

# Summary Guide to Dating Bottles

Bill Lindsey

To misquote an old saying as rephrased by the Bureau of Land Management supervisor who facilitated the initiation of the *Society for Historical Archaeology's Historic Glass Bottle Identification & Information Website* project: "The universe (of bottles) isn't just more complicated than you think, it's more complicated than you CAN think." This is often true, although much information can be teased out of most bottles with a systematic approach to the matter. This concept is the crux of SHA's historic bottle website, and the reader should use that resource for a more detailed and interactive guide - <http://www.sha.org/bottle/index.htm>. If the reader is uncertain of any terms, please see the bottle glossary (this volume) or the SHA historic bottle website for more information. The next article (Lindsey and Allen) is really a series of 3 worksheets and 18 questions designed to help those beginning the foray into bottle dating. Examples can also be found at - <http://www.sha.org/bottle/examples.htm>.

## CAUTIONARY NOTES

- *Changes in technology are not immediate.*

As the transition occurred from manual craft production to industrialization and automation, glass manufacturers did not always make an immediate leap to technological advances. There is often a technology lag, and acceptance of new technologies often occurred over a period of years, even decades in some cases. Some technological changes were expensive, thus not adopted by glassmakers until it became an "adapt or perish" issue. Many glass factories just perished. A classic example of technology lag is the shift to the fully automated bottle machine from mouth-blown and some semi-automatic methods in the early-20th century (Toulouse 1967, 1969a).

- *Consider the artisan effect.*

All techniques of glass manufacture, once developed, have continued into the present. In short, there was (and is) nothing to stop a glassmaker from using an obsolete method in the production of a bottle. Glassmaking and glassblowing induces uniqueness in the form of variations, errors, experimentations, and retrogressions.

- *Many bottles are recycled and reused.*

Glass bottles are an enduring form of storage. The same bottle could have been recycled and reused multiple times for many years before finally being discarded—entire or broken (Busch 1987). Reuse was almost universal with many beverage bottle types (e.g., soda, beer, milk) but was variably common with just about any type bottle, especially prior to 1920. When a likely or known "older" item is found in a known "newer" site, it is referred to as deposition lag.

- *Shapes can indicate manufacturing eras—or not.*

Some bottle shapes are indicative of a particular manufacturing era, such as late-17th to very early-18th-century English "onion" bottles; other bottle styles/shapes, such as square snuff bottles (early-19th century until the mid-20th), were used for so many years that the shape itself is not indicative of age. Other diagnostic tools must be used to date these items. Shape is more indicative of function, i.e., what the bottle was used for or contained, but even that has a myriad of exceptions.

A key concept in historic bottle dating is the high probability that the age range noted for a particular diagnostic characteristic is accurate for a given bottle with diagnostic features. This general probability is based on a merging of reliable references with empirical observations that are made by the author's affiliated consulting experts and by the author himself—all of whom have been students of historic bottle dating and identification for decades. What follows is a sort process using diagnostic characteristics of a bottle with diagnostic features.

The first step is to determine whether the bottle is mouth blown or machine made. Within each of those two categories there is a further sort process to narrow down the age range of the bottle.

### INITIAL SORT: MOUTH BLOWN or MACHINE MADE?

#### Question 1

Does the bottle have raised embossing on the body, shoulder, and/or neck OR a distinct vertical side mold seam (*Figure 1*) visible on the body, shoulder, and/or neck (or both features)?



*Figure 1. Vertical side mold seam on the neck of a beer bottle ending well below the tooled finish, indicating that it was at least partially handmade. This is a typical 11–12 oz. beer bottle, ca. 1905–1915. (Photo by Bill Lindsey, 2005.)*

**If YES:** The bottle has embossing or visible, vertical side mold seams somewhere on the body between the heel and the base of the finish or lip. A bottle may have mold seams but no embossing, but *all* embossed bottles were molded and have mold seams, even if they are not readily apparent. The majority of the bottles made in the 19th and virtually all in the 20<sup>th</sup> century were made in molds so “YES” is the *most likely* answer to this question.

#### Move to Question 2.

**If NO:** The bottle has NO embossing and NO apparent vertical side mold seams on the body, shoulder, or neck. This bottle is either free-blown, “dip”

molded, or was produced in a turn-mold (aka paste-mold) where the side mold seam is erased during manufacturing. A “NO” answer is *much less likely* than a “YES” for this question because a very large majority of bottles made during the 19th century and virtually all made during the first half of the 20<sup>th</sup> century were mold blown resulting in mold seams; see the note below.

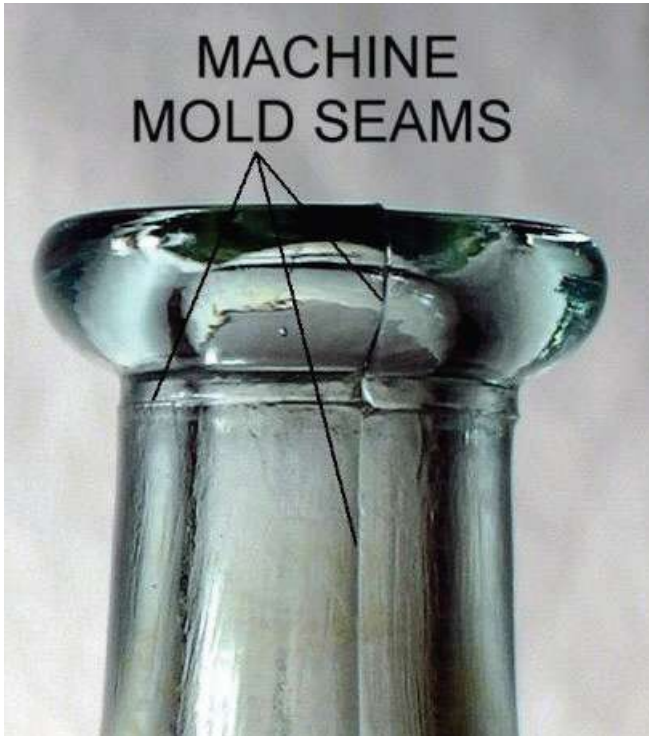
#### Move to Question 3.

#### Question 2

Answer only if you said “YES” to Question 1. The bottle DOES have vertical side mold seams and/or raised embossing.

**Do the vertical side mold seams go up to the highest vertical point of the finish (aka “lip”) side and usually onto the finish rim itself AND the topmost surface of the finish (rim) is not visibly ground down, i.e., the bottle does not have a ground lip/rim?**

**If YES:** The vertical side mold seam or seams go to the highest vertical point of the finish side and (usually) onto the top surface (rim) of the finish AND the top surface of the finish does not appear ground down. This is a machine-made bottle or jar and will also usually have a highly diagnostic horizontal mold seam just below the finish that circles the neck. This is especially obvious with narrow-mouth or bore bottles but can also be found on wide-mouth/bore bottles, like canning jars.



**Figure 2. Close-up of the finish (lip) of an Illinois Glass Co. bottle manufactured on an Owens Bottle Machine (Toledo, Ohio), ca. 1915–1920. (Photo by Bill Lindsey, 2005.)**

*Figure 2* shows both of these mold seams. Bottles with these diagnostic mold seams in evidence were made by either semi-automatic or fully automatic bottle machines and virtually always date after 1900 (for wide-mouth bottles and jars) and after 1910 for narrow-bore bottles (Miller and McNichol 2002). **\*See Exceptions below; if none apply and your bottle is indeed machine-made move to Question 8.**

**If NO:** The top surface of the finish is either ground down (most commonly seen on canning/fruit jars but also on other types, including screw-thread-finish liquor flasks) or the side mold seam stops or fades out distinctly below the top of the finish and usually - but

not always - below the lowest portion of the finish (i.e., collar) as shown in the *Figure 1* above.

Bottles with this discontinuous or fading vertical side mold seams are referred to as mouth-blown or hand-made and typically date prior to 1915, although they could date back to at least 1800. The vast majority of U.S. manufactured, mouth-blown molded bottles were made between about 1820 and 1915. **See Exceptions below; if none apply and the bottle is indeed mouth-blown, move to Question 4 for more information on mouth-blown bottles portion of this key.**

(Note: One of the longest running myths in the world of bottle dating is that the side mold seam can be read like a thermometer to determine the age of a bottle. The concept is that the higher the side mold seam on the bottle, the later it was made or at least in the era from the early- to mid-19th century until the first few decades of the 20<sup>th</sup> century. For a broader discussion of this subject see “Debunking the Myth of the Side Seam Thermometer” [Lockhart et al., 2005].)

