

THE DATING GAME: WHITALL TATUM & Co.

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One of the best-known manufacturers of prescription glassware was Whitall Tatum & Co. Once perhaps the largest producer of flint container glass in the world, the firm produced a large variety of bottles and jars over a long time span. In addition, most Whitall Tatum bottles were clearly marked with the company initials in a variety of styles from the last third of the 19th century until near the end of the 20th century.

Company History

Whitall Tatum & Co.

Whitall Tatum & Co. has a long and involved history that goes back to the cylinder window-glass house of James Lee, established in Millville, New Jersey, in 1806.¹ Although many writers have referred to the evolving ownership of the operation, Toulouse (1971) and Pepper (1971:225-228) seem to provide the most systematic chronologies based on primary sources - and they contradict each other on several points. According to an ad in *The Glass Packer* (November 1925), the company itself traced its existence to 1836. It is clear, however, that from 1845 to 1848 the firm was styled Whitall & Bro., and from 1848 to 1857 it was Whitall, Bro. & Co. In 1857 the partnership became Whitall, Tatum & Co., and remained so for the rest of the century. On January 2, 1901, the firm incorporated as the Whitall Tatum Co. (Moody Manual Co. 1914:1200). It was purchased in June, 1938 by the Armstrong Cork Co., who owned the operation until April of 1969.

Although the factory originally made window glass, by 1820 it produced "carboys, demijohns, vials, druggists' bottles, snuffs, chemicals, and the like" (Toulouse 1971:545-546). The company bought a second Millville factory about 1853. Allegedly the second plant was not wanted by the Whitalls, but its purchase was necessary in order to secure rights to timber needed for fuel but controlled by the second plant's owners. Regardless, the company thereafter operated both factories (Lefebvre 1949:89; Pepper 1971:225-228). The original plant became known as the

Glasstown plant or the Upper Works; the newer plant was called the South Millville plant or the Lower Works.

That the operation specialized in glassware for druggists, chemists and perfumers probably reflects the fact several of the early owners were Philadelphia pharmacists (Shoemaker 1890; Toulouse 1971:545). This was not true of the Whitalls and Tatums. It did, however, provide them with a business compatible with their religious beliefs. Both families were devout Quakers, who "did not believe in war, nor in litigation, nor in the manufacture or sale of intoxicating liquors." As a result they refused to manufacture liquor bottles of any kind - then one of the mainstays of most bottle makers (Anonymous 1896).

Since an important element of their trade consisted of bottles embossed to identify local druggists, some background on that market is worth discussion. Pepper (1971:230) noted that "as early as 1868 Whitall Tatum began making lettered plate ware." She explained that "some customers could not afford an individual mold cut for about \$400, [so] Whitall Tatum devised an inset lettered plate that cost only about \$2 to \$10." This suggests that Whitall Tatum adapted the use of plate molds on bottle bodies, but the story is more complex than that. In 1867, James J. Christie patented a "glass bottle mold fitted with a removable panel that was inscribed with the name and address to be molded in the bottle." Christie made flint glass bottles in Baltimore, Maryland. Whitall Tatum began using the plates in 1868 (Griffenhagen & Bogard 1999:36).

Tatum (1900:20330) supported the date from a perspective only 23 years removed. After discussing the introduction of the French Square,² he noted that:

this was followed about 1867 by the appearance on the market of lettered bottles, that is bottles bearing on one side in raised letters the name and address of the pharmacist, accompanied in some cases by devices, monograms, etc. The lettering was known as a plate mold.

This consisted of a metal plate made of varying sizes to fit the various molds used in casting bottles of different shape [he noted the *American Druggist* as his source].

According to Griffenhagen and Bogard (1999:36), bottles with embossed letters had been used in the United States since at least 1809. Donut-shaped plate molds around the outside edges of bottle bases were invented by Henry Ricketts in 1821 (Jones & Sullivan 1989:48-49). Jones and Sullivan also noted that "an official starting date for plate moulds in the United States is a patent of 1867" - obviously referring to the Christie patent noted above.

