

AUTOMATIC MERCHANDISING — 75 YEARS OF PROGRESS¹

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The Vending Industry this year is celebrating its 75th anniversary. This is also the 50th anniversary of IAMFS and the 25th anniversary of the vending industry's National Automatic Merchandising Association (NAMA). It might, therefore, be fitting to offer a reciprocal "Happy Anniversary" with the fond hope that all three groups will be going strong and continuing to serve the public effectively at the next quarter century milestone.

Patent Office records show that the first coin operated vending machine was patented in the United States in 1886. It was designed to sell postal cards and cigarettes. Perhaps this rather unusual combination was occasioned by the fact that the gay young blade of the 80's sometimes ventured his first smoke away from home. The machine would allow him to buy his favorite brand and write to Ma at the same time. Whatever the reason, this original vending machine never got into production, and it took another 30 years for the first cigarette vender to appear.

The history of vending's growth and its recent diversification in the food and beverage field have been discussed by the writer in a previous Journal article (*J. Milk and Food Technol.*, 21:7, 1958). In deference to those who are familiar with most of the history of vending, this paper reports primarily on those "Years of Progress" which are most meaningful to public health people—the Post War II years and particularly the past 4 which have seen the Vending Industry launch a full time public health program of its own.

The first vending machine actually operated on location was our childhood friend, the ball gum vender—on New York City's subway platforms. Early records show that gum, candy and nuts were the industry's economic mainstay for the first 20 years. The first cigarette machines, as previously noted, were placed on location in 1920. It is interesting to note that 5 years later, all vended products sold in the United States totaled \$30,000,000. Last year alone, the cigarette sales in this country were just under \$1,000,000,000, or 1 in every 7 packs.

The development of small mechanical refrigeration units in 1930 made possible the first bottled soft

drink machines. This was a major step forward in the merchandising of soft drinks which in 1960 came to over 7,000,000,000 cups and bottles.

Fifteen years ago the first hot beverage and cup soft drink machines appeared on the market. These two machines mark the entry of the vending industry into the type of equipment and products which created public health interest. One city immediately developed a proposed regulation for the design and construction of cup soft drink venders. This regulation was the "handwriting on the wall" for every machine manufacturer to see. The vending industry immediately began a long series of meetings, research projects and introspection which culminated in the adoption by the U. S. Public Health Service of its 1957 Ordinance and Code entitled "The Vending of Foods and Beverages". NAMA is proud to have participated in its development and to endorse it on behalf of its machine manufacturer, operator and product supplier members.

REGULATION AND STANDARDIZATION

Industry reaction to the first proposed cup drink machine regulation in 1947 was, "We Can't Do It!". There was more than a little truth to the opinion at that time. Machine manufacturer reaction to the same proposals in the Public Health Service Code 10 years later was almost unanimously, "We Can Do It". It is pleasing to note that the manufacturers were not just paying lip service to the new Code. After 4 years of evaluation experience, we can report that "They Are Doing It".

What caused this apparent about-face in a matter of 10 years? Admittedly, when engineers from any food equipment industry get acquainted with public health people and their goals, it contributes greatly to a change in attitude and to a better understanding of the problems of both groups. There was a second factor involved in improving the vending industry's ability to meet elevated standards. This has been the vastly improved technology in plastic tubing, plastic molding and the availability of miniature electrical relays and other components. These advancements now make it possible to build into a cabinet smaller than the average home refrigerator all of the items we now find in a typical batch-type coffee vender. Here are some of the most important components:

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1. Complete refrigeration system.
2. Refrigerated compartment for perishable ingredients.
3. 6-quart-11 gallon water heater plus controls.
4. Automatic coffee brewer and coffee pot.
5. Automatic chocolate whipper and blending compartment (optional).
6. Ground coffee hopper and metering device.
7. Dry ingredient canisters and dispensing motors.
8. 18 inches-15 feet of water, black coffee and liquid waste tubing.
9. Automatic controls for water temperature and refrigeration; automatic controls for brewing, cycling and dumping.
10. Sold out controls for cups, ingredients and the waste container.
11. A spray head rinsing device for sanitation.
12. Cup well, cup dispenser and a turret for up to 1,000 cups.
13. Liquid waste containers for empty tapes, cans or loose coffee grounds.

All of these items cannot just be crammed into the machine cabinet. They must be readily accessible, if necessary for cleaning and servicing, and in many cases, removable instantly for commissary exchange or on-location cleaning.

During the past 4 years, we have found that practically all design and construction requirements of the Vending Code can be met with today's available materials and engineering know-how. Experience has shown that there is need to reconsider a few minor details in the Code, but this was anticipated at the time of its writing. An example of such a change is the 16-mesh screening requirement for condenser compartments which are already divorced from the product and container compartments of the machine. A slightly larger screen would permit better air circulation and effective refrigeration without creating any new health problems.

