO EXPLORE MARKET POTENTIAL

Three top-flight dairy executives left the United States for Chile in mid-January to launch another Dairy Society International (DSI) study of consumption potential for milk and milk products in that long slender country stretching 2,600 miles along the West Coast of South America.

Headed by DSI president Bernie F. Beach of Adrian, Michigan, the committee is made up of George F. White, Homer, La., and Dr. Roland C. Dayton of Boca Raton, Fla. These three men will travel the length of Chile studying every phase of dairy development, nutrition and consumer reaction to milk products for their detailed report on that country's potential market for dairy products and with a view toward possible launching of another of the long-range market development programs to bring more and better dairy products to overseas nations through utilization of funds from the sale of U.S. dairy products, a program in which the Society serves as industry cooperator with the Foreign Agricultural Service of the USDA.

While Chile has devoted increasing interest to dairy herds, has opened new grazing areas, and has pasteurization for its major cities, its per capita consumption of this vital food is considerably below that of Venezuela and some others of the Latin countries. One of the limiting factors is geographical. In a country as long and mountainous as Chile there is a wide difference in climates. Roughly, it is divided into three areas; the first barren and arid but rich in nitrates and copper, the central lush and well suited to agriculture, and the southernmost section so far below the equator that it compares to the climate of Alaska on the North American Continent.

Transportation of perishable commodities is made even more difficult by the many rivers which cross between the mountain ranges to the east and west of the Central Valleys. One railroad traverses the length of the country, and there are roads (unpaved for the greater part).

Government Industry Cooperation

The study is the fifth mission sponsored by Foreign Agricultural Service of the USDA, with DSI as industry cooperator, to get under way as a part of the Market Development program for dairy products through which local currencies have been set aside under Public Law 480, from the sale of U.S. agricul-

tural surpluses. William C. Callan of FAS will accompany the team as a part of a four-country investigation of the best methods of approach to the market development work for dairy products.



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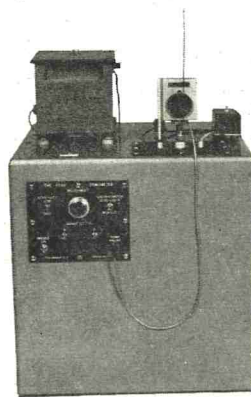
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For Bernie Beach the experience will not be a new one. Two years ago he was chosen one of four men representing the dairy industry of the United States on President Eisenhower's Agricultural Trade Mission to southern Europe. Through the Society, he made a similar survey in Puerto Rico for the Island's Economic Development Administration later returning to that country as a special consultant on milk regulations. A Michigan State U. graduate, he has devoted his life to dairy affairs. Currently he is general manager of Michigan Producers Dairy Company, the manufacturing operation of a large cooperative. As retiring chairman of the Dairy Industry Committee, an organization made up of all national segments of the U.S. dairy industry, a member of the board of directors of American Dry Milk Association for 14 years, and a director of National Dairy Council for the past 10 years, his life has been filled with responsible posts.

Dr. Dayton, University of Pennsylvania graduate, has spent most of his lifetime working in dairy companies of Pennsylvania affiliated with National Dairy Products Corporation. During this period he has served as president of Greater Pittsburgh Dairy Council; Pittsburgh Dairy Industry Association; Pennsylvania Association of Milk Dealers; and Pennsylvania State Veterinary Medical Association. Although Dr. Dayton thought he had retired a year ago, from National Dairy's Reick Division in Pittsburgh, the Society succeeded in pressing him back into service for this mission for which he will be responsible for technical and sanitary aspects.

Third member of the volunteer group, George F. White, is currently secretary-treasurer-manager of Claiborne Creamery, Inc., and executive manager of Louisiana Dairy Products Association, Inc., with head-

quarters in Homer, La. A graduate of Louisiana State University and A. and M. College, he has grown up in the milk industry, and is Louisiana's representative on the National Executive Committee of the American Dairy Association, a post he has held for the past twelve years. In the national ADA he is chairman of the Research-Education Committee and has received the Distinguished Service Award of ADA.

