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Dairy and Food Sanitation

A Publication for Sanitarians and Fieldmen

- Warehouse Organization
and Current Good
Manufacturing Practices (CGMP's)
- Quality of Crackers
- Dairy Farming in the U.S.
Virgin Islands



*A Publication of the International
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PRESIDENT'S PERSPECTIVE

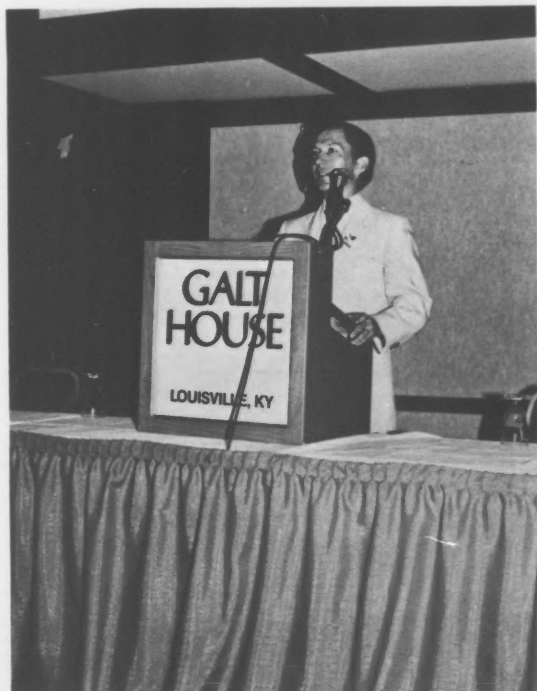
This is my first opportunity to write a few lines as President of IAMFES. It is with great pleasure and gratitude that I accept the task of guiding the "International" this year. Thanks to each of you members for your confidence and support.

IAMFES has a fine history of service to a broad group of persons working in the general areas of food protection. Our journals and annual meetings provide much opportunity for education and communication. It is the intent of your Executive Board that we continue the HIGH STANDARD OF EXCELLENCE with these major vehicles of communication. We are grateful to the members of the Kentucky Affiliate for their part in providing great facilities and appropriate arrangements for our 1982 Annual Meeting. It was most educational and enjoyable. Each of us left with renewed enthusiasm which we hope will be conveyed to members who could not attend.

Soon Mr. Earl Wright will retire as Executive Secretary. Your executive board welcomes and solicits your suggestions regarding management of IAMFES in the future. We hope we can maintain the office in Ames, IA. We have a fine publisher there and an excellent Associate Executive Secretary and office staff. To strengthen our financial situation we are asking selected organizations whether we may provide management services to them for a fee per member.

Finally, we are asking members to reflect on the name of our Association. Hopefully, each of you has responded to my letter regarding the name change.

You can readily see that the International Association of Milk, Food and Environmental Sanitarians has plenty to keep it busy. We have about 3500 members and we want each one to have a part in the organization. Each can by discussing our work with other professionals, by writing for our journals, by attending our Annual Meeting, by voicing support at State and local meetings, and by communicating through the Affiliate Representative or directly to an officer or the "International" office.



My very best wishes,

Robert T. Marshall
President, IAMFES

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QUALITY OF CRACKERS

LESTER HANKIN, LUCIA A. MC-
LEAN, and J. GORDON HANNA

Crackers must be included among the most popular snacks for all ages. They are eaten with or without topping, with a dip, or with another food such as soup. Some crackers are also used for cooking, as for example, coatings for fish or meat or crusts for pies, as well as for myriad other uses. Crackers come in a variety of shapes, sizes, and flavors to please different tastes.

Consumers usually purchase a cracker for its flavor or basic ingredient (e.g. rye, wheat, rice). Some people are concerned with nutritive quality and seek information on the fat, protein, carbohydrate, and caloric content. Many consumers, for religious or ethical reasons or because they wish to restrict intake of cholesterol from animal fat, are also interested whether animal or vegetable fat is used in the cracker. Some consumers wish to know whether the fat is saturated or unsaturated and how much sodium is in the cracker.

Since it would have been almost impossible to survey all cracker varieties, we selected for analysis four basic types from among the myriad in the stores: snack crackers, saltines with and without salted tops, graham crackers, and animal crackers.

METHODS

On a single day 61 samples of crackers representing 22 different brands were collected from retail stores. An inspector from the Connecticut Department of Consumer Protection collected 15 snack types representing 11 brands, 18 saltines (10 with salted top, 8 with unsalted tops) representing 10 brands, 13 graham crackers representing 12 brands, 10 animal crackers, and 5 miscellaneous crackers.

After each sample was ground to a

homogeneous mixture, protein, fat, ash, total solids, and carbohydrate content were determined by Official Methods. Animal fat was determined by analyzing the fat for cholesterol by gas-liquid chromatography after saponification of the fat and extraction of unsaponifiable residues. For determination of percent animal fat (lard or beef), a value of 100 milligrams (mg) cholesterol per 100 grams (g) of fat was used since 100 g of lard contains an average of 95 mg cholesterol and 100 g of beef tallow contains 108 mg.

The ratio of saturated to unsaturated fat was determined by gas-liquid chromatography of the methyl esters of the fatty acids. Calories per 100 g of sample were calculated as % fat \times 8.79 + [% total solids - (% fat + % ash)] \times 4. Sodium was determined by Atomic Absorption Spectrophotometry.

RESULTS AND DISCUSSION

Fat: Animal fat, lard or beef, was claimed in only 23 of 61 samples, and of these, only one sample was found to contain no animal fat and one contained only a trace. Two samples, not claiming animal fat, did contain small amounts derived from eggs. None of the other 36 samples that did not claim animal fat had any. All 61 samples claimed use of vegetable fat and all contained some.

Animal fat was greatest in animal crackers, which averaged 12.0%. The other types of crackers containing animal fat had, on the average, about half this amount.

The total fat content of snack crackers was about twice that of other types. Only in animal crackers did the total fat content differ between those with only vegetable fat and those with both animal and vegetable fat, those with animal fat had 3% more. The

labeling of fat is openformulation; i.e. the fat used at any time is determined by availability and market price so long as it does not change the flavor of the cracker.

Cholesterol: Cholesterol was found only in products containing animal fat, and its content is expressed in mg per 100 g. The cholesterol contents can be gauged if the reader knows that, for example, whole milk (3.3% fat) contains 14 mg, ice cream (10% fat) contains 45 mg, and cottage cheese (4.5% fat) contains 15 mg per 100 g.

Thus for animal crackers containing cholesterol from animal fat the average of 12 mg was close to milk and cottage cheese. The other types of crackers with animal fat had about half the cholesterol of animal crackers. Two samples, with animal fat from eggs, also contained cholesterol. Based on the amount of cholesterol in dried whole eggs we calculated that one sample contained 0.9% dried whole eggs and another, 0.3%.

Saturation of Fat: Except for snack crackers, more of the fat in crackers containing animal fat was saturated than was the fat in those with only vegetable fat. The amount of saturated and unsaturated fatty acids in the fat in crackers depends on whether animal or vegetable fat was used as well as on the type of vegetable fat and its degree of hydrogenation. coconut oil, a fat noted on many labels, is one of the most saturated vegetable fats and contains only about 8% unsaturated fatty acids while peanut oil contains about 82% and lard about 59%.

Hydrogenation converts a liquid oil into a semi-solid or solid fat and some of the unsaturated fat into a more saturated fat. All labels stated that the vegetable oil was partially hydrogenated and thus, for example, 2 sam-

ples which do not list coconut oil on the label got their highly saturated fat from hydrogenation.

Carbohydrates: The carbohydrate in crackers come from the sucrose or sugar listed on the label. It also comes from other listed ingredients such as flour, honey, dextrose and molasses, from malt and corn syrup, and from lactose in whey. Average carbohydrate content was 72-to-78% in animal, graham, and saltine crackers, but only 62% in snack crackers.

Protein: Saltines with an average protein content of 9.4% had about 2% more protein than the other types. Some miscellaneous crackers contained more than 9% protein.

Calories: One gram of protein or carbohydrate contains 4 calories and 1 gram of fat about 9 calories. Thus, snack crackers, because of their higher fat content, contained 50 more calories per 100 g than the other types.

Ash: Ash indicates minerals such as monocalcium phosphate, sodium bicarbonate, sodium bisulfite, calcium carbonate, and sodium acid phosphate used in crackers. One or more may be in a single brand. Some are used for leavening. Saltines and snack crackers averaged about 3% ash. Grahams averaged 1.9% and animal crackers were lowest with 1.3%.

Sodium: Saltines contained more sodium than the other crackers, with animal crackers containing the least. Saltines with unsalted tops averaged 717 mg sodium per 100 g compared to 1046 for those with salted tops. Within the same brand of saltines, the difference in sodium content between salted and unsalted tops was 5 to 50%.

CONCLUSIONS

Snack crackers averaged about 25% fat, about twice the amount in the

other types. The label on 23 of the 61 samples claimed animal fat. Of the 23 claiming animal fat one contained none; another a trace. Two crackers with no claim for animal contained some from eggs. All crackers with animal fat from beef, lard, or eggs contained cholesterol.

Crackers with only vegetable fat contained more unsaturated than saturated fat. Those with no animal fat but a high concentration of saturated fat probably contained considerable coconut fat, a highly saturated vegetable fat.

Protein content ranged from 6.6 to 9.4%. Carbohydrate content ranged from 49.0 to 84.0%. Snack crackers tended to have the most calories because of their higher fat content. Sodium content of saltines averaged 900 mg per 100 g, about 68% more than animal crackers, 43% more than grahams, and 18% more than snack types. Although saltines with unsalted tops averaged about 32% less sodium than those with salted tops, the difference within the same brand ranged from 5 to 50%.

ACKNOWLEDGMENTS

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WAREHOUSE ORGANIZATION AND CURRENT GOOD MANUFACTURING PRACTICES (CGMP's)

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Traceability and accountability of manufactured goods are essential to Current Good Manufacturing Practice (CGMP) compliance. The importance of the organization of a company warehouse is discussed with emphasis on CGMP compliance. Both automated and conventional warehousing are considered. Although the warehouse may be among the least visible parts of an operation, it demands the same attention and sophistication given to other segments of a company.

Current Good Manufacturing Practices should begin with the layout of the facility, if the facility is not properly designed, compliance with government standards will be both difficult and costly.

Nowhere is this more true than in the warehouse. Because the food industry is required by the FDA to take necessary precautions to reduce the potential for contamination of raw materials and end products, warehouse design and organization becomes a critical concern. The FDA states that potential contaminants can be curbed by separating product ingredients and finished goods through location, partition, air flow, or "any other effective means". This, however, is all rather vague and the nuts and bolts decisions are left to the food companies and their technical advisors.

The overriding theme in any warehouse must be cleanliness and the orderly, logical storage of goods and materials. A growing number of firms rely on automated, rack storage systems in which there is a minimum amount of human input, while others depend on semi-automated or manual procedures. Regardless of the system used, it is essential that the warehouse be organized in a manner allowing the manufacturer to know exactly how much of a given product he has, when it was received, where it is located, and the quickest way to extract it.

At the very least, CGMP's dictate that there be physical separation between shipping and receiving departments to prevent returned goods being inadvertently ship-

ped out to a customer. Returned goods must be segregated from raw materials and finished goods. Controlled substances and hazardous materials such as acids and alcohols must also move along carefully prescribed receiving, storage and dispensing channels.

There should also be clear-cut distinctions between "hold" areas for goods awaiting quality control testing and those that have been approved and released. Some firms paste identifying stickers on QC-approved or to-be-approved goods without attempting to segregate them from general products in both raw materials and finished goods sections of their warehouses. Such a practice can lead to mix-ups and may delay use of these products. Moreover, it does little to foster Good Manufacturing Practices.

The plant designer can, and should, provide for lines of product and material demarcation in his layout of the warehouse. He should also design for cleanliness. He may decide to place the facility under positive air pressure as a means of limited infiltration of dust and other contaminants. Here particular attention should be given to truck contact points. The design should provide for effective dock seals and inner or auxiliary walls which can be effectively used to create separate staging areas for materials about to be shipped or those just received. This further shields the warehouses from outside contaminants and also is a sensible security device in that it prevents direct access to the warehouse by non-employees.

In an industry where traceability and accountability of goods are essential to CGMP compliance, the designer and his food industry client should be taking a close look at automated, rack storage warehousing. While automation is certainly no guarantee that CGMP's will be followed, it can make compliance with other pertinent FDA regulations a lot easier. Rack warehouses—often of the high-rise, high-density variety—can make goods much more accessible while providing for much tighter inven-

tory control. They can also alleviate the problem of segregation of goods and materials by location, batch and lot numbers which exist in other types of storage systems.

The most sophisticated operations have computer-controlled storage/retrieval machines (some capable of 90-foot heights) that can handle goods with speed and precision, eliminating the chance of human error and providing accurate, up-to-the-minute inventory read-outs. Improved inventory control can, in turn, accelerate a company's manufacturing and distribution processes, as well as drastically cut inventory costs. Automated equipment, by reducing manpower needs, also reduces airborne con-

taminants that workers often bring to the job. Cutbacks in pilferage, damaged goods and the need for security are further side benefits of an automated warehouse system.

Automated warehousing is not meant for every firm, it must first be cost-justified through a careful analysis by professional consultants. But it should certainly be considered along with the more conventional forms of warehouse design and organization. Though the warehouse may be among the least visible parts of an operation, it is one of the most crucial, and demands the same attention and sophistication given to other branches of a company.

UPDATE...RE: The Report on Modified Inspection Plan by One Farm Inspection Per Year Study Committee, National Conference on Interstate Milk Shipments, May 17-21, 1981, Arlington Hotel, Hot Springs, Arkansas. The committee report was overwhelmingly voted down.

Listening to five dairy farmers on St. Croix, U.S. Virgin Islands, shows clearly how much dairying and dairymen everywhere are the same even when dealing with some unusual problems, peculiar to an Island paradise.