In another area there have been new types of equipment developed which were not envisaged when the Code was planned. For example, there are small coffee machines (usually operated in offices) which utilize pre-brewed coffee brought to the machine in insulated containers. Other similar units have restaurant-type coffee urns which brew at the machine. The Code requires that "Water used as a product ingredient must be piped into the vending machine under pressure". It can be met by the machines which are supplied with pre-brewed coffee, but it can not be met if the same containers contain water and ground coffee when placed in or on the machine. Since there is no public health distinction involved, there should be little objection to a revision of this wording. (It should be pointed out that industry has not yet taken these suggestions to the Public Health Service. They are mentioned here, not in criticism, but to make this reporting complete.)

STANDARDIZATION

So that manufacturers can have a spelled-out set

of guidelines in planning new equipment at the drawing board stage, our Automatic Merchandising Health-Industry Council, (AMHIC) on which IAMFS has been represented since December, 1956, has been working for 2 years to develop a Machine Evaluation Manual. The Manual is now ready for distribution to various committee members in its 6th Draft and we feel it will be finalized at our October AMHIC meeting.² It follows faithfully the requirements of the Vending Code, but explains the basic requirements in greater detail for the design engineer and production staff.



Figure 1. An attractive automatic restaurant is created by placing harmonizing pieces of equipment side-by-side, as in this installation. The coin-operated venders operate around the clock, providing equal service for workers on all shifts.

MACHINE EVALUATION

As many readers know, NAMA set up the mechanics of a machine evaluation program at Michigan State University and Indiana University Departments of Public Health before the Code was published so that all machine manufacturers could have access to evaluations based on the design and construction requirements of the Code.

Since many manufacturers had reviewed various drafts of the Code beginning in 1954, some machines in production from 1954-57 were built to anticipate the new design and construction requirements. In late 1957 the first machine was issued a Letter of Compliance by one of the two retained NAMA Evaluating Agencies. Since that time over 200 models from 35 manufacturers have been evaluated, and

²Since this paper was prepared the proposed Manual was approved by AMHIC at their meeting in October, 1961. The Manual soon will be available for distribution to official agencies, vending industry, vending machine evaluating agencies, and other interested organizations and persons.



Figure 2. Vending is going to college with gleaming, attractive dispensers available around-the-clock for bull sessions as well as between study periods. Today's students get fresh beverages, fruits and dairy products through such units, both in the dormitory and in student union snack rooms. This one is at the University of Kansas, Lawrence.

machines from 5 more manufacturers have recently been submitted for the first time. Each certified model is listed in the annual published "Listing of Letters of Compliance" made available by NAMA to all health officials on request. All of the policies, checklists and other administrative controls used in the program are, of course, also available.

The National Sanitation Foundation during the past 4 years also has carried out evaluations under its Criteria C-1, and annually lists machines meeting its standards. The essential uniformity of the standards used by the NSF and NAMA laboratories is illustrated by the listing of the same models by both agencies on several occasions. This uniformity of the end results of testing under both programs is reassuring to the field sanitarian and adds further to the impressive list of manufacturers who subscribe in fact as well as theory to the upgrading program.

The acceptance of Regulation and Evaluation by manufacturers proves the point that uniform guidelines are welcomed when the manufacturer has a reasonable hope that the program will promote national acceptance of his equipment. Conversely, when everyone has different rules, no one cooperates and no one gains.

LEGISLATION

No industry likes to be regulated for the pure joy of regulation. There were undoubtedly many people in our industry who did not approve of NAMA pressing for a national regulation back in 1953. The advantages resulting from having a Code in the past 4 years have justified the foresight of our industry leaders in this important decision.

It was expected that the states would adopt uniform vending regulations as necessitated by the size and scope of vending in each area. This has generally held true. Seven states have adopted regulations based on the PHS Ordinance and Code. These are Nevada, Montana, Indiana, Ohio, North Carolina, Connecticut and California. Several more are now working on drafts.

Since vending is increasingly a multi-jurisdictional operation, it is felt that initial regulation is best done at the state level. However, the industry has worked cooperatively with local agencies too in developing new programs, and it is gratifying to see the uniformity with which the basic Code requirements are accepted. Among the major jurisdictions with uniform local programs are Los Angeles, Salt Lake City, Denver, Phoenix and Maricopa County, Arizona.

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Clayton, Missouri, Indianapolis and Marion County, Ft. Wayne, Detroit, Flint, Grand Rapids, Kalamazoo County, Waukegan, Philadelphia and Jacksonville, Florida.

To this list should be added those states already named whose new laws or regulations are automatically enforceable by local agencies. Of major importance too, in attaining national uniformity, is the promulgation of regulations by the 3 military services patterned after the PHS Code. This achievement allows the operating company with both civil and military vending locations to develop one sanitation program acceptable to both.

The adoption of reasonable state regulations and local ordinances has been carried out in practically all of these areas in cooperation with members of the local vending industry. The programs under way tend to support the opinion that machine inspection in the field, after the initial go-around, can be done effectively by random sampling inspections on a route basis, focusing primarily on the types of equipment which have the most sanitation significance, namely, cup beverage and perishable product machines.

