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Rim Codes: A Pacific Coast Dating System for Milk Bottles

ABSTRACT

Milk bottles from the western United States sometimes exhibit embossed numbers on the upper surface of the finish. Physical and historical evidence indicate that these numbers constitute a unique date code, indicating the month and year of production. Examination of more than 1,200 milk bottles from this region (227 with the code) demonstrates that the code was used by five California glass factories between 1924 and 1933. It appears that in a region with intense competition among glass factories, this dating system was developed to help dairies track bottle loss—a significant problem at that time. The code was discontinued after most of the region's milk bottle production was concentrated in a single company.

Introduction

Historic archaeologists have long been interested in the use of makers' marks and associated codes for dating bottles and contexts in which they occur. Known date codes share several characteristics: they are usually found on the heel or base of the bottle, indicate the year of production, and specify individual glass manufacturers (Toulouse 1971; Lockhart 2004; Lockhart et al. 2007). An ongoing study of bottle manufacturers' marks, however, encountered a previously unreported date code system that exhibits none of these characteristics: a code indicating both the month and year of manufacture, placed on the bottle finish, and shared by several Pacific Coast glassworks.

The code was first encountered on a California milk bottle embossed on the rim (lip) of the cap-seat finish with two numbers: "2" on the left and "5" directly opposite on the right. Research led to no previous reports of such marks in the archaeological or collectors' literature. Examination of additional collections indicates that such rim codes were commonly used by Pacific Coast glass factories in the 1920s and early 1930s but were evidently unknown elsewhere. Historical research confirms that the codes were intended to address an important problem in the dairy industry by indicating the production date of each bottle.

Materials and Methods

To determine the geographical and temporal distribution of rim codes, the authors examined milk bottles in numerous archaeological, museum, and private collections, the largest single collection being the 1,200+ bottles in the State Dairy Collection maintained by the California Department of Parks and Recreation. Contact with other archaeologists and collectors throughout the country found no one who had noticed the codes or anyone with a clear understanding of what they represented.

During examination of rim-coded bottles, other features were noted as well. These features included the nature of the finish, the bottle capacity, the dairy label and whether it was embossed or applied color, the maker's mark, any other codes present, and the manufacturing technique. Simultaneously, one of the authors reviewed the literature on milk-bottle production and use, focusing on national and regional dairy trade journals produced throughout the first half of the 20th century.

Results

Rim codes were found on 227 bottles with capacities ranging from one-quarter pint to a quart. The codes were embossed only on cap-seat finishes, the upper face of the lip sometimes being flattened slightly to accommodate them. The numbers are well formed and usually quite distinct but are only about 1/8-inch (3 mm) tall. As in the initial example, they always occur in pairs: one number on the left side of the rim, the other directly opposite it on the right (Figure 1). Left-side numbers range from 1 to 12. Those on the right occur in both single-

Historical Archaeology, 2009, 43(2):30–39.
Accepted for publication 2 June 2008.