The white milkhouse looks orange in the first morning light as the Health Department Inspector drives into the barnyard. He is following up on a report of a high bacteria count. The air feels almost cool as he stretches and yawns

DAIRY FARMING IN THE U.S. VIRGIN ISLANDS

A Talk with the Island Dairymen

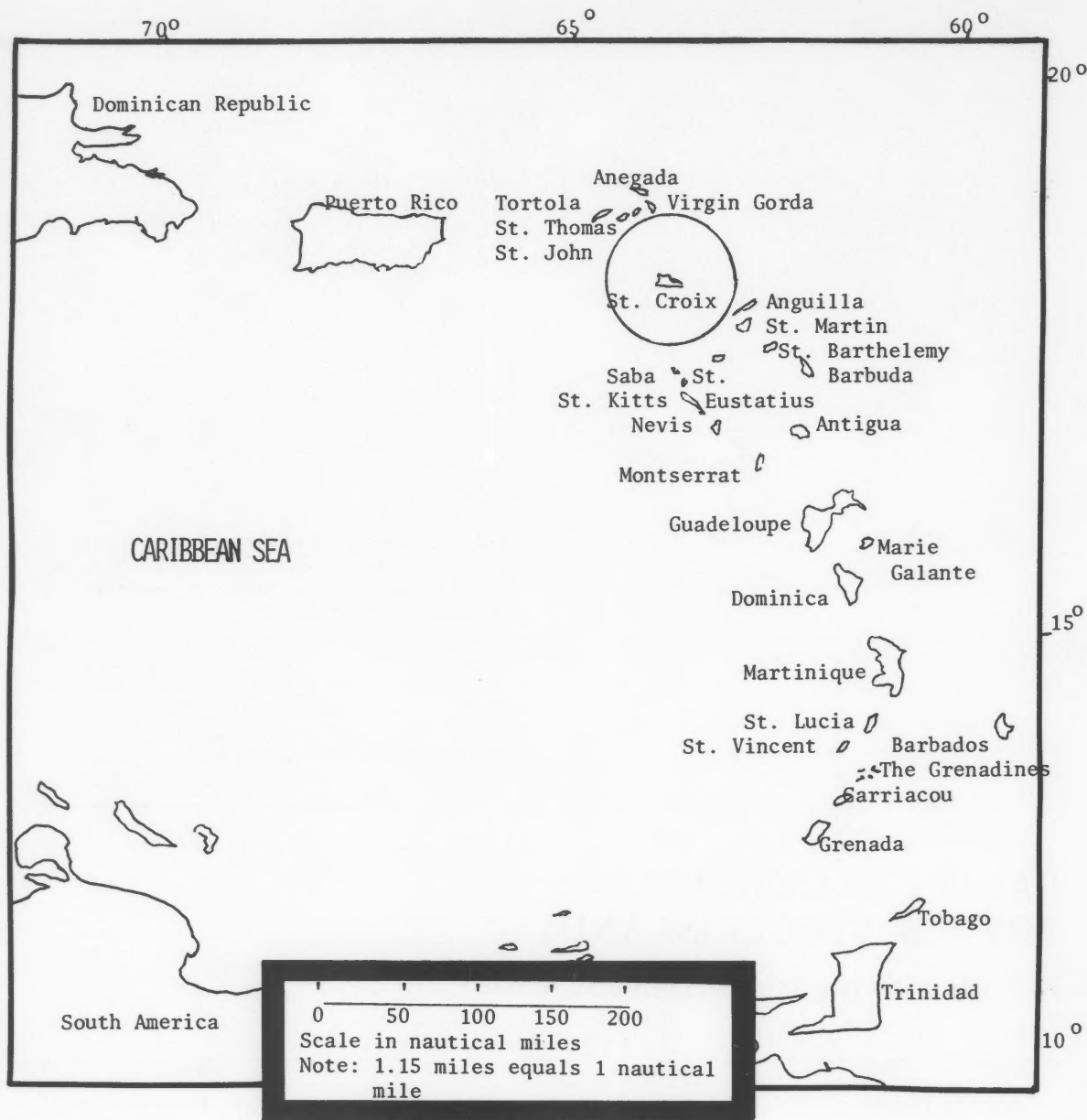
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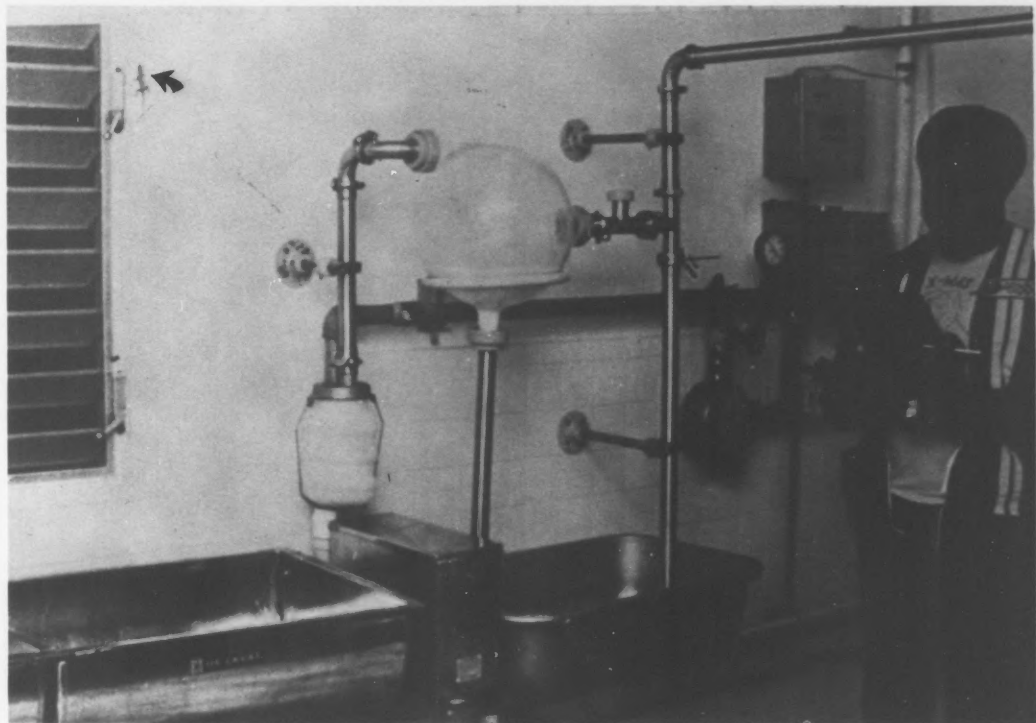
and gets out of his car. The rhythmic chug of machinery is pleasantly familiar as he enters the milkhouse. One and one-half hours later in the full light of morning, but still before most city people are awake, he has found the problem. It is an "applesauce" buildup of milk solids in the milk lines caused by a faulty hot water heater and wash water 20° too cold.

A new water heater is recommended. Later that day, the farmer has one installed. This sounds like a familiar scenario for any farm in any state. Except this farm is not in a state, this farm is on the Island of St. Croix (pronounced 'Croy') in the U.S. Virgin Islands. The inspector is a native Virgin Islander, Mr. Shadrach Gil.

*Senior Regional Milk Specialist, State Programs Branch, Food and Drug Administration, Region II.



Spectacular scenery and mild weather are characteristic of St. Croix, the largest and most agricultural of the U.S. Virgin Islands. St. Croix was discovered by Columbus in 1493. Since that time it has been owned by Spain, England, France, Holland, the Knights of Malta, Denmark, and the United States.



"Now where shall I mark it?" Mr. Shadrach Gill, U.S. Virgin Islands Sanitarian, ponders the farm inspection sheet. He is looking for the correct place to record presence of the visiting lizard on the wall (arrow, upper left).



Sanitarian Shadrach Gill (left) relaxes with Dairyman Charles Schuster after concluding a milking time inspection. The inspection followed up a high bacteria count. The problem was quickly identified and corrected. The good working relationship between the dairy industry and the Virgin Islands Department of Health is typified by the relaxed, friendly exchange shown above.

The similarities to farming in the states are striking, as are the differences. The dairymen themselves are very much the same as dairymen in Minnesota, New York, or Utah. They have the same pride (four of the five participate in the Dairy Herd Improvement Program), and the same complaints, such as needing more money for their product to pay for increasing costs.

There are some differences here on the Islands. There are no cold mornings or sweltering afternoons, the temperature never goes below 70°C or above 90°C. Hoof-rot or fly problems do not exist, and mastitis is practically unheard of. However, ticks are more of a problem than in many areas of the mainland. Also, because of the distances involved, equipment service is difficult. Imported grain costs \$300/ton and the farmer usually has to pay the freight to return the empty container.

There are some compensations for these financial burdens. Milk sells for 45 cents per quart at the farm regardless of the butterfat. This translates to a payment for milk on the farm of over \$21 per hundred pounds.

From the air, the Island of St. Croix strikes one as an 80 square mile humped-back turtle poking out of a Caribbean Sea that adds depth and dimension to the word "blue". On one side of the hump is lush, green rain forest, on the other is savannah, desert, and cactus. The dairy farms are all located on or near the dryer side of the Island.

Ron Smith of the FDA State Training Branch and I were here on St. Croix to put on a dairy training course. After the formal part of the course, we used the five dairy farms on St. Croix as classrooms to teach practical inspection skills to selected Virgin Islands milk regulatory employees. Later that day, the farmers and regulators met as a group to discuss the results and plan courses of improvement.

The dairy farmers want to meet Grade A standards so that their milk can be sold to airlines and U.S. flagships. A number of changes were recommended and have subsequently been made.

After this meeting, each of the five dairymen wanted to talk about their farm, their successes, and their problems. Despite the miles and the differences, some of the following excerpts may sound a little familiar:

Mario Gasperi: Right now we are milking 86 cows, mostly registered Holsteins. We grow some sorghum for sorghum silage which we consider very useful to the overall ration of the cows. We recently had a lot of trouble with lower uterine infection which prevented conception and sent our average milk production down. I think there is a lot of potential for milk production in the Virgin Islands. Each year we have to handle a drought period. For that we do produce hay, guinea grass hay, or whatever grasses we have, and some sorghum silage. Production can go as high as 20,000 lbs. I enjoy being in the dairy business here. I think there is quite a future for it as there is quite a margin on milk for the moment and we hope that it will stay that way.

Henry Nelthrop: I operate a farm with about 160 head. We milk approximately 74 animals daily. I started 12 years ago. My production is 18 quarts (38.7 lb.) per cow. We have a very unusual grass that differs from most of the

other farms. It is a local grass they call "Barbados sour grass". We also feed quite a lot of high concentrate, 20% dairy pellets, approximately 24 lbs. per cow each day. My operation has been the newest of the five farms. We try to improve all the time, and try to enlarge, but I don't think I can get very much larger because I only have about 200 acres of land to use for dairy purposes.

Oliver Skov: I operate the smallest of the five dairies that are on St. Croix. I milk about 65 cows and I currently have a total of 100, that includes replacement heifers and calves. My best predicted producing cow gives 18,000 lbs. and my average is 8,000 per year. We keep the cows in pasture. They are fed concentrate during milking time, averaging about 30 lbs. per cow. We milk twice a day, usually about 5:30 a.m. and 3:30 p.m. I have been in the dairy business now for a little over 20 years and it has been a challenge to me. I have enjoyed it a lot, although under the present circumstances it's a little bit on the marginal side as far as profit is concerned. The potential for producing milk on St. Croix is still promising and there is a lot of land that could be used for this purpose. However, it is expensive and you have to have quite a bit of investment to get started.

Charles Shuster: We own about 130 Holstein cows and heifers. We milk about 65 head per day. Production is around 40-45 lbs. We raise some guinea grass and buffalo grass. We start milking in the morning around 4:00 a.m. and in the afternoon around 3:00 p.m. Our milk is picked up each day by the dairy about 7:00 a.m. We don't have any special butterfat test or anything. It's just sold as whole milk.

Stacy Lloyd: I milk 150 Jersey cows. I've been in the dairy business here for 25 years and I find it very interesting. It's a difficult business here because you have ticks which have to be handled very carefully, otherwise you'll get disease and lose cows. The great difficulty is trying to find a grass or roughage which will produce milk economically comparable to alfalfa or corn in the United States. Corn is not grown here, as it is very difficult to control pests which infest corn. Alfalfa does not grow. Sorghum is fine, but it isn't high enough in protein to compare with alfalfa. We have found that growing sorghum, cutting it, and green-chopping it when it's quite young can yield possibly 10% protein and it is noticed immediately in milk production. But the problem is to grow enough sorghum to really keep that protein up all year round.

Experiments should be continued to find some roughage high in protein that will grow here on the Islands. It would make dairying much more profitable. Animals here do well in the long run. They look well, and their hides have a good shine. It is a tropical place, however, and they suffer from heat and a very producing cow will often go under a tree and sit to cool off. One reason I have Jerseys instead of Holsteins is because I think that the Jersey handles heat just a little better than a bigger, heavier animal. But you have a problem of low production. We may produce an average of 10 quarts (21.5 lbs.) per cow which is about half of what the Holstein will produce, but it doesn't cost quite so much to feed. St. Croix is a good and very interesting place to dairy.

A QUALITY CONTROL PROGRAM RECOMMENDATION FOR UHT PROCESSING AND ASEPTIC PACKING OF MILK AND MILK BY PRODUCTS

SAI FARAHIK
Aseptic Research Lab
Packaging Systems Div.
Ex-Cell-O Corporation

Aseptic packaging is defined as: The packaging of a sterilized product in a sterilized package, under a sterile environment. This definition encompasses all parameters required to achieve a totally shelf stable product. However, for milk and milk products this is not possible unless a good quality control program is implemented from the time the milk is collected at the farm until it reaches the consumer. Let's review the parameters:

A. RAW MILK

To have good quality UHT processed milk, one has to start with good quality raw milk. If the raw milk collected for UHT processing contains flavors originating from microbial activity, the feed or weeds, or absorbed from the environment, there is a good chance that this off-flavor will show up in the UHT processed milk. The raw milk intended for UHT processing should be the same as for pasteurization, it should be high in flavor quality and low in microbial counts.

The type of microorganisms present in raw milk may have an influence upon the quality of the finished UHT product. In such instances, the high concentration of heat resistant spores increases the chances of the occasional survival of certain spores. Also, high concentrations of psychrotrophic bacteria generate proteases which are not completely destroyed by the high temperatures used for UHT

processing. The heat stable protease can produce defects such as protolysis, bitterness and even gelatin of UHT milk.

Raw milk with high levels of acidity tends to be unstable during heating which is unacceptable for UHT processing. To assure that the quality of the raw milk is at low concentration of acidity, the ethanol test should be used. This test is referred to as the "stability to ethanol" test which reflects if the product is stable to heat, but the result is more closely correlated with heat stability. The procedure recommends mixing an equal volume of milk to an equal volume of ethanol at room temperature. Signs of coagulation or flaking are recorded. IDF Standard No. 48 (1969) specifies 68% (volume per volume) alcohol. But some studies have recommended the use of 74% ethanol for UHT milk.

