

## **Chapter 2**

### **Massachusetts Seals on Glass Milk Bottles**

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with contributions by Brad Blodget

#### **Introduction**

Because the initial milk bottles were mouth blown (i.e., blown into a multi-part mold by human breath) and then completed by hand to produce the top opening area (known as the “finish”), there was little control over precise capacity. Although the initial move to bottled milk was spurred by health concerns, the worry soon shifted to measurement. The manufacture of milk bottles (almost universally called milk jars at that time) was imprecise, and the containers were not marked to indicate their contents. Although not germane to this study, these concerns led to the marking of the capacity of milk jars. Of more importance, they led to the “seal” system, whereby local communities and later bottle manufacturers guaranteed the correct capacity of the bottles. The leader in this development was the state of Massachusetts.

In a departure from his usual fount of information, Giarde (1980:148) had very little to say about state seals on milk bottles. He noted that Massachusetts “seems to have required a special seal on the neck of the milk bottle. Because of space limitations, the companies did not always use their typical symbols. For instance, Thatcher simply used a ‘T.’” Giarde failed to note that Maine, Rhode Island, and other states also required seals on milk bottles, although he did discuss the Minnesota triangles (another seal form).

#### **Development of the Milk Bottle**

The Lester Milk Jar, patented January 29, 1878, was the earliest currently known attempt at creating a bottle specifically for milk. An earlier bottle was actually patented in 1875, but none are known to have been made (Tutton 1994:2-3). Prior to that, milk was delivered in cans by horse-drawn wagons, and the driver ladled the milk from the can into the housewife’s pail or

pitcher (Rawlinson 1970:19). This was an unsanitary method, as foreign objects and other debris (including horse hair) would contaminate the milk, resulting in illness and death, especially among children and infants.

In addition, the milkman would often add water to the milk as it ran low towards the end of his route. Milk customers saw the glass container as the surest way to keep milk from being adulterated, since it would be filled and capped at the dairy. The industry also adopted standards for the processing of milk at the dairy and tried a variety of existing bottles and jars – including beer bottles and fruit jars – but none suited the specific needs of the dairies.



Figure 2-1 – Tin-top closure (eBay)

It was not until Dr. Hervey D. Thatcher invented the “Milk Protector” ca. 1885 that many dairies began seriously considering the bottling of milk. Until 1889, all milk bottles were typically sealed with glass-top or “tin-top” devices, both variations of the lightning seal, where the cover was held in place by a wire swing bail. Although some authors claimed the use of “tin-tops” (Figure 2-1) ceased about 1900 (e.g., Rawlinson 1970:13), empirical evidence from this study shows that they were in use until at least the early teens. On September 17, 1889, Harvey P. and Samuel L. Barnhart patented the ligneous disk and cap-seat seal, setting the stage for the Common Sense milk bottle sold by Thatcher (Jones & Sullivan 1989:161; Tutton 1994:8, 13-14). This invention created the first truly practical milk bottle, and the cap-seat/ligneous disk combination dominated milk bottle production until the late 1940s (Figure 2-2).



Figure 2-2 – Cap-seat finish

Square milk bottles had been invented in 1898 (see Chapter 1), but they were ahead of their time and found few users. Another type of square milk bottle was used with partial success in 1927, but it was not until Owens-Illinois patented a new square bottle in 1943 that the idea really caught on. These did not really control the market until ca. 1948 (*Food Industries* 1944:83; *Milk Route* 1998:1-2; *Modern Packaging* 1944:102; Tutton 1994:35; 1997:7).

Although paper milk cartons were first advertised in 1907, the first successful paper container was cone-shaped. These cones, patented on August 18, 1914, although used by some dairies, were never a threat to the glass bottle industry. About 1938, however, square, waxed-paper cartons began to be used, and those slowly grew in popularity, until they completely dominated the market by the late 1960s (Farran 2000:6 Gallagher 1969:95; Giarde 1980:148-149; Haas 1970:72; Winslow 1907:140).

## Plates

Although collectors frequently call these slug plates, glass catalogs identified them as plates (e.g., Figure 2-3). On milk bottles, these were almost always oval in shape (to give the appearance from the front that they were round) and identified the individual dairies. Prior to the patent for these molds in 1876 (Tatum 1900:20330), each dairy (or other glass company customer) had to buy every mold that was used. When the mold wore out, a new one had to be engraved at the dairy's cost. The plate allowed the company name to be inserted in the plate at a much lower price than buying an entire set of side molds.

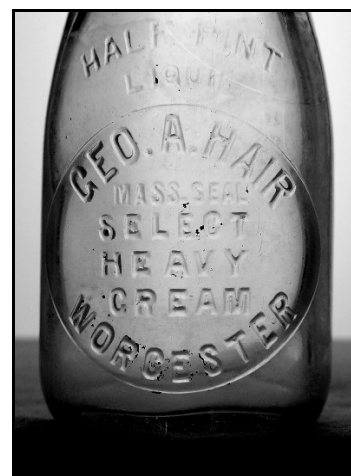


Figure 2-3 – Plate

Many of the circular seals were embossed on small, round plates on the shoulders of the milk bottles (Figure 2-4). Most milk bottle manufacturers offered both plates and seals embossed directly onto the shoulders, although it is likely that some glass houses only featured plates. In our sample, we have found plate seals from almost every company (ABC2, BB, B1, D, E, FID, FL, K9, L, O, P, R, T, TR, UG, and W formats – although none of C. Most companies in our sample also used non-plate seals in the circular format. However, we have found none of these with the B1, C, D, K9, P, TR, or W formats. These companies may have only offered the round shoulder seals in plates. We will discuss these logos later in the chapter.



Figure 2-4 – Shoulder plate

## History of the Massachusetts Seal Laws

When the use of milk bottles became common around the turn of the 20<sup>th</sup> century, people initially became concerned with the capacity of the container rather than the quality of the milk. In the Commonwealth of Massachusetts, this concern took the form of the “seal” law in 1900. Approved June 6, the Act of 1900 “Relative to the Sealing of Bottles and Cans Used by Milkmen” stated that cans, bottles and other receptacles used for the distribution of milk or cream to the customer shall be sealed by measures.” In other words, the Sealer of Weights and Measures for each Massachusetts community was to use hydrofluoric acid to etch into the “breast of the bottle or jar” the Sealer’s district (usually the name of a city or town) and the word “SEALED” to ensure that each “sealed” bottle held the correct amount (Figure 2-5). Some Sealers included their personal initials, and many included the year, although that was not required by law. The act was to take effect December 31, 1900 (Schadlich & Schadlich 1984:1-2).



Figure 2-5 – Etched seal (Al Morin)

A 1901 addition clarified specific capacities and required that “all dealers in milk or cream who use glass bottles or jars for the distribution of milk or cream” bring their containers to the local Sealers, with no fee for the service. If a bottle failed the test, it was etched “CONDEMNED” or simply “CD.” Many of these continued to be used for other purposes (e.g., storing seeds or oil), but they could not be used for commercial milk delivery. By 1909, the system had become unwieldy due to increased demand for bottled milk (Schadlich & Schadlich 1984:1-3). The act also established tolerances regulating the capacities of the container, specifying the volume of “glass containers . . . filled to the level with the bottom of the cap or stopple” (Schadlich 1984:2)

At least some of the sealers were overzealous, it seems. The *North Adams Transcript* (3/2/1901) complained that “bottles are condemned that hold over the measure as well as those that fall a few drops short.” Local dairymen feared that “manufacturers of bottles will decline to sell their wares [sic] under guarantee in this state” because “bottles cannot be cast sufficiently accurate [sic] to meet the requirements of the exacting inspectors under the law.” The dairies

complained that other fluids (specifically medicines) were “sold without harrassing [*sic*] inspection or interference by the law.” An earlier article (*North Adams Transcript* 2/21/1901) had stated that “the sealers [had] decided to allow more leeway when bottles were large, and so, while those which are much too large are condemned, a few drops, or even more than that, can be contained in the bottle without causing it to be rejected.” However, sealer A.G. Nichols had condemned 8 of 12 bottles in one lot, so the dairymen were still dissatisfied.

The Act of 1909 shifted the onus from the local Sealer to the bottle manufacturer. The act required each producer of milk bottles sold in the Commonwealth of Massachusetts to apply to the Commissioner of Weights and Measures for a seal code and to guarantee that their bottles held the correct measure of milk. Each factory milk bottle had to be “marked with the name, initials, or trade-mark of the manufacturer, and by any other mark which the commissioner of weights and measures may require.” Approved on June 19, 1909, the law took effect immediately, although Massachusetts dairies were still allowed to bring existing milk bottles to the local Sealer as before (Dept. of Commerce and Labor 1912:195; Schadlich & Schadlich 1984:3-4).

This opened a period, probably only lasting about two years, when the older etched seals could be used by the dairies as well as the newer, factory-sealed milk bottles. The law at this time did not specify the shape of the seal or its location. Thus, seals were indiscriminately embossed on shoulders, heels, and bodies of milk bottles. Some were even embossed as a single horizontal line (e.g., MASS SEAL B) in the plate that identified the dairy on the front of the bottle. Others were embossed on the reverse body. Seals appeared as horizontal lines, gentle arches, and in circular configurations (Blodget 2006:8).

Although a specific date was not mentioned, the *Annual Report of the Commissioner of Weights and Measures* for 1910 (Commonwealth of Massachusetts 1911:4) stated that:

The words “Mass Seal” to be uniformly used by all manufacturers, the individual letter being the individual mark assigned to the manufacturer for his exclusive use; the mark to be placed on the breast or the neck of the bottle, in letters at least three-eighths of an inch in height, and in a type which is distinct and can be easily read.

This makes it clear that the shoulder location was the only place permitted by the end of 1910, although it is virtually certain that most glass houses continued to use molds with the older placements until they wore out, probably by 1913. Even though we have not discovered a specific law, seals had probably pretty much assumed a round shape and were embossed on bottle shoulders by 1914, with some round configurations in use at least a year earlier (see Table 1). The use of all forms on the shoulder probably continued until 1918.