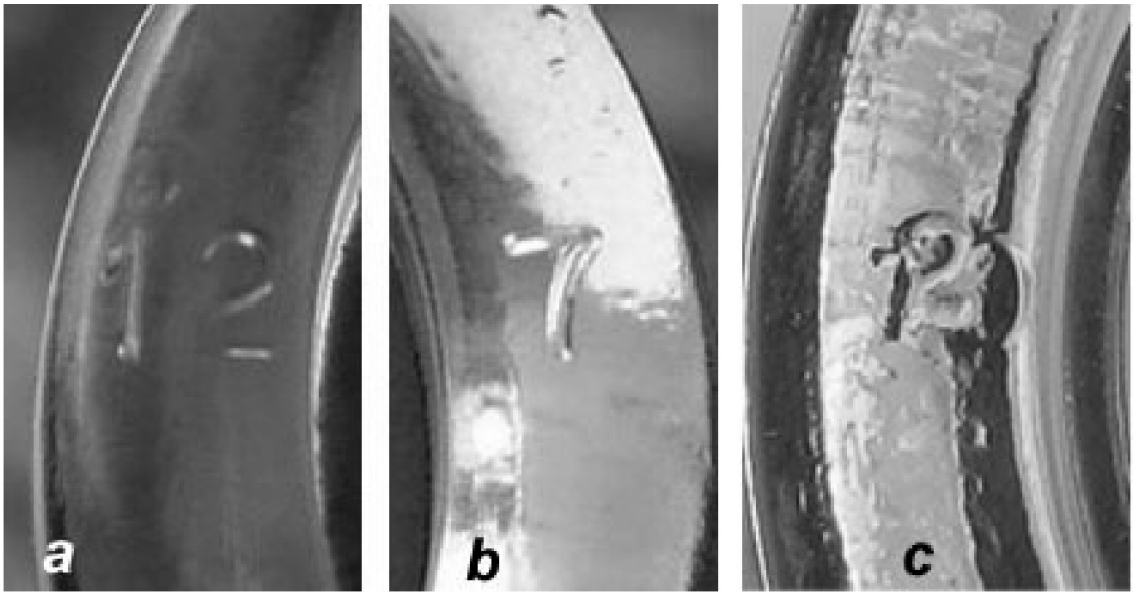

FIGURE 1. Rim codes on milk bottle finishes: (*a–b*) left and right side numbers from the same bottle; (*c*) result of peening out and replacing a number ("10" replaced by "2"). (Photos by B. Lindsey.)

digit (0–9) as well as double-digit (25–26) form. This observation strongly implies that the left/right combination represents a month/year code, and that single- and double-digit codes were used variably to indicate the year.

All bottles with rim codes were machine made. This conclusion was expected since hand production of cap-seat finishes required use of a lipping tool, which would preclude any embossing on the finish. Bottles from both blow-and-blow and press-and-blow machines were represented (see Miller and Sullivan [1984] for distinguishing features), although the latter were far more common. Additionally, all dairy labels on rim-code bottles were embossed with only one bottle having an additional applied color label (discussed below). This suggests that rim codes were popular prior to the widespread introduction of applied color labels in the mid-1930s.

Rim codes were observed on bottles made by at least five glass companies (Table 1). Although all the code-using glass factories were in California, dairies employing the codes were located in California, Hawaii, Nevada, Oregon, and Utah. Factory operation dates indicate the codes must have been in use before 1930 and must have continued until at least 1932. Bottles made for West Coast dairies by eastern factories, in the same era, exhibited no rim codes.

Assuming a month/year designation for the codes, it was initially unclear whether they indicated the date the mold was made or the time of the bottle manufacture—that is, whether the intended user was the glass factory or the dairy. Physical evidence, however, demonstrates that the codes were sometimes peened out, and newer ones were applied to the molds (Figure 1*c*). This would have made no sense if the code were intended to track the mold.

The codes in fact indicate the date of manufacture and were intended to help track the bottles. This purpose is intimated by an advertisement from one of the California glass manufacturers (Illinois-Pacific Glass Company), noting that their bottles were "stronger and give longer service," which was "why each one bears its own date" (*Pacific Dairy Review* 1925). An advertisement a few months later is definitive:

> Keeping Books on Milk Bottles. How do you know a bottle has earned its cost unless it is dated? Look at the top of the finish for date of manufacture. If it is there the maker believes in his own bottle (*Pacific Dairy Review* 1926).

A similar message from the same company touted the durability of its bottles and alleged that they "live practically twice as long [as] ordinary milk bottles." Milk distributors were

TABLE 1
DISTRIBUTION OF RIM CODES BY MANUFACTURER AND DATE

Glass Company	Location	Operation	No.	Code Range
Blake-Hart (only)[a]	Sacramento		15	Dec. 1925–Dec. 1929
Illinois-Pacific Glass Co.	S.F. and L.A.	1926–1930	126	Jan. 1925–Jul. 1933
Latchford Glass Co.	Los Angeles	1925–1938	5	Sep. 1932–Oct. 1932
Owens-Illinois Glass Co.[b]	San Francisco	1932–1937	1	Jul. 1932
Pacific Coast Glass Co.	S.F. and L.A.	1919–1930	46	Jun. 1926–Nov. 1932
Southern Glass Co.	Los Angeles	1917–1931	15	Oct. 1924–Sep. 1930
None or unknown			19	Dec. 1925–Sep. 1930
Total			227	

[a]Blake-Hart bottles were made by Illinois-Pacific Glass and Pacific Coast Glass. Only those lacking a separate glass company mark are listed under Blake-Hart.
[b]Owens-Illinois Factory 21.

advised that the bottles "are dated on the top of the finish so you can figure for yourself" (*Western Milk Dealer* 1926).