Therefore, it is necessary that the raw milk used for UHT processing be of high flavor quality, have low bacteria counts, and stable to heat and alcohol.

B. UHT PROCESSING

Regardless of the type of processing system used, extra care and attention must be paid to details for UHT processing more than any other processing. In the case of pasteurized milk, the effect of post-pasteurization contamination

is dependent upon the extent of the contamination. For example, one spoilage microorganism in a liter carton of pasteurized milk would have minimal effect on shelf life where the product is kept refrigerated. But with UHT processed milk, the effect of any such contamination would be extensive as it would spoil the product in a very short time. Therefore, the process for UHT milk must be such as to eliminate all spoilage-causing microorganisms. The sterilization procedure for the processing equipment, either steam or hot water, must ensure all contact surfaces, such as plates, pipes, valves, tubes, homogenizer (downstream) and aseptic surge tanks are totally and effectively sterilized and maintained at that condition for the duration of the processing period.

Therefore, for an effective and efficient operation, the key is proper plant maintenance. Not only does poor maintenance produce excessive breakdowns, it could lead to product failure and a costly situation. It is not an exaggeration to say that proper and effective maintenance is the most important single factor in determining the success of a UHT milk operation.

C. PACKAGE STERILIZATION

The other criterion which must be considered in order to have a successful aseptic operation is to have

a sterile package. The packaging material received at the dairy plant is contaminated and requires sterilization to make sure none of the contaminants enter the aseptic system. Steam, which is used for sterilization of the most rigid materials, is not suitable for flexible material used for aseptic packaging of dairy products and fruit juices. This type of material requires a sterilization system which will not damage the package. Here, chemical or physical sterilization must be used to sterilize the packaging material.

Chemical sterilization of packaging material can be done either away from the filling machine or on it. Away from the machine requires extensive quality control measures to make sure the sterilized packages are not recontaminated. This requires an excellent outer packaging or wrapping procedure and extra care must be taken in its shipping to ensure the material is not damaged. Also, the outer wrapping should be easy to open so that the contents do not become contaminated during opening or loading of the machine.

On-machine sterilization is the sterilization of packages before filling. Most aseptic filling equipment today uses a solution of hydrogen peroxide and heat (170°-180°F) to sterilize the packages. (There are other methods but they have not been proven to be effective.) Hydrogen peroxide is used in various ways. Some systems dip the packaging material in a hydrogen peroxide bath, some coat it with hydrogen peroxide, and other systems (i.e. Ex-Cell-O) spray or fog the packages. Then, heat (170°-180°F) is applied, not only to activate the hydrogen peroxide, but also to dissipate it from the packages. This concept requires an extensive quality control program to make sure the packages are sterilized properly and no more than 0.1 PPM residue remains.

Following is the recommended quality control program;

First, Proper Kill Rate - The packaging material is inoculated with spores of a heat-resistant bacterium (such as *B. subtilis-A*) and exposed to hydrogen peroxide at the same concentration level used to sterilize the packages on the filling machine. Samples are either evaluated for the number of surviving spores or are filled with product. This type of activity is usually done at the manufacturer's research center before installing the filling machine at the dairy plant. Then, the established criteria are recommended to the machine operator at the dairy plant so that he can set up the system to achieve the predicted results. The only quality control that the dairy should be concerned with is to evaluate the peroxide flow rate often, to make sure it is within the recommended concentration level.

Secondly, Determination of Hydrogen Peroxide Residue - This is one of the most time-consuming tests that may be performed at a dairy because there is no easy or proven method available. The potentiometric method which has been recommended by FDA to determine 0.1 PPM residue requires hours of preparation. The dairies need a fast, accurate method to get meaningful results. One must use enough peroxide to achieve sterility but not too much to exceed the permitted residue limit of 0.1 PPM.

The quality control program for this system should be set up according to the FDA established standards. Representative samples without product should be collected and checked, with adding one liter sterilized distilled water, for hydrogen peroxide residue. A quick method which has been experimented with is the use of vanadium pentoxide. The sensitivity of V_2O_5 is 100 milligram per liter,

but it is possible to determine the 0.1 PPM concentration using this compound by doing slight mathematical calculations.

D. FILLING MACHINE STERILIZATION

Here, the major concern is the product contact surfaces, but non-contact surfaces should not be neglected. The product contact surfaces are sterilized mostly with steam hot water, or hot air and as a time-temperature relation function. The best method for quality control using steam is temperature gauges calibrated to indicate accurately the proper conditions. Non-contact surfaces also require special attention to make sure the contamination from this area will not reach the sterile sections via air movement in the machine or other activities. After completion of the sanitization procedure, periodical swab sampling must be done on these surfaces to determine the sanitary condition of the non-contact surfaces, as well as the efficacy of the procedure.

One other area of concern in the machine is the atmosphere in which the filling and sealing takes place. Usually, this section of the machine is saturated with highly filtered air. The air is filtered through a HEPA Filter which removes 99.7% of the contaminants. However, periodic air sampling must be done to make sure the filling and sealing sections of the packaging machine are free from harmful contaminants.

E. FINISHED PACKAGE

For quality control practices, proper number of samples must be collected. Numerous recommendations have been made as to how many samples should be collected in order to be statistically sufficient for meaningful results. A sampling rate of about 1% has been recommended by many scientists. But consider a lot of 3,000 - 8,000 packages where a spoilage of 0.1% is allowed. This would re-

quire a random sampling of 300 individual packages. This would, of course, be quite uneconomical, demonstrating the problem of sampling. However, sampling for microbial evaluation purposes has been recommended within the range of 0.1 - 1% with greater emphasis placed on sampling the start and finish of the run. In addition to the standard sampling, samples before and after operational interruption, change of packaging material, etc., are recommended. It is necessary for the dairy to decide on a sampling level which would provide a reasonable assurance of the sterility of a batch. At the same time, the dairy should not impose an excessive economic burden on itself due to the cost of testing and destruction of the product, concurrently staying within the recommended requirements of the FDA.

Samples should be evaluated for: (1) microbiological safety, (2) package integrity, and (3) organoleptic acceptability of the product.

(1) *Microbiological Safety* - Microorganisms present in UHT milk almost always create some type of spoilage. Their presence in UHT milk would indicate they are either survivors of the heat treatment, or have entered the product during the packaging period. However, studies have shown there is evidence that when using temperatures of 265 - 300°F, no microorganisms will survive. This depends on D₂₅₀ value of microorganisms present.

Spoilage due to the presence of microorganisms may show up as bulging, that is, the development of gas; by coagulation and protolysis; or by bitterness and off-flavors.

Samples for microbiological evaluation are normally incubated at 30 - 33°C for four to seven days. Then, they are plated and the number of colonies are re-

corded. IDF Standard No. 48 recommends that no more than ten colonies per .1 ML (or 100/ML) should be found. It has been reported that a mass of microbial growth in the test indicates a positive result and a complete absence of growth indicates a negative result. The presence of one or two colonies can be attributed to atmospheric contamination or human error when setting up the test.

Although these microbiological studies are required and produce objective results, they are time consuming and expensive, and require an extra 2-3 days after the incubation period in order to obtain the microbiological results. If samples are examined organoleptically, the incubation period for batch certification may be increased to seven days and a greater number of samples can be examined at a lower cost. However, contaminated packages should be examined by microscope or cultured to obtain some information about the types of organisms involved. Such an examination may help to indicate the cause and source of the contamination. If the organisms are of one type (e.g. Thermophilic) it would indicate survival during heating process or the sterilization process; if they are of Mesophilic type, it could indicate contamination during handling and packaging. Contamination subsequent to packaging. The container should also be examined carefully to determine a possible source of contamination which might be attributed to package integrity.

(2) *PACKAGE INTEGRITY* - The most important quality assurance parameter is package integrity. It is the package that protects the product from contaminants (air, light, or other elements) and enables the product to have the expected shelf life. Therefore, the package must be durable, light impermeable, and environmentally

exclusive to the contaminants. To ensure that all of the above criteria are met, standards must be established and quality control programs developed to make sure these standards are implemented.

A good hermetically sealed package not only protects the product from outside contaminants, it also protects the contents from oxidation. Therefore, a perfectly formed package should not fail unless the problem is inside. This type of problem is mostly microbial or chemical. The best method to determine chemical changes in the product is by evaluating it organoleptically.

(3) *Organoleptic Acceptability of the Product* - Organoleptic testing, that is, examination of the contents of incubated samples by sight, taste, and smell, should be made frequently to make sure the product reaching the consumer is acceptable. There is no specific standard or procedure except by relying on expert opinion to determine the best tasting product. Acidity and physical changes can be determined by chemical and physical standards.

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Calendar

1983

Jan. 10-13---EIGHTH ANNUAL TROPICAL AND SUBTROPICAL FISHERIES CONFERENCE OF THE AMERICAS. Agenda includes topics in seafood quality control, etc. Admiral Benbow Inn, Tampa, FL. Chairman, W. Steven Ottwell, Dept. of Food Science & Human Nutrition, University of FL, Gainesville, FL 32611, 904-392-1991.

Jan. 30-Feb. 2---THIRD INTERNATIONAL SWEETENER COLLOQUIUM, The Pointe, Phoenix, AZ. For more information contact: Sugar Users Group, 910 Seventeenth St. NW, Suite 1105, Washington, DC 20006. Phone: 202-296-4250.

Feb. 10-13---ALIMAC '83, Bologna. For more information contact: Senaf, 40127 Bologna Via Michelino, 69.

Feb. 16-17---DAIRY AND FOOD INDUSTRY CONFERENCE, The Ohio State University. For information contact: John Lindamood, Department of Food Science and Nutrition, 2121 Fyffe Road, The Ohio State University, Columbus, OH 43210.

March 21-25---MID-WEST WORKSHOP IN MILK AND FOOD SANITATION, The Ohio State University. For information contact: John Lindamood, Department of Food Science and Nutrition, 2121 Fyffe Road, The Ohio State University, Columbus, OH 43210.

March 23-24---IOWA ASSOCIATION OF MILK, FOOD AND ENVIRONMENTAL SANITARIANS SPRING MEETING, Starlite Village, Ames, IA. For more information contact: Jack L. Schoop, 602 East 1st St., Des Moines, IA 50307.

April 11-13---DAIRY AND FOOD INDUSTRIES SUPPLY ASSOCIATION, 64th ANNUAL MEETING, Boca Raton Hotel and Club, Boca Raton, FL. For more information: Dairy and Food Industries Supply Association, 6245 Executive Blvd., Rockville, MD 20852, 301-984-1444.

April 20-22---SOUTH DAKOTA ENVIRONMENTAL HEALTH ASSOC. ANNUAL MEETING. Howard Johnsons, Sioux Falls, SD. For more information contact: Morris V. Forstine, SD State Dept. Health, 1320 S. Minnesota Ave., Room 101, Sioux Falls, SD 57105.

August 7-11, 1983---IAMFES ANNUAL MEETING, St. Louis, MO.

1984

August 3-9, 1984---IAMFES ANNUAL MEETING, Edmonton, Alberta, CN.

News and Events

Keller Offers Hazardous Waste Audit Program

J. J. Keller & Associates, Inc., announce publication of a new guide for coordinating internal hazardous waste audits. The new publication, entitled the HAZARDOUS WASTE AUDIT PROGRAM, is written to provide generators, disposers, and TSD facility operators with a regulatory and safety compliance system. This "how to" guide allows evaluation of current methods of handling hazardous waste to ensure compliance and safety procedures to avoid regulatory problems. In addition, users can determine if present compliance procedures are necessary and if additional compliance is needed.

Keyed to Federal EPA hazardous waste rules, the Hazardous Waste Audit Program guide provides the user with a complete outline for a corporate program. The publication includes evaluation guidelines, monitoring procedures, checklists and forms for evaluating present status of operations against EPA requirements, and checklists for maintaining a continuous program of compliance with EPA rules.

Also included in the publication are guidelines for developing an in-house employee training program. It gives an overview explanation of training requirements related to different portions of the cradle-to-grave network, and a specific training outline for all employees, management staff, and operating staff.

The program guide, arranged in a three-ring binder format, covers 400 pages. More information may be obtained by contacting J. J. Keller & Associates, Inc., 145 W. Wisconsin Avenue, P.O. Box 368, Neenah, Wisconsin 54956-0368, toll-free, 800-558-5011 (in Wisconsin: 800-242-6469).

Bloomberg Joins Monarch Chemicals

Carl S. Bloomberg has joined the Monarch Chemicals Division of H. B. Fuller Company, St. Paul, Minnesota, in the position of director of marketing.

In his new position, Bloomberg will be responsible for the management of marketing and direct sales for the Monarch Division's line of sanitation chemicals for the dairy and food processing industries.

A twenty-year veteran of the food sanitation industry, Bloomberg holds a B.S. in dairy science from the University of Minnesota. He is a member of the International Association of Milk, Food and Environmental Sanitarians.

H. B. Fuller Company is a manufacturer of adhesives, sealants, coatings, paints, and specialty waxes, as well as floor maintenance equipment and sanitation

chemicals. The company has plants and technical service centers in 40 U.S. cities and 25 foreign countries worldwide.

Second National Dairy Housing Conference

The state-of-the-art in dairy production facilities will be established at the Second National Dairy Housing Conference, scheduled for March 14-16, 1983, in Madison, Wisconsin. Sponsored by the American Society of Agricultural Engineers and 12 other organizations, the Conference is the first such meeting in 10 years.

Forty-six top papers will be presented on such topics as stray voltages; milking centers; calf, heifer, and dry cow facilities; manure handling; total systems; and others. The information will benefit progressive dairy producers, fieldmen, extension personnel, veterinarians, builders, designers, and manufacturers of dairy farm equipment.

Those attending the Conference will be able to attend the popular Electric Power and Farm Equipment Show, to be held March 16-18 in adjacent facilities.

Complete programs with registration information will be mailed in December. To get on the mailing list, contact Cathy Ziegert, Meetings Secretary, ASAE, 2950 Niles Road, St. Joseph, Michigan 49085, or phone (616) 429-0300. Be sure to designate the Second National Dairy Housing Conference mailing list.