**\*Exceptions to Question 2:** The three most common exceptions to the side mold seam “rule” are a few types of machine-made bottles on which the vertical side mold seams do not quite reach the top edge of the finish, making them appear to be possibly mouth-blown.

- **Fire polishing**

Occasionally encountered machine-made bottles may have fire-polished finish rims, a process that eradicated evidence of the neck-ring mold seam on the rim of the bottle. These bottles will not have the side mold seam proceeding from the upper finish side over and onto the rim itself.

- **Milk bottles**

Many milk bottles made with press-and-blow machines from the very early 1900s into at least the 1940s resulted in vertical side mold seams that gradually fade out on the neck, distinctly below the base of the finish.

- **Ink/shoe polish bottles**

Another common exception to this dating question deals with small ink bottles and similar small, moderately wide-mouth bottles (like shoe polish) made during the first half of the 20th century.

### **Question 3**

Answer only if you said “NO” to Question 1. The bottle does NOT have vertical side mold seams.

**Is the bottle cylindrical/round, exhibiting very symmetrical conformation and having faint concentric “rings” or striations on the glass surface going horizontally around the body and/or neck of the bottle as shown in the picture below (Figure 3)?**



*Figure 3. “Hock” wine bottle, ca. 1890–1915. The concentric rings are not always as obvious as the picture shows and sometimes not visible. Although if present this characteristic is a conclusive diagnostic feature. (Photo by Bill Lindsey, 2005.)*

*If YES:* This bottle was produced in a turn-mold, which was also known in the glass industry as a paste-mold. The bottle literature variously refers to all turn/paste mold, free-blown, and dip-molded bottles as mouth-blown or handmade bottles. All turn-mold bottles are round in cross section and, unless stained (aka patinated), will usually have a polished-looking sheen to the glass surface. The large majority of turn-mold bottles date between 1880 and 1915, although they were produced as early as the mid-1850s and as late as the early 1920s (Switzer 1974; Deiss 1981; Jones and Sullivan 1989; Boow 1991; Gerth 2006; empirical observations).

A “YES” answer to this question is more likely than a “NO.” **Move to Question 5** for a possible dating refinement based on the method of finish application, although turn-

mold production process can mask some of the diagnostic features.

*If NO:* The bottle is either not round or, if round, is very crudely made and nonsymmetrical with no concentric body/neck rings. This bottle is probably free blown or dip molded. These two manufacturing types can be hard to differentiate from each other. Free-blown bottles are almost always round or oval in cross-section and have lines that are not sharp (i.e., a “flowing” look). Most free-blown bottles date prior to 1850 and can be much older. Dip-mold-produced bottles may be any shape in the body but have more distinct lines from the shoulder down since that portion was actually molded (Jones and Sullivan 1989). Dip-mold bottles usually date prior to 1865–1870 but can also be much older (back to early-18th century at least).

#### **Note:**

Questions 4–7 apply to diagnostic characteristics of mouth-blown bottles.

Questions 8–18 apply to diagnostic characters of machine-made bottles.

## **MOUTH-BLOWN BOTTLES**

### **Question 4**

**Does the base of the bottle have some type of pontil scar or mark?**

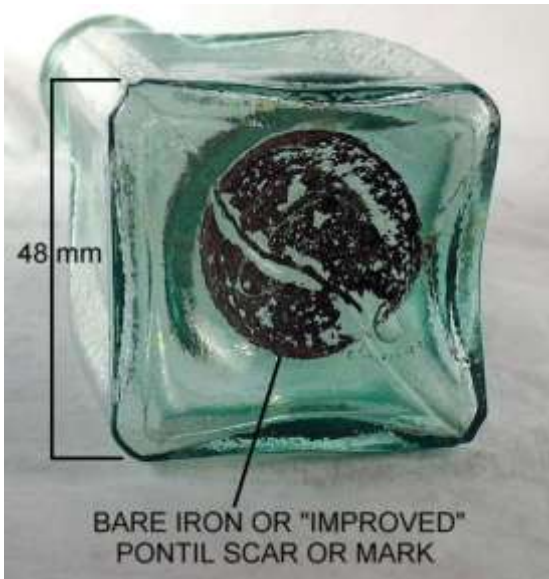
A pontil scar or mark is a very useful mid-19th-century diagnostic dating characteristic (Figure 4). Several different types of pontil marks exist, all of which are a mark or scar on the bottle base left by a type of pontil rod. A lot of variety is possible within each category of pontil marks. Between

the mid-1840s and the mid-1860s, various snap-case tools that typically left no distinct markings on the bottle gradually replaced the pontil rod (Barber 1900; Jones and Sullivan 1989). The SHA historic bottle website has much more information on pontil rods, pontil scars, and the empontilling process.



**Figure 4.** Examples of the three major pontil types: (a) glass-tipped or “open” pontil scar on a pictorial calabash flask from Isabella Glass Works, NJ, ca. 1850–1855; (b) iron or “improved” pontil scar; and (c) sand (disk) pontil scar on a “Rickett’s Patent” liquor bottle, 1822 (this bottle has a dated blob seal). (Photo by Bill Lindsey, 2005.)

**If YES:** The base of the bottle does have a pontil mark. Utilitarian bottles with pontil marks usually date from or prior to the American Civil War era, i.e., 1860–1865, and almost always prior to the early-1870s, although bottles can date prior to 1800. Note that many specialty or artisan-made bottles can have pontil scars after this period.



**If NO:** The base of the bottle does not have any evidence of a pontil mark. The base may have a mold line(s) and/or embossing, or be totally smooth and unmarked. The vast majority (probably 95%+) of mouth-blown utilitarian bottles without pontil marks date after the Civil War, that is, they were made after 1865.

### **Question 5**

**Does the bottle finish (“lip”) have an applied finish, tooled finish, or a finish that does not fit either of these categories or you do not know?**

Unless familiar with these terms, a user must view the descriptions below for both applied and tooled finishes to properly differentiate those finishing methods from each other. The finish manufacturing technique can be difficult traits to differentiate from each other. The applied vs. tooled finish dating reliability is considered of moderate accuracy due to the wide time span that glassmakers adopted the new tooling methodology. A lot of finishing variability exists between types or classes of bottles, although within a given type of bottle, the finishing method can be a very helpful dating tool. For more information, see my reprinted article “Finishing Touch: A Primer on Mouth-blown Bottle Finishing Methods with an Emphasis on ‘Applied’ vs. ‘Tooled’ Finish Manufacturing.”



**“True” applied finish** — This finish is most accurately called an applied finish but is also

referred to as an applied lip. Figure 5 shows a bottle with a distinct applied finish. This finish results from the separate application of hot glass to the unfinished bottle at the point where the

bottle was removed from the blowpipe, i.e., the neck. After glass application, most applied finishes were also tooled to shape. Applied finish bottles typically date between 1820 and 1890, although there is much variety depending on type or class of bottles. In general, based on empirical evidence, the larger the bottle the later applied finishes were used.

Many collectors and archaeologists inaccurately use the term “applied lip” to refer to any finish on a mouth-blown (non-machine-made) bottle where the side mold seam does not terminate at the top of the finish. “Applied finish” should refer only to a separately applied finish, i.e., a “true” applied finish.

Diagnostic characteristics of an applied finish include several or all of the following:

- The mold seam ends abruptly at the lower edge of the finish (shown in *Figure 5*). Be aware that the mold seams in the upper neck portions of an applied finish bottle can be very hard to detect due to neck re-firing during the finish application process or just the emasculating effect of the hot glass to finer features like mold seams.

- There is usually a small quantity of excess glass slopping over onto the neck of the bottle just below the finish (*Figure 5*). Sometimes the excess slop-over is not evident or the finish glass was actually inadequate in quantity, resulting in a finish that is “missing” some portions, evidenced by unfilled spots on the top of the finish and/or ragged unevenness at the base of the finish.



- The visual presence of a line or ridge inside the applied finish glass can often be confirmed and felt with the little finger inside the bore. (Note: this ridge is not visible in *Figure 5* but can be distinctly felt on this bottle with ones finger.) This line/ridge is the “interface” between the blowpipe-severed neck and applied finish glass and can vary from distinct to virtually nonexistent.

- Concentric horizontal tooling marks from a finishing tool will be present on the finish itself but not on the upper neck just below the finish. Most applied finishes had to be hand tooled after the glass application in order to achieve the desired shape.