Rim codes thus indicate the month and year of manufacture, likely practical because the limited number of bottle sizes and styles allowed ring (finish) molds to be manufactured or retooled each month and then used with a variety of previously made blow molds.

Manufacturers and Dating Problems

Of the 227 code-marked bottles, 85% can be assigned to five manufacturers, based on makers' marks (Table 1). The remaining code-marked bottles have no perceptible makers' marks but probably derive from the Illinois-Pacific Glass Company and the Pacific Coast Glass Company. The heel marks of both these companies are often quite faint. It is likely that in some cases the molds were not sufficiently well cut to provide a clear impression or that the heel marks lost their clarity faster than the body labels.

About half of the bottles with no perceptible maker's mark do, however, exhibit the mark of the Blake-Hart Company (Giarde 1980:16–17). This Sacramento partnership patented a design for a square milk bottle (Blake and Hart 1927), which was actually manufactured by both Illinois-Pacific Glass and Pacific Coast Glass during the 1920s. (Two Blake-Hart bottles that exhibit an Illinois-Pacific factory mark are included with that company's bottles in Table 1. It may be noted that 7 of the remaining 15 Blake-Hart bottles have year codes of "25" or "26" on the rim—a double-digit year code otherwise used only by Pacific Coast Glass and only in those two years.)

The remaining bottles have makers' marks. All are identified by Julian Harrison Toulouse (1971), although in some cases more recent investigations modify chronologies proposed by him. All date codes from bottles made by Latchford Glass Company, Southern Glass Company, and Owens-Illinois (Plant 21) fall within the temporal range of those companies (Table 1), but the same is not true of the other two manufacturers.

Pacific Coast Glass Works was incorporated as the Pacific Coast Glass Company in 1924, but it used the same marks before and after the reorganization. The rim codes provide no information on these changes. Two of the rim codes, however, date after the company's merger with Illinois-Pacific in September 1930, to form the Illinois Pacific Coast Company. A third code (November 1932) even postdates the latter firm's acquisition by Owens-Illinois in July 1932 (*Western Milk Dealer* 1930; Porter 1933:294–296). These seeming discrepancies are almost certainly due to retention and continued use of old private blow molds by the new firms operating the old factories. Only the ring (finish) molds were being updated.

Obvious discrepancies also occur with the Illinois-Pacific Glass Company marks. All bottles with rim codes exhibit the company's initials

in a triangle. This Triangle-IPG mark dates to the later years of the company's operation and suggests that it was introduced when the company incorporated in 1926 (Lockhart et al. 2005:76–78). The association of this mark with rim codes dating as early January 1925 indicates that the mark was in use at least a year before incorporation. As with the Pacific Coast Glass Company bottles, the Illinois-Pacific rim codes continue past the 1930 merger and even the 1932 acquisition by Owens-Illinois. Eight bottles have rim codes dating to the Illinois Pacific Coast period, and an additional three postdate the 1932 acquisition. These changes again can be attributed to reuse of old private blow molds with new ring molds.

One of the Illinois-Pacific bottles is particularly interesting. It has a rim code of "2 // 1" and a circular plate-mold label for Brant Rancho, Owensmouth, California. The opposite face has an applied color label—the only example of such a label found on a rim-code bottle—with similar information, but this label locates the dairy in Canoga Park. The change in location reflects the fact that Owensmouth changed its name to Canoga Park on 1 March 1931 (*Van Nuys News* 1931). Thus both the rim code and the embossing should predate the applied color label. Presence of a color label is initially confusing since the technology was not introduced until the mid-1930s.