Although peripheral to this study, there is empirical evidence that plate molds were used on the bodies (rather than the bases like Ricketts-type molds) of soda water bottles at least as early as 1850. We have seen bottles produced by the Union Glass Works of Philadelphia, for example, that were embossed with plate molds for the San Francisco soda water firm of Lynde & Putnam that operated only in 1850 and 1851 (Markota and Markota 1972:53). There are numerous other examples of soda bottles with embossed plate molds prior to the 1867 patent. Boley & Co., Sacramento, California, for example used bottles with plate molds during the 1849-1862 period. Delahanty, Skelly & Co., San Francisco, used similar bottles from 1854 to 1864 (Schulz et al. 1980:125, 136).

Pepper (1971:228) claimed that Whitall Tatum began making "flint glass" (i.e., colorless glass) in 1863 and built a "new flint glasshouse at South Millville" in 1864. However, she claimed that the company used "William Leighton's formula for lime glass" which actually used no decoloring chemicals. Pepper stated (1971:232) that "the flint glass was of extraordinary clarity and brightness, especially considering its intended use for fairly expendable bottles. . . . Sand for the flint glass was brought in by rail from Ohio where washing was done on a large scale and more economically than Whitall Tatum could have done at the time." Despite her claims, all identifiable bottles we have seen were solarized purple, a sure indicator of manganese used as a decolorizer in the glass.

Horner (1985:98) placed the date of Whitall Tatum's first flint glass manufacture at 1862 (almost certainly the process described by Pepper) and noted that it met with "only partial success." The lack

of complete success led to the building of the new flint glass house in 1864. It was not until 1870, however, that “the progress in that branch of the business has been quite rapid.” “Glass formulae” used by Whitall Tatum included ten ounces of Manganese Dioxide for a 500-pound batch of “Lead Glass” and four ounces for a 200-pound batch (Horner 1985:101). This is more in keeping with observed Whitall Tatum colorless pharmacy bottles.

In addition to pharmacy bottles, the company manufactured laboratory ware for chemists and druggists, perfume bottles, nursing bottles and other druggists’ sundries, as well as various glass and rubber implements used by physicians. Toward the end of the century the operation was touted as “probably the largest flint- bottle works in the world,” having “thirteen flint-furnaces, in addition to five green-glass furnaces and a green-glass tank.” The firm employed “from 1500 to 1900 employees, according to the demand for their goods” (Depew 1895:282).

Whitall Tatum had developed a semiautomatic machine for wide-mouth containers by 1904 and had one for narrow-mouth bottles operational by 1912 (Toulouse 1971:544-547). However, the plant also continued to make bottles by hand. In 1913, the company was listed as using both mouth-blown and semiautomatic processes (Anonymous 1913:953). The use of both hand-blown and machine-made bottles continued at least until 1924, the company’s catalog of that year still listing a large component of specially-embossed hand ware.

When hand production was dropped at the Whitall Tatum plants is currently uncertain. However, a 1925 news report implies that the transition was well underway if not complete (Anonymous 1925), and it is likewise interesting that from 1925 onward, the company’s ads tout “full automatic machine process” but no longer mention lettered ware. By 1932, the ads mention amber “beverage” bottles, and

after Repeal it is clear that those bottles – in a departure from the company’s 19th-century tradition – were meant to hold beer. Wine and liquor bottles soon followed. This was evidently part of a major effort at diversification, which had already led to production of glass insulators beginning in 1922.