Bally Prefab Panels Earn NSF Listing

White-polyester-finished, insulated prefab panels manufactured by Bally Case & Cooler, Inc., have earned National Sanitation Foundation listing and the acceptance of the United States Department of Agriculture. The Bally, PA., firm is the world's largest maker of prefabricated walk-in coolers, walk-in freezers and refrigerated buildings.

The USDA acceptance states:

"Your coating is chemically acceptable for application to structural surfaces or surfaces where there is a possibility of incidental contact with meat or poultry food product prepared under Federal inspection."

The NSF listing for Bally walk-ins reads:

"Models accepted with one of the following finishes: aluminum, galvanized, stainless steel, Bally white polyester."

Both approvals mark compliance with strict, established standards of sanitation and public health.

For more information on Bally prefabs, write Bally Case & Cooler, Inc., P.O. Box 98, Bally, Pa. 19503-0098, 215-845-2311.

Milk Production Exceeds Consumption

One way or another, milk production must be cut. The options available to dairy farmers are tough but obvious, says Glynn McBride, Michigan State University Cooperative Extension Service agricultural economist. These options include voluntarily cutting back the volume of milk going to market, incurring governmental penalty for overproduction, or allowing market economics to reduce the number of dairy farms in Michigan.

"So far, the latter, harsh as it may seem, has been the pattern in recent years," McBride says. "As much as I dislike to see this unfold, I'm afraid this will probably continue to be the pattern unless dramatic change occurs within the industry during the next few years."

Milk production continues to far exceed consumption. The only new development is that Congress says government is not going to continue shoring up prices by buying surplus dairy products.

The strongest signal from the feds to date is continuation of the current price support level -- \$13.10 per hundredweight (cwt.) --- through fiscal year '84, plus authorization of the USDA secretary to deduct 50 cents per cwt. from the proceeds of all milk sold by farmers. These funds will be paid to the Commodity Credit Corporation (CCC) to offset handling costs if projected surpluses are 5 billion pounds of milk equivalent. This assessment, to be levied beginning Dec. 1, is not refundable.

A proposed second assessment of equal amount after April 1, 1983, is refundable, providing the farmer can prove an output reduction. The second assessment could go into effect if CCC purchases are above 7.5 billion pounds of milk equivalent.

"This could mean that milk checks next year could average about 90 cents less per hundredweight than they do now," McBride says.

McBride urges farmers to resist the tendency to increase farm milk flow to overcome the decrease in cash flow. Instead, he recommends a vigorous cow culling -- at least 5 percent -- and increasing production of the remaining cows.

"With good management, the effect on net income will not be as tough to handle as the possible consequences of continuing the present production pattern," McBride says. "The vigor of the milk industry can be restored if all dairy producers do their part in reducing milk output."

McBride and a team of 30 CES campus specialists and field agents are ready to help dairy farmers develop management plans for farm survival. Team members can be reached through local county Extension offices.

American Cultured Dairy Product Institute Highlights

Speakers and product analysts who participated at the first American Cultured Dairy Product Institute-sponsored mini-Klinic in Columbus, Ohio on October 5-7 included: Dr. Charles White, Louisiana State University; Dr. Ron Richter, Texas A & M University; Dr. Ed Custer, Mississippi State University; Earl Connolly, Fantasy Flavors, Inc.

According to Institute Secretary Dr. C. Bronson Lane, the two and one-half day intense training session dealing with the ABC's of cultured dairy food manufacturing was primarily geared for quality control personnel, supervisors, foremen, and on-line production staff employed by processing concerns in the U.S. Midwest.

The enthusiastic and positive response to the Institute's "nuts and bolts" training program will precipitate the scheduling of additional mini-Klinics during the ensuing months in other regions of the United States including the Northeast, Southeast, Southwest, and West Coast.

Correspondence Course for Food Service Industry

Years from now the early '80s may well be looked back on by the food service industry as the years when a very serious shortage developed.

Certainly not of foodstuffs, technological innovations, or professionalism. And certainly not of customers clamoring for quality food service.

The early '80s will be noted for its shortage of individuals trained in various areas of foodservice to meet the demands of a swelling population whose active lifestyle has them "eating out" more often than any previous generation.

Developing qualified individuals requires professional guidance and structured education. But foodservice programs today are already full to bursting, and the supply of graduates still does not equal the demand for new talent.

Determined to offer a solution to this serious shortage, the professional staff at the Restaurant, Hotel, and Institutional Management Institute (RHIMI) at Purdue University set about studying the problem. After countless hours of analysis and discussion, they came up with their solution: to resurrect a somewhat forgotten, often maligned form of education -- the correspondence course.

Under the auspices of RHIMI Director, Brother

Herman E. Zaccarelli, two professional development correspondence courses were created; **ACHIEVING FOODSERVICE EXCELLENCE: Management and Supervision**, and **ACHIEVING FOODSERVICE EXCELLENCE: Food Purchasing, Selection, and Procurement**.

Decidedly practical and rigorous, each course attacked its topic from all angles, offering a wealth of insider's information along with case studies to bring home the important points.

Participants in the programs are sent three course books along with a comprehensive workbook. There are exercises, reading assignments, quizzes, and a multi-part final examination graded at Purdue. In all, completion of the course requires between sixty and eighty hours of concentrated work.

Recently, RHIMI conducted a survey among the participants in the courses to assess the program's value to them. Questionnaires were sent to each of the 370 individuals who had completed a course. Presently, RHIMI has over 1,000 participants enrolled in various courses.

The results of the survey were rather startling. A full 97% of the respondents felt that the course fulfilled their needs, and that it met their original expectations.

100% agreed that the material was not over their heads. Every respondent also said that the correspondence format helped them by allowing them to learn at a comfortable pace.

And perhaps most revealing, 99% said that they would recommend the course they took to a friend because of its "in depth" approach to subject matter.

Rodent Infestation

No rodent infestation should be considered too small to warrant treatment. Rats visible at any time may be an indication of a serious problem, according to one rodent control researcher.

"Most farmers fail to recognize rodent signs or that they have a rodent problem," says Dr. Jack Shugart, a rodent control researcher with Ralston Purina Company. "They may see rats, but they don't feel that this is enough to initiate control programs. For each rat a farmer actually sees, there may be many more hiding in the dark corners of their facilities. What's more, every female rat can produce 7-8 litters of 5-8 baby rats in a year, which means that a minor infestation can quickly become a major problem."

Serious profit losses can stem from these hidden rodent populations, Shugart reports. The U.S.

Department of Agriculture (USDA) estimates each rat on and around a farm can cost a farmer \$25.00 in contaminated or consumed grain. Loss of grain is further compounded by contamination from rat urine and feces.

Even more serious are the disease problems rodents can cause. Rats are known carriers of many different diseases, including leptospirosis and salmonellosis. Many of the diseases spread by rats may affect both man and animals.

Farm buildings can also be damaged by the great amount of gnawing necessary to wear down rats' teeth which can grow five inches per year. They'll chew holes in feed bags, wooden wall planks, insulation and electric wires. The result can be faulty ventilation systems and electrical fires.

With these problems in mind, it's no wonder many farmers are making rodent control a top priority, says Shugart, by implementing a thorough and well-planned control program on their farm and surrounding facilities.

Keep Farms Clean

A successful rodent control program begins with good housekeeping, the researcher explains. Cleaning up junk piles and removing farmstead weeds will minimize possible areas where rodents live. Shugart recommends that farmers rat-proof their operations by adding sheet metal to the bottom of doors and sealing entry holes.

Farmers should then check for tell-tale signs of a rodent infestation. Torn or gnawed feed bags, burrows around buildings, gnawed electric wires or wooden molding, greasy oily smears along walls and rafters or fresh tracks are indications of a serious rodent infestation, explains Shugart. A checklist and diagram of where these signs are found will help pinpoint the problem, he adds. Shugart also suggests that growers set out control bait (regular feed the rats have grown accustomed to eating on your farm) and check it regularly, to measure the extent of the problem. The speed at which this control bait is consumed will be good indication of the primary area and extent of the infestation, he says.

Multiple Feedings

Once growers determine the severity of their rodent infestation, they should choose a rodenticide that will effectively control the rodents while posing little hazard to pets, livestock and humans, he cautions.

"We recommend using 'anticoagulant' rodenticides containing warfarin, a chemical requiring multiple feedings to kill rodents. Purina's Rat Control Pellets are a proven anticoagulant rodenticide and, if used as directed, present little hazard to animals or human," explains Shugart.

Another consideration in choosing a rodenticide is taste and smell, the researcher points out. "Any rodenticide must taste as good as or better than food the

rats have been eating. They won't eat poison if good, non-poisoned food (like your grain or livestock feed) is more palatable and just as accessible. Tests at Purina's Research Farm have proven that rodents have a marked preference for the taste of Purina Rat Control Pellets over fresh grain and most baits," Dr. Shugart notes.

Maintenance Program

"After Rat Control Pellets have been distributed in accessible "bait stations" for several days, dead rats may start to appear," he continues. These should be disposed of immediately.

Once the problem seems to be under control, Dr. Shugart recommends the initiation of a "maintenance level" program. "Studies have shown that when control programs end, new rats move in from surrounding areas. Soon rat populations reach pretreatment levels if plenty of grain and feed is available and a suitable environment for nesting still exists. A few bait stations should be kept in service at all times to prevent reinfestation," he says.

"A strict program of continued sanitation and maintenance, along with an effective rodenticide, can go a long way toward keeping farm or livestock facilities rodent free," the researcher concludes.

Salt/Sodium Controversy

By their complacency, food marketers are treading dangerous ground in face of the potentially explosive salt/sodium controversy, according to a report on the subject just published by Packaged Facts, the New York information/research company.

Titled *Salt Content In Food: The Current Controversy And Its Implications For Food Marketers*, the report points out that although a few marketers have taken positive steps in this area, the majority have done little or nothing to reduce the salt content of their food products.

"By this wait and see attitude, they are evidently gambling that the anti-regulatory trend of the Reagan administration and Congress will block any substantive sodium content and labeling laws," says David A. Weiss, Packaged Facts president. "But in pursuit of this policy, they are courting disaster should such legislation succeed."

Two Marketers That Have Taken Action

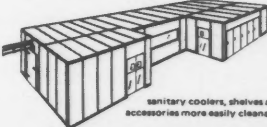
One marketer that has responded to the situation is Campbell Soup which has introduced low-sodium

extensions to its basic soup lines. Another is Beechnut Food Corp. which from its baby food line has eliminated not only most added sugar, preservatives, artificial flavors and colors, but also most added salt. According to trade accounts, the results have been spectacular, Beechnut is currently believed to have moved past Heinz to the No. 2 spot in the market, behind Gerber.

The Packaged Facts report — *Salt Content In Food* — examines in detail the marketing problems that food processors face as far as the health and nutritional aspects of salt/sodium, federal government involvement, and consumer attitudes toward these ingredients in food. It also analyzes the ramifications of these factors in the food processing industry. Also included in the report is an overview of the salt substitute market as well as a profile of the U.S. hypertensive population. For more information contact: Packaged Facts, 274 Madison Ave., New York, N.Y. 10016.

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Presidential Address

HARRY HAVERLAND

Louisville, Kentucky

August 24, 1982

Members of the Executive Board, fellow members, and guests of the International Association of Milk, Food and Environmental Sanitarians. During the past year I have had an opportunity to meet and come to know many more of the members who have contributed substantially to our Association's professional status and high level of recognition, both nationally and internationally. IAMFES continues to be a viable progressing organization dedicated to fulfilling our membership's current needs and planning for the future.

MEMBERSHIP

During this period of economic austerity, while many organizations are experiencing a loss of membership, we can point to an increase. Although small, it is significant. Our current membership is 3,539.

To increase awareness of IAMFES, a table top display has been developed by the headquarter's staff. The initial use of the display was at the Institute of Food Technologists Meeting held in Las Vegas, Nevada. The subject display is available for affiliate meetings and other meetings attracting professionals with similar interest as our membership.

Additionally, a new attractive, informative brochure has been prepared by Kathy Hathaway. The brochure identifies the types of membership available and our involvement in 3-A Standards and the development of technical publications.

IAMFES has also moved into the world of plastics. You can now pay your dues with your Master or VISA credit card.

AFFILIATES

The Affiliates form the basic strength of IAMFES. Currently, there are twenty-six (26) affiliate organizations representing 1,033 members. This is a decrease of 269 members during the past year. We encourage the Affiliates to increase their membership. This can be achieved through more well-organized professional meetings and frequent contact with the membership. The latter can be accomplished through an informative newsletter. Several Affiliates have developed newsletters and would be happy to share their format and ideas with other Affiliates. Many times the Affiliate Meetings are the only activities that members can attend.

During the Affiliate Council Meeting we discussed how our Ames office and the Executive Board can more effectively work with the Affiliates in obtaining new members, representation at Affiliate Meetings, including the presentation of topics, etc. We need the continued support of our Affiliate Organizations.

PUBLICATIONS

The Journal of Food Protection is recognized throughout the World as one of the leading, if not the leading publication in the area of food research. Currently the Journal is received in 65 Countries outside the United States. We are pleased that Dr. Michael P. Doyle joined the staff of the Journal of Food Protection as Associate Editor. Through the efforts of Dr. Elmer Marth, editor, JFP; Dr. Doyle and the generosity of the Milk and Food Industry one additional issue of the Journal was published in February and April, 1982. With these two issues, identified by the letter "B", the backlog of technical papers was reduced to a realistic level. The positive side of a backlog is related directly to the popularity of the Journal as an avenue for publishing technical materials.

Dairy and Food Sanitation, which was developed to meet the need of operational or field level personnel, continues to grow in strength. We are still trying to cope with the problem relating to the quality and quantity of nontechnical articles being received for publication. More articles are needed. Each of you are engaged in activities and projects which are interesting, informative and could be of assistance to your colleagues in carrying out their responsibilities. Dairy and Food Sanitation is received by over 2,000 members. It just reached that goal. We are extremely optimistic that this publication will continue to grow at a rapid rate. It is worthy to note that nearly one-third of the membership received both publications. It is truly the best buy.

PERSONNEL

Our Association experienced some changes in personnel during the year and anticipates a major change in 1983. Jan Richards, Editor, Dairy and Food Sanitation, resigned to accompany her husband on a new assignment. We were fortunate to employ Kathy Moore

Hathaway as Associate Executive Secretary and Editor of Dairy and Food Sanitation. The Executive Board reviewed several excellent applications for the position before making a final decision.