Owens-Illinois introduced applied color labels on milk bottles beginning in mid-1933, offering them only from its Huntington, West Virginia, factory. The process was expanded to the Columbus, Ohio, factory in 1934 and then to other plants (*Milk Dealer* 1933; *Modern Packaging* 1948:122). Color-labeled bottles were available from Owens-Illinois California plants (including the former Illinois-Pacific plants) beginning in fall 1934 and were heavily advertised by 1935 (*California Milk News* 1934; *Los Angeles Times* 1935; *Milk Dealer* 1935; Owens-Illinois Glass Company 1935).

The important point here is that color labels could be applied to old bottles. In fact, the Owens-Illinois San Francisco factories did this experimentally in 1936, inviting local dairies to send in embossed bottles to have color labels applied to the opposite side (*Milk Dealer* 1936). It is quite possible that the Los Angeles plants did the same. Such a practice would result in bottles with dual-embossed and color labels, and the present specimen seems to be an obvious example of this process.

A final limiting factor in interpreting the codes is that some pairs of numbers can be read upside down (for example, "6 // 8"), leaving a question as to which is the month and which is the year code. Sixteen specimens in the sample reflect this difficulty. While it might be argued that the earlier possible date is the one intended, it is also possible that the glass factories simply overlooked this problem. In only three cases was possible confusion eliminated by the addition of an underline.

Subtracting specimens with only partial codes or where uncertainty exists regarding the month-year interpretations leaves 207 bottles where the year is known and 209 with a known month. The annual and monthly distributions are shown in Figures 2 and 3.

"No Experience but Grief": Rim Codes and the Dairy Industry

The 1920s witnessed an increasing interest in bottle date codes among businesses relying on returnable bottles, that is, among dairy companies and beverage bottlers. Such companies had considerable capital tied up in containers that were prone to breakage, theft, or loss. Glass companies appealed for patronage through claims for the durability of their products, sometimes using date codes:

> The old saying of "The pitcher that goes to the well too often gets broken" can now be applied to your beverage bottles, but the Pacific Coast Glass Company has made it possible to keep track of the trips. It is now possible to get your bottles with the date of manufacture blown in them.
>
> This feature has many advantages. It gives the bottler an opportunity of keeping track of the life of a purchase of bottles and to determine just how long it takes to use up so many gross. He can always make up his orders ready so that he need not run short of bottles at the height of the season.
>
> Another advantage of this dating is to help keep accurate figures on costs. By knowing the life of a bottle it is possible to determine the average number of trips a bottle will make, and to determine an average cost of packing beverages. This is an advantage that should encourage every bottler to buy his bottles dated (*Pacific Bottler* 1928).

