Basic Guide to Bottle Age Identification

Say you're planting a new tree in your backyard, and you dig a hole deeper than you've had to dig before. In the hole you find a glass bottle that you didn't put there. How can you identify the bottle? How can you tell if it is old or just a piece of modern recycling that the previous owner left behind?
Below please find a basic guide to help you identify a bottle's age. Bottle identification is a rabbit hole that I've found fun to fall into; one bottle can take hours to research, and sometimes, you can't find anything on it at all! In addition, manufacturing technological advances were adopted over time, not all at once, so older techniques were used at the same time as newer ones. This makes determining exact age for a bottle that wasn't machine-made a little tricky. But, by looking at a few basic characteristics, you can learn if you want to toss your find in the recycling bin or place it at the center of your mantle.

If you are interested in discovering more, I've listed some helpful web sites at the end. If you just want a basic guide, hope this helps!

How was the bottle made? The first thing that I do when I handle a bottle is look at the construction – the sides, the top or lip, and the base.

Free-Blown - Bottles were blown by hand in antiquity, and free-blown bottles were the main manufacturing technique used before the mid-1800s for utilitarian bottles. Fancier, decorative pieces can be still free-blown (like the glass pumpkins on Highway 92), but it is a laborious technique and does not provide a consistent shape and look to the bottle. Bottles made in this fashion cannot be mass produced at an affordable cost.

Is your bottle lopsided, show signs of a pontil (blow pipe) scar, missing any evidence of a seam, is a rounded shape? Is the top unfinished or appear more crudely applied or applied after the body was made? Does the bottle have many bubbles within the glass? It is likely a free-blown bottle, which would date it typically as made before the American Civil War in the 1860s.

Left: Free blown bottle with a very deep punt. Pontil scar evident inside.

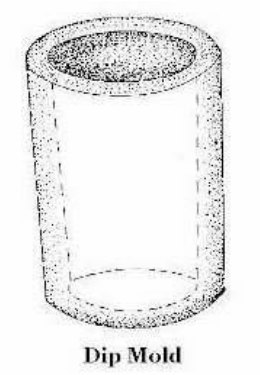
(Half Moon Bay History Association collection)

How was the bottle made?

Molds In the early 1800s, mostly by the 1820s – 30s, utilitarian bottles began to be produced using molds. These molds could be made of brass, cast iron, or even wood. The advantage of using a mold is multifold: a less skilled worker could make a bottle, bottles could be manufactured faster, bottles could be manufactured in shapes other than round.
Glass was mouth-blown into the molds to form a bottle. There were many types of molds; below are the most common types that you may see evidence of if you find a bottle.

Dip Mold A dip mold was the earliest step up from a free-blown bottle. The molds could even be dug into the floor of a bottle making shop. Dip molds could be a single piece, as shown below, that wouldn't leave seams on the bottle. Dip molds were not usually embossed with lettering, and thus did not produce bottles that had writing on them. Bottles produced using dip molds will be more symmetrical than free-blown bottles. They may show a "break" or difference between the top of the mold and shoulder.

All mold Images courtesy of The Society for Historical Archeology



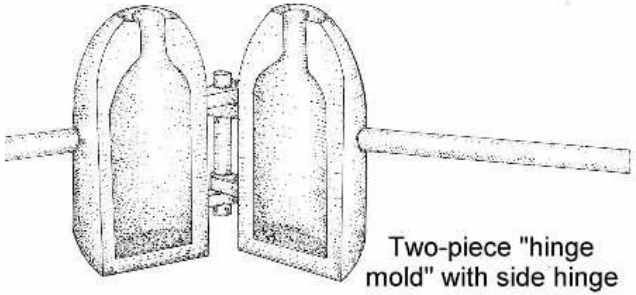
Dip Mold

Glass discontinuity formed by the top of the dip mold

(Half Moon Bay History Association collection)

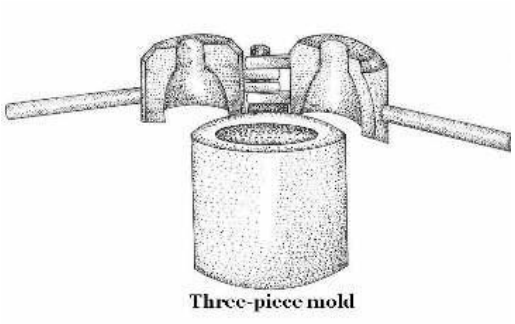
Hinge or Snap Mold This is a two-piece mold that snapped into place. Glass was blown into the top of the mold. The mold could then be unsnapped. Bottles made in this fashion show a seam running all the way around from the mold. Used as early as 1809 in the US but disappeared by the 1870s.