Earl Wright, Executive Secretary, has advised the Executive Board that he plans to retire in August, 1983. Earl has been a member of IAMFES for many years and will be completing ten years as Executive Secretary. His service to IAMFES is outstanding and we will miss him as Executive Secretary of our Association. The Executive Board is exploring several management possibilities for handling IAMFES following Earl's retirement.

On July 26, 1982, three members of the Executive Board (Doctors Robert Marshall, A. Richard Brazis and myself) visited the IAMFES headquarters at Ames, Iowa, to review the office operations, personnel and discuss current business with Earl Wright. We were greeted warmly by the staff and were impressed by their enthusiasm and dedication to our Association. The message that comes through is - we are here to provide assistance to the membership and help IAMFES grow both in membership and professional recognition.

We were advised of cost reduction procedures which have been recently instituted, including the use of a parcel service for volume mail, sorting mail by ZIP code, and utilization of a computer located at Iowa State University. In reference to the latter, the technology and sophistication of computers has advanced to a "State of the Art" which makes it not only feasible but a necessary instrument of good management. IAMFES will continue to investigate and explore greater utilization of computers in carrying out our Association's business.

FINANCIAL STATUS

IAMFES has an operating budget exceeding a quarter of a million dollars annually. One of our persistent problems has been cash flow. Over the past three (3) years it has been necessary for us to borrow several

thousands of dollars on future potential to carry the organization through these financial droughts.

Naturally we had to pay interest on these borrowed funds. This year I am happy to announce it will not be necessary to borrow money to meet our operating obligations. Our improved financial picture can be attributed, in part, to increased advertising efforts, Journal subscribers and minimizing the increases in operating costs.

A separate entity in our financial picture is the Sustaining Member Foundation. Through the efforts of Dale Tremunde, the membership in the Foundation increased from 31 to 36. Monies from the Foundation Fund are used in the development of technical publications and educational materials.

COMMITTEES

Committees are an important component of our Association. In reality the Committees are responsible for technical output, the Journals, standards activities, etc. To increase the effectiveness of some of our Committees, the Executive Board has been exploring a more structured approach to Committees, their objectives, leadership and members. The Board has assigned responsibilities for Committees to the First Vice President. Through this approach, there will also be a closer relationship between the Committees and the Executive Board. Our continued success is dependent on our Committees, and I want to thank all of the Committee Chairpersons and members for their efforts during the past year.

In closing, I want to thank the members of the Executive Board, Earl Wright, the headquarter's staff, and you, the members of IAMFES, for the support and guidance provided to me throughout the year. I appreciate the opportunity to have served as your President and I am confident that IAMFES will continue to provide leadership in the area of milk and food technology and sanitation.



Left to right, 1982-83 President Robert Marshall, 1981-82 IAMFES President Harry Haverland.



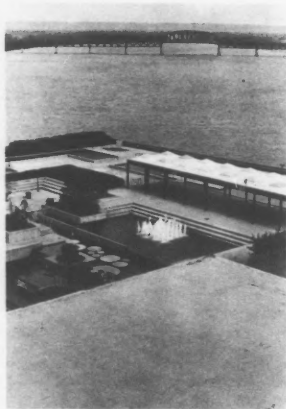
Galt House, Louisville, KY.



Looking out over the city.

1982 Louisville, Kentucky

Photos in this section by Ellen Ruch, Jewell Wagner, Robert Crombie, Kathy R. Hathaway.



The Ohio River from the Galt House.



Galt House lobby.

The 1982 IAMFES Annual Meeting was held August 22-26 at the Galt House in beautiful Louisville, Kentucky.

Once again, the Local Arrangements Committee worked diligently to provide a smooth, educational, and enjoyable annual meeting.

A vote of thanks to the local arrangements committee, and everyone who worked on a most successful annual meeting. Including: Chairman-Leon Townsend, Co-Chairman-Bruce Langlois, Finance-W. Dale Marcum, Registration-Joseph Schureck and David Atkinson, Speaker's Arrangement-David Nichols and Beth Ballard, Banquet & Entertainment-Tommy Coomes and William Murphy, Social Functions (Spouses' entertainment)-Mrs. Lyman Knierem, Mrs. William Arledge and Mrs. Ann Roman, Door Prizes - Ed Napier and Lyman Knierem, Milk Breaks-Ed Aylward and Danny Jasper, Photography-Jewell Wagner and Ellen Ruch.

The social event of the meeting was held on Monday evening. The three hour boat excursion on the Ohio River on the Belle of Louisville was most enjoyable. The Belle is a triple decker paddle powered boat complete with calliope. The evening also included a luscious buffet and blue grass band.

Tuesday evening included Cracker Barrel sessions while Wednesday evening, of course, was the Awards Banquet with a very entertaining family musical group.

Spouses activities included a program called "Shades of You," presented by color expert Barbara Furlong. Spouses also enjoyed a five hour city tour including Churchill Downs, St. James court area, downtown and Old Louisville, Butchertown and Farmington, a historic home designed by Thomas Jefferson.

For those of you who were not able to attend this year, make plans now for another educational experience and intermingling with fellow members of your profession. The 1983 annual meeting will be held in St. Louis, Missouri, August 7-11.

A detailed account of the meeting follows. . .

The 69th Annual Meeting of the

IAMFES Executive Board convened August 22 at 1:35 p.m. at the Galt House, Louisville, Kentucky. The meeting was called to order by President Harry Haverland. Haverland welcomed the new Secretary-Treasurer, Roy Ginn, and introduced Kathy Hathaway as the new Associate Executive Secretary and Editor of the Dairy and Food Sanitation Journal.

Minutes of Previous Meeting: It was moved, seconded and passed that the October 1981 minutes be accepted.

Financial and Budget Report: The auditor's financial report was distributed and reviewed. For the past year ending June 30, 1982, the loss was very slight. The auditor's report showed increases in dues, subscriptions, advertising and reprints because of the new journal. Other increased income came from reprints, 3A, sustaining members, page charges due to an increased rate and more papers and also from one time contributions from the two special issues of the Journal of Food Protection. Earl Wright reported that the association's financial position is much better than the previous year because of increases in dues and more members. Brazis moved and Arledge seconded a motion that the financial report be accepted. It was passed unanimously.

Proposed Budget for 1982-1983: The proposed budget for 1982-1983 was reviewed. It assumes new members, advertising up by 50% and new subscriptions to generate added revenue. Minor changes were made in awards and annual meeting expenses. It was moved by Marshall, Arledge seconded and it was unanimously approved to accept the proposed budget.

Nominating Committee Report: Paul Pace, delegate from the Wisconsin affiliate, presented the Nominating Committee report which showed only 354 votes cast for election of the Secretary-Treasurer. This is only 10% of the members. Marshall indicated that the by-laws called for a seven member nominating committee and suggested Robert Winslow as chairman, with affiliate delegates from Alberta, South Dakota, Missouri, Tennessee, Oregon and New York. A representative from



1982-83 Executive Board, front row, 1 to r, William Kempa, William Arledge, Kathy R. Hathaway, Harry Haverland, Bob Marshall, Elmer Marth. Back row, 1 to r, Earl O. Wright, Michael Doyle, Roy Ginn, Sid Barnard, Archie C. Holliday, A. Richard Brazis.



Executive Secretary of IAMFES, Inc., Earl O. Wright.

regulatory should be elected for 1983. It was moved, seconded and passed unanimously to accept Marshall's recommendation for the nominating committee to include seven affiliate delegates.

Local Arrangements Committee Report: Leon Townsend reported 330 members and spouses registered. Concern was expressed about people who were there for only a day without registering. Only 12 persons in milk and

60 in food Cracker barrel session. Seventy-five percent of the people were preregistered, but 50% were projected.

Committees: Marshall expressed concern, which was shared by all, about the confusion surrounding the purpose, size and activity of some of the association committees. In general, the chairmen have gathered a nucleus of responsible people. Haverland wrote a letter to all chairmen

suggesting that composition and duties be developed for each committee. Holliday moved, it was seconded and passed unanimously that a survey be given to all committee chairman and returned to the president. Marshall moved, it was seconded and passed that the first vice president review the committee structure, functions and activities, rewrite objectives, recommend terms of service and report to the board at the November '82 meeting. Barnard moved, Brazis seconded and it was passed unanimously that the Food Service-Food Protection Committee be abolished. The purpose had been to solicit articles for the Journal. A question was raised about the Teller Committee. It was decided that the Nominating Committee would serve.

Awards Committee: Bill Kempa reported that only six new names and supporting data were submitted for a total of 16. The selected recipients for two awards were not current members, so the awards will not be given. The certificates of merit were to be given for outstanding contribution to the affiliates. However, two of the three recipients would have been eligible for other awards. The intended purpose did not seem to be achieved.

Executive Secretary Retirement: Wright will retire as of August 31, 1983. There is the possibility of someone at Iowa State serving as part time Executive secretary since the computer and programs are there. There is concern about the printing cost of Cruse and ADSA if IAMFES were to go with a management service for the association. IAMFES costs are approximately \$19 per member, comparable with the estimated \$14 for ADSA, however there is no advertising or affiliate contact.

A replacement should be selected by March 1 to permit training. Marshall will contact NMC, AFDA, NEHA, IMS and others regarding IAMFES, offering them management services.

Brazis moved, Barnard seconded and it was passed unanimously to table a decision on possible alternatives for the association office and executive secretary.

Retired Persons Membership: A request was received to have free membership provided to retired persons. Brazis moved, Marshall seconded and it was passed unanimously to have the president appoint a committee to look into membership rates for retired persons. A committee of Barnard, Chairman and Kempa was appointed and asked to report at the November board meeting.

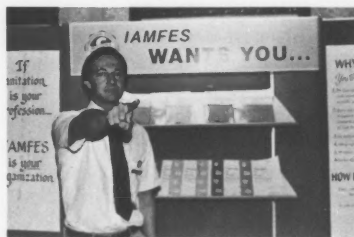
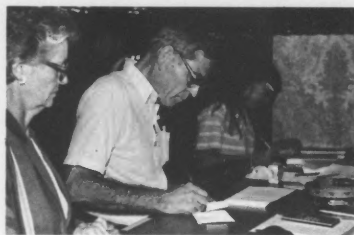
Computer Facilities: Wright proposed increased computer usage as floppy discs do not provide enough capability. A terminal of Apple II or Beacon could be tied in with the ISU computer. Present access is just once a month. Uses of expanded service could be for lists, finances, prospective members and advertisers.

Barnard moved, Brazis seconded and it was passed unanimously to authorize Wright to determine the final costs for the computer system and bring these, projected savings and applications to IAMFES to the November board meeting.

1984 Meeting Plans for Edmonton, Alberta: A presentation by the Edmonton affiliate was made by Paradis, Steele and Roth. They prefer three one half day sessions for special interests in the areas of Salmonella, food service sanitation, modified atmospheric packaging and storage, and a demonstration of a UHT plant. Attempts will be made to include all topics in the program by one or more speakers. Hotel arrangements with the Terrace Inn are for \$48 for two people in US currency.

Marshall moved, Holliday seconded and it was passed unanimously that Wright be authorized to sign an agreement with the Terrace Inn. The dates are August 5-9, 1984.

3-A Criteria: Four IAMFES members are appointed to the 3A Symbol Council. The question of conflict of interest was mentioned as some 3A members are consultants to equipment manufacturers and processors. Criteria should be established for selection of members. Arledge moved, Barnard seconded and it was passed unanimously to develop criteria for 3A members, avoiding all conflicts of interest. Arledge was named Chairman



Top three photos - registration at the Annual Meeting. Bottom photo - New IAMFES exhibit.

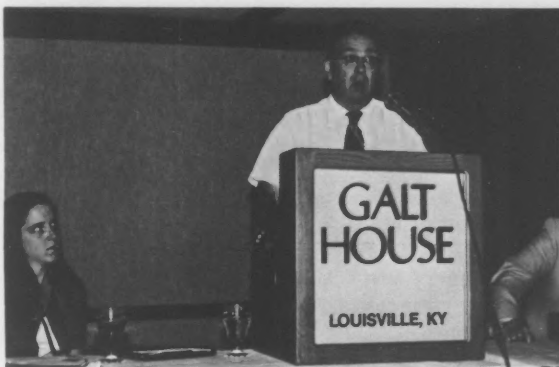
of a group to develop criteria to be presented at the November board meeting.

1985 Meeting Location Set: The Tennessee affiliate made a presentation and invitation for the 1985 meeting. They recommended the Opryland Hotel in Nashville with room rates at \$60 for two people. Holliday moved, Townsend seconded and it was passed unanimously to accept the invitation from the Tennessee affiliate for 1985.

Following a discussion about a name change, two possibilities were settled on: *International Association of Food Protection* and *International Association of Milk and Food Protection*.

Marshall explained that he would provide justification to Townsend for a letter to the affiliates to explain the reasons for a name change and ask for their vote on the matter.

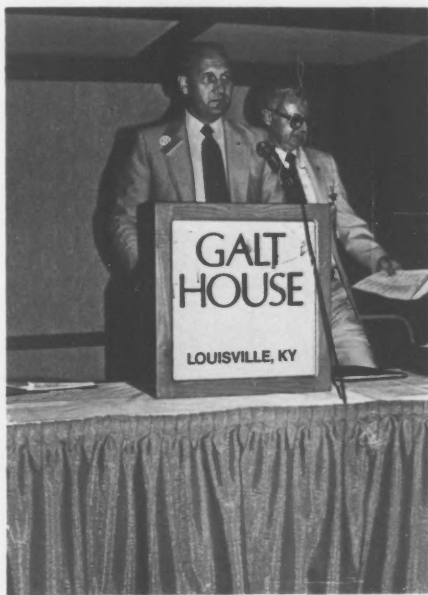
Ginn moved, Arledge seconded and it was passed unanimously to have the association office send bulk mail letters to all members explaining reasons for a name change and a questionnaire with two proposals to be returned before November 1.



Henry Atherton



Leon Townsend



Harold Bengsch



Paul Pace

Farm Methods Report

The committee is chaired by Dale Termunde. The report contained subcommittee reports on Antibiotics, Pesticides and Other Adulterants; Cleaning and Sanitizing of Farm Equipment; Education; Plastics; Precooling Raw Milk; Sampling of Milk in Transport Tanks; Water Treatment and Protection; Animal Waste Management; Milking System Installation; and Mastitis Prevention.