The round configuration, place on the shoulder with initials in the center, became law in 1918, and the description was distributed in the Massachusetts Department of Standards Bulletin #11. The

seal, in letters three-eighths of an inch in height, [had to be] arranged in circular form upon the breast of the bottle or jar. The special designation mark of the manufacturer [had to] appear in the center of the circle with the abbreviation 'MASS.' above and the word 'SEAL' below the manufacturer's designation.

The law specified that neither the bottle's capacity nor the word "Sealed" was to be embossed on the base of any milk bottle. Along with bottle makers, the manufacturers of paper or "fibre" bottles and jars were also required to use the seal. Appearing with the requirements was a list of 15 glass factories and five paper container manufacturers allowed to use the seal and their designations (Schadlich & Schadlich 1984:4-5). By this time, the seal was consistently located on the shoulder, although it could be on either the front or the reverse of the bottle (Blodget 2006:8).

The Act of 1920, Section (43) was amended to provide a definite filling point other than the level of the bottom of the cap or stopple. This change was made because pasteurized milk was subject to expansion and contraction of the milk due to heating and subsequent cooling. It was thus impossible to fill the bottle or jar to the top. This amendment permitted the marking of a definite filling point, often embossed on the bottle, e.g., "FILL TO THIS POINT" or similar neck embossing (Schadlich 1984:5-6). Since few actual bottles have this type of embossing, it is certain that the law permitted such markings but did not require them.

In 1928, the Massachusetts Department of Standards Bulletin #25 slightly amended the depth of the filling point on milk bottles and provided another list of companies allowed to use

the Massachusetts seal. This list was reduced to nine bottle makers but included six paper manufacturers (Schadlich & Schadlich 1984:5-7). The end of the system came when the Glass Container Manufacturers Institute (GCMCI) standardized milk bottles in 1947. On September 9, 1947, the GCMCI informed the Massachusetts Division of Standards that the National Conference on Weights and Measures unanimously adopted a new milk bottle code in September 1946 that standardized milk bottle sizes. The standardization was actually approved on July 29, 1947 (Doucette 1982:443, 447).

Although not specified in our sources, it is likely that each bottle manufacturer had to file a bond with the Commonwealth of Massachusetts to insure its compliance with the regulation. Such compliance, backed by bond, was required by similar laws in other states, such as Wisconsin and Maine (*Kennebec Journal* 4/5/1916:10 *Stevens Point Journal* 9/22/1913:1). If a manufacturer were discovered selling bottles with incorrect weights, the fine could be levied against its bond.

## **Configurations and Locations**

### **Configurations**

#### **Etched Seals**

Etched seals were either placed in a single line or in as many as three (possibly more) rows. Although these were mandated by law to contain the word “SEALED,” many examples in the Al Morin collection lack the word but contain a date, even though the date was not required. Etched seals in the Morin collection are date coded as early as 1902 and as late as 1911. It is important to realize that these are *not* manufacturing dates. Dairy owners brought their bottles to the Sealers in each community for acid etched application. In many cases, especially during the early days of the first seal phase, the bottles may have been older than the etched date.

## Embossed Seals

Essentially, embossed Massachusetts seals were made in three shapes.

1. Horizontal lines (see Figure 2-3) – These could be found in four locations: shoulder, heel, reverse body, or front body inside the plate that identified the dairy. They were associated with the second phase of the seal laws, from 1909 to 1911, although they were almost certainly used until the molds wore out, possibly to 1913 or later. A sub-variation was embossed in two lines (e.g. MASS SEAL / TR).

2. Arched seal (Figure 2-6) – Seals with a slight arch were almost always embossed on bottle shoulders. There is a possibility that some were on bodies, but we have not found examples. These, too, were generally used during the second phase of the seal laws, from 1909 to 1911 – extending to 1913 or later. A sub-variation was made in two lines, with the top line arched and the second line horizontal (e.g., MASS SEAL / FID.).



Figure 2-6 – Slight arch seal

3. Circular seals (Figure 2-7) – These were embossed on both shoulders and reverse bodies during the third and fourth phases of the seal law, ca. 1914 to 1918, although a few were made as early as 1913. From 1918 on, they appeared only on shoulders. Circular seals were made in at least two variations:



Figure 2-7 – Circular seal

a. The first variation had “MASS SEAL” in an arch around 2/3 of the circle, with the manufacturer’s initial (or initials) in an inverted arch at the bottom of the seal. These were used only during phase 3 of the seal law (see Table 1).

b. The final variation, mandated by law in 1918, was embossed “MASS” (arch) / {initials} (horizontal) / “SEAL” (inverted arch) to form a circle. It is important to note that this format was used by some glass manufacturers prior to the adoption of the 1918 law, possibly as early as 1913. This seal mostly was used during the third and fourth phases from ca. 1914 to 1947.



**Table 1 – Chronology of Configurations and Locations of Massachusetts Seals<sup>1</sup>**

Stage	Seal Configuration	Seal Location	Date Range
1	Acid Etched Seal with city name, sometimes date, and “SEALED”	Shoulder (occasionally body)	1901-1911
2	Embossed – usually arched or horizontal	Body or shoulder	1909-1918
3	Embossed – circular shape but initials may be at bottom of seal	Body or shoulder	ca. 1914-1918
4	Embossed – initials in center of circle	Shoulder only	ca. 1914-1947

## **Location**

The law required that acid-etched seals be located on the shoulders of milk bottles during the initial (1901-1910) phase of the seal law. Despite the requirement, some seals were acid etched on the bodies (front, side, or reverse) as late as 1904 (possibly later).

During the second phase, seals could appear virtually anywhere. Early horizontal seals (and other configurations) were sometimes embossed in the plate on the front of the bottle, along with the dairy name and location (e.g., see Figure 2-3). Occasionally, round seals appeared on the reverse body of the bottles. The shoulder was a popular location for every configuration and became the final resting place, mandated by law in 1918. Typically, the seal was placed on the front shoulder, but the reverse shoulder was also used fairly frequently, especially in cases where bottles were embossed with seals from two states (most commonly Massachusetts and Maine). Although Schadlich (ca. 1990) noted that the “D” seal was embossed on heels, the only ones we have seen (Morin collection and eBay) were on the shoulders.

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<sup>1</sup> The chronology was compiled by Bill Lockhart and Albert Morin based on dates specified by laws, dates in connection with manufacturer’s marks, and Al’s experience with Massachusetts milk bottles. Dates noted as “ca.” (circa) are approximate and based on our best estimate. Others are specified in various laws.

It is probable that many of the earliest seals were embossed as an afterthought on plates at the front or reverse of milk bottles. These often appeared in smaller letters than the rest of the lettering on the plate and/or were “tucked in” to fit an existing plate (e.g. MASS and SEAL embossed around the top edges of a large “A” in the center of a plate with the manufacturer’s initials tucked in between the “legs” of the “A”), It is possible that many of the early dairies using bottles with the seals initially thought that attaching the seals to the individual *daires*, similar to the prior use of etched seals, was a good idea.

However, manufacturers probably soon figured out that there were too many dairies in Massachusetts for the plate seals to be a practical solution, so each glass house developed a bottle pre-embossed with a seal or with one in a shoulder plate. The plant could then apply a plate for any dairy to these “seal generic” bottles, thus saving a great deal of time and effort. However, they continued to use existing “seal plates” until they wore out. These may have been followed by the extremely rare heel seals (MASS SEAL / {initials} at the lower body and heel).

Horizontal and slightly arched seals (usually MASS SEAL {initials}) at the shoulders and occasionally the heels probably superceded the plate seals, and round seals were the last to be initiated. Round seals with the initials at the bottom of the circle and those in positions other than the shoulder were certainly in use prior to the 1918 law. Finally, the round seals on shoulders using the MASS / {initials} / SEAL format were mandated by law in 1918 but had been used by some glass manufacturers by at least 1914 (possibly as early as 1913).

It is important to note that each glass manufacturer followed a slightly different chronology of procedures in both the configuration and location of the seals. For example, Thatcher apparently never used either a heel seal or one embedded in the front plate, even though the company was one of the first to use a seal in 1909. Thatcher’s earliest seals had arched or horizontal shoulder configurations. Thatcher also used (and may have pioneered) the final variation of the seal (mandated by the 1918 law) by 1914. See Individual Codes and Glass Factories section for discussions about specific configurations and placements – also Table 2.

## Seals and Companies

Table 2 shows the relationships between the seal codes and the years they were used. However, a full understanding of the table requires some explanation. The table is configured in alphabetical order according to the manufacturer’s codes within the seals, rather than by manufacturer’s names. Initials in the codes come from five sources: 1) 1911 Annual Report; 2) the 1918 Massachusetts Department of Standards Bulletin #11; 3) the 1928 bulletin #25; 4) a list of marks compiled by Louis Schadlich (ca. 1990) that included two marks not listed in either bulletin; and 5) the cover illustration from Schadlich and Schadlich (1984).

The connection between marks and companies is virtually undisputed (especially when the bulletins listed specific companies with their seals), with two exceptions: the “C” and “N” marks. These, along with all other marks and accompanying numbers (explained in Chapter 1), will be discussed in detail below. The years of use for each *seal* mark (as opposed to each manufacturer’s logo) has been determined by a combination of methods that includes: 1) the time span of the seal system in Massachusetts; 2) listing (or lack thereof) in the bulletins; 3) configurations and locations of known marks; and 4) duration of the companies as determined by the latest research of the Bottle Research Group (BRG).<sup>2</sup>

**Table 2 – Relationships between Seal Codes, Manufacturers, and Years in Use**

Seal Code	Glass Mfg. Co.	List Years*	Years of Use**
A.B.C.2	Atlantic Bottle Co.	1918, 1928	1918-1931
B	Butler Bottle Co.	1918	1909-ca. 1916
B1	Buck Glass Co.		ca. 1940-1947
BB	Berney-Bond Glass Co.	1928	ca. 1919-1931
BB	Owens-Illinois Glass Co.		ca. 1931-1947

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<sup>2</sup> The Bottle Research Group (BRG) is a consortium of archaeologists and other researchers who study bottles. The group publishes its finds in a variety of venues, but the major publication location is the *Encyclopedia of Manufacturer’s Marks on Glass Containers* at Bill Lindsey’s Historical Bottle Webpage (Lindsey 2017) on the Society for Historical Archaeology website.