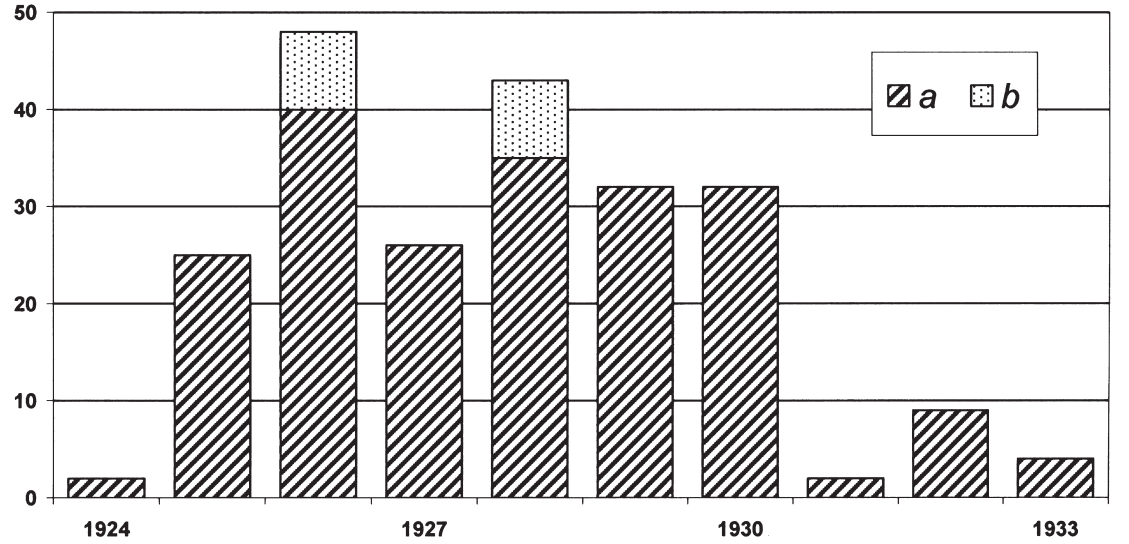

FIGURE 2. Annual distribution of codes in the present study: (*a*) distribution of 207 specimens for which the year is unequivocal; (*b*) distribution of 16 specimens for which alternative readings are possible, assuming the earlier year is intended. (Graph by authors.)

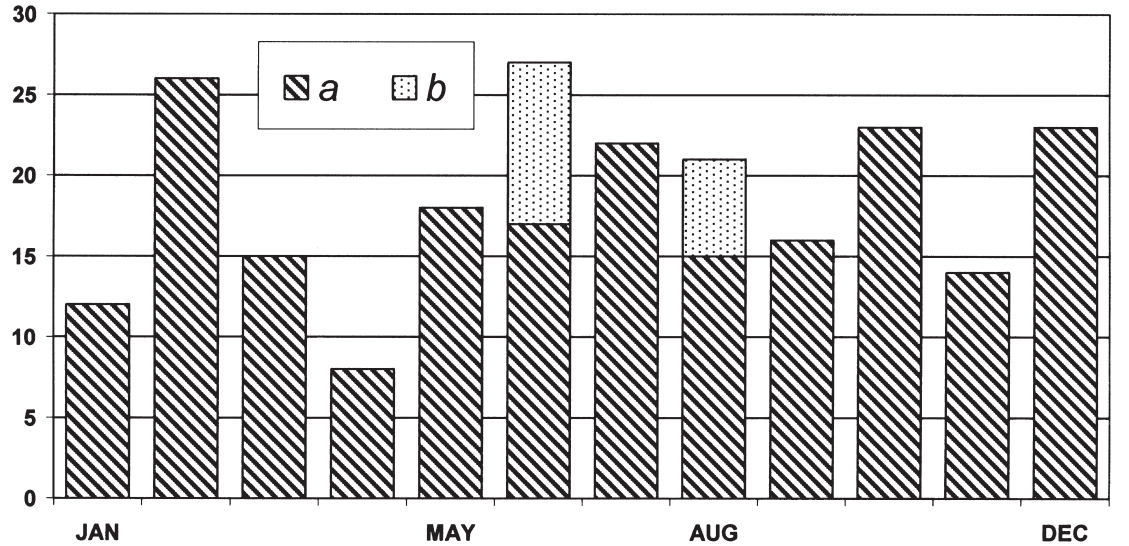

FIGURE 3. Monthly distribution of codes in the present study: (*a*) distribution of 209 specimens for which the month is unequivocal; (*b*) distribution of 16 specimens for which alternative readings are possible, assuming that the earlier month is intended. (Graph by authors.)

Intended for soda bottlers, this advice was old news to the fluid milk industry, which had been complaining about the functional lifespan of bottles for more than two decades while trying to devise practical solutions.

Creation of the modern dairy industry was based on an expanding market for its products, and this market depended on two crucial factors: an increasing perception of the nutritional values of milk and the increasing demand for sanitary rigor in its handling (DuPuis 2002). The "milk for health" campaigns of the 1920s depended on widespread insistence on inspection of dairy herds and milk plants by local health

authorities. The perception of milk as valuable for the public health—especially the health of children—led to legal mandates for sanitary plants, pasteurization, and eventually to vitamin-augmentation of the milk supply. Importantly, these developments relied on the elimination of what was the nearly universal method of delivery in the 19th century: "loose milk," dipped from a communal milk pail to fill the customer's own receptacle. Sanitary processing of fluid milk—in the dairy—resulted in a product that was safe to consume. To ensure delivery of uncontaminated milk to consumers, local and state governments required that milk be sealed at the dairy in sanitary containers. Although there was some early interest in disposable paper containers (Winslow 1909:140–141), the overwhelming choice of distributors throughout the nation was to use returnable glass bottles.