W. T. & Co. and W. T. Co. Manufacturer’s Marks on Pharmacy Bottles

Toulouse (1971:544) claimed that the W T & Co manufacturer’s mark was used by the company “until 1935.” As shown below, this is incorrect. Other dating methods are more realistic. For example, any specific bottle with a mark that includes a patent date could not have been used prior to the patent date. However, many patents were used for years, so the patent date does not necessarily reflect a valid initial date for the bottle’s use. According to Griffenhagen and Bogard (1999:38), Whitall Tatum & Co patented at least ten designs for medicine or pharmacy bottles alone during the 1878-1898 period. Until this time, Bethman (1991:78-79) has been the best source for dating Whitall Tatum bottles. Indeed, we have used his dates as a baseline for this study.

We examined a total of 228 Whitall Tatum marks on bottle bases in our initial study and have observed literally dozens since. Our sources included eBay auctions, our personal collections, archaeological databases, and entries in books that either illustrate or thoroughly describe marks by the company (Elliott & Gould 1988; Miller 1999; Pollard 1993; Ring 1980). Each of these researchers provided date ranges for the use of individual drug store bottles or, in some cases, for the specific drug stores. By consolidating these date ranges for individual bottles, we can get a better picture of the overall use range of a specific variation of the Whitall Tatum marks. In addition, the Whitall Tatum catalogs from 1880, 1892, 1896, 1898, 1900, 1902, 1909,

and 1937 were helpful in establishing the relationship between catalog numbers and embossed digits as well as related data.

This sample gave us a good look at bottles in use between at least 1880 and the early 1920s. Marks on these bottles are sometimes embossed horizontally and sometimes slightly arched depending on the shape of the bottle base. On drug store bottles, all marks are found on bases. Many of the colorless bottles are solarized (often artificially by collectors) to a light amethyst color, and it may be that all of them would change color if exposed to ultra-violet radiation. It is clear that the use of manganese extended for the full time period when the W. T. & Co. or W. T. Co. marks were used.

A few generalizations provide a basic guideline (see **Table 1** for a basic dating guide to Whitall Tatum pharmacy bottles):

1. A major division between marks occurs with mouth-blown vs. machine-made bottles. Mouth-blown bottles are marked with either the “W. T. & Co.” or “W. T. Co.” logo. Machine-made bottles are marked “W/T” in an inverted triangle.

2. The ampersand (&) was used in the mark during the pre-incorporation period from the 1870s to 1901. Bottles following the 1901 incorporation lack the ampersand.

3. “U. S. A.” may have become part of the mark in the 1880s, but it was not generally used until sometime after 1890. This may reflect a Whitall Tatum entry into the international market.

4. Three stars accompanying the mark were used infrequently. If they had any specific meaning, we have yet to discover it. These were generally used between ca. 1890 and ca. 1901, although a few examples exist with the “W. T. Co” mark, indicating a manufacture after 1901.

5. The use of a capital or lower-case “o” in “Co” was apparently a random variation at the whim of the engraver. The lower case appears a bit more commonly in earlier bottles, while capitals are overwhelmingly dominant in later ones.



Figure 1: Whitall Tatum Mark – mid-1870s-late 1880s (Bethman 1991:811)

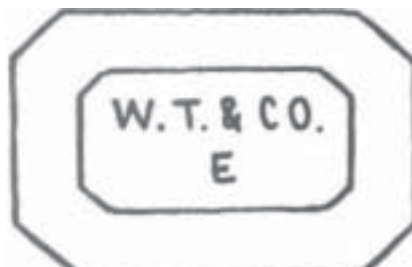


Figure 2: Whitall Tatum Mark – ca. 1880-1895 (Bethman 1991:810)

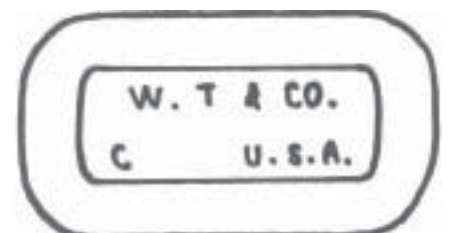


Figure 3: Whitall Tatum Mark – 1891-1894 (Bethman 1991:533)