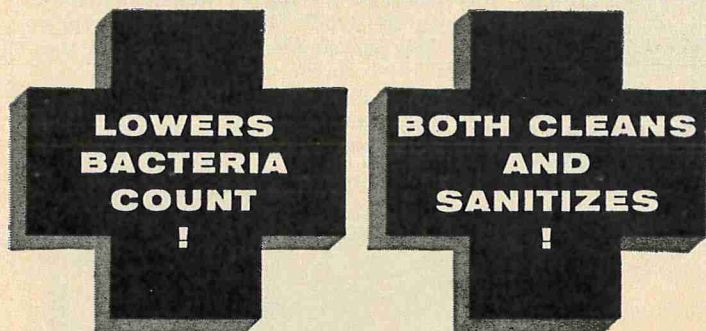
In 1951 he was recognized for leadership and made a member of Omicron Delta Kappa, national honorary leadership society, and in 1956 was named King of the Louisiana Dairy Festival, being preceded in that recognition by the Chief Justice of the State Supreme Court and the Commissioner of Agriculture.

To Explore Milk Promotion Possibilities

Should this DSI-FAS team recommend a long range program for Chile it will be the third of its kind for the Society. The first is in Bogota, Columbia, established in cooperation with the local dairy industry under the leadership of Joseph O. Eastlack, former head of Borden's fluid milk division. The second educational project is across the world in Thailand, where Dorothy McCann, who left her work with the American Dry Milk Institute to work with government and industrial organizations of Thailand, is bringing better health and stronger bodies to the teeming millions of that picturesque country.

The FAS-DSI team will spend four weeks, working with Chilean government and industry leaders, and will present the report to FAS early in April. The Department of Agriculture agency will then decide whether or not to launch a long range educational program there.

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STUDENT REPORT

Two hundred eighteen of 942 students enrolled as freshman in 1956 at the 17 veterinary schools of the United States already have a college degree, the American Veterinary Medical Association reported today.

Bachelor degrees are held by 207 while 11 of the beginning veterinary students hold master degrees. At least 28 per cent of the students have had 3-year per-veterinary training and 27 per cent have had 4 or more years of college. The remaining 45 per cent of the 942 students have completed the 2-year pre-veterinary college requirements. Those who already hold degrees make up 21.2 per cent of the freshman enrollment.

There are 18,076 veterinarians in the United States, the Association said. Of this number, over 9,000 treat animals of all kinds, over 2,000 specialize in pet animals while some 400 specialize on one species such as poultry or swine. More than 3,000 work for local, state or federal governments in public health or agriculture. Eight hundred are engaged in teaching and research while almost 2,000 work for meat packing plants, drug manufacturers, unclassified activities or are in retirement.

In the decade, 1940-1950, the number of veterinary schools increased from 10-17 in the United States. These schools graduated 5,922 veterinarians in that period.

Since 1950 veterinary graduates have numbered close to 1,000 per year. Enrollments in veterinary schools increased from 3,940 in 1955 to 3,958 for the 1956-57 school year. Eighty four of these students are women.

ARTHUR F. BIXBY NAMED TO PENNSALT CHEMICALS MARKETING POST

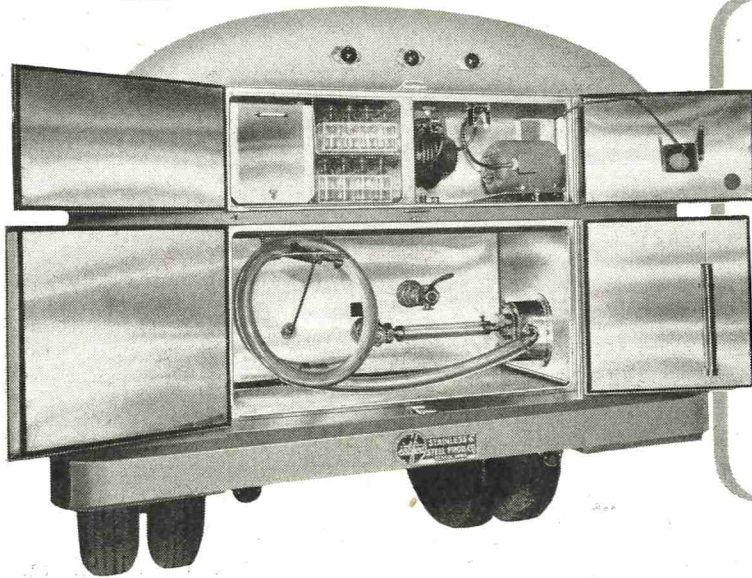
Arthur F. Bixby has been named Manager of Marketing Research for Pennsalt Chemicals' Industrial Division. Under the Director of Marketing, George R. Lawson, Mr. Bixby will supervise product managers and direct market development on the Company's heavy chemicals and "Sharples" brand specialties.