A survey was conducted of the state regulatory agencies concerning adulterants in milk and milk products and the results are included in the subcommittee report.

The report contains a list of bulletins available, which would be of great value to any fieldperson in the dairy field.

A subcommittee is drafting a new suggested producers' application to install:

A. Around the barn milking/transfer system

B. Parlor milking system

A brochure entitled "Somatic Cell Counts" is being worked on.

Dairy and Food Sanitation Management Committee

This committee is chaired by Harold Bengsch. Current subscriptions are over 2000. This is an increase of 403 from last years' count of 1597. Subscriptions are growing at the rate of one new subscription each day.

The committee is recommending:

1. The Executive Board investigate the cost of installing an in-out Wats line with an 800 number at Ames.
2. Reprints of published articles be made available to prospective buyers.
3. Galley proofs be sent to authors prior to publication.
4. Publishing the table of contents in the publication "Current Contents".
5. We urgently solicit articles and case studies from our membership.

Committee on Food Equipment Sanitary Standards

This committee is chaired by Karl K. Jones. The committee reports deals with two health and industry organizations with which the committee interacts: The National Sanitation Foundation (NSF) and The National Automatic Merchandising Association (NAMA). The committee recommends:

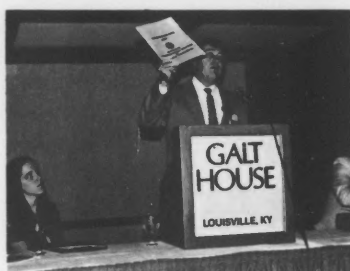
1. That IAMFES reaffirm its support of the NSF and the NAMA and continue to work with these two organizations in developing acceptable standards and educational materials for the food industry and public health.
2. That the IAMFES urge all sanitarians to obtain these organizations' manuals and educational materials to evaluate each piece of food equipment and vending machine in the field to determine compliance with the applicable sanitation guidelines and let this committee know of any listed manufacturer or fabricator failing to comply with these guidelines.
3. That the IAMFES urge all sanitarians and regulatory agencies to support the work of the committee.

Baking Industry Sanitation Standards Committee (BISSC)

This committee is chaired by Martyn A. Rouge. The IAMFES committee actively participated in the 67th meeting of BISSC on five task committees concerned with standards for horizontal and vertical mixers, flour handling equipment, equipment for handling and storing refined liquid and dry sweetening products, racks, pan trucks and dollies, baking pans and packaging equipment.

At present there are BISSC Standards covering forty-two (42) categories of baking equipment.

The 1983 BISSC meeting will be held in Chicago, Illinois, February 25 and 26, 1983.



Dale Termunde



Journal Management Committee



Karl Jones



Clair Gothard

IAMFES Affiliate Council

The Affiliate Council met Monday afternoon, August 23, 1982. Thirty eight people attended the meeting. Twenty of these were delegates representing their affiliates. Most of the Executive Board attended the meeting. Earl Wright, Executive Secretary told the delegates that the Affiliates lost 265 members last year. President Harry Haverland spoke to the delegates and encouraged them to communicate their ideas to the Executive Board as the Board wants to serve the Affiliates. Awards Chairman Bill Kempa encouraged the delegates to have their members take the time to send in deserving persons' names for the awards. This year the Citation Award and the Honorary Life were not given since there were no candidates.

Leon Townsend was elected Chairman and Dr. Clem Honer was elected Secretary.

Applied Laboratory Methods Committee

The Applied Laboratory Methods Committee met on August 23, 1982.

The Milk Sub-Committee agreed to continue the collaborative study to determine the effects of delayed and/or interrupted incubation on the standard plate count for raw milk samples.

The Water Sub-Committee agreed to study the problems associated with dairy farm water supplies. This committee plans to work with the Farm Methods Sub-Committee on water treatment.

No business was brought before the Food Sub-Committee.

Respectively submitted by:
Clair S. Gothard, Chairman

Office of Executive Secretary Report

This year several changes have taken place at the Executive Office. Jan Richards who was Editor of *Dairy and Food Sanitation* and Associate

Executive Secretary left our organization on January 1. Kathy Moore Hathaway was chosen to fill this position at that time. Our office Secretary and Bookkeeper also left us and was replaced by Suzanne Trcka.

Several changes have been made in our computer services this year. These were made to enable our office to become more efficient in the handling of our affiliate accounts. Several problems developed through the year during the initial part of the transfer, but it is running quite smoothly now. At present we are using the Iowa State University Computer Service. The possibility of putting a computer terminal in our office to help us communicate more fully with our affiliate associations is now being studied and considered. This would help us become more efficient without the large outlay of money that would be needed to install a complete computer system in our office.

A considerable amount of mailing from our office is now done through the United Parcel Service. This has helped us to keep our mailing costs down in some areas.

A table top display was purchased this year that is to be used as part of our exhibits. In addition, this display folds up into a convenient package that can be sent by UPS to any Affiliate Meeting for display. Please take special note of this unit that you will see on display near the registration desk. We hope that all Affiliates will feel free to use this at their annual meetings.

This year we attended the I.F.T. Convention in Las Vegas, Nevada with our new exhibit. The exhibit was well received and it is hoped that we will appreciate some memberships and advertising from this effort.

Our membership again this year held its own with a slight increase in memberships over last year. The Affiliate Membership this year decreased by about 200 members, but our increase in Direct Memberships more than made up for this loss. We have 8 new Sustaining Members this year.

Dale Termunde and his committee have been most effective in this area.

This year we have increased our circulation of *Dairy and Food Sanitation*. It was hoped that we would have a circulation of 3,000 at this time, however we are well over 2,000 and increasing each month. The *Journal of Food Protection* has held its own in circulation. Many members and subscribers are now taking both Journals.

The Executive Board held three meetings this year. In addition to the Annual Meeting, a program planning meeting was held in the Galt House. A delegation of the Board also met in Champagne, Illinois to review the possibility of using a professional management group for servicing our organization. Another delegation from the Executive Board visited our Central headquarters in Ames to familiarize themselves with our operations. This was all done to investigate the alternative for management upon my retirement next year.

This coming year I will be starting my last year of the ten year period that I will serve as Executive Secretary of the Association. I will be leaving the Association after the next Annual Meeting which will be held in St. Louis, Missouri. Along with all the members at the Executive Office I wish to take this opportunity to express our thanks and sincere appreciation for the fine cooperation we have received this year from our members, our affiliate organizations, our committees and from the industry organizations that so generously have supported IAMFES, Inc.

Respectfully submitted

Earl O. Wright
Executive Secretary and
Managing Editor

3-A Sanitary Standards Symbol Administrative Council Report

There were two meetings of the 3-A Symbol Council held during the past year. The first meeting was held in conjunction with the Food and Dairy Exposition at Atlanta, Georgia on November 18, 1981. The second meeting was held in Milwaukee, Wisconsin at the Red Carpet Inn on May 13 and 14, 1982.

The Council published the list of 3-A Symbol Holders in the September and March issues of *Dairy and Food Sanitation*. The number of companies holding the 3-A Symbol has increased to 206 this year. Continuous inquiries and requests for information indicate an increase of activity in the use of the 3-A Symbol.

Two new Standards were published and two Amendments were made in the existing standards this year. The two new standards are:

39-00 Standards for Pneumatic Conveyors for Dry Milk and Dry Milk Products

40-00 Standards for Bag Collectors for Dry Milk and Dry Milk Products
These two standards become effective on September 3, 1982.

The two amendments are:

26-03 Standards for Sifters for Dry Milk and Milk Products

607-03 Accepted Practices for Milk and Milk Products Spray Drying Systems

It might be well to point out that the Symbol Council does not issue a 3-A Symbol to any accepted practice standards.

There were several non-compliance reports issued this year. The non-compliance report made by Sanitarians and other persons inspecting equipment is a very valuable cog in the 3-A Standards program. This is a very valuable procedure that the 3-A Symbol Council has in finding errors in equipment in the field. Manufacturers are constantly making changes in their equipment. Sometimes they are negligent in reporting their changes and filing application for amendment forms to the 3-A Symbol Council.

The Symbol Council had a booth at the Food and Dairy Exposition in Atlanta, Georgia this year. The 3-A program was outlined there and materials were on display explaining the 3-A Standards Program. A pamphlet and also the complete 3-A Symbol Story explaining how it emerged and developed is available. Please feel free to order or take with you as much of our 3-A literature that you can use.

It is with deep regret that we lost Mr. Paul Girton who was one of our valuable and long time Council Members. Mr. Carl Nielsen, St. Cloud, Minnesota, has been appointed to the council to replace Paul Girton.

The Symbol Council wishes to thank all Sanitarians, fieldmen, dairy processors, equipment manufacturers and the 3-A Standards Committee for their fine cooperation and assistance in making this a successful year.

Respectively submitted,

Earl O. Wright
Secretary-Treasurer

3-A Symbol Council:

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Ed Napier's Milk Bottle Collection

RESOLUTION

**International Association of Milk,
Food and Environmental
Sanitarians, Inc.
Resolution
Organization of the Interstate
Shellfish Sanitation Conference**

WHEREAS, there exists a present and future need to establish a uniform national shellfish sanitation regulatory program throughout the United States; and

WHEREAS, producing and non-producing states require assurance that shellfish harvested and processed in areas beyond their jurisdictional boundaries have been harvested from safe areas and have been processed and handled in accordance with basic

sanitation practices and public health principles; and

WHEREAS, state shellfish control agencies have an interest in, and a responsibility for, protecting public health concerning the safe, sanitary quality of shellfish; and

WHEREAS, recognizing their responsibilities, the state shellfish sanitation control officials are acting, through a National Shellfish Organization Study Committee, to form an effective national conference, to be known as the "Interstate Shellfish Sanitation Conference" which will assist in controlling the sanitary quality of shellfish nationwide; and

WHEREAS, this proposed Interstate Shellfish Sanitation Conference will be patterned to a large extent on the demonstrated successful National

Conference on Interstate Milk Shippers and will accept and be responsive to input from state, federal, and industry sources; therefore

RESOLVED, that the International Association of Milk, Food and Environmental Sanitarians, Inc., supports the formation of an Interstate Shellfish Sanitation Conference that is equitable and consistent nationwide; and further

RESOLVED, that it supports the concept and objectives of this proposed Interstate Shellfish Sanitation Conference; and further

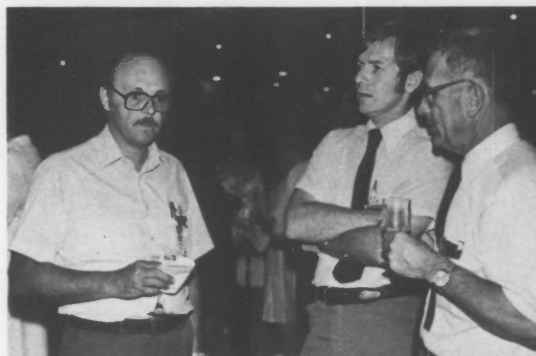
RESOLVED, that a copy of this resolution be transmitted to the Chairman, National Shellfish Organization Study Committee, and to the Commissioner, U.S. Food and Drug Administration.



Ladies gathering in Hospitality Room.



Ladies tour of Lillian Marshall's home.



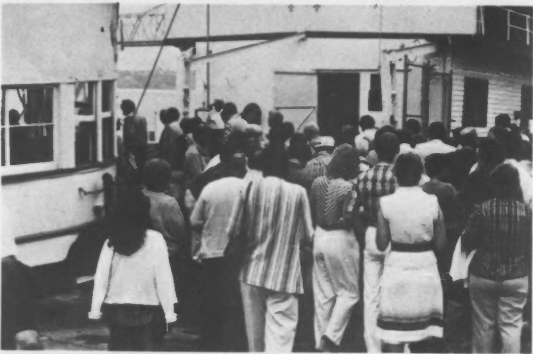
Wine and Cheese Reception.



Milk Break.

Entertainment. . .

Scenes from the Belle of Louisville Boat Cruise



Awards Presented...

RUPPERT RECEIVES SANITARIANS AWARD

Edwin L. Ruppert, Assistant Branch Head and Acting Supervisor, Milk Sanitation Program, Sanitation Section, Environmental Health Section, Division of Health Service, North Carolina Dept. of Human Resources was awarded the 1982 Sanitarian's Award. The award was presented at the 69th Annual Meeting of the Association, held August 22-26, 1982 in Louisville, KY.

Ruppert won the \$1000 award for outstanding contributions to the field of public health. He is a member of IAMFES, Inc.

Ruppert is responsible for implementation of a home study course, "Community Hygiene," for local public health sanitarians.

Most recently Ruppert was involved in developing Standardized Procedures for Sampling Single Service Pasteurized Milk Containers, and has responded to comments regarding the possible reorganization of the Milk Sanitation Program by the North Carolina Dept. of Agriculture and Drafted an Adoption by Reference Form for the 1978 Pasteurized Milk Ordinance.

EDUCATOR AWARD TO BODYFELT

Floyd W. Bodyfelt was recipient of the Educator Award. Bodyfelt was awarded \$1000 for outstanding academic contributions made to the field of dairy sanitation.

Bodyfelt is the Extension Dairy Processing Specialist at the Department of Food Science and Technology, Oregon State University, Corvallis.

As a member of IAMFES, he has served as Affiliate Council Representative for Oregon and has also served on the Laboratory Methods Committee.

Bodyfelt has presented numerous lectures, technical reviews, and professional presentations throughout the years.

Presently, Bodyfelt is a member of

the Oregon Dairy Industries, Oregon Department of Agriculture Advisory Committee, Oregon Sanitarians Registration Board and the Oregon FFA Dairy Foods Quality Contest.



Edwin Ruppert accepts Sanitarians Award from sponsors (l to r) Nan Wyley, H. B. Fuller, Monarch Chemical Division; Marnard David, Diversey Wyandotte; Charles McDuff, Klenszade.



Floyd W. Bodyfelt accepts the Educator Award from Bob Gray, sponsored by FIEI Milking Machine Manufacturers Council.

FERREIRA RECIPIENT OF HAROLD BARNUM AWARD

Howard Ferreira, Corporate Quality Plant Inspector for Dean Foods Company, Rockford, Illinois, was recipient of the \$500 Harold Barnum Award at the IAMFES 69th Annual Meeting. This was the first year for the Harold Barnum Award.