- On some applied finishes there will be a grouping of small, short fissures or cracks (crazing) in the area where the glass was applied to the sheared/cracked-off neck end. This feature is rarely seen on tooled finishes (next section) and typically quite indicative of an applied finish.

**Figure 5.** “True” applied finish (lip) with the side mold seam stopping abruptly at the base of the finish. Bottle is a Lindsey’s Blood Searcher (patent medicine from Hollidaysburg, PA), ca. 1855–1865. (Photo by Bill Lindsey, 2005.)

**Tooled Finish** — *Figure 1* shows an early-20th-century beer bottle with a tooled finish. The side mold seam fades out on the neck well below the finish. The tooled (aka “wiped” or “improved tooled”) finish was usually a result of the glass for the finish being blown with the rest of the bottle in the mold, then the finish was hand tooled to a more precise shape once the still-hot (and pliable) bottle was removed from the mold, often after re-firing the bore at the blowpipe detachment point. In short, the finish glass was not applied to the severed neck of the bottle in a separate hand operation. The changeover from applied finishes to tooled finishes appears to

have been in the 1880s, with a large majority of bottles produced after 1890 exhibiting this finishing method. Hand-tooled finishes largely disappeared between 1910 and the early 1920s with the ever-increasing dominance of fully automatic bottle-making machines.

Diagnostic characteristics of a tooled finish include several or all of the following:

- The side mold seam distinctly fades out on the neck of the bottle, typically within an inch of the bottom of the finish (Figure 1), although sometimes it will disappear within the finish itself but short of the rim. The terminal end of the seam will often bend slightly in the direction that the finishing (aka “lipping”) tool was rotated.
- Concentric horizontal tooling marks are usually present on both the finish and the upper portion of the neck above the point where the side mold seam fades or disappears; these rings show faintly in the picture above. Sometimes the side mold seams can be observed faintly “underneath” or within the tooling marks or rings. The mold seam can occasionally proceed faintly almost all the way to the top of the finish. This residual seam evidence is likely a result of the glass beginning to cool and solidify while being hand tooled, allowing finish mold-seam traces to remain, and/or how tightly the finishing tool was pressed. Evidence of the mold seam within the confines of the finish positively identifies the finish glass as having been mold blown and not separately applied.
- The absence of a line or ridge inside the finish as would be found on a “true” applied finish since there was no separate application of finishing glass. The glass inside the neck at the finish/neck interface feels smooth to the touch with no ridge evident (not visible in Figure 1).
- There is often a visible change in the thickness of the glass on each side of the bottleneck inside the bore, beginning at the point where the seam disappears and the tooling marks begin. This is usually just a subtle “hump” on the inside surface of the glass where the tip of the finishing tool ended.

As usual with glass bottle manufacture, there was a lot of variation in the changeover from applied to tooled finishes, depending on the type or class of bottle. In general, based on empirical evidence, the smaller the bottle, the earlier that tooled finishes were generally adopted. For example, small proprietary drug store bottles appear to have almost totally made the changeover to tooled finishes by the late-1870s. Larger square “bitters” type bottles appear to have not completed this changeover to tooled finishes until the mid- to late-1880s, and beer bottles until the early- and possibly mid-1890s (Bill Lockhart 2006, pers. comm.).

***Other Finishes or Do Not Know*** —The universe of mouth-blown historic bottles contains many finishes or finish processes that do not fit neatly into this key. An assortment of different finishes (e.g., sheared, laid-on rings) have features that defy specific categorization, although these bottles can be dating-diagnostic depending on the particular type or class of bottle on which the finish is found. If your bottle falls out here, the best course of action is to consult the “Bottle Finishes & Closures” link on the SHA historic bottle website.

## **Question 6**

**Does the bottle have some type of mold seam or seams within the extreme outside edges of the base?**

Base mold seams can be indicators of age, although there are enough exceptions that the dependability of this diagnostic feature is only moderate. In addition, the mold seams on many bottles may be difficult or even impossible to discern for a variety of reasons. (Note: Base embossing is not pertinent to either a “YES” or “NO” answer here, as embossing can be present on bottles from any of the mold types.)



**Figure 6a.** Basal mold seam across the bottom of the bottle. Bottles produced in a simple two-piece mold with no separate base part have a mold seam that bisects the entire base. These are often referred to as hinge mold or snap-case bottles. This bottle is a Washington-Taylor figured flask (Philadelphia, PA), ca. 1860–1870. (Photo by Bill Lindsey, 2005.)

**If YES:** Within the confines of the bottle base, there is a mold seam or seams (Figures 6a and 6b). Base mold seams on mouth-blown bottles can be straight, round, oval, keyed, or notched. All versions include a continuation of the side (body) mold seams onto at least the outer edge of the base where the side

seams merge with the base seams (post-bottom mold) or actually are the base seams (hinge mold). Bottles with these base types usually date no later than 1890–1895, although earlier cut-off dates are associated with certain mold types and within some bottle categories. On the SHA historic bottle website the links on “Bottle Bases” and “Bottle Typing & Diagnostic Shapes” cover exceptions to these rules.



**Figure 6b.** Post-bottom mold produced bottle. The “post” seam is a result of a separate base mold section or plate. Bottle pictured is a Warner’s Safe Tonic (Rochester, NY), ca. 1879–1883 (Seeliger 1974). (Photo by Bill Lindsey, 2005.)

Bottles with a centered round or oval mold seam within the base were produced in a post-bottom mold simply called a post mold (Figure 6b). With this mold type, a large section of the base is formed by a separate mold base plate or section. Post-bottom mold bottles (with no pontil scar) usually date between 1860 and 1890, although there are significant dating differences among different types of bottles.

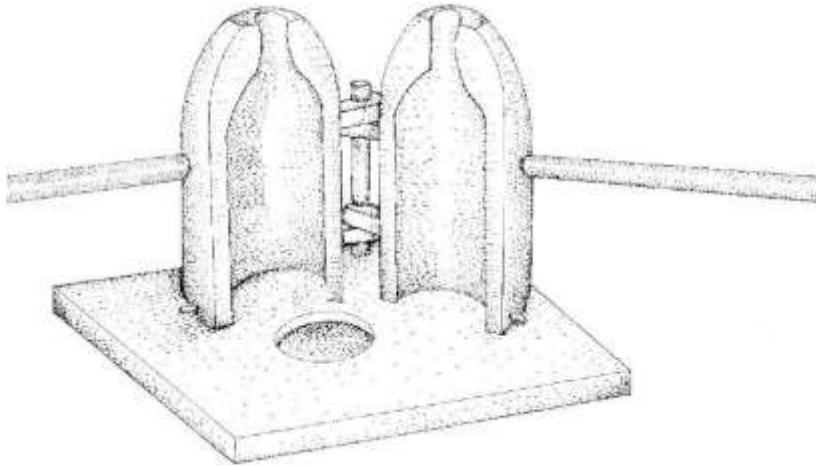


**Figure 6c.** Cup-bottom mold-produced bottle with no mold seams within the base. Bottle pictured is a Cla-Wood Malt Tonic from Portland, OR (White 1974), ca. 1906–1916. (Photo by Bill Lindsey, 2005.)

**If NO:** If within the confines of the base there are no apparent mold seams, there will probably be a mold seam on the heel of the bottle at the lower edge of the body just above the base resting point (Figure 6c). This heel seam may be distinct but is often faint or invisible, as it is commonly hidden in the ridge or edge at the body/heel transition point or interface. Even if this base seam is not



apparent, a cup-bottom mold is conclusively indicated by the side mold seams ending at the heel with no continuation around the heel edge and onto the base. Bottles with these diagnostic features were produced in a cup-bottom mold. These bottles can possibly date back to at least the 1870s (especially for druggist and smaller bottles), although the majority dates from the late-1880s to approximately 1915–1920, which is the effective end of the mouth-blown bottle era. Mouth-blown bottles from the early-20th century (1900–1920) were almost always produced in cup-bottom molds.

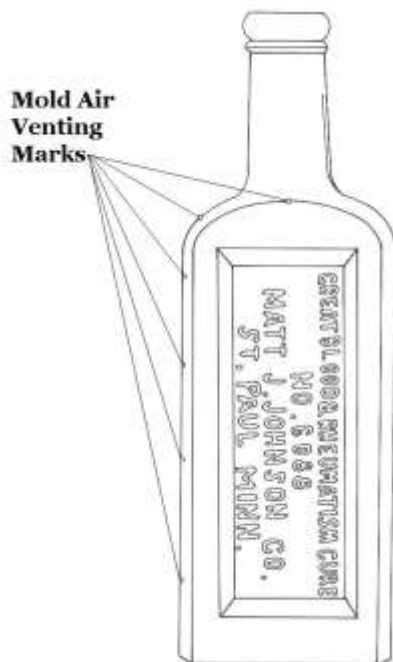


*Figure 6d. Two-piece “cup-bottom” mold with separate base plate. (Drawing by P. Corson, 2003.)*

Cup-bottom molded bottles are produced in a mold where the base-forming portion of the mold “cups” the hot glass for the base of the bottle to be (*Figure 6d*). This type mold was (and may still be) the dominant type used with automatic bottle machines (Toulouse 1969b), although the dates listed above are for mouth-blown bottles.