Seal Code	Glass Mfg. Co.	List Years*	Years of Use**
BP	Belle Pre Glass Co.	1918	1909-1912
C	Chicago Heights Bottle Co.		1913-1914
D	Dubois Glass Co.	1918	1914-1918
E	Essex Glass Co.	1918	1909-1920
E.F.	Elk Flint Bottle Co.	1918	1909-ca. 1914
F.I.D.	Fidelity Glass Co.		1909-1916
FL	C.L. Flaccus Glass Co.	1918, 1928	1909-1928
K9	Knox Glass Bottle Co.	1928	1920s-1947
L	Lockport Glass Co.	1918	1909-1919
L	Lamb Glass Co.		1939-1947
M	Mannington Glass Co.	1918	1902-1909
N	Bogus		
O	Lamb Glass Co.	1928	1921-1939
P	Standard Milk Bottle Mfg. Co.	1918	1912-1920s
R	F.E. Reed Glass Co.	1928	ca. 1924-1926
S	Sheffield Glass Bottle Co.	1918	poss. ca. 1918
T	Thatcher Mfg. Co.	1918, 1928	1909-1947
TR	Travis Glass Co.	1918	ca. 1910-1920
UG	Universal Glass Products	1928	1921-1947
W	Winslow Glass Co.	1918, 1928	ca. 1912-1927
WT	Whitall Tatum Co	1918	1912-ca. 1928

\* This indicates presence of both the company and mark on either the 1918 or 1928 lists or both.

\*\* These date ranges have been determined by BRG research. The early dates on these ranges reflect one of three conditions: 1) the earliest probable date the seals were embossed – for companies that were in business prior to 1918; 2) the date the company began production; or 3) special circumstances explained below.

An unusual seal (Brad Blodget, personal communication, 2/17/2007; eBay photo) was only embossed “MASS SEAL” in a circular plate on the shoulder – with no manufacturer’s code. This may have been an error. Such aberrations were common in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries.

According to Brad Blodget (personal communication, 2/17/2007), the most common seals are BB, the L seals from both Lamb Glass and Lockport Glass, O, T, and UG. Less usual are A.B.C.2, E, FL, K9, and TR. The others are scarce or rare, especially the BP, D, EF, M, or WT seals. According to Al Morin, W and R seals are unusual finds, with B, P, and D in the very scarce category. He placed BP as rare. The S and WT seals are so rare that we have been unable to find any examples. The N seal was almost certainly a fiction used on the cover by Schadlich & Schadlich (1984).

Another unusual feature on some bottles is the combination of two seals on the same bottle. Thus far, we have only found occurrences of Massachusetts and Maine seals, although the possibility of a Massachusetts-Rhode Island or Maine-Rhode Island combination is probable. The seals are usually on opposite sides of the shoulder. In addition, some milk bottles from other states are marked with the Massachusetts seal. These include Vermont, New Hampshire, Maine, Connecticut, and Rhode Island (Brad Blodget, personal communication, 2/17/2007; eBay).

There are at least two possible explanations for the Massachusetts seals found on bottles used in other states. The simplest explanation is that the dairy owning the bottles did business in both Massachusetts and the other state and had to follow Massachusetts law. It is also possible that a dairy wanted to be certain its bottles contained the correct capacity. While the use of a Massachusetts seal would not be a legally binding guarantee in another state, the capacity would be tied to the reputation of the glass house.

### **Individual Codes and Glass Factories**

This study would be incomplete without a discussion of individual seals and the factories that used them. These discussions will be brief, emphasizing the seals, their variations, and their locations on the bottles. For more information on each of the glass houses, see the *Encyclopedia of Manufacturer’s Marks on Glass Containers* by the Bottle Research Group (Lindsey 2017).

## A.B.C.2 (1918-1931)

This mark is only reported in the typical fourth stage configuration “MASS / A.B.C.2 / SEAL” with the seal on the shoulder (Figure 2-8). It was probably initiated in 1918, when the Atlantic Bottle Co. bought the former Fidelity Glass Co. at Brackenridge, Pennsylvania, and was used until the company lost its identity as a branch of the Owens-Illinois Glass Co. in 1930.



Figure 2-8 – A.B.C.2 seal

However, Giarde reported bottles with date codes for 1931.

These were probably made by Owens-Illinois to fill existing orders or until the old molds wore out. Both practices were common (Giarde 1980:10-11; Toulouse 1971:28-29).

We have encountered an atypical example that is smoky in color. The bottle was generic (i.e., no identified dairy) and was embossed “HALF PINT / LIQUID” at the shoulder, and “MASS. SEAL / A.B.C.” in a full-sized plate on the front body (Figure 2-9). The front heel was embossed “SEALED / 5” (with the “5” backwards) and A.B.C.2 on the reverse heel roll. The bottle was probably one of the earliest made by Atlantic, in 1918 or 1919. The seal almost certainly migrated to the shoulder no later than 1919.

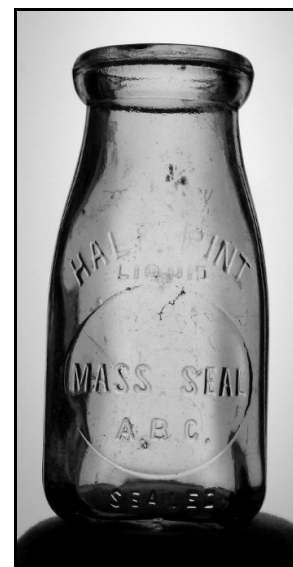


Figure 2-9 – A.B.C. seal

In all cases we have found, the A.B.C.2 mark was also embossed on the heel, sometimes low on the heel roll. Generally, the seal and heelmark were both embossed on the front of the bottle; some had both on the reverse, and a few had the seal on the front and the heelmark on the reverse. Although some imprints may be light, virtually all seals and heelmarks had punctuation. In many cases, the heelmarks were very weakly embossed. Although the seal was usually in a small plate at the shoulder, it was sometimes embossed directly onto the bottle. At least one transitional bottle was made with the FID. seal on the reverse and an A.B.C.2 heelmark (Blodget collection).

## B (1909-1916)

The “B” seal for Butler Bottle Co. is somewhat unique and is rated as very scarce. In all examples we can find, the seal was inserted as an apparent afterthought into the plate on the front of the bottle that identified the dairy. The addition of the seal took at least three forms:

1. The word “REGISTERED” was divided between the “S” and “T” with one half of the word to the left of a large square containing a large letter “A” (probably for Grade A milk) with the other half to the right. Below that was “MASS SEAL B” in a horizontal line set in much smaller font. The “24B” manufacturer’s mark was on the front heel of the bottle (Figure 2-10).

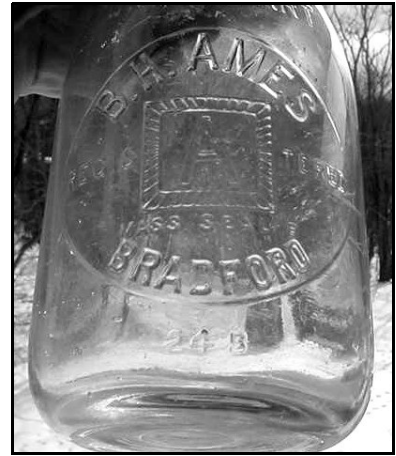


Figure 2-10 – B seal (Al Morin)

2. Along with the split “REGISTERED,” at least two bottles from the same dairy had the “MASS SEAL-B” split around a large letter “F” – with “MASS” to the left and “SEAL-B” to the right (Brad Blodget, personal communication, 1/24/2008).

3. On a half-pint bottle, the “MASS SEAL B” was at the bottom of the front plate in an arch.

Each bottle, regardless of the seal configuration, was embossed “24B” on the front heel, just below the plate. In addition, most (possibly all) bottles with the seal and the “24B” heelmark were embossed in the center of the base with the letter “B.” In many cases, this basal “B” was very indistinct (Brad Blodget, personal communication, 1/24/2008).

Although the 1910 list did not mention location, Schadlich (ca. 1990) cited the Massachusetts Bulletin (#11) for 1918 as placing the Butler Bottle Co. in Butler, Pennsylvania. The bulletin was incorrect. There was apparently no Butler Bottle Co., in Butler, Pennsylvania. We have been in contact with the local historical society, and the term “Butler Bottle Co.” was apparently only used in a generic sense for bottle factories (notably J.T. & A. Hamilton) that were located in the town.

The Butler Bottle Co. of Butler, *Ohio*, however, manufactured milk bottles from 1907 to ca. 1916. Since the plant made milk bottles, this is almost certainly the company intended in the Massachusetts record (*Commoner & Glassworker* 1909:1; Hayes 1909:13; Paquette 2002:369; Thomas Publishing Co. 1912:480; 1915:578; 1916:660). A 1916 newspaper article noted that the 24B mark was used by the Butler Bottle Co., Butler, *Ohio* (*Stevens Point Journal* 1916:2).

Giarde (1980:20) identified the “B” mark as being used by the Buck Glass Co. on milk bottles. Schadlich (ca. 1990), however, noted that the Buck Glass Co. did not apply nor was it approved for a Massachusetts seal (presumably based on the 1918 and 1928 lists, the only currently known primary sources). Although Buck certainly used the sans serif “B” mark to identify other glass bottles that it produced, Butler used the “24B” heelmark and “B” on the base in conjunction with the Massachusetts seal and probably on other milk bottles. Later, Buck used a Massachusetts B1 seal (see below).