Ferreira authored one of the first articles on Psychrotrophic Bacteria in Grade A. Raw Milk.

He has also been an active member of the 3-A Standards Committee, Past President of the Associated Illinois Milk, Food and Environmental Sanitarians and member of IAMFES, Inc.

Ferreira demonstrated the cleanability of silo-type milk storage tanks which led to their acceptance by the Chicago Board of Health.

A Registered Sanitarian, Ferreira holds a license for Structural Pest Control. He is a graduate of the University of Illinois College of Agriculture, Dairy Manufacturing.



Harold Barnum Award presented to Howard Ferreira, Dean Foods, Rockford, IL by Phil Nermier, Nasco.

SDEHA PRESENTED WITH SHOGREN AWARD

The Shogren Award is presented to the Affiliate Association nominated for service to their members.

The Shogren Award was given to the South Dakota Environmental Health Association, represented by Harold Schultz, during the awards banquet at the 69th Annual Meeting in Louisville, KY.

This year the South Dakota Environmental Health Association in conjunction with the South Dakota Public Health Association, held a joint educational conference. The goals of each were to promote, protect, advocate and address public health related issues in South Dakota on a national as well as international level.



Shogren Award presented to Harold Schultz, representing the South Dakota Environmental Health Association by Sid Barnard.

1982 SHERMAN AWARD PRESENTED FOR FOOD PROTECTION ARTICLE

The 1982 Sherman Award was presented to Dr. Frank L. Bryan, Mary Harvey and Melvin Misup. C. Dee Clingman, Director of Quality Control, Red Lobster Inns of America, presented the award by the National Institute for the Foodservice Industry.

The Sherman Award is offered annually by NIFI, the foodservice industry's not-for-profit educational foundation, to provide recognition to articles that best reflect the principles of Norbert F. Sherman, late chief executive of North American Foodservice Companies, Inc. and former NIFI Treasurer.

Winners of the 1982 award were Bryan, Harvey and Misup for their article, "Hazard Analysis of Party-Pack Foods Prepared at a Catering Establishment," published in the Feb. 1981 issue of the *Journal of Food Protection*.



1982 Sherman Award presentation (l to r) Frank Bryan, recipient, Paul Martin, NIFI, Mary Harvey, recipient, C. Dee Clingman, Red Lobster Inns of America. Not pictured, Melvin Misup.

CERTIFICATE OF MERIT AWARD

The Certificate of Merit Award is presented each year to those members who are active within their state and international group.

This years winners include: Thomas B. Hart of Florida, Bruce Edward Langlois, Kentucky, and Leon Townsend, Kentucky.



Certificate of Merit Award, l to r, Bruce Edward Langlois, Sid Barnard, Leon Townsend. Not pictured, Thomas B. Hart.

CRUMBINE AWARD TO WINNEBAGO COUNTY, IL

The Winnebago County (Illinois) Department of Public Health was the winner of the 1982 Samuel J. Crumbine Consumer Protection Award. The Award, given annually by the Single Service Institute, goes to the local public health agency whose entry is judged by a jury of professionals to be the most effective and innovative program for food service sanitation.

The Department's submission, entitled, "Food Protection Program—An Integral Part of Public Health in Rockford and Winnebago County," was prepared and presented by the Department's Environmental Health Division, Food Protection Program under the direction of J. Maichle Bacon and Dennis Priewe.

The County Health Department employs about 120 people in all aspects of preventive health services. The Food Protection Staff of seven includes five Field Sanitarians who spend 80% of their time in the Program. This represents a food sanitarian ratio of one for 62,721 residents. They inspect 1,255 licensed food service operations.



Accepting the Crumbine Award from IAMFES President Robert Marshall (right) are (l to r) Dennis Priewe and J. Maichle Bacon.



St. Louis, MO, August 7-10, 1983.
SEE YOU THERE



Your hosts for 1983 in St. Louis, Mr. and Mrs. John Schilling.

AFFILIATE NEWSLETTER . . .

This page has been devoted to YOU, the IAMFES affiliates. Your input is needed on whether you feel this page should be a regular feature to serve as a communication source between the state and international office. Please respond.



The Kentucky Association of Milk, Food & Environmental Sanitarians, Inc. will hold its Annual Fieldmen & Sanitation Education Conference at the Executive Inn, Louisville, KY, February 14-16, 1982. Contact Dale Marcum, P.O. Box 139, Frankfort, KY 40601, for more information.

SANITARIAN OF THE YEAR

J. B. Drake was named Sanitarian of the Year by the Wisconsin Association of Milk and Food Sanitarians at their 3rd Annual Joint Educational Conference recently held at the Sheraton Inn, Madison. J. B. is currently Territory Manager for the H. B. Fuller Company, Monarch Chemical Division.

The annual scholarship was awarded to Miss Gail Mezera, a student in the School of Allied Health Professions at the University of Wisconsin, Eau Claire.

The Wisconsin Associations of Milk and Food Sanitarians participated in the Third Annual Joint Educational Conference September 1st and 2nd at the Sheraton Inn, Madison, WI. Other organizations involved were the Wisconsin Environmental Health Association, the Wisconsin Association of Dairy Plant Field Representatives, and the Wisconsin Dairy Technology Society.

The theme for this year's Joint Educational Conference was "Focus on our Future." The program highlight was the general session on Thursday morning, September 2nd, where the topic was Ground Water. Seven speakers gave presentations on the definition and geology of ground water and contamination of ground water by pesticides, nitrates, solid wastes, toxic wastes and sludge. One of the Thursday afternoon sessions brought people up to date on radioactivity in ground water.

The conference opened with a keynote address by Henry Roberts of the Minneapolis District of the Food and Drug Administration. He emphasized that education of the news media and politicians was necessary for regulatory agencies to carry out their mission effectively. Mr. Roberts' talk was followed by a discussion of the challenges of declining resources for regulatory programs by La Verne Aushman, Secretary, W.D.A.T.C.P. and Kenneth Rentmeester, Administrator, W.D.H.S.S.

Wednesday afternoon there were two sessions with interesting topics. One dealt with Sodium in foods. Three speakers gave an overview, labeling requirements, and nutritional implications of sodium in foods. The other topic Wednesday afternoon was Imitation Dairy Products. Three speakers gave information on consumer preference, labeling and marketing of imitation dairy products.

Thursday afternoon there were presentations by the editor and assistant editor of the Journal of Food Protection. Dr. Elmer Marth talked about psychrotrophic bacteria in raw milk. He covered species involved, off flavors that can be produced and tests that are used to determine psychrotrophs in milk. Dr. Michael Doyle brought people up to date on *Campylobacter* and discussed a new method he has developed for isolating *Campylobacter* from food products. There were also discussions of radioactivity in ground water and Reverse Osmosis, ultra-filtration, and ultra high temperature pasteurization in the dairy industry.

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Abstracts of papers in the November Journal of Food Protection
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Comparison of Fresh Feces with Lyophilized and Frozen Cultures of Feces as Inocula to Prevent *Salmonella* Infection in Chicks. H. Pivnick, B. Blanchfield, C. Ribgy and E. Ormsby, Bureau of Microbial Hazards, Food Directorate, Health Protection Branch, Department of National Health and Welfare, Ottawa, Ontario, Canada, K1A 0L2 and Agriculture Canada, Animal Disease Research Institute, Nepean P.O. Box 11300, Station H, Nepean, Ontario, Canada, K2H 8P9 and Division of Food Statistics and Operational Planning, Food Directorate, Health Protection Branch, Department of National Health and Welfare, Ottawa, Ontario, Canada, K1A 0L2

J. Food Prot. 45:1188-1194

Mixed treatment cultures obtained by inoculating anaerobic medium with chicken feces were administered to 0 to 1 d-old chicks in their drinking water. Three types of treatment cultures (all fourth passage) were compared: FFC (fresh fecal cultures started with inocula of fresh feces followed by four daily, uninterrupted serial subcultures), LFC (cultures started with inocula obtained by lyophilizing third-passage cultures), and FrFC (cultures started with inocula obtained by freezing third-passage cultures). Protection of treated chicks against infection by *Salmonella typhimurium* was assessed by challenging the chicks via their drinking water 2 d after treatment and culturing their ceca 8 to 9 d later, or at weekly intervals for 7 weeks. FFC protected chicks against infection more consistently than LFC or FrFC. However, some LFC and FrFC were as protective as FFC ($\alpha = .05$). Treatment with cultures did not increase mortality or decrease weight gain.

Heat and Light Stability of Eight Sanitizers. P. Gélinas and J. Goulet, Département de sciences et technologie des aliments and Centre de recherche en nutrition, Université Laval, Québec, Québec, Canada G1K 7P4

J. Food Prot. 45:1195-1196

The light stability of eight sanitizers was evaluated at an extreme storage temperature of 40°C. After 2 and 6 d of storage, all products but sodium hypochlorite and iodophor retained their activity.

Microbiological and Chemical Changes During Storage of Swordfish (*Xiphias gladius*) Steaks in Retail Packages Containing CO₂-Enriched Atmospheres. M. Lannelongue, G. Finne, M. O. Hanna, R. Nickelson II, and C. Vanderzant, Seafood Technology Section, Department of Animal Science, Texas Agricultural Experiment Station, Texas A & M University, College Station, Texas 77843

J. Food Prot. 45:1197-1203

Swordfish (*Xiphias gladius*) steaks were held in retail packages containing 100% CO₂ and in mixtures of 40% and 70% CO₂ in combination with either oxygen or nitrogen. Controls were stored in air. Samples were removed for chemical and microbiological analyses after 2-22 d of storage at 3.5°C. The inhibitory effect of CO₂ on psychrotrophic, aerobic gram-negative spoilage bacteria was proportional to the CO₂ tension in the packages. Maximum inhibition of growth was achieved with 100% CO₂. Except for steaks stored in 40% CO₂:60% O₂ heterofermentative *Lactobacillus* spp. became a dominant part of the microflora of steaks stored in CO₂-enriched atmospheres. *Pseudomonas* spp. continued to be a major part of the microflora of steaks stored in 40% CO₂:60% O₂. During the first 2 d of storage, there was a decrease in the surface pH of the swordfish steaks proportional to the CO₂ tension in the packages. Swordfish steaks stored in CO₂-enriched atmospheres had lower total volatile nitrogen (TVN), trimethylamine (TMA) and total volatile acid (TVA) values than steaks stored in air. Oxidative rancidity was not a flavor problem of fish in any of the atmospheres after 20 d of refrigerated storage.

Mites and Other Filth in Dried Shrimp Imported into the United States from the Orient. Alan R. Olsen, Food and Drug Administration, Los Angeles, California 90015

J. Food Prot. 45:1204-1207

Fifty samples of dried shrimp imported into the United States from the Orient were examined for filth contamination. Twenty-one samples (42%) contained significant filth, including insect fragments, whole insects, mites, rodent hairs and feather fragments. Frequency of occurrence was tabulated for each type of filth. Mite contaminants included *Lardoglyphus konoi* (Sasa and Asanuma) (Acarina:Acaridae) and house dust mites (Pyroglyphidae).

Low-Temperature Activity of Lactic Streptococci Isolated from Cultured Buttermilk. Steven L. Hogarty and Joseph F. Frank, Department of Animal and Dairy Science, University of Georgia, Athens, Georgia 30602

J. Food Prot. 45:1208-1211

Psychrotrophic and mesophilic lactic streptococci were isolated from commercial cultured buttermilk to determine their potential effect on the quality of this product. These isolates consisted primarily of *Streptococcus lactis* subsp. *diacetylactis*, with *S. lactis*, *Streptococcus cremoris*, and *Leuconostoc* spp. also being present. Psychrotrophic isolates of *S. lactis* subsp. *diacetylactis* were compared to mesophilic isolates in regard to their ability to grow and reduce diacetyl in acidified milk (pH 4.7) incubated at 7°C. There was no significant difference detected in the ability of the two groups to reduce diacetyl ($P < .05$). The mesophilic isolates grew more rapidly in acidified refrigerated milk than did the psychrotrophs, indicating that the psychrotrophic isolates were

more acid sensitive. The psychrotrophic isolates exhibited generation times of 9 to 11 h when grown in skim milk (pH 6.7) at 7°C. Both psychrotrophic and mesophilic strains of *S. lactis* subsp. *diacetylactis* could rapidly reduce diacetyl in refrigerated acidified milk. The results of this study suggest that procedures for selection of starter cultures for buttermilk manufacture should be improved.

Campylobacter jejuni in Cattle and Raw Milk in The Netherlands, J. Oosterom, G. B. Engels, R. Peters and R. Pot, Laboratory for Zoonoses and Food Microbiology, National Institute of Public Health, P.O. Box 1, 3720 BA Bilthoven, The Netherlands
J. Food Prot. 45:1212-1213

A survey was done on the occurrence of *Campylobacter jejuni* in slaughtered cattle and raw milk from dairy farms in The Netherlands. In the first part of the survey, in which direct plating techniques were used, no *C. jejuni* was detected in any of 200 samples of caecal contents of cattle or in 200 samples of raw milk. A second series of investigations was done using a new enrichment procedure. This time *C. jejuni* was isolated from 11 of 200 caecal contents, but from none of 200 samples of milk. Further experiments showed that *Campylobacter* can survive in milk at 4°C for weeks, whether the milk was shaken with air (as occurs during the milking process) or not. Our investigations indicate that *C. jejuni* was not excreted with the milk. It can be concluded that cattle in The Netherlands do not play an important role in the epidemiology of *C. jejuni*.

Comparison of Postmortem Handling Methods for Effects on Quality Characteristics of Mature Beef, H. R. Cross and B. W. Berry, Meat Science Research Laboratory, ARS, U.S. Department of Agriculture, Beltsville, Maryland 20705
J. Food Prot. 45:1214-1217

The longissimus, semitendinosus and semimembranosus muscles from 60 U.S. Utility beef carcasses were used to investigate the effects of electrical stimulation (ES), different postmortem boning times, blade tenderization coupled with enzyme dip, and storage conditions on the quality, appearance, cooking and sensory properties of cooked beef muscle. Muscles were removed from stimulated and nonstimulated sides at 1, 3 or 24-h postmortem, wrapped in PVC film and either immediately frozen at -40°C or stored at 2 to 3°C for 24 h and then frozen at -40°C. Before freezing, part of the muscles was allocated to blade tenderization and/or enzyme dip treatments while the remainder served as controls. Electrical stimulation increased tenderness in muscles excised at 1 h postmortem; however, as boning time increased, the effects of ES on tenderness decreased. It was concluded that electrical stimulation increased tenderness sufficiently to allow boning at 1 or 3-h postmortem. Blade tenderization and/or enzyme dip treatments did not significantly improve tenderness of any of the muscles over the effects of ES. With the exception of the semitendinosus, muscles chilled 24 h before freezing were significantly ($P < .05$) more tender than those frozen immediately.