## **Question 7**

**Are there mold-formed air venting marks on the shoulder, body, and/or base of the bottle?**



Air venting marks are usually very small bumps that can be found just about anywhere on the surface of a bottle but are most common on the shoulders, corners, base, mold seams, (*Figure 7a*), and sometimes incorporated within the embossing pattern itself. Air venting marks can be found in several or even all of the locations illustrated in figure 7a - as well as the base - on the same bottle. Air vent bumps are typically smaller than a pinhead and appear like embossed “period” dots. These markings result from small holes drilled in the mold that allowed for the release of hot gases as the bottle was being blown and expanded. (Note: The information for question 7 was based largely on an amalgam of John Thomas [1974, 1977, 1998a, 1998b, 2002], Rex Elliott and Stephen Gould [1988], other references which provide company dating information, and empirical observations.)

*Figure 7a. This shows the most common places to look on a bottle, in order of likely probability of air venting marks being present: shoulders, on the body, vertical body edges (square or rectangular bottles), and base. (Drawing by P. Corson, 2003.)*

**If YES:** There appears to be one or more air venting marks on the surface of the bottle. Mouth-blown bottles with air venting marks typically date from or after 1885–1890. Air venting began being used significantly in the early- to mid-1880s and appears to have been fairly quickly accepted, becoming an industry standard by about 1890. Few

American-made mouth-blown bottles after 1890 are not air vented, although foreign-made items will often lack air venting into the early 1900s (empirical observations).

Depending on the location and type of mold air venting, additional dating refinement is possible. As a general rule, the more air venting marks present on the surface of a mouth-blown bottle, the later the bottle was likely produced. More specifically, just one air vent bump each on the front and back shoulder (cylindrical bottles) or the body shoulder corners opposite the vertical side mold seams (square or rectangular bottles) tend to be the earliest (mid- to late-1880s to mid-1890s). Those with multiple air-venting marks scattered around the bottle (including those integrated into the embossing pattern and/or on the base) tend to date to a later period (1905–1920).

Check the surface of the bottle carefully as air-venting marks can be very difficult to see and are sometimes easier to feel. One clue to consider in your search for vent marks is that bottles made in molds with air venting usually have sharper, more distinct embossing than bottles without vent marks; although this characteristic can be difficult to discern except to the experienced eye.

The advent of air venting largely coincides chronologically with the adoption period for molded and tooled finishes, as described in question 5 above. Based on the author's observations, mold air venting appears to have been accepted by glassmakers for all types of bottles faster than tooled finishes replaced applied finishes. This makes the presence of air venting a somewhat more reliable diagnostic dating break for a wider array of bottle types than the finish method. (Of course, using both diagnostic features helps to better refine the dating.)

**If NO:** There appears to be no air venting marks on the body of the bottle. Mouth-blown American made bottles without air venting marks typically date from or prior to 1885–1890. Look closely at the entire surface of the bottle, as air-venting marks can be very difficult to discern and occasionally are not visible even though the mold may indeed have been vented. An additional diagnostic indication is that bottles produced in non-air-vented molds tend to have more rounded and flattened embossing; this characteristic can be difficult to discern even to the experienced eye.

Note: If your mouth-blown bottle has embossed (or labeled) volume capacity, consult **Question 16**. If your bottle has any type of glass/bottle maker's marks embossed on the base or body, consult **Question 18** as well as the "Bottle & Glass Makers Markings" page on the SHA historic bottle website for dating refinements.

## MACHINE-MADE BOTTLES

### **Question 8**

**What color is the bottle?**

- ***Aqua***

A machine-made bottle made of aqua glass (aquamarine of very pale green), which is NOT a soda bottle or canning jar, is most likely to date from or prior to the 1920s. Aqua pretty much disappears by the early 1930s as a bottle color with the notable exception of soda bottles (and many canning jars) that continued to be produced in various shades of aqua up until recent years.

- ***Colorless***

Machine-made bottles with largely colorless (aka "clear") glass can date from any time after 1905, although there is a relatively reliable dating break possible, based on the type of colorless glass. In the production of colorless glass numerous methods—mechanical, physical, and/or chemical—were used to decolorize glass and could result in a slight color tint.

- **Lavender or Amethyst**

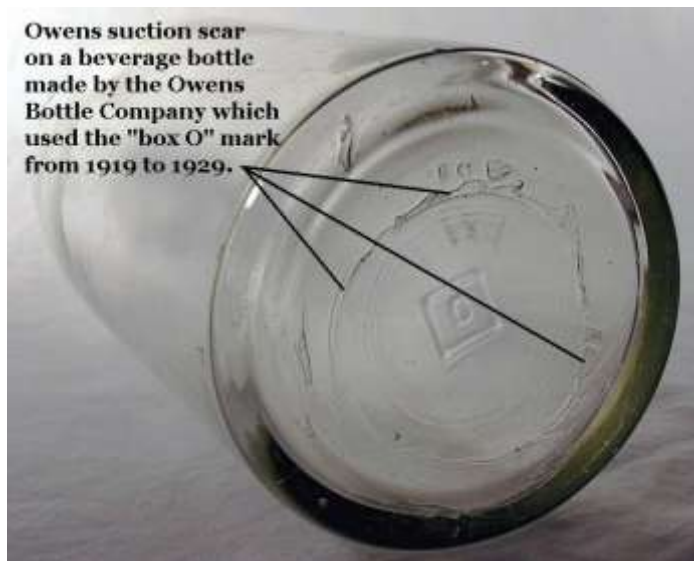
Manganese dioxide causes the glass to have a very slight lavender or amethyst tint which is amplified to varying degrees with exposure to sunlight (or artificial radiation). Amethyst bottles generally date between 1905 and the early 1920s (*Figure 8a*), although some can date as late as the 1930s. Machine-made soda bottles were generally not decolorized with manganese after 1914 (Lockhart 2006a; 2006b).



**Figure 8a.** Small utility bottle made from manganese dioxide decolorized glass, exhibiting a slight lavender cast in the thick portions of the glass, ca. 1910–1920. (Photo by Bill Lindsey, 2005.)

- **Straw**

When selenium or arsenic (or a combination of the two) is used to decolorize glass, it often



leaves a very faint “straw” cast to the thick glass portions that is not affected or intensified by sunlight (*Figure 8b*). These bottles will date no earlier than 1912 (Lockhart 2006a and 2006b). One or both of these decolorizers are still in use today. Although after the 1960s other decolorizing agents and glass-producing processes were used, resulting in less abundant “straw” tinted bottles.

**Figure 8b.** Beverage bottle made from arsenic and/or selenium decolorized glass, exhibiting a slight “straw” color in the thick portions of the glass, ca. 1920–1925. (Photo by Bill Lindsey, 2005.)

- **Other**

Bottle made of some other color of glass. In general, if the bottle has some other glass color, no useful general dating information is possible. See the SHA historic bottle website for more details on the exceptions, and move to questions below for more dating opportunities. Note: As with all of the dating points on this page, color must be considered in conjunction with other diagnostic characteristics in arriving at a probable date or date range for any given bottle—the “preponderance of evidence” concept.

## **Question 9**

### **Are there bubbles present in the glass? If so, how many and what size and shape?**

Bubbles are air- or gas-filled cavities within the glass, caused by an assortment of irregularities in the production process, including a glass pot or tank that was too hot or not full enough, glass cut-off or shearing irregularities, and various gob feeder problems. *Figure 9* is a close-up of a bottle with bubbles in atypically high quantity for illustrative purposes. In the glass-making industry, small bubbles were referred to as “seeds” and larger bubbles as “blisters” (Tooley 1953). Similar to the color question above, the presence of bubbles in the glass can help

some in pinning down the date of a machine bottle, but this knowledge must be used in conjunction with other features to more confidently narrow down a date range because it is not conclusive by itself.