### **B1** (ca. 1940-1947)

We have not found this seal reported in the secondary literature, although we have a bottle with the seal and have seen others on eBay. The shoulder seal was in the typical later, circular format (MASS / B1 / SEAL) with no serifs on the “1” (The logo in the Maine seal and embossed on heelmarks, however generally had a serif, indicating that the mark was “B1” rather than “BI.”) (Figure 2-11). The same “B1” was embossed on the heel. The base of one half-pint bottle was embossed “3077-1B46,” a typical mark of the Buck Glass Co. Even though the bottle was round, it was made by a blow-and-blow machine, unlike the typical round bottle made by the press-and-blow technique. Although Buck Glass was in business from 1909 to 1961, the seal bottles appear to have only been made during the last decade or so of the seal system, ca. 1940-1947 (Lockhart et al. 2006a:12).



Figure 2-11 – B1 seal



**BB** (ca. 1919-1931; 1931-1947)

This mark is found only in the 1918 (fourth) configuration on bottle shoulders and almost certainly continued to be used until the termination of the system in 1947 (Figure 2-12). Initially, the mark was used by the Berney-Bond Glass Co. Berney-Bond was formed when the Berney Glass Co. and the Bond Glass Co. merged on September 24, 1904. The company initially had plants at four Pennsylvania locations: Bradford, Smethport, Hazelhurst, and Clarion. Only Clarion and Hazelhurst produced milk bottles, the former beginning milk bottle production ca. 1918, the latter not until ca. 1925 (Hoenig et al. 2008:33-34).

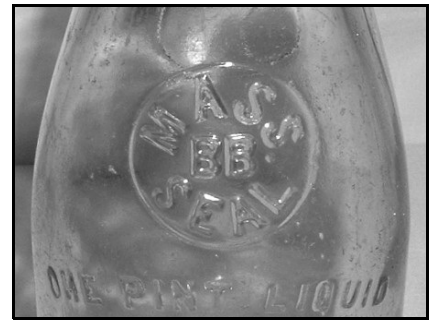


Figure 2-12 – BB seal (eBay)

Evidence suggests that Hazelhurst used the BBGCO48 heelmark (sometimes with a small “H” also embossed on the heel), and Clarion used the more common BB48 mark. The Hazelhurst factory ceased production for Berney-Bond on December 28, 1928. On May 1, 1927, Berney-Bond purchased the Winslow Glass Co. and continued to operate its Columbus, Ohio, plant. The Columbus factory also used the BBGCO48 mark, often with a “W” on the base to indicate that plant (Hoenig et al. 2008:36-37).



Figure 2-13 – BBGCO48 (eBay)

When the Owens-Illinois Glass Co. purchased Berney-Bond in 1930, it continued to make milk bottles at the former Berney-Bond plants. In addition to its own manufacturer’s mark on the bases of the milk bottles, Owens-Illinois also used the BBGCO48 heelmark (inherited from Berney-Bond) and the “BB” in the Massachusetts seal (see Giarde 1980:14-16). Interestingly, we have not found a single bottle with both the BB Massachusetts seal *and* the more common BB48 heelmark on milk bottles (Figure 2-13). The last use of the BBGCO48 heelmark we have found was in 1951 (Hoenig et al. 2008:38-39).

Berney-Bond included date codes on its milk bottle bases from ca. 1925 until 1931.<sup>3</sup> These were accompanied by either BBGCO48 or BB48 heelmarks (although, as mentioned above, only the BBGCO48 mark was used with the Massachusetts seals). Beginning in 1931, the bottles were marked with the Owens-Illinois date code system (Hoenig et al. 2008:39; also see Lockhart & Hoenig 2015). An example from eBay included a Massachusetts “BB” seal on the shoulder and a basemark of “17 <(0)> 4” (1944) (Hoenig et al. 2008:39).

### **BP (1909-1911)**

Although Schadlich (ca. 1990) noted the “BP” seal as being on the shoulder, he did not describe it. Morin noted that the configuration was MASS SEAL BP in an arch on the front shoulder. As noted above, bottles with the “BP” seal are scarce to rare. We have not found an actual example.

The firm was listed in the 1910 Annual Report (Commonwealth of Massachusetts 1911:4). The 1918 record placed the Belle Pre Bottle Co. at Washington, D.C., and Shadlich (ca. 1990) noted that the company was a “jobber” (i.e., a distributor), but that is incorrect. Belle Pre made its own milk bottles – a manufacturer, not a jobber. The location is also slightly misleading. Although the company maintained a sales office in Washington, D.C. (and embossed that location on at least one bottle), the factory, itself, was in Alexandria, Virginia. The plant operated from 1902 to 1911 (Lilienthal 2003:2; Lockhart et al. 2007a:2).

### **C (1913-1914)**

The Massachusetts “C” seal is only found on apple-shaped heavy cream jars, each embossed “½ PINT (horizontal) / DEER FOOT (slight arch) / HEAVY / CREAM / THIS JAR IS NOT SOLD / PLEASE RETURN (all horizontal)” on the front body. The last line was at the heel. The reverse was embossed “MASS (arch) / C (horizontal) / SEAL (inverted arch)” with “REGISTERED” at the heel (Figure 2-14). The jars solarize to a light amethyst color. Deerfoot jars were also made by other glass houses.

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<sup>3</sup> Even though Owens-Illinois took over the plants in 1930, it filled existing orders with the older company logos and/or used the molds until they wore out at some point in 1931.

Schadlich (ca. 1990) stated, “There were manufacturers applying the MASS SEAL to their milk bottles or jars for which no record of approval has been found.” One example he gave was a “MASS C SEAL” on a half-pint cream jar used by a dairy in Southborough, Massachusetts. He assigned the mark to the Cohanse Glass Co. Morin added that

Deer Foot Farm purchased “SPECIAL COHANSEY Fruit Jars lettered/embossed Deer Foot Farm” that were used for milk & cream VERY EARLY like the 1880’s . . . either Lou Schadlich attributed the later Mass C Seal jars because of this . . . or he had other information that Deer Foot continued their relationship with COHANSEY in later years.

Giarde (1980:25) noted that the “COHANSEY GLASS MF’G Co” mark was used on milk bottles “to about 1900,” but we have found no contemporary mention of milk containers connected to the company. The Giarde entry suggests that Cohanse may have ceased milk bottle production after the move to East Downington in 1900. However, since Cohanse closed in 1911, the firm remains an unlikely, although still possible, choice.

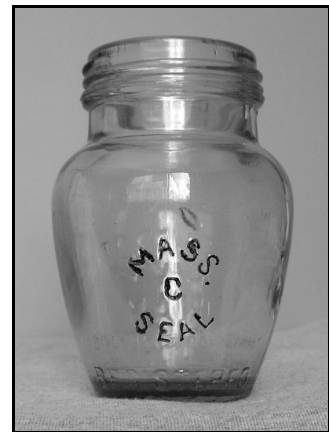


Figure 2-14 – C seal

The C-seal jar was made by a press-and-blow machine and exhibited an unusual ejection scar on the base. Typically, these scars



Figure 2-15 – C.H.B.Co.

are either flush with the base or slightly sunken. The ejection scar on the Deer Foot jar with the Massachusetts “C” seal, however, protruded slightly from the base. In our examination of literally hundreds (maybe even thousands) of milk

bottles, the “outie” scar is very rare. We have only found one bottle with a similar scar, and it had a manufacturer’s mark of “C.H.B.Co.” (Figure 2-15).



Figure 2-16 – “Outie” scars

A comparison between the jar and the milk bottle reveals several similar characteristics. Both were solarized amethyst in color, and both were made by press-and-blow machines. Each had the “outie” ejection scar and a base that

exhibited tiny, pinpoint holes from a rough, cast-iron baseplate (Figure 2-16). Each also had an unusual vertical side seam that either disappeared or almost disappeared as it reached the heel of the container. The cup bottom base seam was virtually invisible on both the jar and milk bottle.

The finish of the jar was interesting in its own right. The vertical side seams terminated at the base of the finish at a horizontal seam that encircled the jar. A second horizontal seam encircled a sealing ring just below the beginning of the continuous thread. There were no vertical seams on the threaded segment of the finish or the rim. The seamless, continuous-thread finish was the invention of George W. Henning and Arthur W. Beeson, an adaptation to fit a press-and-blow machine that would make seamless, continuous-thread finishes. They applied for a patent on June 16, 1906, and received Patent No. 857,803 on June 25, 1907. The patent document stated:

The object of the invention is to provide a mechanism which may be readily adapted and attached to any form of molding and blowing machine, and which operates automatically and whereby a thread or threads without fin or seam may be formed on the article.

Their adaptation could therefore work on any press-and-blow machine.

Although the finish description is not directly relevant to the discussion about the manufacturer of the jar, it places the production of the jar after 1906 (probably after 1907). The similarities between the Deer Foot jar and the pint milk bottle with the C.H.B.Co. manufacturer's mark are too close for a spurious connection. Those similarities, coupled with the "C" in the seal, suggest that the Massachusetts "C" seal was used by the Chicago Heights Bottle Co., in business only during 1913 (*Indianapolis Star* 1913). The short life of the company also explains why the only known use of the seal was on the Deer Foot heavy cream jars.

The Lockport Glass Co. also made apple-shaped, Deer Foot jars, probably after Chicago Heights had become part of the Illinois Glass Co. and had transferred the milk bottle business to the Bell Bottle Corp. For more information, see the sections on the Chicago Heights Bottle Co. and the Illinois Glass Co. in the BRG *Encyclopedia of Manufacturer's Marks on Glass Containers* at Bill Lindsey's Historical Bottle Webpage (Lindsey 2017).