Image courtesy of The Society for Historical Archeology



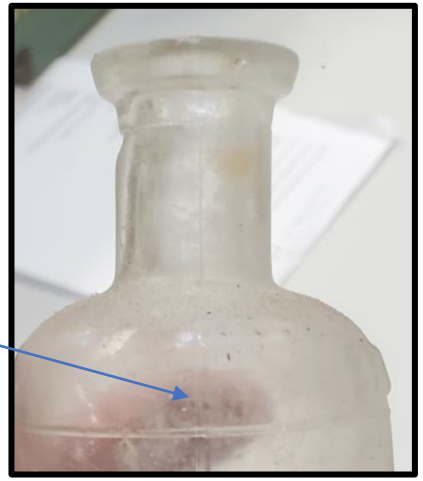
Two-piece "hinge mold" with side hinge (there were also bottom hinge versions)

Three-Piece Mold Used as early as the 1830s, this popular style of mold continued was a staple of liquor bottle production into the early 20th century, when machine-made bottles then became dominant. This type of mold is a basic dip mold with shoulder sections added. Bottles made in these molds have an obvious shoulder seam, a junction where the mold pieces meet. In earlier bottles made in three-piece molds the seams do not run all the way to the top, and the bottle was hand-finished. Later three-piece mold bottles show clear seams all the way to the top.

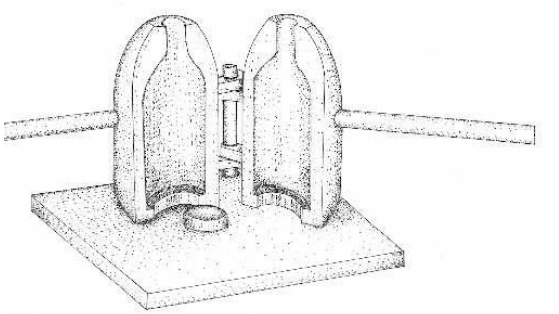

Three-piece mold

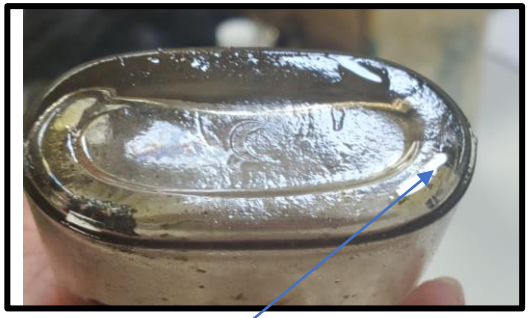
Left: Early Three-Piece Mold bottle.
Note seams do not run all the way up the neck.
Seams crudely meet. Age estimate 1830s-1840s.
(author's collection)

Right: Later Three-Piece Mold bottle with seams running all the way to the top. In addition, the seams meet much more smoothly than the earlier bottle. Age estimate late 19th century.
(Half Moon Bay History Association collection)



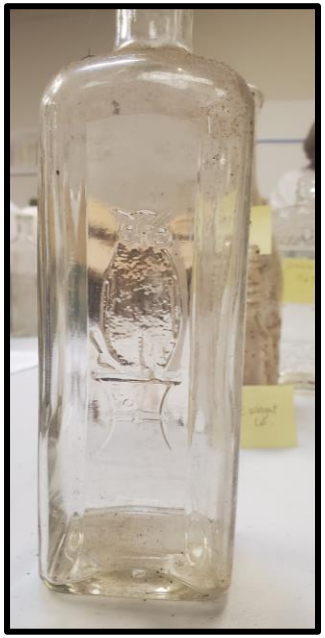
Post Bottom Mold Used from 1840s to 1900, this was the dominant type of mold used in the latter part of the 1800s. This type of mold produced a variety of bottles. It was two pieces with a base that had a raised portion that was either round or oval. A visible mold seam can be seen on the base.


Two-piece "post bottom" mold with separate base plate.