Investment in milk bottles, however, was expensive, and the problem of bottle loss—and a corresponding interest in "trippage" (the number of round trips a bottle made from dairy to customer and back)—quickly became a focus of concern throughout the industry. In the early decades of the 20th century, loss of bottles through breakage, theft, or simply the failure of customers to return them was universally considered one of the most important problems that milk dealers had to face. Simultaneously, it was one of the few expenses potentially within their power to reduce (Spear 1907; Hagemann 1913; Lane 1913; Hood 1914; *Milk Dealer* 1915b; Parker 1917:326–327; Walker 1917, 1923; Traveler 1918; Kullman 1921; Smith 1921; Cochran 1923a, 1923b, 1923c; Clement 1924; Gardiner 1925). A national survey of distributors in the early 1920s reported an average daily loss of 4% of all bottles delivered, with an estimate of 13–21 trips per bottle (Kelly and Clement 1923:339–340).

An important element of the problem was breakage, either in the plant or upon delivery. For very small dairies, this was the most important source of loss. Concern focused on the contributing factors in handling by workers as well as breakage by poorly designed washing and bottling machines (Moon 1917; Clement 1923; Ford 1924a, 1924b, 1924c; *Certified Milk* 1927; *Milk Dealer* 1929, 1932; Clement et al. 1932). This concern also resulted in investigations of bottles themselves (Williams 1922; Gardiner 1925; Kouwenhoven 1926). It should come as no surprise that the durability of their products was the most commonly stressed feature of major milk bottle manufacturers in this era.

For larger distributors, the most important factor in bottle loss lay with retrieving empties. Customers discarded the bottles or diverted them to other uses; junkmen scavenged them for resale; or competing dairies pirated them for their own use. Surveys of how dairies met these problems typically found a limited number of solutions: charging deposits, forming bottle exchanges, legal action against junkmen, public information campaigns, creating local organizations to use "universal bottles," and either rewarding or penalizing the delivery drivers. A 1921 survey inspired comments from 50 dealers throughout the U.S. and Canada. All of these possible solutions and combinations of them found adherents or experimenters, and a few were satisfied with the results. Most dealers, however, were dissatisfied and frustrated, echoing at greater length the terse response from a California distributor: "No experience but grief. Do the best we can and buy more bottles" (Smith 1921:14).

Regardless of the nature of the loss, distributors could understand its source and extent only by maintaining appropriate records. The trade literature specifically encouraged such tracking (*Milk Dealer* 1913, 1915a; Whitcomb 1922) and prominently featured discussions of the bottle loss problem from dairymen who clearly were employing such methods and knew exactly the extent and nature of their losses (Hagemann 1913; Clement 1923, 1924; Cochran 1923a, 1923b, 1923c; Ewing 1923; Kelly and Clement 1923; Lindsey 1923; Walker 1923; Ford 1924a, 1924b, 1924c).

This was the nature of the trade into which rim codes were introduced in the early 1920s. It is interesting that the codes nearly escaped mention in the milk trade literature, but they were certainly popular enough that five California glass companies offered them. The situation in California appears to have been unusual in only two ways. First, the great majority of milk bottles were manufactured within the state, local production accounting for 82% of bottles purchased by California milk distributors (Hayden 1924:218). Second, the state government recognized the problem of bottle loss and actively

supported attempts to reduce it, especially the formation of bottle exchanges (Frey 1925:241–242; Wademan 1930). It is clear that the glass companies (while obviously using the codes as an advertising technique to stress the quality of their products) recognized the great interest among distributors in reducing bottle loss.

The reasons for abandonment of the code system, on the other hand, are not so clear. It is true that after 1930 economic depression brought significant changes to the liquid milk industry: fluctuating demand, foreclosures of large dairies and distributorships that had overextended during the 1920s, difficulties in collecting debts, and a seemingly endless and incurable series of price wars that racked the industry (Tinley 1938). Yet, it is unclear how these changes would affect use of the code system. In spite of these conditions, the industry in California was successful in establishing bottle exchanges in virtually all major milk markets. By 1930, 10 regional exchanges were retrieving and repatriating 12,000,000 bottles annually (Wademan 1930). It is possible that this success reduced the felt need among distributors for tracking individual bottle loss.