**Figure 9. Bubbles in the shoulder glass of a bottle. This is an extreme example of the number of bubbles to be found in a bottle. (Photo by Bill Lindsey, 2005.)**

**If YES:** As a general rule of thumb, earlier machine-made bottles and jars (i.e., 1905–1910 [mid-1890s for wide-mouth ware] through the 1920s) will have more and larger bubbles than later machine-made bottles (early 1930s and later), when bubbles in the glass became a much rarer occurrence due to ever more-refined glassmaking technology. Larger bubbles (~1/8-inch and larger) and/or numerous bubbles of all sizes are more prevalent in bottles manufactured during the early machine period: 1890s (wide-mouth ware) to early 1920s.



**If NO:** The absence of bubbles or presence of only a very few small “seed” bubbles (less than a pin-head in size) or very narrow V-shaped bubbles, denotes a bottle that is more likely to date from or after the 1930s. Looking at glass bottles found in supermarkets today, one would be hard pressed to find even one bubble in all the observed bottles combined, as technology has all but eradicated this flaw in glassmaking.

## **Question 10**

**Does the bottle have the following statement embossed on its side or on the base?  
“FEDERAL LAW FORBIDS SALE OR REUSE OF THIS BOTTLE” (Figure 10).**

**Figure 10. Bottle embossed with “FEDERAL LAW FORBIDS SALE OR REUSE OF THIS BOTTLE.” (Photo by Bill Lindsey, 2005.)**

In the U.S., National Prohibition was repealed in late 1933 and was subsequently followed by the passage of Federal laws prohibiting the reuse or sale of used liquor bottles. This requirement was intended to discourage the reuse of bottles by bootleggers and moonshiners,



although the biggest discouragement to that illicit activity was that liquor was now legally available. On January 1st, 1935 all liquor sold in the U.S. was required to be in bottles that had the above statement embossed in the glass (Busch 1987). The statement was not required on

wine or beer bottles, as the latter category was and to some degree still is bottled in reusable bottles.

**If YES:** If your bottle has this statement embossed in the glass, it is a machine-made liquor bottle that dates between 1935 and the mid-1960s. This inscription is found only on machine-made bottles, with the rare exception of some Mexican-made (for the U.S. market) bottle being mouth-blown during that era. In 1964, the law requiring this statement was repealed. Be aware, however, that for some years after 1964, liquor could still be found in bottles with this phrase, since not all liquor producers switched immediately to new bottles, either due to the expense of new molds or to deplete an existing supply of bottles (Ferraro and Ferraro 1966).

**If NO:** If your machine-made bottle does not have this phrase embossed in the glass, it is probably either not a spirits or liquor bottle, was made outside the era the statement was required, or was originally sold outside the U.S. If you know the bottle is a U.S. made/sold spirits bottle (i.e., distinctly a spirits bottle in shape or design or it has other conclusive features like brand embossing or labeling), it could date prior to 1935, although is more likely to be a post-1964 product. Visit the liquor bottle section of the “Bottle Typing/Diagnostic Shapes” link for more information on spirits bottles.

## **Question 11**

**Does the bottle base have similar markings to those shown in *Figure 11*?**

**Figure 11. Maker’s mark showing manufacturer of bottle. Bottles with the mark in the image date between 1930 and the mid-1950s, with some limited use of this mark until at least 1959. (Photo by Bill Lindsey, 2005.)**



The “Diamond O-I” maker’s mark of the Owens-Illinois Glass Co. is shown in the picture within the white box. This mark is also known as the Saturn mark due to its stylized form. (Note:

The “O” in the Diamond O-I marking is actually a vertically elongated oval, although referred to here as an “O” for simplicity.) This maker’s mark is very common on bottles made during 1929–1930 to the mid-1950s.

## **Question 12**

**Does the bottle have a finish (lip) that was sealed with a cork, a threaded screw cap, or some other type of closure?**

### **• Cork**

The bottle you have has a finish that accepted a cork as the closure and is not a soda, beer, wine/champagne, or liquor bottle. Cork closure, machine-made medicinal, food, inks, and some non-alcoholic beverage bottles usually date prior to the early-1930s, although there are numerous exceptions.

### **• Screw cap**



The bottle has external screw threads, which are usually either continuous (*Figure 12*) or non-continuous or variations on these themes. Most all types of machine-made bottles with external screw threads date from the late-1920s or after, although some types, like catsup bottles, were commonly screw-threaded from the beginning of machine manufacture in the early-1910s. Note that the Bakelite (plastic) cap for screw thread finishes made its debut in 1927.

**Figure 12.** External (continuous) screw threads on a Heinz™ catsup bottle produced by the Illinois Pacific Glass Company (San Francisco, CA), ca. 1925–1930. (Photo by Bill Lindsey, 2005.)

• **Other closure**

There are a lot of finish styles that accepted crown caps, lightening stoppers, or other types of closures that do not resemble either of the choices above. If your bottle does not fit cork or screw cap, consult the SHA historic bottle website.

**Question 13**

**Does the bottle have what appear to be a painted or enameled label, lettering, and/or decoration?**

Applied color labeling or lettering (also known as ACL or pyroglazing) was a common way of permanently labeling or owner marking a bottle without the use of fragile paper labels (*Figure 13*). It was most common by far on soda and milk bottles but can occasionally be found on other types of bottles. An ACL soda or milk bottle dates no earlier than 1934, when the ACL process was first adopted for commercial use in the U.S. (Giarde 1989) with almost complete acceptance by bottle makers (and users) by the early 1940s (Bill Lockhart 2003, pers. comm.). Many beverage and some other types of bottles are still produced today with ACL's (e.g., Corona™ Beer), so there is no termination date for this feature.

**Figure 13.** Applied Color Label (ACL) on a 10-oz. soda bottle from the Mission Bottling Co., Klamath Falls, OR. Bottle made by the Owens-Illinois Glass Co. Oakland, CA, plant in 1946. (Photo by Bill Lindsey, 2005.)



**Question 14**

**Does the bottle have a shallowly incised circle on the base that is (usually) between 1/3-inch to 3/4-inch (10–18mm) in diameter?**

A valve or ejection mark on the base of a bottle is a definitive indication of machine-made manufacture by a press-and-blow type machine (Miller and Morin 2004). This mark was formed by machines that used a push-rod valve to eject the partially expanded parison out of the one-

piece blank mold (the “press” part of the process) to be grasped by transfer tongs when shifting the parison to the second blow mold (the “blow” part of the machine process) (Tooley 1953).

A valve mark is usually perfectly round and roughly 1/2-inch (12–14 mm) in diameter (Figure 14), although the marks can occasionally be a bit smaller (10–12 mm) or larger (up to at least 24 mm). The circle is incised or sharply indented into the surface of the glass and can be distinctly felt by running one’s fingernail over the mark. On somewhat rare occasions (by a few different glass companies), the valve rod had a mold number incised in it that would emboss the base of the bottle with this number when ejecting the parison; these numbers will always be centered within the ejection mark (Bill Lockhart 2007, pers. comm.; empirical observations).



**Figure 14. Valve mark on the bottom of a Cloverdale Dairy bottle, ca. 1925–1930. (Photo by Bill Lindsey, 2005.)**

Valve marks are almost exclusively found on wide-mouth machine-made hollowware: food bottles and jars, milk bottles, and canning/fruit jars. The mark is most commonly observed on wide-mouth milk bottles and food jars made between the early 1900s through the 1940s and occasionally after that. The mark is also common on canning jars, including many that were produced by semi-automatic press-

and-blow machines, possibly as early as 1898 (Birmingham 1980; Leybourne 2001).

Valve marks are very unusual on narrow-necked/mouth (bore) bottle types, although there are some exceptions as valve marks are occasionally seen on early (1910s) machine-made beer and soda bottles. At least one manufacturer (Cumberland Glass Manufacturing Company, Bridgeton, NJ) invented and used a type of semi-automatic press-and-blow machine in 1910 that did produce narrow-neck bottles, most likely resulting in a valve mark on the base of the bottles produced in the early 1910s (Bill Lockhart 2006, pers. comm.; Roger Peters 2007, pers. comm.). Thus, the presence of a valve mark on a soda or beer bottle would indicate a narrow manufacture date in the early 1910s.

## **Question 15**

**Does the bottle have a narrow mouth (bore/finish) or does it have a wide mouth (bore/finish)?**

### **• Wide Mouth**

During the mid-1890s, semi-automatic machines began to be used for the production of bottles and jars. The first known production bottles made on semi-automatic machines were wide-mouth Vaseline bottles made by the C. L. Flaccus Glass Co. in 1894 (Lockhart et al. 2007). For the first decade or so of use (i.e., up to about 1905), semi-automatic machines were useful almost exclusively for the production of wide-mouth bottles and jars (Figure 15a) due to the limitations of the press-and-blow machines in use at that time. Wide-mouth (bore) bottles and jars with

machine-made characteristics can date from as early as the mid-1890s but primarily date after about 1900. These bottles/jars are usually food bottles and canning/fruit jars.