Example of a medicine bottle produced in a post bottom mold; note mold seam.
(Half Moon Bay History Association collection)

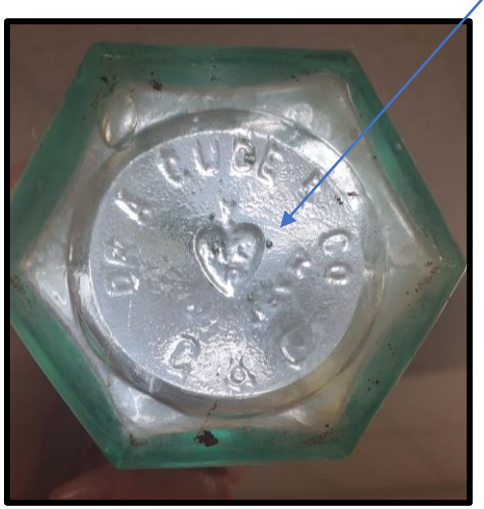
Plates/Plate Molds These were metal, iron or brass, engraved plates that allowed the glass to be customized with a name or message. The plates were placed inside the molds that the glass was blown into. Plate mold glass is interesting as it allows you to clearly know what the bottle was used for and/or who sold their goods in the bottle. Plates were used in the US from about the 1840s until the advent of machine-made glass. Collectors of glass bottles love plated glass for its uniqueness and connection with history.



Left: San Francisco's Owl Drug Store bottle, made in a plate mold.
It shows the distinctive logo of this store, who sold and shipped medicine via rail from a catalog.

Bottom/Left: Interesting hexagonal German-made post mold bottle with plate-imprinted product name. I've added an image of one of their advertisements, so you can tell what this medicine was used for. Note that this heart-shaped maker's mark is not listed in a US database.

(Both bottles Half Moon Bay History Association collection)



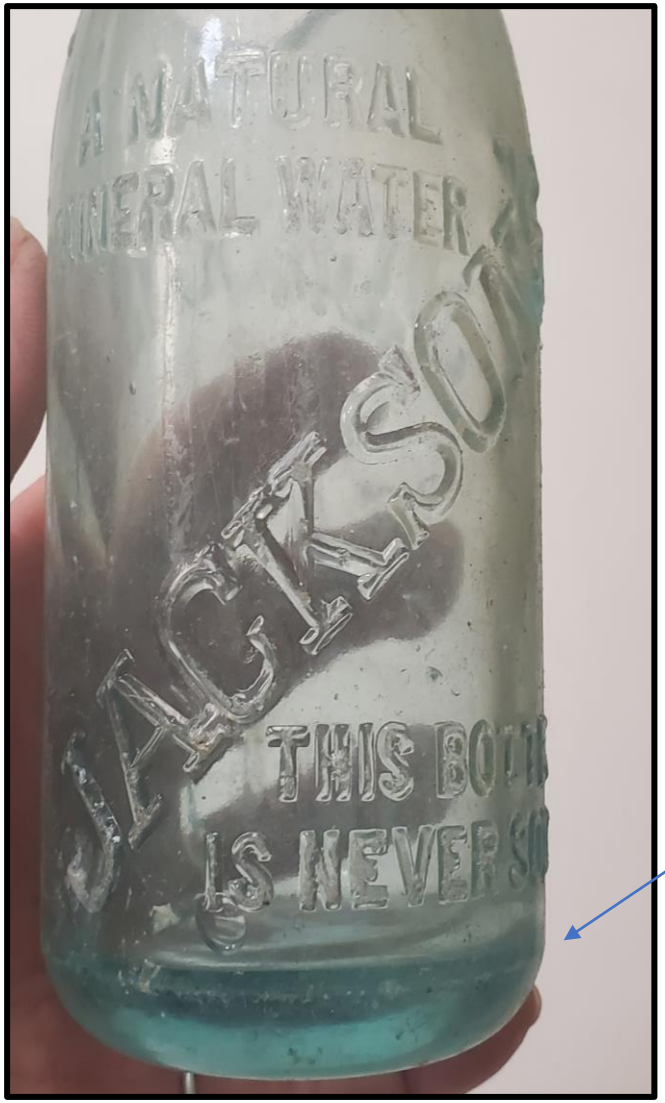
This exquisite bottle from Roger & Gallet is a fine example of a plate post molded glass container; note that even the bottom has a decorative embossed pattern. Unfortunately, the stopper is missing, as this too would have been made of glass and highly detailed.

Roger and Gallet was a favorite of the Emperor Napoleon; he was an aficionado of their Eau de Cologne, or aqua mirabilis, as he thought it to have life affirming properties. The company was established in 1806 and held the French rights to make violet perfumes. They still exist, owned now by the L'Oreal brand.

Given the somewhat humble ranching, farming, and fishing origins of our community, this piece seems almost out of place. Was the owner a traveler from San Francisco? Was it a gift from a lover? Wish it could tell us more…
I would date this bottle to the last quarter of the 19th century.