The Cohansey identification also fails on another level. Photos of Cohansey jar bases (at least ones marked with the company name) all exhibited mouth-blown characteristics. Many of the jars had a “whittled” appearance, a characteristic generally found only on mouth-blown containers, and many had uneven or rough finishes, especially at the rim. There was no sign of an ejection mark or any kind of machine scar on any bases observed by the BRG. Most (possibly all) bases were cup bottom with a circular, sunken plate embossed with the Cohansey name. In addition, we have found no historical evidence that Cohansey ever used machines.

Thus, the apple-shaped jars with the “C” seal could only have been made during 1913, although some evidence suggests that manufacturing may have continued into early 1914. This is one of the few cases we have found where the circular format was possibly used prior to 1914.

Paul Doucette questioned the Chicago Heights identification and defended the Cohansey hypothesis. He noted that

Deerfoot began in-bottle pasteurization in August, 1911. This required the use of the crown or dacro lip finish. I have examples of cream jars (dated 1916-while some bottles are undated) with the dacro style finish. My assumption is this; why would Deerfoot order an “old” style cream jar in 1913, which probably required it to be manually filled and capped, when a new “assembly line” style bottling and capping process was, by then, in place for 2 years?

## **D (1914-1918)**

Schadlich (ca. 1990) noted that the “D” seal was embossed on bottle heels. This suggests a use of the mark during the pre-1918 period, consistent with the known duration of the DuBois Glass Co. A photograph (Morin), however, showed the “D” seal in the typical post 1918 format (Figure 2-17) on the shoulder (used as early as 1913) with “DBG CO 30” embossed on the heel. It is possible that Schadlich confused the heelmark with the seal or that the heel seal represents an earlier (pre-1918) location. The glass house was in business during both periods.



Figure 2-17 – D seal (Al Morin)

Although Shadlich (ca. 1990) noted that the Massachusetts record placed the DuBois Glass Co. at DuBois, Pennsylvania, contemporary sources (Thomas Publishing Co. 1915:578; 1921:782, 784) indicated that the plant was at Falls Creek, Pennsylvania, a couple of miles northwest of DuBois. The firm may have maintained a sales office in the larger town. Schadlich included no dates for the company. DuBois Glass opened in 1914 and operated until 1918.

## E (1909-1920)

A 1916 Essex Glass Co. ad noted this seal as “Mass / SEAL E” (*Milk Dealer* 1916:58), although the actual configuration was more likely either “MASS SEAL E” in an arch or “MASS (arch) / SEAL E (inverted arch)” to form a circular pattern. Thus far, we have not actually observed the mark in either of these patterns. The 1910 list in the Annual Report (Commonwealth of Massachusetts 1911:4) listed the logo and the Essex Glass Co., so it was certainly one of the early marks.



Figure 2-19 – E seal - circular (eBay)

Essex “E” seals were made in at least two configurations. The earlier one was embossed “MASS SEAL (slight arch) / E (horizontal)” on milk bottle shoulders and at least once on the reverse body (Figure 2-18). These were probably used during the ca.

1912-1916 period, although at least one bottle from the H.P. Hood Dairy at Boston still used the “MASS SEAL / E” configuration in 1919 (eBay). By at least 1902, the Hood dairies required that glass houses emboss a full, four-digit date code on the bases of bottles made for the dairy.

The circular configuration with the “E” in the center replaced the earlier format, also embossed on shoulders (Figure 2-19) – although at least one generic bottle had the seal on the body (Figure 2-20). Bottles with the seals were usually (possibly always) accompanied by E-4 heelmarks. These seals date from ca. 1914 to 1920 (Lockhart 2007).



Figure 2-18 – E seal - arch (eBay)

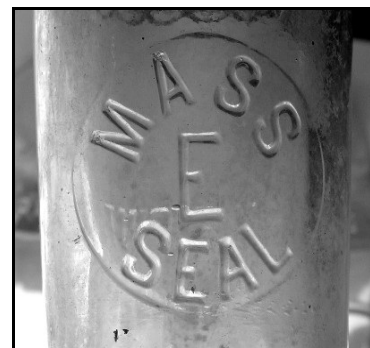


Figure 2-20 – E seal - body

The “E” seals also occur with heelmarks that included the E-4 logo and “EMPIRE,” the mark used by the Empire Bottle & Supply Co., New York, New York, a jobber rather than a manufacturer. The Essex “E4” and “E-4” logos are found in association with “EMPIRE” marks as well as the 1901 Empire patent date. However, Schadlich (ca. 1990) noted that “EMPIRE” was embossed on bottles with the “E” and “P” seals (see P seal discussion below). Morin noted that heelmarks could be “E4” or just “4,” although the number alone may only indicate a weak “strike” where the “E” is not visible.

### **E.F.** (ca. 1911-ca. 1914)

This seal appears to have been rarely used. Although the mark did not appear in the 1910 Annual Report, it was listed as “E.F.” in the 1918 Massachusetts Bulletin and was used by the Elk Flint Bottle Co. (Schadlich & Schadlich 1984:5). The company was initially located at St. Marys, Pennsylvania, from 1903 to 1904, then moved to Shinglehouse, Pennsylvania, in the latter year. The firm was only open a few years (ca. 1904-ca. 1914), so it was out of business prior to its inclusion in the 1918 Massachusetts Bulletin. The Puritan Glass Co. had replaced Elk by 1915 (*Oswaygo Valley Mail* 6/28/1956; Schadlich ca. 1890; Thomas Publishing Co. 1907:161; 1914:532). Schadlich (ca. 1990) noted the location of the seal with a question mark, indicating that he had not seen an example. Thus, the seal would have been an early one and would probably not have appeared in the circular shape.

Unfortunately, the Elm Farm Milk Co. embossed the initials “EF” on the fronts, backs, and/or heels of its milk bottles (Figure 21). At least one of those was also embossed with a Massachusetts “T” seal and a “28” (1928) date code. Such bottles have been offered on eBay. It is very likely that the “E.F.” seal was never actually used – despite its inclusion in the 1918 bulletin.



Figure 2-21 – EF

### **F.I.D.** (1909-1916)

The F.I.D. seal was used in at least two configurations between 1909 and 1916, some with variations:

1. “MASS SEAL FID” in an arch above the front plate and “FID2” on the reverse heel (Blodget collection). Schadlich (ca. 1990) described a variation embossed “MASS F.I.D.2 SEAL” located “above slug plate in arc. Front of bottle. 1915-1916.” Morin noted that the correct configuration of the arched seal was



Figure 2-22 – Mass Seal FID arch

“MASS SEAL F.I.D.2” and



Figure 2-23 – Mass Seal / FID arch

noted that the FID also

appeared in some configurations with no punctuation, although the mark with periods is more common (Figures 22 & 23). It is possible that these reports represent three variations of the arched mark. These were probably used early in the sequence, possibly ca. 1909-ca. 1915.

2. “MASS SEAL (arch) / F.I.D. (inverted arch)” with the period under the “I” instead of following it (Figure 2-24). This was in a circular plate on the reverse shoulder. Below the seal, “FID. / 2” was embossed horizontally across the upper section of the body (Morin collection). A variation had the same plate on the reverse shoulder but no embossing on the reverse body (Blodget collection). This type of seal was probably used during the third phase of the Massachusetts system.



Figure 2-24 – Circular FID (eBay)

There is little doubt that the Fidelity Glass Co., Tarentum, Pennsylvania, was a major manufacturer of milk bottles (Thomas Publishing Co. 1907:161, 799; 1917:731). The company was open from 1895 to 1916 (Hawkins 2009:116-121), and Giarde (1980:42), attributed the FID mark, “found on tin tops,” to the Fidelity Glass Co. The number (2) apparently transferred to the Atlantic Glass Co. upon the 1916 sale. The date of the sale also explains why Fidelity was only listed in the 1911 Annual Report, although the document called it the “Fidelity Manufacturing Company.” Atlantic Bottle had bought Fidelity in time to be listed in its place in the 1918 bulletin (Schadlich & Schadlich 1989:5).



## FL (1909-1928)

Schadlich (ca. 1909) only listed a shoulder location for the FL seal, although C.L. Flaccus was certainly in business early enough to have used the seal when the location and configuration were not yet legally mandated. In at least some cases, the FL seal was placed on the center of the reverse body of milk bottles in a plate (Figure 2-25), probably during the second stage. The seal also appeared on the side of a Deerfoot Farm heavy cream jar (Figure 26). At least some bottles had the seal on the shoulder (Figure 2-27).



Figure 2-25 – FL seal - reverse (Al Morin)



Figure 2-26 – FL seal - shoulder (eBay)

C.L. Flaccus & Co. was in business from 1879 to 1928 with four Pennsylvania locations (Hawkins 2009:213-215; Lockhart et al. 2007b:40-42). The company manufactured milk bottles at least as early as 1914 and probably continued to make them until the firm closed in 1928 (Thomas Publishing Co. 1914:532, 536; 1920:828, 830, 8616). Flaccus was listed in the 1910 Annual Report, so he was certainly one of early users of the seals, and it is likely that Flaccus made bottles for a few Massachusetts dairies during this entire period.

Although both Toulouse (1971:190) and Giarde (1980:22) solely noted the F-in-a-keystone mark as being used by Flaccus, we have only seen that logo on a single milk bottle, and that one *did not* have a Massachusetts seal. Morin stated that he had only seen a mark of “F 13” on the heels of bottles with the seals. Possibly, the keystone mark was used either earlier or



Figure 2-27 – Deerfoot jar (eBay)

later than the center body seal. It is also possible that Flaccus milk bottles from other states used the “F 13” mark, but it has not been connected with Flaccus in the past.

## **K9** (1920s-1947)

We have only found these seals in the “MASS / K9 / SEAL” configuration on the shoulders of milk bottles (Figure 2-28). This format was used from ca. 1914. In addition to the seal, a K9 mark may also be embossed on the heel of the bottle, and many bottles from other locations bear the K9 heelmark but no seal.