The glass industry, meanwhile, had experienced a series of acquisitions and consolidations that ultimately left the majority of the state's container-glass production in the hands of a single company. Acquisition of the Illinois Pacific Coast Company by Owens-Illinois in mid-1932 meant that almost all the code-using factories were now controlled by a single corporation. (The one exception, Latchford Glass, was at best a minor producer of milk bottles.) Examination of more than 150 milk bottles produced in the 1930s by Owens-Illinois' California factories (Schulz et al. n.d.), undertaken in the course of this study, encountered no evidence for use of rim codes after 1933.

It is thus possible that reduction in competition eliminated the value of rim codes as an advertising tool, and no advantage was seen by the glass industry in perpetuating the extra expense of the codes. By this time, most large glass companies were already employing year codes, including both Owens-Illinois and the Thatcher Manufacturing Company, then the two largest producers of milk bottles for the national market (Lockhart 2004; Lockhart, Schulz et al. 2007; Schulz et al. n.d.).

Additionally, it is worth considering how useful the codes really were. While they are placed where they can be readily accessed even on full and sealed milk bottles, it is doubtful that they were ever systematically used in this condition. The numbers are so small that they are very difficult to see in any but the best light. They would be impossible to record expeditiously during sorting or on the filling line. In contrast, those marks that needed to be observed on a routine basis—the distributor's initials on the bottle base—are quite large, typically much larger than any lettering on the body. Consequently, it seems likely that the codes were useful only for recording the age of chipped or broken bottles, prior to discard.

Conclusion

In the 1920s, several California glass factories adopted an unusual date code system that was widely accepted by milk distributors throughout the far west. Judging from this research sample, the system was pioneered by the Southern Glass Company in 1924. Although American glass factories had been increasingly adopting date code systems since the turn of the century, the rim code system was unique in two ways: it included a code for the month as well as the year, and it was embossed on the upper surface (lip) of the finish. It seems clear that this combination of traits was possible only on milk bottles for three reasons. First, it required month-specific embossing only on ring molds, which could be interchanged with private blow molds for any number of dairies. Second, unlike the great majority of finishes, cap seat finishes could be embossed on the lip without interfering with the seal of the closure. Third, milk bottle lips were large enough to accommodate a legible code.

It should be noted that month-specific embossing was impractical for either the body or base components of blow molds because those mold components were intended for prolonged periods of use. Most factories offered multiple styles of bodies, in several sizes, so that even plate molds—featuring interchangeable dairy labels—could not be used for even a majority of orders. Additionally, base components of the blow molds commonly featured the initials of the dairy placing the order. These mold components were

consequently used on limited-production runs but had to be available for future orders. The milk bottle cap and, hence, the cap seat, however, was standardized by the glass and dairy industries in mid-1924 at a single size, regardless of the size or style of the bottle (Little 1924). This meant that ring molds could potentially be used interchangeably with all the blow molds used by a factory, regardless of their size or style or any needed dairy labels. The rim-code system was introduced within six months after this standardization was announced.

The rim-code system was introduced at a time when bottle loss was a serious problem in the liquid milk industry and when tracking that loss and identifying its causes were seen as important goals for virtually all milk distributors. The system was abandoned a decade later, perhaps due to reduced competition in the glass container industry or because that industry, now dominated by national corporations, saw little value in perpetuating a regional dating system in addition to the year codes they had already adopted.

Acknowledgments

We thank Bruce Stiny for access to the State Dairy Collection, and Jeanette Schulz and Wanda Wakkinen for recording assistance. We also thank the Bonita Historical Society Museum, the Save Our Heritage Organization (San Diego), Doug Gisi, Kirby Johnson, G. Nicewonger, Frank Pekarek, and Sally Starling for providing examples of bottles; Gail Bardhan (Corning Museum of Glass) and George Miller for research assistance; and John Finnegan for computer assistance.

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