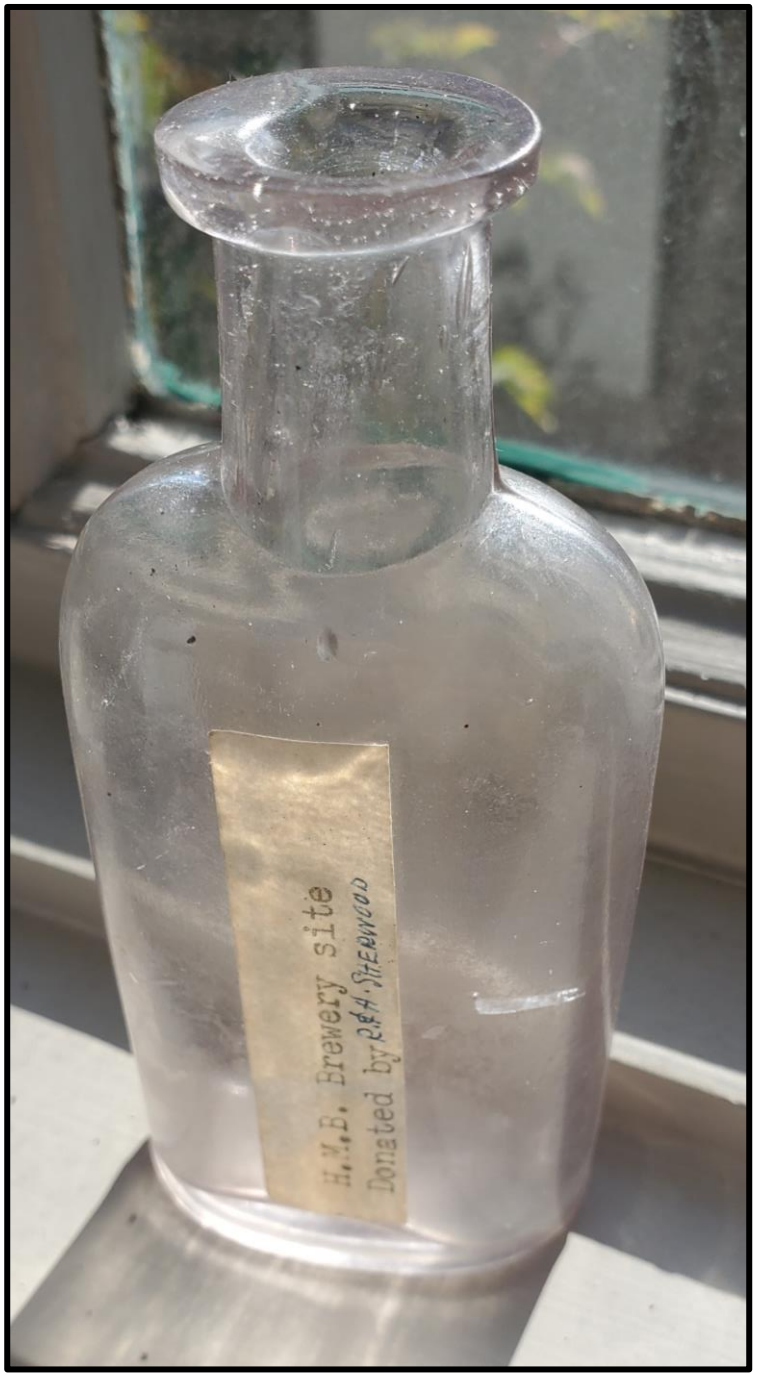
(Half Moon Bay History Association collection)

Cup Molds These molds came into use around 1850 and were a dominant mold type for mouth-blown bottles from the 1880's until the advent of machine-manufacture. These molds had a base plate that formed a mold line on the bottle. The earliest cup mold bottles could have flat bases, as molds were even set on shop floors.
The distinct features of bottles made using this type of mold are the thick base and base seam.
Personally, these are one of the easiest bottle mold types to determine, just by looking at the base.



Jackson's Napa Valley Mineral Water bottle made with a cup mold. Note the mold seam at the base and thick bottom.
This cup-modeled bottle also used a plate to emboss the lettering.

(Half Moon Bay History Association collection)



Left: This medicine bottle shows quite a few bubbles in the neck and lip. Although blown into a post mold with an obvious side seam, the top was hand finished. These bubbles would not be present in a machine-made bottle. I would date this bottle from the 1870s – 1880s, due to mold type and color (more on color in a bit!).

Below: A beautiful blue post-bottom mold-blown bottle. It shows seams, but the neck and top were hand-finished. You can tell this by the "stretching" evident in the glass, and the uneven bottle lip (despite the chips, you can see it is uneven). I would date this bottle between 1840s -1880s. Although fashioned using the same mold technique as the other bottle, the top/lip on this one is more crudely made.

(Both bottles Half Moon Bay History Museum collection)

How was the bottle made?