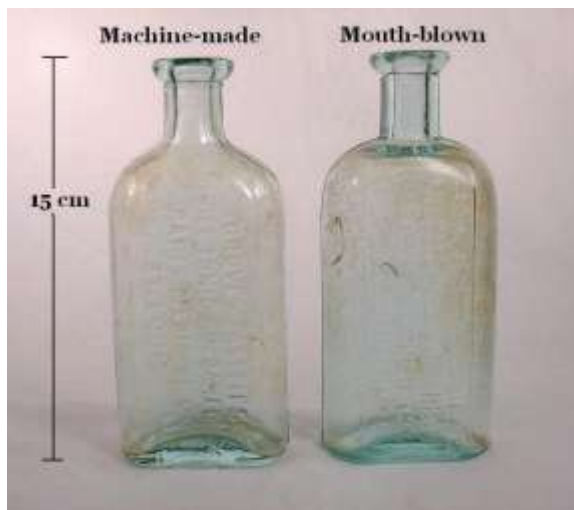
**Figure 15a.** A wide-mouth machine-made canning jar. (Photo by Bill Lindsey, 2005.)



• **Narrow Mouth**

Non-Owens machine-made bottles with narrow necks, like the medicinal bottles pictured in *Figure 15b*, will essentially always date after 1905 and virtually always after 1910. This also largely holds true for narrow-mouth bottles made by the Owens machines, which began to dominate bottle production after about 1908–1910 (Toulouse 1967; Miller and Sullivan 1984; Jones and Sullivan 1989; Boow 1991; Miller and McNichol 2002; Bill Lockhart 2003, pers. comm.). Narrow-mouth machine-made bottles, regardless of the type machine they were produced on (e.g., blow-and-blow semi-automatic machines, Owens Automatic Bottle Machine), will essentially always date after 1905 with very few dating earlier than 1910.

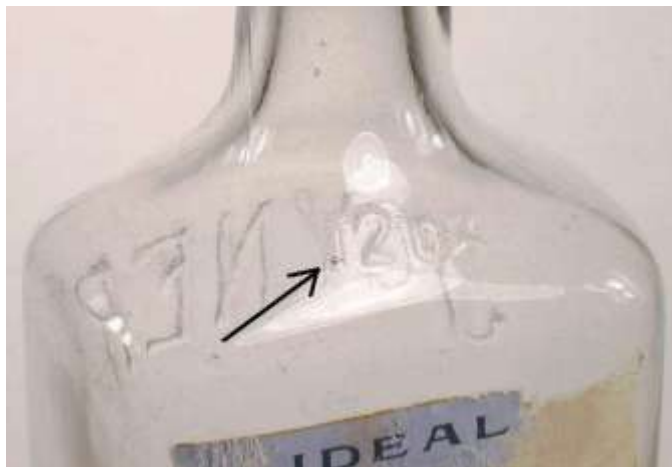
**Figure 15b.** (Left) narrow mouth machine-made bottle, produced by the Owens machine and likely dates between 1915 and the early-1920s; (right) mouth-blown bottle. (Photo by Bill Lindsey, 2005.)



**Question 16**

**Does the bottle have embossed (or labeled) contents or volume-capacity information?**

**If YES:** It was very uncommon until the early-20<sup>th</sup> century for the capacity or volume of the bottle contents to be noted in the embossing or on the label (or closure sometimes). Lockhart (2003) details the origin of volume designation:



“On March 3, 1913, Congress passed H.R. 22526, generally known as the Gould Amendment to the Pure Food and Drug Act of 1906. Although the Pure Food and Drug Act demanded a great deal of labeling information, it did not require the inclusion of volume specification. The Gould Amendment corrected that oversight...” (*Figure 16a*).

**Figure 16a.** This is a very late mouth-blown druggist bottle (1914 to early 1920s) from Spokane, WA, that has the volume capacity (12 oz.) embossed on the shoulder. (Photo by Bill Lindsey, 2005.)

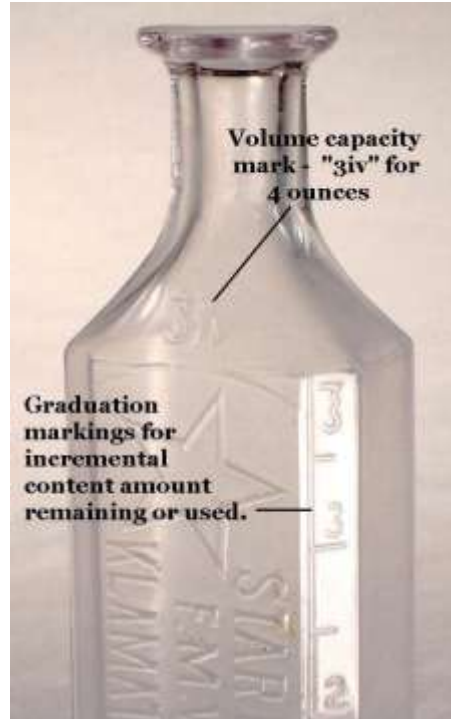


It appears that the majority of machine-made beverage, food, and medicinal bottles with embossed (or labeled) specific capacity or volume information likely date from 1913 or later. Note that the majority (*if not* all) of mouth-blown beverage, food, and medicinal bottles with embossed (or labeled) specific capacity or volume information also likely date from 1913 or 1914 or later. Since mouth-blown bottles largely disappeared by the mid-1920s, this gives a pretty tight timeframe for mouth-blown bottles with volume information.

**Figure 16b.** Example of volume notation and gradation marking embossed on prescription/druggist bottle. (Photo by Bill Lindsey, 2005.)

There are several notable exceptions. Many later mouth-blown liquor or spirits bottles commonly had volume notations embossed in the glass (e.g., "FULL QUART," "ONE PINT") or on the label as early as at least 1900. Volume notation on liquor bottles was apparently a marketing issue and seems to be related to the rise of mail-order liquor. The other important exception is with mouth-blown druggist/prescription bottles, which had volume notations commonly embossed on them beginning very close to 1900 as well as gradation markings (*Figure 16b*).

Note: Keep in mind that bottles without volume embossing may have once had a paper label with volume information.



## **Question 17**

**Does all or a portion of the bottle base have a textured pattern, i.e., stippling or knurling?**

**Figure 17.** Stippled base on the bottom of a 1959 soda bottle. (Photo by Bill Lindsey, 2005.)

The bases of mid- to late-20th-century, machine-made bottles commonly have a textured effect covering all or a portion of the base (*Figure 17*). There were several practical reasons for this feature: (a) reduced base surface contact, decreasing drag on the conveyor belts moving them within the factory and by purchasers/users; (b) hide product-related sediment; (c) hide the suction scar (primarily on Owens Automatic Bottle Machine products); and (d) for at least one specific machine operational reason (Phil Perry, engineer with the Owens-Illinois Glass Co., 2010, pers. comm.). The noted conveyor belt utility would only involve the stippling on the resting surface of the bottle base (like that on *Figure 11*) where the stippling pattern is just on the outside base edge where contact would occur. Various stippling patterns were also added to bottle bases for largely aesthetic reasons (*Figure 17*).



Stippling was typically produced by hand punching the base plate of the bottle mold. Knurling was machine impressed on the base plate. Practically speaking, the difference between the two is unimportant, and the precise look of these base designs varies quite a bit over time, with different bottle types and among bottle makers. If one has a machine-made bottle with a stippled base, one can be quite certain that it dates from 1940 or later.

## **Question 18**

**Does the bottle have any type of glass/bottle maker's marks embossed on the base (typically) or body (occasionally)?**

Machine-made (and often mouth-blown) bottles will frequently have embossing on the base (the most common location; see *figure 11*), base heel, and/or body that identifies the actual manufacturer of the bottle. Be aware that many times the embossing on a bottle base is not a manufacturer's or maker's mark but, instead, is either related to the product the bottle contained, the user of the bottle, or is for internal manufacturer-related tracking (e.g., mold or catalog designations). These latter markings are of little use in dating or typology.