Prior to his promotion, Mr. Bixby was General Manager of Agricultural Chemicals for Pennsalt's Western Division at their headquarters in Tacoma, Washington. A graduate of Massachusetts State College, he joined Pennsalt in 1938 as assistant to the director of heavy chemical sales.



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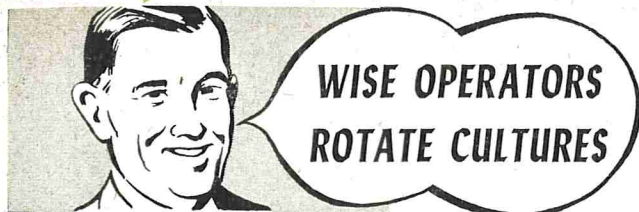
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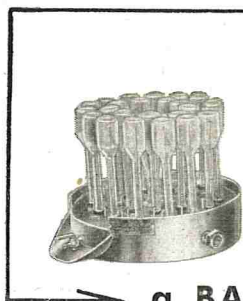
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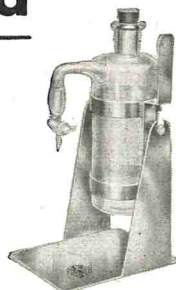
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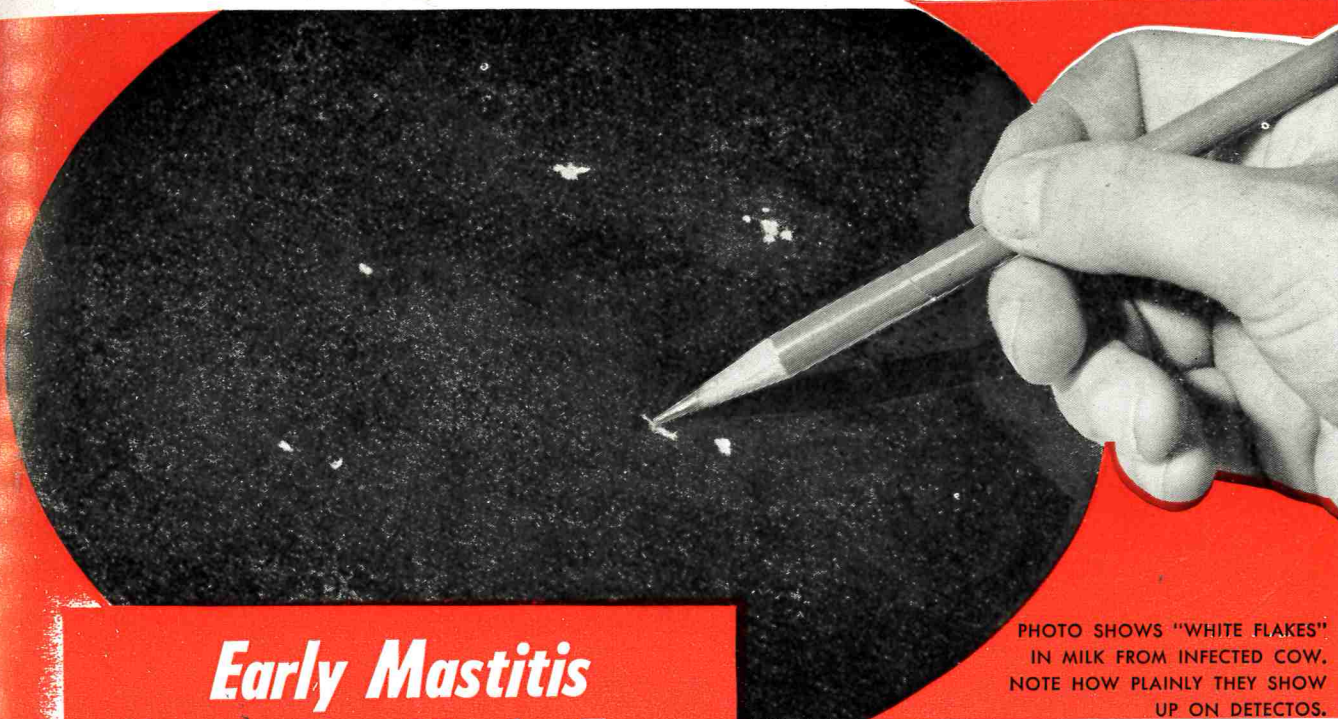