Machine-Made Bottles The Owens Company

Michael Owens was a self-taught American inventor who revolutionized the glass industry.
In 1903 he unveiled the world's first completely automatic glass-forming machine for making bottles. This machine could make more bottles in an hour than an entire factory of blowers could make using molds in an entire day.
Adoption of machine-made glass did not occur all at once, but by 1910 most of the bottles produced were made using a machine.

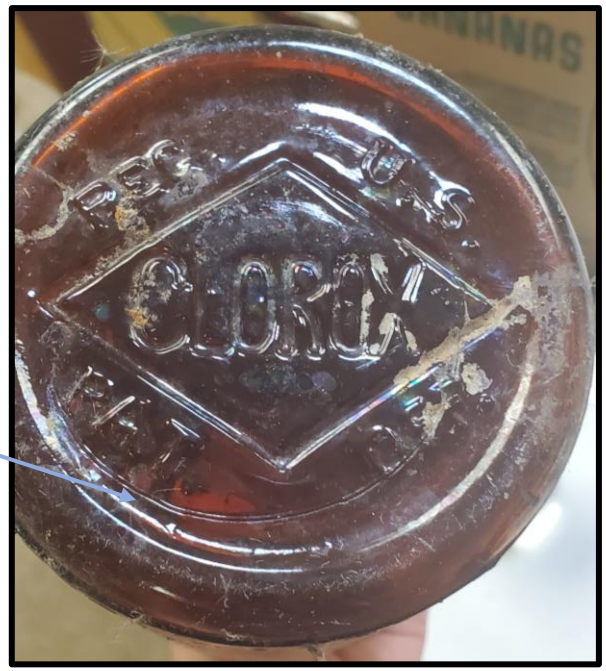
Typical characteristics of machine-made bottles

- Mold seams typically run up to the highest point of the finish and often over the lip of the bottle.
- The side mold seams on most machine-made bottles tend to be finer and sharper than mouth-blown bottle mold seams. Earlier machine-made bottles (1905-1920s) tend to have somewhat thicker/higher mold seams than later machine-made bottles due to the increasing precision in mold machinery as time progressed. Most machine-made bottles have mold seams about the thickness of a hair while most mouth-blown mold seams are usually several times as thick.
- Machine-made bottles tend to have few if any bubbles in the glass and the thickness of the glass is usually more uniform throughout the bottle as compared to mouth-blown bottles. This is especially true of later machine-made bottles, from the late 1920s onwards.
- The presence of valve suction marks, as seen on machine-made glass produced by Owens Automated Bottle Machines.

Left: The lopsided base of this bottle indicates it was not machine made. However, it has a seam, so was mouth blown into a mold and not free-blown.

Right: 1937 machine-made Clorox bottle bottom showing a clear valve suction mark.

(Both Half Moon Bay History Association collection)



How was the bottle made?
Machine-Made Bottles

Left: Note the mold seam on this bottle-top shard found in the beach cliff face inside the Amesport Pier ruins. The seam runs all the way over the rim of the top, but looks thick and crude, not like a modern bottle.

While the pier was originally built in the late 1860's, the presence and look of this seam indicates that the bottle was early machine-made, and likely deposited in the 1910's - 1920's. This date range matches up with the reconstruction date of the pier that was done when the Palace Miramar hotel was built.

(author's collection)

Does the bottom of the bottle have indentations or marks around the edge? Look at a modern bottle and you will see marks around the bottom edge. This is known as knurling or stippling. Stippling helps to keep the glass from cracking in manufacture; it was a process invented in 1940 by the Owens company, and if your bottle has it, it was made after 1940. Now, there are bottles made *after* 1940 that do **not** have stippling. Like many manufacturing techniques, it was not immediately adopted. If your bottle bottom has no signs of these marks, you will need to dig further to determine the age.

On this modern wine bottle stippling is obvious around base

This Coca Cola bottle has a clear 1946 date code on the side, but lacks stippling

(author's collection)

What does the top of your bottle look like?

Looking at the way your bottle was sealed can help you to determine the age of the bottle.

Does the top have threads that a cap was screwed into? While screw-tops were used in some older canning jars, the appearance of a screw-top pretty much means that your bottle is no older than the 1920s.

Right: Early 1940s food bottle showing screw-top threading with part of the metal lid still intact.

(Half Moon Bay History Museum collection)

Was your bottle sealed with a cork and is NOT a soda, beer, wine, champagne or liquor bottle?

Older, mouth-blown or molded bottles would have required a cork or stopper to cap them; sometimes the remnant of the cork can be found inside the bottles. This aspect, in conjunction with the bottle body, can be used to date your bottle. Bottle tops that look hand-applied can be "blob top".
Carbonated beverage bottles can show signs of the metal/wire closure that kept the cork from popping out.