Figure 2-28 – K9 seal (Al Morin)

Giarde (1980:118-119) noted that these logos are found on bottles, both with or without a Thatcher logo. These bottles lack date codes, although he suggested a date range from the 1920s to the late 1930s. Giarde attempted to explain the marks but finally concluded, “In the final analysis it can only be said that K9 milk bottles should be attributed to Thatcher. Beyond that the K9 will remain a mystery until some researcher finds the answer.”

A complicating piece of evidence is the listing of the mark as belonging to the Knox Glass Bottle Co. in the 1928 Massachusetts Bulletin (Schadlich and Schadlich 1989). Blodget (2006:8) also identified “K9” in the Massachusetts seal as the mark identifying Knox. The earliest listing we have found for milk bottle production by Knox was 1927 (*American Glass Review* 1927:137), although we have a gap in our listings between 1921 and 1927, so production may have commenced earlier. Milk bottles were not listed for Knox in the 1921 Thomas Register (Thomas Publishing Co. 1921).

The resolution of these apparently conflicting lines of evidence is fairly simple. In December, 1932, Thatcher “purchased bottle machines, molds and name-plates, certain Hartford Empire licenses relating to the manufacture and sale of milk bottles, and good-will, etc., of Knox Glass Bottle Co., of Knox, Pa.” (Porter 1935:1518). Bottles exhibiting both the K9 heelmark or K9 seal and a Thatcher logo were clearly made by Thatcher after 1932, using old Knox molds. Bottles with an embossed K9 but lacking any Thatcher mark were presumably made by Knox prior to the Thatcher purchase.

Blodget (personal communication 4/11/2007) described a bottle with the typical Massachusetts circular K9 shoulder seal, K9 embossed on the heel, and a “w” embossed in the center of the base (i.e., inside the ejection scar). The “w” is ca. ½" tall. The only Knox plant that fits a “w” mark is the Pennsylvania Bottle Co., Wilcox, Pennsylvania, a plant that normally used a mark of LP in a keystone. The Wilcox plant was one of the four Knox factories that produced milk bottles (Lockhart et al. 2008a:56, 60).

Knox reentered milk bottle production ca. 1942 (certainly by 1943). This time, it marked its milk bottles with “K-14” on the heels and/or an empty keystone logo on the bases.<sup>4</sup> The K-14 does not appear on later bottles, and the numbering system may have been removed after the general demise of seals in 1947. The number “14” was originally given to the J.T.&A. Hamilton Co., but Hamilton sold its milk bottle section to Thatcher in 1920 (Lockhart et al. 2008b:3-4). The number was apparently reissued to Knox ca. 1942.

### **L (Lockport Glass Co.) (1909-1919)**

According to Schadlich (ca. 1990), the Lockport Glass Co. embossed the Massachusetts “L” seal on the shoulders of milk bottles from 1909 to 1919, and the glass house was certainly an early one, listed as of 1910 in the 1911 Annual Report. The firm was in business from 1900 to 1919, and the company’s typical heel mark “LGCO / 1” accompanied most seals (Lockhart 2004a:2). At least one exception – used by the Hood Dairy – had “LGCO” embossed on the base. The dairy was known for embossing a full, four-digit date code on the bases of its bottles, and this one, dated 1911, was no exception. Possibly, Lockport had not adopted the “1” code by that time.



Figure 2-29 – L seal - arch (eBay)



Figure 2-30 – L seal - jar (eBay)

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<sup>4</sup> After the publication of the article, we also discovered milk bottles with the K-9 heelmark and S in a Keystone embossed on the base.

Lockport used at least three configurations for the seal (each accompanied by the typical manufacturer's mark on the heel):

1. Probably, the earliest had the "L" centered below an arched "MASS SEAL" (Figure 2-29). These were almost certainly used during the second stage, and the only examples we have seen were on tin-top bottles.
2. The second type may have only been used on the apple-shaped Deerfoot cream jars. This one was "MASS SEAL L" in an arch on the reverse of the jar. The "L" was in the same line as the "MASS SEAL" in this configuration (Blodget, personal communication 1/24/2008). The only Deerfoot jars we have found on eBay, however, had the first configuration (entry above – Figure 30).
3. The final type was in the typical 1918 configuration with the "L" in the center of the circle, used during the fourth stage (Figure 2-31). Morin noted that formats 1 and 3 are equally common, and that some bottles had LGCO embossed on the base.



Figure 2-31 – L seal - circle (eBay)

An example of the circular format in the Morin collection also had a small plate on the reverse shoulder embossed "1912." Both the bottle style and the manufacturer's time in business support the identification of this as a date code, almost certainly one requested by the dairy. The Hood Dairy (Massachusetts) followed this practice, although it was unusual.

### **L (Lamb Glass Co.) (1939-1947)**

The Lamb Glass Co. originally used the "O" seal (see below) but reincarnated the "L" seal in 1939, after Lockport had been out of business for 20 years! This timing suggests that the Massachusetts seals were awarded to glass companies for a 30-year period, in this case, from 1909 to 1939, although we have found no historical reference for



Figure 2-32 – L seal - circle (Al Morin)

this practice. When used by Lamb, the “L” seal was always in the typical circular configuration and was accompanied by Lamb’s “L52” heelmark – with the “52” nestled in the crook of the “L” (Figure 32).

## **M** (1902-1909)

These seals are so rare that Schadlich (ca. 1990) had apparently never seen one. He recorded a “?” in the location column and suggested the seal was used “circa 1909.” The Mannington Glass Works, Mannington, West Virginia, was listed as the seal user in both the 1911 Annual Report and the 1918 bulletin (Schadlich & Schadlich 1989:5).

The company was very short lived. The Mannington Glass Co., Mannington, West Virginia, incorporated on January 2, 1902, and manufactured milk bottles on O’Neill machines. When a tank burst on April 18, 1909, the factory suffered \$50,000 in fire damages, probably leading to its closure (*Insurance Engineering* 1909:562; *History of Engineering & Technology* n.d.; *State of West Virginia* 1903:189).

The plant apparently sat idle for five or six years, but a new corporation decided to rebuild it. *Iron Age* (1914:421) announced on February 5, 1914, that the Mannington Glass Co. was a new corporation with W.J. Leahy as president. The new firm planned to build a new plant at a cost of \$76,390. We have found no follow up to the plan.

It seems likely that Mannington Glass paid the bond to Massachusetts for a seal number in 1909 just before the fire forced the closing – thus assuring a listing in the 1911 report. The new firm may have again bonded for the licence right after it reformed but never accumulated sufficient funds to build the new factory. If our speculation is correct (see above), Mannington Glass may have continued on the 1918 list because the numbers were assigned for a 30-year period – and no one from the glass house contacted Massachusetts to cancel. In any case, it is apparent that Mannington Glass never actually produced bottles with the seal.

## N

The Massachusetts “N” seal does not show up on any of the lists of seals. However, Schadlich and Schadlich (1984) illustrated the mark on the cover of their report. The drawing showed a typical 1918 circular seal format (with the “N” in the center) and “N.G.Co” embossed on the heel (Figure 2-33). He did not discuss the mark in his text, so the only information we can glean is that it *may* have been used sometime between 1918 and 1947. However, this appears to have been concocted by Schadlich, although why he would illustrate a bogus mark, when he had so many actual seals to choose from is a mystery.

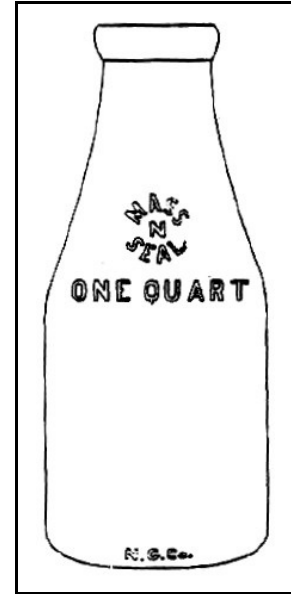


Figure 2-33 – N seal  
(Schadlich and Schadlich  
1984)

## O (1921-1939)

Initially, the Lamb Glass Co. used the Massachusetts “O” seal, because Lockport had already claimed the “L” code (see above). Lamb used the “O” seal from the opening of the glass house in 1921 to 1939, all within the period when the circular seal with initials in the center was legally mandated (Figure 2-34). Although it became part of the Dorsey Corp. in 1964, the plant continued to use the L52 logo until 1971, when it adopted the Circle-C mark of the Chattanooga Glass Co., the main Dorsey company (Lockhart 2004a; 2004b; 2004c).



Figure 2-34 – O seal

Although much research remains to be done, the initial manufacturer’s mark used by Lamb Glass Co. was L-52 (1921-ca. 1925). That was followed by LGCO52 (ca. 1925-ca. 1929), prior to the adoption of the “L52” mark (with the “52” nestled in the crook of the “L”) ca. 1929. The final mark was used until ca. 1971. All Lamb logos were embossed on bottle heels. Several of the “O” seal bottles in the Morin collection are embossed with “LGCO52” heelmarks. Schadlich (1984) noted that the “O” seal was accompanied by a smaller “L52” heelmark than those accompanying the “L” seals. It is probable that Massachusetts “O” seals were made on bottles with all three Lamb logos.

## **P** (1912-1920s)

Schadlich and Schadlich (1984:5) noted that the Standard Milk Bottle Mfg. Co. used a “Pe.” seal, probably citing the 1918 Massachusetts Bulletin. However, the 1911 Annual Report placed the letter “P” as belonging to the Poughkeepsie Glass Works along with “Pe” for Standard. The Poughkeepsie Glass Works opened ca. 1881 and ceased operations in 1916. It was thus no longer listed in the 1918 Bulletin. It is highly probable that Standard took over the “P” seal in 1917 or soon thereafter.