Table 1: Chronology for Whittall Tatum Prescription Bottles

MARK	DATES / PATENT	DATES	SOURCE
W. T. & Co.	1880, 1881, 1888	mid-1870s-ca. 1890	Bethman (1991:79); Elliott and Gould (1988:205)
(letter or number) W. T. & Co.	1888	ca. 1880-ca. 1895	Bottle Research Group (BRG)
W. T. & Co. (letter or number)	1878	ca. 1880-1895	Bethman (1991:79); Elliott and Gould:196)
W. T. & Co. (letter) U.S.A.	1881	ca. 1890-1894	Bethman (1991:79); Miller (1999:87)
W. T. & Co. U.S.A.	1898	ca. 1896-1901	Bethman (1991:79, 730); Pollard (1993:255)
W. T. & CO. (letter or number) U.S.A	1878, 1891, 1892, 1894	ca. 1890-1901	Bethman (1991:79); Elliott and Gould (1988:190)
(letter) W. T. & Co. U.S.A.		1890-1896	Bethman (1991:79)
W. T. & Co. U.S.A. (letter)	1878	1889-1890	Bethman (1991:79); BRG
*** W. T. & Co. (letter) U.S.A.	1892, 1894	early 1890s-1901	Bethman (1991:79); M. Miller (1999:72); Elliott and Gould (1988:206); T. Miller (n.d.:16)
W. T. & Co. *** (letter) U.S.A.		mid-1890s-1901	Bethman (1991:79); Preble (2002)
*** (letter or number) U.S.A.	1892, 1894	early 1890s-1901	Bethman (1991:79); Preble (2002)
*** W. T. & Co. (letter) U.S.A.		early 1890s-1901	Preble (2002)
Logos with Stars to One or Both Sides		mid-1890s-1901	Preble (2002); Miller (1999:72)
W. T. Co. U.S.A.	1892, 1898	1901-ca.1905	Pollard (1993:243, 251, 255)
W. T. Co. (letter or number) U.S.A.	1892, 1894	1901-1924	Bethman (1991:79); Elliott and Gould (1988:198; BRG
*** W. T. Co (letter or number) U.S.A.		1901-ca. 1905	Preble (2002)
W. T. Co. (letter or number)		1901-1924	BRG; Pollard (1993:277)
(letter) W. T. Co.		after 1901	Bethman (1991:735)
(letter) U.S.A.		ca. 1912-ca. 1915	Miller (1999:67, 97)

6. Letters and single-digit numbers accompanying the marks are probably mold codes or identifiers of production groups. It is worth noting that in the 1937 Whitall Tatum catalog, single- and double-letter codes are used to identify all models of pharmacy bottles. Although that system may have been used at earlier dates, it was never recorded in the earlier catalogs. We have not been able to detect a notable pattern for letter/number use, nor are they helpful for dating purposes.

An Important Note About Sources

Virtually all the sources (except catalogs and ads) used to date the Whitall Tatum marks are books about local/regional drug store/pharmacy bottles written for collectors. They were never intended as vehicles to date manufacturer's marks. Each of these sources has compiled the available data to produce date ranges for the individual businesses in a specific state or region. These date ranges are usually intended to reflect the length of time a business was open based on existing sources.

In cases where the authors found more than one bottle used by a business, they have usually attempted to determine a range for that type of bottle – not for that type of mark – using a variety of characteristics such as embossed addresses or name of the proprietor, local advertising, and other bottles with similar styles. In all cases, these date ranges should be considered approximate.

It is important to note that the best information available does not necessarily reflect the entire date range for a business. Thus, for example, an unusual date range (i.e., one that does *not* fit in with other known ranges for a mark) most likely indicates that historical information for the drug store in question is incomplete. It usually does *not* indicate that the date range for the mark needs to be questioned.