Left: This molded pre-machine manufacture bottle would have required a cork to close it, usually indicating 19th century manufacture.

(Half Moon Bay History Museum collection)

Below: Metal closure that has been added through the glass of this seltzer bottle. It would have anchored in the cork; bottle dates from late 1800s.

(author's collection)

What color is your bottle?

Color can sometimes be used to determine the age of a bottle, but generally it will need to be reviewed in combination with other traits of the bottle.

Colorless, or "clear" Colorless glass was always highly desirable in the history of glassmaking, as glass naturally has a slightly greenish cast due to iron impurities found in sand. To produce true colorless glass requires the use of high-quality materials or a decolorizing agent. True colorless glass was relatively uncommon until the 1870s but is very common after the advent of machine-made bottles.

Natural glass, or "bottle green glass" Glass in these bottles was made from sand that has a low iron content and has not had de-colorizers added. These bottles tend to date prior to the 1870s.

Bottle showing the natural green, or "bottle green" shade of glass. This bottle dates from the mid 1800s.

(Half Moon Bay History Association collection)

Lavender Bottles that show a slight lavender tint started off their lives as clear. In the 15th century the Venetians discovered that manganese could be added to glass to produce clear bottles. With exposure to light, bottles with added manganese start to "solarize" and begin to demonstrate a purplish tint. A bottle that is showing this color was likely made between the 1870s and World War I. During the first world war, manganese was needed to produce hardened steel, and was no longer used in glass production. (Note of caution, you may find bright purple bottles available online. Be wary that they could have been artificially irradiated to make them purple and drive up their value.)

Base of the Roger and Gallet bottle clearly shows it turning lavender. It would have been clear when it left the glass factory. The solarization may be a result of it being near a window in the museum. I think that it only adds to the beauty and history of the bottle.

(Half Moon Bay History Association collection)

What color is your bottle?

"Straw" colored Glass makers during WWI needed to use a new clarifying agent other than manganese to make bottle glass clear, and so turned to selenium. Glass with this tint will date no earlier than World War I and could have been made as late as the mid 20th century. Bottles with this color will be machine-made.

1920-s – 30s food bottle with a straw tint

(Half Moon Bay History Association collection)

Aqua Soft aqua colored bottles can be a natural result of a chemical reaction between iron in the sand and oxygen content during the glass making process. Medicine and bitters bottles, soda/mineral water bottles, ink bottles, and fruit jars are among the most common types of bottles seen in aqua glass. Aqua bottles became less common after the 1920s, when clear glass was preferred to show the bottle contents.

Two early machine-made bottles in light aqua tint
Left: Lea & Perrins sauce bottle

Right: Mellin's Food for infants and Invalids

(Both bottles Half Moon Bay History Association collection)

What color is your bottle?

Greens Bottles can be found in a wide variety of green shades, from the classic patented "Coke" bottle aqua/green to olive, to the deep forest green of wine bottles. Green bottles have been used for a variety of products over a long period of time and this color is not a good indicator of age alone, although soft greens are usually older and bright "7 UP" green is a 20th century invention. Green glass typically uses iron oxide to color it.

Left: This medicine bottle was made using a post mold with plate, and so dates from the 1800s. It is a good example of an older green glass color.

(Half Moon Bay History Association collection)

Right: Pair of hobble-skirted Coca Cola bottles showing their patented classic green color. They date to 1946 (L) and 1950 (R).

(author's collection)

Amber/Honey – Carbon (wood, charcol) and sulfur were added to glass to make this color. It was, and still is, a color used widely for beer and alcohol containers, although there are subtle variations in color that can indicate age. A color known by collectors as "old amber" is a medium yellowish amber with an olive tint and is very uncommon in bottles made after 1890. Likewise, yellow amber is an uncommon color after 1910, when most bottles were machine-made. Red Amber can be found in machine made beer bottles popular in the 1940s.

Left: 1947 Red Amber beer bottle from the Armstrong Cork Company

(author's collection)

Right: "old Amber" colored bottle made in San Francisco in 1880s.

Image courtesy of The Society for Historical Archeology

What color is your bottle?

Root-beer Brown Used widely in machine-made bottles, it is a common modern color with a general uniform look.

Reds, Amethysts Rarer to find, they generally indicate a bottle made between the 1840s to 1880s. However, the Schlitz company produced red bottles in the 1940s – 1960s (often known after the bottle maker and called Anchor Hocking ruby). To achieve these colors manganese dioxide, copper, nickel, selenium in various quantity is added to glass.