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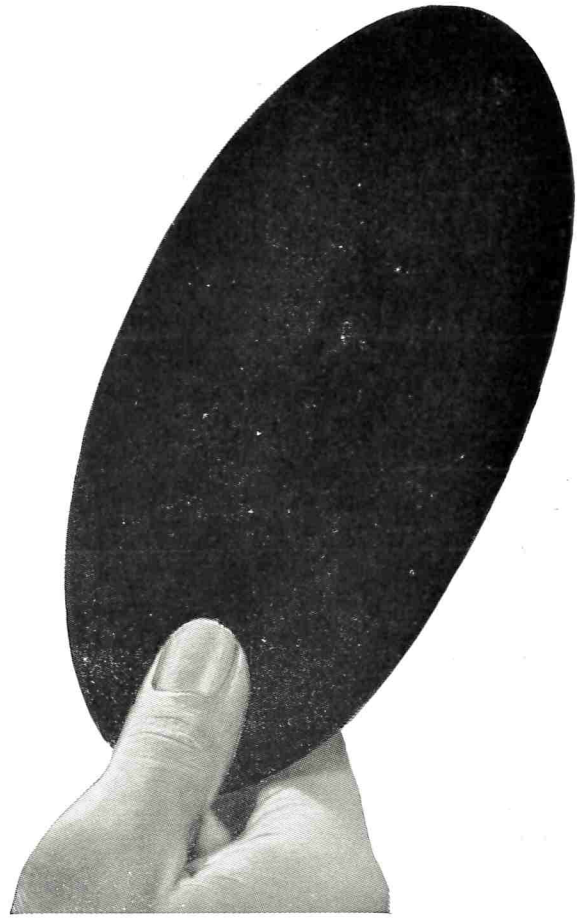
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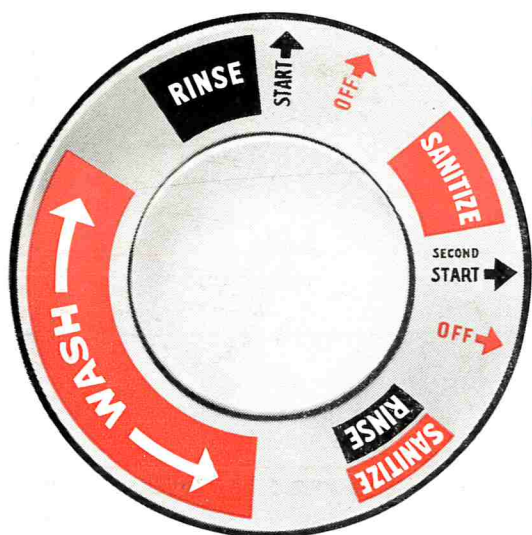
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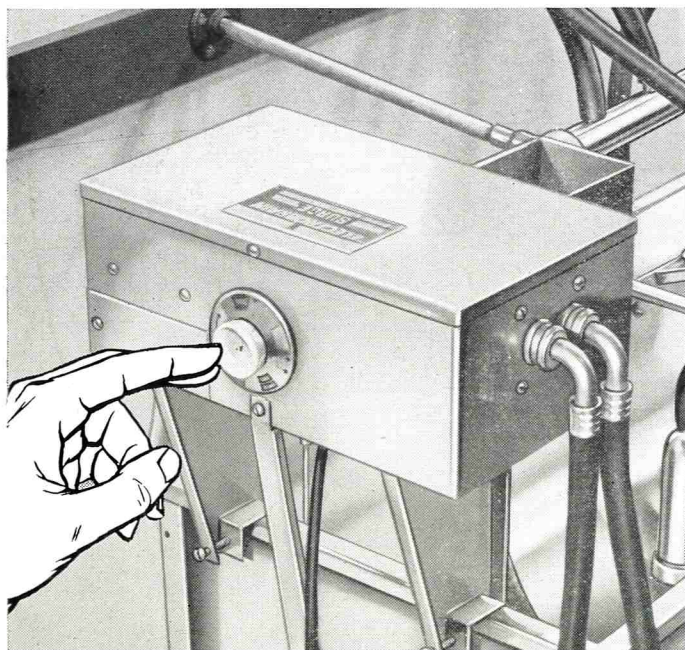
in some detail. The meetings were well attended... but... they called for more time and man power than we could produce.

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