**Figure 18. Makers marking on the base of a late 19<sup>th</sup> century export style beer bottle. (Photo by Bill Lindsey, 2005.)**

When present, maker's marks (in hand with answers to the other questions) will often allow for a distinct narrowing of the date range in which a given bottle was likely produced. For example, the mark shown in *Figure 18* (C. C. G. C.) is on the base of a quart-sized mouth-blown export-style beer bottle manufactured by the Cream City Glass Company (Milwaukee, WI), which operated from 1888 to 1894 (Toulouse 1971; Bill Lockhart 2007, pers. comm.). When present, maker's marks can be one of the best dating refinement tools of all. Incidentally, the no. 1 on this bottle base is of unknown meaning; it could be for the first mold made for this style or for the intra-factory bottle-blowing group (shop no. 1) that used the mold at the glass company ... or something else totally unrelated.



To assist with identifying marks and manufacturer-related dates, consult the “Bottle & Glass Makers Markings” link on the SHA historic bottle website, an interactive page that links to scores of articles - <http://www.sha.org/bottle/makersmarks.htm#makersmarkinglogotable>. The articles were largely produced by members of the Bottle Research Group (BRG) and deal with specific maker's markings and the history of the companies behind those markings. The SHA site will be a work-in-progress over the coming years as scores more BRG articles (including revisions and updates of past articles) are planned to be e-published via this website on an array of other bottle makers.

If the marking is not clearly identifiable alphabetical letter or letters (like A. B. Co. for the American Bottle Company) but is, instead, a distinct logo or symbol, consult the “Manufacturer's Marks and Other Logos on Glass Containers” - <http://www.sha.org/bottlepdfs/SymbolsLogoTable.pdf>

## REFERENCES

**Barber, Edwin A.**

1900. *American Glassware Old and New*. David McKay & Co., Philadelphia, PA.

**Birmingham, Frederick A.**

1980. *Ball Corporation: The First Century*. The Curtis Publishing Co., Indianapolis, IN.

**Boow, James**

1991. *Early Australian Commercial Glass: Manufacturing Processes*. The Heritage Council of New South Wales, Australia.

**Busch, Jane**

1987. Second Time Around: A Look at Bottle Reuse. *Historical Archaeology*, 21(1):67–80.

**Deiss, Ronald W.**

1981. *The Development and Application of a Chronology for American Glass*. Master's thesis, Illinois State University, Normal, IL.

**Elliott, Rex R., and Stephen C. Gould**

1988. *Hawaiian Bottles of Long Ago*, revised edition. Hawaiian Service Inc., Honolulu, HI.

**Ferraro, Pat, and Bob Ferraro**

1966. *A Bottle Collector's Book*. Western Printing & Publishing, Lovelock, NV.

**Gerth, Ellen C.**

2006. *Bottles from the Deep—Patent Medicines, Bitters & Other Bottles from the Wreck of the Steamship Republic*. Shipwreck Heritage Press, Las Vegas, NV.

**Giarde, Jeffery L.**

1989. *Glass Milk Bottles: Their Makers and Marks*, 1st edition, 2nd printing. L. G. Enterprises, Redlands, CA.

**Jones, Olive, and Catherine Sullivan**

1989. *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures*. Studies in Archaeology, Architecture, and History, National Historic Parks and Sites, Parks Canada, Ottawa, ONT.

**Leybourne, Douglass M., Jr.**

2001. *The Collector's Guide to Old Fruit Jars: Red Book 9*. D. Leybourne, Jr., USA.

**Lindsey, Bill**

2010. The Finishing Touch: A Primer on Mouth-Blown Bottle Finishing Methods with an Emphasis on "Applied" vs. "Tooled" Finish Manufacture. Web published on the Historic Glass Bottle Identification & Information Website, Society for Historical Archaeology. Available at: <http://www.sha.org/bottle/pdf/finishingtoucharticle.pdf>

**Lockhart, Bill**

2003. Exploring the Chronology of Soft Drink Bottles from El Paso, Texas, Part 2: Embossed, Machine-Made Bottles from El Paso's Three Largest Bottlers. *The Artifact* 41:21–45.

2006a. A Tale of Two Machines and a Revolution in Soft Drink Bottling. *Bottles and Extras* 17(2):19–25.

2006b. The Color Purple: Dating Solarized Amethyst Container Glass. *Historical Archaeology* 40(2):45–56.

**Lockhart, Bill, Carol Serr, and Bill Lindsey**

2007. The Dating Game: De Steiger Glass Co. *Bottles and Extras* 18(5):31–37.

**Miller, George L., and Tony McNichol**

2002. *Dates for Suction Scarred Bottoms: Chronological Changes in Owens Machine-Made Bottles*. Paper presented at the 2002 Society for Historical Archaeology meeting, Mobile, AL.

**Miller, George L., and Ed Morin**

2004. A Household Cleanup Assemblage from ca. 1938–1941, Raritan Landing, New Jersey, site 28Mil78: Feature 8, the well, 14 June. Authors' notes.

**Miller, George L., and Catherine Sullivan**

1984. Machine-Made Glass Containers and the End of Production for Mouth-Blown Bottles. *Historical Archaeology* 18(2):83–96.

**Seeliger, Michael W.**

1974. *H. H. Warner: His Company & His Bottles*. Michael W. Seeliger, Greenville, PA.

**Switzer, Ronald R.**

1974. *The Bertrand Bottles—A Study of Nineteenth-Century Glass and Ceramic Containers*. National Park Service, U.S. Department of the Interior, Washington, DC.

**Thomas, John**

1974. *Picnics, Coffins, Shoo-Flies*. Preuss Press, San Luis Obispo, CA.

1977. *Whiskey Bottles of the Old West*. Maverick Publications, Bend, OR.

1998a. *Whiskey Bottles and Liquor Containers from the State of Oregon*. Privately printed, Scotts Valley, CA.

1998b. *Whiskey Bottles and Liquor Containers from the State of Washington*. Ananta Printing & Publishing, Soquel, CA.

2002. *Whiskey Bottles of the Old West*, revised and updated edition. Boyertown Publishing Co., Boyertown, PA.

**Tooley, Fay V.** (editor)

1953. *Handbook of Glass Manufacture: A Book of Reference for the Factory Engineer, Chemist and Plant Executive*. Ogden Publishing Co., New York, NY.

**Toulouse, Julian**

1967. When Did Hand Bottle Blowing Stop? *The Western Collector* 5(8):41–45.

1969a. *Fruit Jars*. Thomas Nelson & Sons, New York, NY.

1969b. A Primer on Mold Seams, Part 1. *The Western Collector* 7(11):526–535; Part 2. *The Western Collector* 7(12):578–587.

1971. *Bottle Makers and Their Marks*. Thomas Nelson, Inc., New York, NY.

**White, James Seeley**

1974. *The Hedden's Story Handbook of Proprietary Medicines*. Durham & Downey, Portland, OR

# Bottle Dating Worksheets

Bill Lindsey and Rebecca Allen

## WORKSHEET 1: INITIAL SORT - MOUTH-BLOWN OR MACHINE-MADE BOTTLE?

*Circle Yes or No and note relevant dates.*

### **Question 1:**

**Does the bottle have raised embossing on the body, shoulder, and/or neck OR a distinct vertical side mold seam visible on the body, shoulder, and/or neck (or both features)?**

*If YES: Continue to Question 2.*

*If NO: Skip to Question 3.*

### **Question 2:** (Use when the bottle DOES have vertical side mold seams.)

**Do the vertical side mold seams go up side of the finish to the highest vertical point (rim or lip) and usually onto the finish (rim) itself AND the topmost surface of the finish (rim) is not visibly ground down, i.e., the bottle does not have a “ground rim”?**

*If YES:* This is a *machine-made* bottle or jar. Bottles with these diagnostic mold seams in evidence were made by either semiautomatic or fully automatic bottle machines and virtually always date after 1900 (for wide-mouth bottles and jars) and after 1910 for narrow-bore bottles.

***SKIP to Questions 8–18, completing Worksheet 3.***

*If NO:* Bottles with this discontinuous or fading vertical side mold seams are referred to as “mouth-blown” or “hand-made” and typically date prior to 1915, although they could date back to at least 1800. The vast majority of U.S. manufactured, mouth-blown molded bottles were made between about 1820 and 1915.

***Continue to Question 3 AND Questions 4–7, completing Worksheet 2.***

### **Question 3:** (Use when the mouth-blown bottle DOES NOT have vertical side mold seams.)

**Is the bottle cylindrical/round, exhibiting very symmetrical conformation, and with the body and/or neck having faint concentric “rings” or striations on the glass surface going horizontally around the body of the bottle?**

*If YES:* This bottle was produced in a turn mold. The majority of turn-mold bottles date between 1880 and 1915, although they were produced as early as the mid-1850s and as late as the early 1920s.