Cobalt, "True Blue" Cobalt oxide is added to glass to achieve a stunning blue color. These blue colors were frequently used for soda and mineral water bottles from the 1840s into the early 1900s and for medicine, cosmetic or poison bottles until the 1960s. The lighter, or cornflower blues, tend to be earlier bottle colors, while the intensely dark cobalt color seen in Milk of Magnesia bottles tends to be a more modern variation of the color. The manufacturer Maryland Glass was renown for this color.

Left: Light Cobalt blue bottle from the Emerson Drug Company. Stoppered top, late 1800s

(Half Moon Bay History Association collection)

Right: Deep Cobalt blue Maryland Glass bottle from the 1940s - 1950s.

(author's collection)

Milk Glass, or White Glass Traditionally bone ash, rich in phosphates, was added to glass to produce a glass in an opaque milky white color. Used for cosmetic and cream jars/bottles from the late 1800s through the middle of the 20th century.

1950s ad for hair conditioner in a milk glass jar

(author's collection)

What color is your bottle?

Black Glass AKA "Pirate Glass" Produced as early as the late 17th century to protect bottle contents from light exposure and spoilage. The early production time period gives this glass its catchy name, and it is a collector's favorite. Traditionally coal was added to glass to give it a black color. When you hold a black glass bottle up light you will find that it is not true black but a dark green or amber color. This technique was typically used prior to the 1880s.

"Black" Glass bottle backlit by the sun

(author's collection)

Uranium or Vaseline Glass Trace amounts of Uranium was used to color glass as far back as the 1830s up until World War II, then afterwards until the 1950s. It gives glass a soft greenish-yellow glow when exposed to natural light but fluoresces under black light. It was used for decorative pieces, and not in commercial glass production. It is beloved by collectors.

Uranium Glass Juicer, circa 1930s. From the estate of a long-time Half Moon Bay family. Left, viewed under natural light. Right, viewed under black light.

(author's collection)

Does your bottle have any markings on the bottom?

Glass manufacturers often placed their marks on bottle bottoms, and they can used to help find out the maker, age and location where your bottle was produced. As there were thousands of glass manufactures in the history of American Glass production, I will briefly detail only one, the largest, here. There are helpful web sites with alphabetical lists of marks that are easy to use.

Owens Illinois

The Owens-Illinois Glass Company was incorporated in 1929 with the merger of two of the industry's largest producers, the Illinois Glass Co. and the Owens Glass Co. They became the largest bottle manufacturer in the world and are still in operation. This company pioneered the use of automated bottle production machines and made many different types of bottles for many different types of product through the years.

Throughout their history they used a few logos, and the embossing on the bottom of the bottles can tell you date and the plant where your bottle was made.

- "I" in an Oval-in-a-Diamond – Company logo since 1929. Date code can usually be found to the right of the logo. Plant code to the left.
- Single digit date codes were used in the 1930s but became problematic in 1940 (does the "0" stand for 1930 or 1940?) so the company adopted first the date followed by a period, and then by 1947, two-digit codes.
- "Duraglas" – This logo signifies a bottle-making process and was used from 1940 through the 1950s. "The surface of the hot, just-produced bottles, were sprayed on the body, shoulder, and neck (but not the base or the top of the finish) with a stannic chloride (Tin chloride) vapor that allowed the tin to bond to the outer surface, providing scratch resistance and durability to the bottles."
- "I" in an Oval – Their logo since the mid-1950s.

This emerald green bottle was found in a beach cliff near Miramar. What can the bottom tell us?

1. Owens Illinois Logo from 1929 – 1950s, so bottle dates no earlier and no later. Because it is not made earlier than 1929, this bottle was machine-made
2. Plant code "3" Fairmont , WV. In operation 1930 – 1980. This plant date matches the logo date
3. Date code Is a little tricky, as it is distorted. It is a single digit with a dot, but is it a 3 or an 8? I've blown this up and researched and believe it to be "1943". If it was were 1948 it would be a two-digit code. Molds produced during WWII were over-stamped, and there was a labor shortage, so may have been re-used and poorly restamped. The 1943 date matches the other embossing pieces. In addition, bottle was found in a location with known US Army occupation in 1943.
4. Duraglas logo, signifying that the bottle was made in the 1940's or 1950's. This matches the other embossing on the bottle
5. Bottom is knurled or textured. This process was done no earlier than 1940.

(author's collection)

General bottle diagnostic questions

Does your bottle have seams running up the side? Seams don't necessarily mean that the bottle is machine-made. Pre-machine bottles used molds. Glass was blown into the mold, and when it was removed it left seams. If the seams go all the way up to the top of the bottle, and around the lip, your bottle is machine-made and was not blown into a mold.