Occurrence and Survival of *Campylobacter jejuni* in Milk and Turkey, C. Jane Wyatt and E. M. Timm, Department of Food Science and Technology, Oregon State University, Corvallis, Oregon 97331

J. Food Prot. 45:1218-1220

An enrichment procedure was used to determine the presence of *Campylobacter jejuni* in milk and ground turkey. This procedure consisted of subculturing a sample in antibiotic-supplemented brucella broth incubated at 37°C for 24 h, transferred to fresh broth, incubated microaerophilically at 42°C for 8 h and plated on agar medium selective for *C. jejuni* for detection. *C. jejuni* was suspected in 9 of 50 samples of raw milk, but was not confirmed. The organism was not recovered from rectal swabs of cows. Storage of whole milk and ground turkey inoculated with *C. jejuni* at 4, 37 and 42°C resulted in decreases in *C. jejuni* counts in milk at 4 and 42°C; and increases in counts in ground turkey at 37 and 42°C. No survivors were detected when suspensions of the organism were exposed to 10 ppm chlorine for 30 s or three common commercial sanitizers used according to manufacturers' specifications.

Evaluation of a Rapid Impedimetric Method for Determining the Keeping Quality of Milk, S. B. Martins, S. Hodapp, S. W. Dufour and S. J. Kraeger, Bactomatic, Inc., P.O. Box 3103, Princeton, New Jersey 08540

J. Food Prot. 45:1221-1226

Shelf-life of 151 pasteurized milk samples was recorded and correlation coefficients calculated using various microbiological factors: standard plate count (SPC), psychrotrophic plate count (PPC), coliform count (CC), and the impedance response detection time (DT) with incubation at both 21 and 32°C. These data were obtained for milk samples on the day of pasteurization as well as 4 and 8 d thereafter. Various treatments (media, dilution factors, temperature and sample volume) were compared. Of the SPC, PPC, CC and DT taken on the day of pasteurization, only the DT achieved a significant correlation with shelf-life. A correlation coefficient of 0.55 was obtained for one treatment applied to 61 samples and correlation coefficients of 0.28 to 0.32 were obtained for several other treatments applied to the entire 151 samples. Values as large as these could occur by chance in uncorrelated data with $p < 0.0005$. Thus, of the total 61 samples, 80% were correctly classified by the impedance detection time test. It is concluded that for prediction of shelf-life on the day of pasteurization, the impedance method is superior to the SPC and the PPC. In addition, the impedance method is more rapid, i.e., 14 h vs. 2 d for the SPC and 10 d for the PPC.

Effect of Feeding Regimen and Vacuum-Packaged Storage on Sensory and Physical Properties of Beef Steaks, S. C. Seideman, J. D. Crouse and H. R. Cross, Roman L. Hruska U.S. Meat Animal Research Center, U.S. Department of Agriculture, P.O. Box 166, Clay Center, Nebraska 68933

J. Food Prot. 45:1227-1231

The longissimus, semitendinosus and semimembranosus muscles from 12 grain-fed and 12 forage-fed cattle were vacuum packaged, stored for either 7 or 21 d and retail packaged and displayed. Primal and retail cut appearance traits and sensory attributes were evaluated. Longissimus steaks had a more yellow fat color after 5 d of display ($P < 0.05$) and semitendinosus had a more intense flavor ($P < 0.05$) when taken from forage-fed cattle. Generally, there were only a few minor differences in sensory properties due to feeding regimen. Primal and retail cut appearance traits (primarily muscle color and percentage surface discoloration) of all three muscles were significantly affected by the length of storage; however, storage period affected sensory properties on only the longissimus and semitendinosus muscles.

Anionic Detergent Contamination Detected in Soapy-Flavored Butters, A. H. Woo and R. C. Lindsay, Department of Food Science, University of Wisconsin-Madison, Madison, Wisconsin 53706

J. Food Prot. 45:1232-1235

Three butter samples which had been officially USDA downgraded as soapy-rancid in flavor did not contain elevated levels of free fatty acids. Analysis of the samples revealed that they contained 7, 13 and 22 ppm of anionic detergents, respectively. Addition of commercial detergent preparations at comparable concentrations to fresh, high-quality butter yielded flavors that were similar in quality to contaminated butter samples, but, because of non-sulfonate carriers or diluents, these gave less pronounced soapy flavors than those found in the commercial counterparts. However, addition of pure alkylbenzene sulfonate to control butter simulated the intensity and type of soapy, detergent and drying flavors observed in the commercial butters.

Pyruvate in Producer and Commingled Manufacturing Grade Milk, R. T. Marshall, B. L. O'Brien, Y. H. Lee and W. A. Moats, Department of Food Science and Nutrition, University of Missouri-Columbia, Columbia, Missouri 65211 and U.S. Department of Agriculture, Science and Education Administration, Agriculture Research, Beltsville, Maryland 20705

J. Food Prot. 45:1236-1241

The automated test for pyruvate concentration, [P], was evaluated as a substitute for the direct microscopic count (DMC) in determining quality of manufacturing grade milk. Samples of manufacturing grade milk from producers and tank trucks as well as skim milk were collected at a large milk drying plant. Each sample was tested immediately for standard plate count (SPC), psychrotrophic plate count (PPC) and DMC. Portions of milk were heated to 85°C for 10 min to stabilize [P] before being returned to the laboratory for analysis of initial pyruvate concentration, [IP]. Unheated samples stored at 4°C were analyzed for [P] and DMC daily for up to 120 h. [IP] was a good indicator of PPC

in milk from individual producers ($r = 0.81$). However, [IP] was not highly correlated ($r = 0.26$) with PPC in skim milk samples which were characteristically high in SPC and homogeneous in PPC. With skim milk, [IP] was more highly and significantly correlated with initial DMC ($r = 0.61$) than with initial SPC ($r = 0.31$) or initial PPC ($r = 0.26$). [IP] was a good indicator of [P] in stored fluid samples until counts exceeded about 10^7 /ml. Initial DMC and initial PPC were about equally correlated with [P] determined at 24-h intervals, and the initial DMC was a reasonably good indicator of DMC determined at 24-h intervals. Using 6.5 mg of pyruvate/L to represent bacterial counts of 3×10^6 /ml by the three methods tested, the pyruvate test correctly classified 91% of 57 samples of producer milk based on PPC, 88% based on SPC and 82% based on DMC. Most of the error was of the false-negative type in which samples with high counts had less than 6.5 mg of pyruvate/L. This was probably because some bacteria catabolize pyruvate once their numbers exceed 10^7 /ml.

Proteolytic and Lipolytic Activity of Molds Isolated from Aged Beef, A. W. Kotula, S. G. Campano and D. M. Kinsman, Meat Science Research Laboratory, Beltsville Agricultural Research Center, United States Department of Agriculture, Beltsville, Maryland 20705 and Department of Animal Industries, University of Connecticut, Storrs, Connecticut 06268

J. Food Prot. 45:1242-1244

This study evaluated the proteolytic and lipolytic activity of several strains of *Thamnidium elegans*, *Mucor mucedo* and *Chaetostylum fresenii* on selected test proteins and lipids. At 18°C, the zone of hydrolysis to colony size ratio on skim milk agar, representing proteolytic activity after 4 d, was 0.92, 0.80 and 0.67 for *M. mucedo*, *C. fresenii* and *T. elegans*, respectively. A similar trend was noted after 4 d of incubation at 24°C. There was positive lipolytic activity on Tween 80 at 18 and 24°C for the same three molds. The proteolytic and lipolytic activity decreased with decreasing temperatures so that at 4°C, the temperature of most probable use if applied to meat, the effect was negligible unless long incubation times were used. The absence of proteolytic activity of the molds at 4°C and the impracticality of aging beef at 18 or 24°C suggest that treatment of meat with molds to enhance tenderness may not be feasible.

pH of Oregon-Grown Figs and Their Acidification for Home-Canning, Margy Woodburn, Department of Foods and Nutrition, Oregon State University, Corvallis, Oregon 97331

J. Food Prot. 45:1245-1247

The pH of locally-grown Oregon figs in three crops was determined before and after cooking, and the proportion of lemon juice which must be added to lower the pH to 4.6 or below for safe canning by the boiling water bath method was determined. The pH of figs averaged 5.51 but was higher as figs were riper. The addition of 15 ml of lemon juice per pint of figs canned in syrup was sufficient to lower the pH of the processed fruit to 4.6 or below.

In Vitro Measurement of Effects of Processing on Protein Nutritional Quality, Harold E. Swaisgood and George L. Catignani, Department of Food Science, North Carolina State University, Raleigh, North Carolina 27650

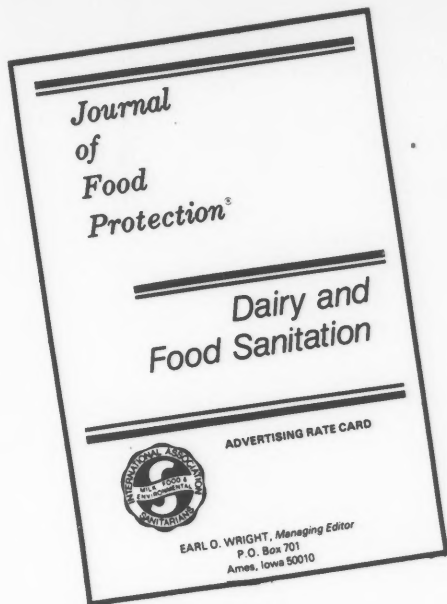
J. Food Prot. 45:1248-1256

Effects of processing on protein structure and its nutritional consequences, and progress towards development of more rapid in vitro assays of nutritional quality are reviewed. Heat and/or alkali processing of proteins initiates Maillard and carbonylamine reactions, causes β -elimination of cystinyl and substituted seryl and threonyl residues, and causes racemization of certain residues. Depending on the extent of these reactions, as determined by the severity of processing conditions, resulting changes may adversely affect bioavailability. Chemical methods for assaying quality have been developed such as the "Chemical Score," which is based on amino acid analysis of acid hydrolysates, and methods for determining available lysine by reaction with FDNB. Recently a more rapid fluorometric method for measuring available lysine based on reaction with *o*-phthalaldehyde and mercaptoethanol was developed. Progress is also being made toward improvement of amino acid scores by replacing acid hydrolysis with total enzymic hydrolysis, which should be sensitive to chemical modifications of residues that are eliminated by acid hydrolysis. Reactors containing combinations of immobilized proteinases and peptidases are being characterized for this purpose. Some improvement of amino acid scores is also afforded by adjustments for protein digestibility. Studies of model digestive systems composed of immobilized gastric, pancreatic and intestinal mucosal proteinases and peptidases indicate that such systems may provide parameters reflecting bioavailability.

Methods to Evaluate Cleaners and Sanitizers, Dale L. Scheusner, S. C. Johnson & Son, Inc., 1525 Howe Street, Racine, Wisconsin 53403

J. Food Prot. 45:1257-1260

Methods to evaluate germicides can be grouped into three categories: standard laboratory tests, in-use tests and simulated-use tests. Standard laboratory methods, such as the Available Chlorine Germicidal Equivalent test, are specifically defined for reproducibility in any laboratory by any operator, but the test results often lack relevance to actual product-use conditions. In-use test methods are relevant to product-use; however, in-use test procedures do not permit proper controls to be included in the organism recovery methods. Contact plates give an estimate of organism numbers which is only 25% of the theoretical number of organisms present. Organism recovery using a swab, cellulose sponge or tube sampler give estimates of organisms ranging from 91 to 111% of theoretical. The tube sampler is a 1-in. length of flexible tubing having a 1-in. interior diameter and a smooth end, which can make a water-tight seal on a flat surface. Simulated use testing yields data which are relevant to actual product-use. A cafeteria tray is soiled, inoculated and cleaned in a manner to simulate actual product-use. This test method permits the necessary controls to be used. Tray-test reproducibility is as good as that of the other recovery methods tested and organism recovery is quantitative. The tray test provides a means for determining biological cleaning where the effect of both cleaning and germicidal activity are measured together.



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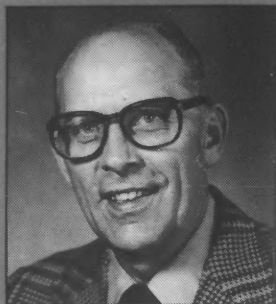
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SOMEONE YOU SHOULD KNOW IN THE DAIRY INDUSTRY



Dr. Clarence C. Olson, Extension Dairyman

Professor Olson is a member of the Department of Dairy Science, University of Wisconsin, Madison. Born and raised on a Wisconsin dairy farm, and a graduate of the University of Minnesota, he began his extension career in North Dakota, taking responsibility in extension programs with both dairy producers and industry. Under his direction, the state saw a rebirth and expansion of Dairy Herd Improvement Association testing programs, the development of membership organizations to provide AI services, and a nearly-complete changeover from farm separated cream to bulk sale of high quality whole milk. He returned to his native state in 1961 to direct training programs for Dairy Herd Improvement Supervisors and Lab Technicians and, since 1973, has led membership promotion and educational programs aimed at helping dairymen and the industry make more profitable use of the Dairy Herd Improvement program.

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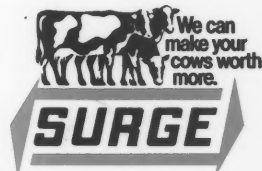
"It is easy for a program that has been around as long as DHIA to become stereotyped—not true, it is changing all the time. As new research suggests, we work with our state DHI committee to make changes in the DHIA program. These dairymen help evaluate these new options to determine how well they fit the needs of members.

"Through this evolutionary process, DHIA records are now more than just measures of cow performance. The current emphasis is on management guidelines for feeding, breeding, selection and for complete records of identification and ancestry.

"The newest option available to DHIA members is somatic cell testing to evaluate udder health. This effort at improving milk quality along with quantity is very appropriate. Not only is it a valuable tool for the herd owner and the veterinarian but it also monitors the cows environment in order to help prevent mastitis.

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