*If NO:* The bottle is either not round or if round is very crudely made and non-symmetrical with no concentric body/neck rings. This bottle is probably free-blown or dip molded. Most free-blown bottles date prior to 1850 and can be much older. Dip-mold bottles usually date prior to 1865–1870 but can also be much older (back to early–18th century at least).

\* \* \* \* \*

## WORKSHEET 2: MOUTH-BLOWN BOTTLES

*Circle Yes or No and note relevant dates.*

### **Question 4:**

**Does the base of the bottle have some type of pontil scar or mark?**

**If YES:** Utilitarian bottles with pontil marks usually date from or prior to the American Civil War era, i.e., 1860–1865, and almost always prior to the early 1870s, although bottles can date prior to 1800. Note that many specialty or artisan-made bottles can have pontil scars after this period.

**If NO:** The vast majority (probably 95%+) of mouth-blown utilitarian bottles without pontil marks date after the Civil War, that is, they were made after 1865.

### **Question 5:**

**Is the bottle finish (a) applied, (b) tooled, or (c) unknown?**

- a. Applied-finish bottles typically date between 1820 and 1890.
- b. The changeover from applied finishes to tooled finishes appears to have been in the 1880s, with a large majority of bottles produced after 1890 exhibiting this (tooled) finishing method. Hand-tooled finishes largely disappeared between 1910 and the early-1920s with the ever-increasing dominance of fully automatic bottle-making machines.
- c. Does not fit A or B and is unknown to you. Continue with questions, and later consult the “Bottle Finishes & Closures” page on the SHA Historic Bottle Website.

### **Question 6:**

**Does the bottle have some type of mold seam or seams within the extreme outside edges of the base?**

**If YES:** Bottles with these base types usually date no later than 1890–1895, with some exceptions. Note that post-bottom mold bottles (with no pontil scar) usually date between 1860 and 1890.

**If NO:** If within the confines of the base there are no apparent mold seams, there will probably be a mold seam on the heel of the bottle at the lower edge of the body just above the base resting point (called a cup-bottom mold). These bottles can possibly date back to at least the 1870s (especially for druggist and smaller bottles), although the majority dates from the late 1880s to approximately 1915–1920, which is the effective end of the mouth-blown bottle era. Mouth-blown bottles from the early-20th century (1900–1920) were almost always produced in cup-bottom molds.

### **Question 7:**

**Are mold-formed air venting marks visible on the shoulder, body, and/or base of the bottle?**

**If YES:** One or more air venting marks appear on the surface of the bottle. Mouth-blown bottles with air-venting marks typically date from or after 1885–1890. Air venting began being used significantly in the early- to mid-1880s and appears to have been fairly quickly accepted, becoming an industry standard by about 1890. Few American-made mouth-blown bottles *after* 1890 are not air vented, although foreign-made items will often lack air venting into the early 1900s.

More specifically, just one air vent bump each on the front and back shoulder (cylindrical bottles) or the body shoulder corners opposite the vertical side mold seams (square or rectangular bottles) tend to be the earliest (mid- to late 1880s to mid-1890s), while those with multiple air venting marks scattered around the bottle—including those integrated into the embossing pattern and/or on the base—tend to date to a later period (1905–1920).

**If NO:** No air venting marks appear on the body of the bottle. Mouth-blown American-made bottles without air venting marks typically date from or prior to 1885 to 1890.

## SUMMARY OF FINDINGS

**Start date (earliest date of manufacture possible):**

**End date (latest date of manufacture possible):**

**Note:** If your mouth-blown bottle has embossed (or labeled) volume capacity, consult **Question 16**. If your bottle has any type of glass/bottle maker's marks embossed on the base or body, consult **Question 18** as well as the "Bottle & Glass Makers Markings" page on the SHA historic bottle website for dating refinements: <http://www.sha.org/bottle/makersmarks.htm>

\* \* \* \* \*

## WORKSHEET 3: MACHINE-MADE BOTTLES

*Circle Yes or the appropriate letter and note relevant dates.*

### **Question 8:**

**What color is the bottle?**

**Aqua:** A machine-made bottle made of aqua glass—which is *not* a soda bottle or canning jar—is most likely to date from or prior to the 1920s. Aqua pretty much disappears by the early 1930s as a bottle color with the notable exception of soda bottles (and many canning jars).

**Colorless, slight lavender, or "straw" cast:** Machine-made bottles with colorless glass can date from any time after 1905. Clear bottles with a slight lavender tint (amethyst) generally date between 1905 and the early 1920s, although some can date as late as the 1930s. Machine-made soda bottles were generally not decolorized with manganese after 1914. Clear bottles with "straw" cast will date no earlier than 1912, and that color was less common after the 1960s.

**Some other color:** In general, if the bottle has some other glass color no useful general dating information is possible.

*Move to questions below for more dating opportunities.*

### **Question 9:**

**Are "bubbles" present in the glass? If so, how many and what size/shape?**

**If YES:** Generally, more and larger bubbles (~1/8-inch and larger) and/or numerous bubbles of all sizes are more prevalent in bottles manufactured during the early machine period—1890s (wide-mouth ware) to early 1920s.

### **Question 10:**

**Does the bottle have the following statement embossed on its side or on the base?  
"FEDERAL LAW FORBIDS SALE OR REUSE OF THIS BOTTLE"**

*If YES:* With rare exceptions (bottles made during late 1934 and after 1965), this is a machine-made liquor bottle that dates between 1935 and the mid-1960s.

**Question 11:**

**Does the bottle base have a Diamond O-I maker's mark?**

*If YES:* This Owens-Illinois Glass Co. maker's mark is very common from 1929-1930 to the mid-1950s.

**Question 12:**

**Was the bottle sealed with (a) cork, (b) screw cap, or (c) other?**

a. For machine-made medicinal, food, inks, and some non-alcoholic beverage bottles, these usually date prior to the early 1930s, although there are numerous exceptions. Does not apply to soda, beer, wine/champagne, or liquor bottles.

b. Most all types of machine-made bottles with external screw threads date from the late 1920s. Catsup bottles were commonly screw threaded from the beginning of machine manufacture in the early 1910s. Note that the Bakelite (plastic) cap for screw thread finishes made its debut in 1927.

c. Consult the SHA Historic Bottle Website. [www.sha.org/bottle/index.htm](http://www.sha.org/bottle/index.htm)

**Question 13:**

**Does the bottle appear to have a painted or enameled label, lettering, and/or decoration, known as an applied color label (ACL)?**

*If YES:* The ACL was most common by far on soda and milk bottles, but can occasionally be found on other types of bottles, and dates no earlier than 1934 with almost complete acceptance by bottle makers (and users) by the early 1940s. This process is still in use.

**Question 14:**

**Does the bottle have a shallowly incised circle - a valve or ejection mark - on the base that is (usually) between 1/3- to 3/4-inch (10–18mm) in diameter?**

*If YES:* Valve marks are most common on wide-mouth milk bottles and food jars made between the early 1900s through the 1940s and occasionally after that. A valve mark on a soda or beer bottle indicates a narrow manufacture date in the early 1910s.

**Question 15:**

**Does the bottle have a (a) wide-mouth or (b) narrow-mouth bore/finish?**

a. Wide-mouth (bore) bottles and jars with machine-made characteristics can date from as early as the mid-1890s but primarily date after about 1900.

b. Narrow-mouth machine-made bottles will essentially always date after 1905.

**Question 16:**

**Does the bottle have embossed or labeled contents/volume capacity information?**

*If YES:* The majority of machine-made beverage, food, and medicinal bottles with embossed or labeled specific capacity/volume information likely date from 1913 or later.

**Question 17:**



**Does all or a portion of the bottle base have a textured pattern, i.e., stippling or knurling?**

*If YES:* The bottle dates to 1940 or later.

**Question 18:**

**Does the bottle have any type of glassmaker's or bottle maker's mark embossed on the base (typically) or body (occasionally)?**

When present, maker's marks - in hand with answers to the other questions - will often allow for a distinct narrowing of the date range in which a given bottle was likely produced. Consult the "Bottle & Glass Makers Markings" page on the SHA Historic Bottle Website. <http://www.sha.org/bottle/makersmarks.htm>

**SUMMARY OF FINDINGS**

**Start date (earliest date of manufacture possible):**

**End date (latest date of manufacture possible):**

\* \* \* \* \*