Schadlich (ca. 1990) noted that the seal for Standard was “P” and that “EMPIRE” was sometimes embossed on bottles with the “E” and “P” seals. Since the plant was in Parkersburg, West Virginia, the “P” likely indicated Parkersburg, although why the firm did not receive an “S” is anyone’s guess. By the 1918 Bulletin, the Sheffield Glass Bottle Co. had captured the “S” seal, but Sheffield was *not* listed in 1911. In an unattached sheet, Schadlich noted that *all* bottles with the “P” seal also had the “EMPIRE” embossing (see “E” seal above for more on Empire). We would also expect the “SMBMCo” logo to be on the heels of these bottles (Giarde 1980:109; Shadlich ca. 1990), but Morin noted that his “P” seal bottles lack the “SMBMCo” heelmark.

The Essex Glass Co. opened Standard in 1911, but the company lost its individual identity when it became the second Essex plant in 1913 (Giarde 1980:109-110; Six 1993:22). The 1911-1913 date range is one of the few that suggests a 1913 usage of the circular format. The “P” seal was in the 1918 circular pattern, embossed on the shoulder of milk bottles (Figure 2-35). It is probable that Essex continued to use the “P” seal on bottles made at the Parkersburg plant until the company sold to Thatcher in 1920, and it may be that all P-seal bottles were made after 1914. Hopefully, future research will further untangle this curious skein of relationships.



Figure 2-35 – P seal (Al Morin)

## **R** (1924-1926 or later)

Although Reed was an old name in glass making, the F.E. Reed Glass Co. did not begin milk bottle manufacture until ca. 1910, but Reed was not listed in the 1911 or 1918 lists. The

earliest Reed milk bottle ad that we have found was placed in 1924 (*Milk Dealer* 1924:119), and it included a drawing of a milk bottle with a Massachusetts R Seal on the shoulder (Figure 2-36). Although Toulouse (1971:432) stated that Reed began using the R-in-a-triangle mark in 1927, it was almost certainly in use by 1925, although the “R” seal was not listed for Reed until the 1928 Bulletin. Currently, the only configuration we have seen for the mark is the circular format with the “R” in the center, mandated in 1918 (Figure 2-37).

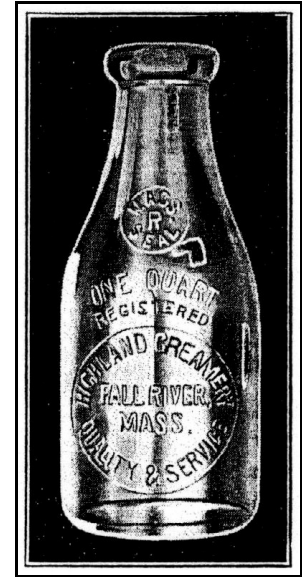


Figure 2-36 – R seal in ad (*Milk Dealer* 1924:119)



Figure 2-37 – R seal (Al Morin)

Bottles with the “R” seal from the Morin collection were not embossed with the Triangle-R mark, and none had date codes. All were embossed “REED” at the heel along with the “34” manufacturer’s number (although the number usually appeared on the base). Sellers on eBay have also reported a “P34” embossed on bases of bottles with “REED” on the heels, although other letters may appear. We have in our possession a milk bottle with “REED” on the heel and “A-34” on the base, although this container does not have a Massachusetts seal.

The “REED” mark was possibly used as early as ca. 1920 and was still used on Coke bottles as late as 1926 (Bill Porter, personal communication, 5/10/2008). The R-Seal could not have been used prior to 1919 (since it did not appear on the 1918 list). The seal was probably not used until 1924, when the earliest ad appeared (that we can find), and it was likely only used until ca. 1926. The “R” seals are scarce, supporting the idea of a limited use period.

## S (unknown)

The Sheffield Glass Bottle Co. began business in 1905 and became the Pennsylvania Bottle Co., a subsidiary of Knox Glass Bottle Co., in 1927 (Lockhart et al. 2008a). Although listed in the 1918 Bulletin, Sheffield – not surprisingly – was no longer on the 1928 list. Schadlich (ca. 1990) only noted that the seal was on the shoulder, so we have no idea as to the format. Thus far, we have not found an example.



Sheffield was listed from 1907 to 1921 in the Thomas Registers and up to 1927 in other sources, and all those indicated that the plant made a general line of bottles – but none listed milk bottles at any point (*American Glass Review* 1927:144; *Journal of Industrial and Engineering Chemistry* 1913:953; Thomas Publishing Co. 1907:161; 1921:782). The scarcity of these bottles almost certainly indicates that Sheffield only used a Massachusetts seal for a short period of time (if ever), but that period could have existed any time between the listing in 1918 and 1927. Our best guess is ca. 1918, although several companies were on the 1918 list that were no longer in business by that time.

## T (1909-1947)

The Thatcher Mfg. Co. (renamed the Thatcher Glass Mfg. Co. in 1946) was one of the earliest companies to emboss date codes on its containers (and the first milk bottle manufacturer to do so). This creates much tighter date ranges for Thatcher products and provides strong evidence for dating stylistic changes. From late 1909 to 1926, Thatcher embossed two-digit date codes in association with its logo on the bases of milk bottles. During a transition period (1920-1924) both the TMC mark and the date codes could be found on either the heel or base of the bottles or both. When the company settled into the M<sup>T</sup>C mark (with the “M” and “C” nestled under the “wings” of the “T”) from 1923 to ca. 1949, the two-digit date code and a letter identifying the factory settled onto the base (Lockhart et al. 2007c:58-60).



Figure 2-38 – Thatcher 1909 date code (Al Morin)

Thatcher captured the “T” seal in 1909. The date was established by a milk bottle in the Morin collection that was embossed “MASS SEAL T” in a gentle arch on the shoulder as well as the “T.MFG.Co” logo on the base above a date code of “09” (1909) and an Owens machine scar (Figures 2-38 & 2-39) This is an important bottle. Not only does it set Thatcher as using the new seal during



Figure 2-39 – T arch

the first six months of the system's existence, it also connects Thatcher's use of date codes with the seal system. Thatcher began making milk bottles on Owens machines in 1905, but no date code earlier than 1910 has been brought to our attention prior to the Morin bottle. The Morin collection also contained another bottle with the same manufacturer's mark without a Thatcher date code, although the bottle was etched with a 1908 seal. This further supports a 1909 adoption of date codes by Thatcher. Of course, Thatcher appeared on the 1911 list.

Thatcher also used a horizontal shoulder seal until at least 1916, according to photos that included the date codes from eBay auctions (Figure 2-40). Currently, both horizontal and slightly arched Mass T seals should be dated from 1909 to ca. 1916. There is some overlap, since Thatcher adopted the "MASS / T / SEAL" circular configuration (Figure 2-41) by 1914, again verified by "14" date codes on bottles in the Morin collection. Thatcher used the typical round shoulder seal from 1914 to the end of the seal system in 1947.



Figure 2-40 – T horiz

An atypical bottle, made for the C. Brigham Co., Cambridge, was embossed "MASS. SEAL" in an arch that formed two-thirds of a circle with a "T" at the bottom (completing the circle) on the back body (Figure 2-42). The back body location was probably chosen because the bottle had a large "B" embossed on both front and back shoulders. The base, too, was atypical, again because of a large "B" in the upper center. Immediately below the "B" was "20" (for 1920) above an arched "T.MFG.CO." partly obliterated by the feathered Owens machine scar.



Figure 2-41 – T circle

After Thatcher bought the Lockport Glass Co. in late 1919, it continued to use the circular "MASS L SEAL" bottles along with its TMC manufacturing mark. Although many of the bottles using this transitional mark were not dated, the mark, itself, was just used during the 1920-1924 period. Thatcher probably only used the "L" seal until existing molds wore out. One example in the Morin collection is dated 1922,



Figure 2-42 – Unusual T circle

demonstrating that the “L” seals were used at least that late. Factory codes of “E” and “L” on bottle bases show that most (possibly all) milk bottles with Massachusetts seals were made at either the Elmira or Lockport plants, both located in New York.

### TR (ca. 1910-1920)

The Travis Glass Co. was listed in the 1911 Annual Report and joined the Massachusetts system early. Schadlich (ca. 1990) stated that the seal had been used “since 1917” but gave no reason for the limitation.

Travis incorporated in 1908 and sold to Thatcher in January 1920 (Giarde 1980:115; *Commoner & Glassworker* 1908:1; Toulouse 1971:498). Since Travis used date codes (in the T-19-xx format – e.g., T-19-16 for 1916) from 1912 until the sale to Thatcher (January 1920, although no “20” date codes are known), bottles with the TR seal but no date code *may* be dated 1909-1912 (see Figure 1-2 in Chapter 1).



Figure 2-43 – TR plate 1 (Al Morin)

The TR seal is found in at least four locations and in four configurations as summarized in Table 3. Probably the earliest configurations are two that were added to existing plates. One of these had the “seal” built around a large letter “A” (probably meaning “Grade A”) in the center of the plate. “MASS” was embossed along the left upper slope of the “A” with “SEAL” descending down the other side. Between the legs of the “A” was “T-R” – the only example of the use of a hyphen with the “TR” seal. On one example, there is also a weak mirror image of a “TR” below the “T-R” mark. The dairy name and city were embossed at the top and bottom of the plate (Figure 2-43).

Another “TR” seal was added to a “STORE / BOTTLE” plate. The “Store Bottle” label was used on bottles that were sold in stores during the period when home delivery of milk was the norm. On this seal, the logo “MASS SEAL / TR” was embossed at the bottom of the plate below the word “BOTTLE” (Figure 2-44). These “add-on” seals were probably the earliest used by Travis.



Figure 2-44 – TR plate 2 (eBay)

They were probably followed by “MASS SEAL / TR” embossed on the lower-body/heel area on the reverse side (Figure 2-45). These and two described above were probably used during the ca. 1912-1917 period (one heelmarked bottle had a 1917 date code), after the company began using date codes. This is difficult to track because Travis date codes and the distinctive Inverted-Triangle-T manufacturer’s mark are often very faint on the bases of the bottles. It is easy, for example to assume there is no date code because it is almost invisible.