Are there bubbles in the glass? The presence of large bubbles (blisters) and/or small bubbles (seeds) in the glass is a general indication that your glass is older, pre-machine-made. Use their presence in conjunction with other traits to help determine age.

Does your bottle have an enameled label? Technology to produce enameled glass started around 1936, so your bottle can date from no older than this.

Milk bottle with enameled label

(Half Moon Bay History Association collection)

Does your bottle have embossing that states "Federal Law Forbids Sale or Reuse of this Bottle" ? Prohibition was repealed in 1933, and from 1935 until 1963 Federal law required this statement on liquor bottles.

"Federal Law" statement embossed on a National Distillers bottle. The company was founded in 1924 during Prohibition. In anticipation of repeal they stockpiled, but did not sell, whiskey. In 1933 they owned 45% of all whiskey in the US.

(Half Moon Bay History Association collection)

Does the top have threads that a cap was screwed into? While screw-tops were used in some older canning jars, the appearance of a screw-top usually means that your bottle is no older than the 1920s.

Does the bottom of the bottle have indentations or marks around the edge? Look at a modern bottle and you will see marks around the bottom edge. This is known as knurling or stippling. Stippling helps to keep the glass from cracking in manufacture; it was a process invented in 1940 by the Owens company, and if you bottle has it, it was made after 1940.

Sources

Society of Historical Archaeology – This site is a wealth of information and has a listing of maker's marks and bottle manufacturing techniques. If you are looking for more detailed "how to date" information, this is a wonderful site.

Glassbottlemarks.com – A bookmarked site for me! Easy to access A-Z listing of marks

Corning Museum of Glass

Treasurenet.com – forums/Bottles and Glass

How to Date Owens-Illinois Glass - HubPages

Vaseline and Uranium Glass (ca. 1930s) (orau.org)

Look on the bottom – the marks often are the key!

"PCGW" = mark of the Pacific Coast Glass Works
San Francisco, in production 1902 – 1925.
As this is a cup mold-made bottle, not machine-made,
It would date from around 1902 – 1910.

(Half Moon Bay History Association collection)

About the Author

I've been a history geek since I was 16. That summer my Aunt took me to live in London and attend the University of London, Birkbeck College, where I took classes in architectural history and had a free reign of the city. I sketched in the Victoria & Albert Museum, climbed up towers of medieval churches (sometimes behind the "no one allowed" ropes), and learned that the Romans had once walked the same streets as me. It blew my mind. I also discovered punk rock music, but that's another story.

My love of glass bottles, however, is of recent vintage and stems from my hobby of seaglassing here on our beautiful beaches. I started beach walking for exercise and began picking up trash (it still is my #1 beach activity). I began noticing gorgeous frosted lumps of glass in the waves, and finally found myself shimming-down eroding cliffs and bottle digging if I saw something good. Finding these things made me want to learn how old the artifacts were and how they relate to our town, so began research into manufacturing techniques, maker's marks and bottle history.

I believe that we never stop learning, so if you see something that I missed, got wrong, or just have a bit of bottle knowledge to add, let's talk! I love being a Half Moon Bay History Museum volunteer and enjoy working with such a great group of people. I have a goal of cataloging all bottles in the museum's collection, so that future explorers will have access.

Thank you! Jo Fry

For the Record

Below are the sea glass colors that we've collected on Half Moon Bay Beaches 2020 – sample size is roughly 10,000 pieces picked up this year. Our % skews a little differently than some other coastal California towns, where up to 40% can be white/clear. However, one year – and it is a COVID year at that – may not be 100% representational. I stayed off the beaches for the most part in March/April, and that it likely to have been a good time to hunt. Yes, I find certain colors more on certain beaches than others, but this is logical given what was at the locations in our town's history.

I'll continue to accrue data and see what it can tell us.

White/ Clear	Kelly Green	Emerald Green	Lime Green	Moss Green	Forest Green	Soft Green	Seafoam Green	Aqua Blue	Turquoise Blue	Cornflower Blue	Cobalt Blue	Root Beer Brown	Honey Amber	Grey	Black	Milk glass white	Milk glass Jadeite	Teal	Lavender	Purple/ Dark Lavender	Red	Orange	Yellow	Pink/ Peach	Multi-color
27.4%	**15.8%**	**4.2%**	**4.8%**	**1.8%**	1%	1%	**3.5%**	**3.6%**	**.06%**	**0.6%**	**1.9%**	**25.3%**	**6.3%**	**0.85%**	**.3%**	**.6%**	**.06%**	**.3%**	**.4%**	**.01%**	**.1%**	**.06%**	**.2%**	**.02%**	**.01%**