The greatest fear of our industry, legislatively, is that of revenue taxation or public health licensing on a "per machine" basis. It is administratively burdensome and expensive to both parties and is inequitable in that it can not assess an accurate cost of inspection. When we note that the 47 legislatures meeting this year considered 1354 bills which affected vending—mostly in an economic way—the fear of adverse legislation is not without foundation.

The Vending Industry health legislation experiences to date have been largely favorable. Local vending operators have exhibited an honest desire to pay their fair share—or a bit more—of the cost of inspection where inspection programs are supported on this basis. The health agencies which are manned by professional personnel have, across-the-board, worked out good regulations and fair fee schedules. In the relatively few areas where the health agency is primarily a fee-collecting department, we find some "sanitation" ordinances where public health is given one sentence and the licensing requirements preempt the balance of the document. An industry sanitarian has no conflict of interest in contesting these alleged health rules, particularly when such words as "clean" and "sanitary" are often forgotten by the city attorney who develops this type of legislation.

EDUCATION AND TRAINING

The automatic food or beverage machine has many advantages in that many of the perennial "human element" problems of manual food service are avoid-

ed. The properly constructed and serviced machine can offer a compact, controlled environment which affords maximum protection to the consumer on a 24-hour-a-day basis. We have come a long way in automating cleaning-in-place and reducing other sanitation problems. But to the extent that products and containers must still be handled and machines cleaned, there will always be a need for trained route personnel.

In-service training has been one of the services most widely demanded by our operator membership. There is still much to be accomplished. Sanitation clinics and demonstrations are featured at each national convention and at dozens of regional meetings each year. Individual training schools have been taken to selected routeman groups, but this degree of service obviously can not be offered nationally for over 1400 member companies. An effective alternate has been found in Do-It-Yourself training materials. Color slide sequences with narration cards are now available so that our operators can conduct employee meetings on sanitation without outside assistance. Training slide series for various special types of equipment offer endless possibilities—not to mention almost endless preparation. We have made a good start in this area up to now.

Schools for orienting health officials in vending have met with great success, particularly where meetings are held in operating company shops where equipment is available for examination and discussion. Meetings of this type will, no doubt, be in great demand in the future and NAMA welcomes



Figure 3. Here, at a service station near Cleveland, a new automatic restaurant offers travelers fast, attractive service at modest prices. Diners select precooked items from glass-front, refrigerated machines. Food is then heated in seconds in microwave ovens, right. At left is a Currency Changer, which provides change automatically for \$1 and \$5 bills.

requests to arrange such schools with state associations or local departments.

On the other side of the coin, it is hoped that local departments will invite vending people to their food sanitation training schools where the local operating companies are involved in food operations which may be covered, at least in part, in the program content. Since food vending is a relative newcomer, the individual operator and employee tend to be young, aggressive and receptive to suggestions and advice. The percentage of "old dogs" who refuse to learn "new tricks" in this industry is very small.

RESEARCH

Many of the requirements of the PHS Code are based on research sponsored by NAMA or its individual manufacturer members between 1948 and 1957. Much of it was conducted at Michigan State University under the direction of Dr. W. L. Mallmann and has been reported through the years in this Journal. As new products and new theories of vending are brought forward, it is incumbent on the industry to ascertain that these new concepts can be employed safely, before machines are offered for public use. With so many new trends being suggested in recent years, studies have been under way at either Michigan State University or Indiana University Departments of Public Health. Through a research agreement made with each university Board of Trustees, NAMA has available expert advice whenever its Research Committee may propose new projects or a review of established procedures.

Studies on copper toxicology at Indiana University (Pub. Health Rep., 73:910, 1958) have substantially supported the carbonation backflow requirements of the Code. They have been further supported by the 4 billion cup drinks a year which have been vended each year since 1947 without a known toxic poisoning or carbonation backflow in machines built to Code requirements.

Hot foods—entrees and full meals—are in increasing demand in industrial and institutional vending. Long-term shelf-life is a problem at 150°F holding temperature, so "cold hold"—"quick heat" will probably be used in future hot food equipment. For over 18 months, cold and hot meal research studies which include the use of pathogenic organisms and foods in packaged form have been under way at Michigan State University. There is presently no doubt that cold-hot machines can store these products cold and elevate batch servings to above 150°F quickly and safely. The same can be done with individual orders. The question is, can unsold packages in a batch-type unit be quickly returned to about 36°F for a subsequent reheating? The outlook is hopeful, based on preliminary returns, but all of the answers are not yet available.

The new bill changers have created a new horizon in the sale of higher priced pre-sold items and also multiple items in automatic restaurants and groceries. As the work-week shortens, we can expect to see more "after hours" vending of staples and specialty items in storefront banks or self-contained vending installations.

Individually brewed cups of coffee and soft drink machines with miniature ice makers have appeared during the past two years or so. The future will see a continuing parade of new and different vending equipment, making products available where they are most convenient. All of the advances will be made within the framework of our public health program guidelines.

Seventy-five years ago, the inventor of that first cigarette-postcard vender might have scoffed at the thought of his industry cooperating with health officials in a program of mutual benefit. Seventy-five years later, his successors assuredly would scoff at any suggestion to drop our cooperative program. What could better acclaim the program's success?

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