Figure 2-45 – TR heel (Al Morin)

Another configuration had the seal in a circular form on the shoulder with “MASS SEAL (arch) / TR (horizontal)” (Figure 2-46) This would probably have been used during the ca. 1914-1918 period, and the date range is supported by the example in the Morin collection with a 1916 date code (T-19-16) embossed on the base. The final format was the “MASS / TR/ SEAL” embossed in a circular format on the shoulder (Figure 2-47). Although mandated by law in 1918, at least one Travis bottle with this configuration had a 1917 date code (T-19-17).



Figure 2-46 – TR circle 1 (Al Morin)



Figure 2-47 – TR circle

A slight variation had the circular “MASS. / TR. / SEAL” (with periods after MASS and TR) on the reverse shoulder and the words “MASS SEAL” added to the front body plate (Figure 2-48).

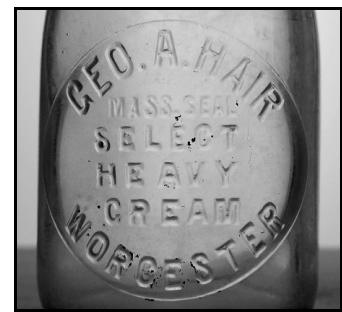


Figure 2-48 – Mass Seal plate

However, the plate had no reference to “TR” or Travis, only

the local dairy. The base had the Travis T-in-an-inverted-triangle mark with no discernable date code.

**Table 3 – Seals Used by the Travis Glass Co.**

Description	Date Range
“MASS” and “SEAL” along opposite slopes of large letter “A” with “T-R” below – on plate	ca. 1909-1912*
“MASS SEAL / TR” at bottom of plate	ca. 1909-1912*
“MASS SEAL / TR” at lower body/heel	ca. 1909-1913
“MASS SEAL (arch) / TR (horizontal)” in circular format	ca. 1914-1916
“MASS (arch) / TR (horizontal) / SEAL (inverted arch)”	ca. 1917-1919

\* A single bottle with a date code of 1917 had both of these seals plus the typical circular seal mandated in 1918. It is almost certain that this reflects a use of two old plates on this bottle.

A single bottle in the Morin collection had *three* of these seals embossed in different places! The bottle had the typical post-1918 shoulder seal with *two* seals in plates (front and reverse). The plate seals were in the configurations described above, with the company identification on the front body and the “STORE BOTTLE” plate on the reverse body (see Figure 2-43). One bottle, otherwise unmarked, was embossed “MASS SEAL TR” in an arch on the base – the only seal of that type we have found.

This bottle requires some speculation. As discussed in the early part of this study, plates were probably used until they wore out. Thus, some of them likely continued to be used into the era of succeeding seal configurations. A short look at plates is also in order. The purpose of plates was to: a) allow customers (dairies, in this case) to purchase a cheaper way to personalize their bottles (a plate cost much less than an embossed bottle);<sup>5</sup> and b) to allow the glass houses to make generic bottles that could be used for virtually any dairy (or other customer) with the insertion of a plate. The only hitch in the plan was that dairies (and other bottle users) were fickle. They switched providers according to sales, prices, shipping, and just the whim of the individual dairy owner. After making a plate, a specific glass factory might not get a reorder from the same dairy for years.

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<sup>5</sup> Prior to the use of plates, customers had to buy the entire mold if the company wanted its name embossed on the bottle.

Applying this knowledge to three-seal bottle, we have a bottle that was made with the final, mandated seal embossed on the shoulder and two plate seals. Although this is pure speculation, the S. Aranoff dairy may have ordered bottles from Travis in, say, 1913. After a single order (with bottles where Travis embossed the Massachusetts seal on the front plate), Aranoff found a better deal from Thatcher or some other glass plant, so the plate sat on the shelf. Meanwhile, Travis made a generic plate for store bottles, but that, too, did not sell well. Four years later, in late 1917, Aranoff decided to take advantage of a Travis sale and ordered “store” bottles. Now, Travis had a generic bottle with the earliest of the mandated seals – but had old plates for Aranoff on the shelf, along with a store bottle plate that was also unused. Travis now had a solution, and we have had a mystery to unravel.

### **U.G.** (1921-1947)

These were embossed in the “MASS / U.G. / SEAL” configuration on milk bottle shoulders (Figure 2-49). Located at Parkersburg, West Virginia, the Universal Glass Products Co. made milk bottles from at least 1921 to 1979 (Six 1993:23). The company probably sold bottles in Massachusetts from close to its opening and continued until the seal system was ended in 1947.



Figure 2-49 – UG seal

### **W** (1912-ca. 1928)

The Winslow Glass Co. began making glass in 1898. At that time, the plant produced a general line of bottles but did not manufacture milk bottles. According to Giarde (1980:140), milk bottle manufacture had become important by 1907, and contemporary sources and advertisements indicate that milk bottles were made by at least 1909 (e.g., “Sciota” 1909:4). However, all Winslow bottles we have seen were machine-made. Winslow seems to have introduced machine manufacture between 1912 and 1913, so that might be a better date for the beginning of milk bottle production (*Journal of Industrial and Engineering Chemistry* 1913:953), although mouth-blown milk bottles may have not been marked with logos. Winslow appeared on both the 1918 and 1928



Figure 2-50 – W seal

Massachusetts lists, although the Berney-Bond Glass Co. purchased the firm in 1927. The only seal known for Winslow is the circular form with a “W” in the center embossed on the shoulder (Figure 2-50). Winslow bottles were embossed with the 5W logo on the heel.

An eBay seller offered a bottle embossed “MASS SEAL W” on the center of the back body. This is the only exception we have found to the typical shoulder location.

## **WT (1912-1928)**

Whitall Tatum was not in the 1911 Massachusetts report, but the firm appeared in the 1918 listing. Although the glass house continued to make milk bottles, it was not included in the 1928 Bulletin. The only plausible explanation for this seeming inconsistency is that milk bottle production was minimal at Whitall Tatum. Although the company made a large variety of containers, it specialized in pharmacy and medicinal bottles.

There has been a great deal of misunderstanding about Whitall Tatum marks (e.g., see Giarde 1980:136; Toulouse 1971:545-546). Although there were many variations in the designs, Whitall Tatum only used three marks. The earliest was W.T.&Co., embossed on bottle bases. In 1901, the company changed from the older Whitall Tatum & Co. to a new corporation, Whitall Tatum Co., dropping the ampersand (&) in the mark. The new logo, also applied to bottle bases, was W.T.Co. Both W.T.&Co. and W.T.Co. were used only on mouth-blown bottles. While hand production continued to at least 1927, very few bottles were mouth blown after 1924 (Lockhart et al. 2006b:58-68).

Whitall Tatum began to make narrow-mouth bottles by machine in 1912, and those overtook hand production by at least 1920. Although Toulouse (1971:544) and Giarde (1980:136) both illustrated a “T” superimposed on a “W” in an inverted triangle, we find no evidence that such a mark actually existed. About 1922, Whitall Tatum adopted the “W / T” in an inverted triangle logo and embossed it only on machine-made bottles. The mark was used until the sale of the company in 1969 (Lockhart et al. 2006b:67-68). Some milk bottles had an inverted triangle



Figure 2-51 – W in triangle

surrounding a “W” embossed on the shoulder (Figure 2-51). This was not a “seal,” and it was not the mark of Whitall Tatum. It was the logo of the dairy using the bottle.

We have been unable to find an example of the WT Massachusetts seal. Brad Blodget (personal communication, 2/17/2007) noted that the WT mark was rare. Whitall Tatum may have only used the Massachusetts seal for a short time, although it is impossible to ascertain when until or unless we actually see an example of the logo. However, it seems likely that Whitall Tatum went through the process for the Massachusetts seal but never actually made any milk bottles that had one.

## **Discussion and Conclusions**

The study of the Massachusetts seal system on milk bottles is both rich and fruitful. Historical dating of the seals can be used to tighten up known date ranges for manufacturer’s marks, and, conversely, many of the marks may be used, especially in conjunction with date codes, to improve date ranges for seal use by individual glass companies. This study shows a highly complex set of patterns that can be generalized and, simultaneously, used for the analysis of individual containers found in archaeological contexts or in collections.

A total of 25 companies used 22 codes on milk bottles (three codes – BB, K9, and L – were each used by two companies at different time periods) during the 47 years that the seal system was in place in Massachusetts. Although the accuracy and reliability of the date ranges vary, almost all of these company codes may be reasonably dated for use in archaeological reports. Some may be dated with a very fine accuracy, and the bottles made by the Thatcher Mfg. Co. and Travis Glass Co. were nicely marked with date codes, as were later bottles from some other firms.

The period of etched seals on condemned bottles is a field ripe for study – although it would take a local Massachusetts collector to conduct it. Since those bottles were condemned, many of them were likely broken rather than merely discarded. The remaining ones are probably in the hands of collectors scattered across the state. Al Morin recently discovered a half-pint cream bottle with “C 99” acid etched in a round plate on the front. This may have indicated Cambridge, Massachusetts, 1899. If so, it is the earliest we have seen.



All books and reports on glass artifacts should be regarded, in the words of Mike Miller (collector and bottle author) as “the latest information,” and this study is no different. As more records and more bottles are discovered, our group, along with other researchers, should find data that will improve the accuracy of most date ranges.

## Acknowledgments

Brad Blodget brought this rich study to our attention in response to an article we published in *The Milk Route*, a newsletter for collectors of milk bottles, on the Essex Glass Co. (Lockhart 2007). He provided us with his own manuscript, examples from his collection, and the first Schadlich manuscript we encountered. Our gratitude also to the legions of anonymous eBay sellers who, albeit inadvertently, provided a large, informal database for bottle study.

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