A hypothetical example might better explain. Let's say a drug store was in business from 1885 to 1907 with a total of two known owners, and two different types of bottles, both mouth blown, have been discovered by the author of the study. The author might date one bottle from 1885 to 1891, based on the proprietor's name embossed on the plate mold. The other one, he or she would date 1892 to 1907 because no owner's name appears. If this second bottle had the "W. T. & Co." mark (used before 1902), then a date range of 1892 to

1907 would *not* indicate that the bottle was made after 1907.

It is, of course, also possible that W. T. & Co. marks extended for the first few years into the corporation era. This may have been caused by the employees continuing to use the older molds until they wore out (a common practice in the glass industry). Thus, occasional W. T. & Co. marks may have extended to ca. 1903 or so. Possibly future research will clarify this possibility.

W. T. & Co.

[mid-1870s-ca. 1890]

According to Bethman (1991:79), "This embossing dates from mid-1870s-1890." It was certainly the earliest mark used by the company [Figure 1]. Griffenhagen and Bogard (1999:130) dated the mark 1868-1903, but they did not address the variations. Their beginning date is probably too early, while the end date is a mistaken date for the company name change at incorporation. Bethman (1990:649, 672, 681, 736, 774, 811, 835, 850) illustrated ten examples of this mark. His date ranges varied from 1880 to 1890. Two examples of W. T. & Co. marks, unaccompanied by other markings, were also listed by Elliott and Gould (1988:205). They dated the bottles ca. 1880. None of our sources extend back to the 1870s, but a large post-1880 sample indicates that the unaccompanied mark was probably not used much after 1880, although the mark was still used some after that date. Preble (2002) listed numerous examples of bottles bearing the mark with date ranges for the companies using them extending from the mid-1870s to ca. 1900 or later.

We have seen examples with "PAT. NOV. 17, 80" below the logo and "PAT. APLD. FOR/W. T. & CO." on a second bottle. A single example in Pollard (1993:246) included a patent number *above* the logo ("PAT. JAN. 24 88"). Bethman (1991) noted a patent of "JAN. 18 '81." Ring (1980:52, 113, 144, 150, 451) listed five bitters bottles with the "W. T. & CO." mark, but none included patent dates. Although most usage of this mark probably ceased by the mid-1880s, the 1888 patent extends the range to mid-1870s to late 1880s.

(letter or number) / W. T. & Co.

[ca.1880-ca. 1895]

Elliott and Gould (1988:195) listed a single example of a slight variation – "A/W. T. & CO./U. S. A." – which they dated



Figure 4: Whitall Tatum Mark – 1896-1901 (Bethman 1991:730)

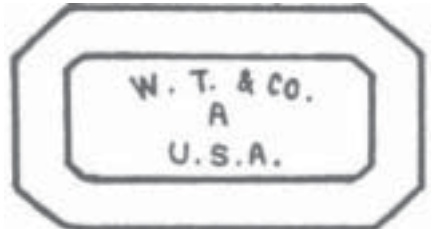


Figure 5: Whitall Tatum Mark – 1890-1901 (Bethman 1991:839)



Figure 6: Whitall Tatum Mark – early 1980s-1901 (Bethman 1991:825)

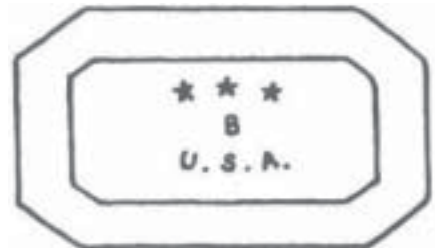


Figure 7: Whitall Tatum Mark – mid- to late 1890s (Bethman 1991:813)

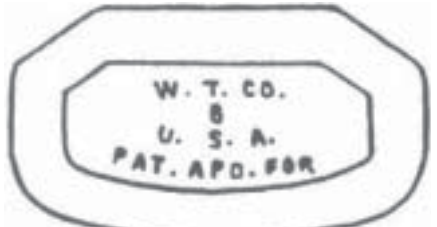


Figure 8: Whitall Tatum Mark – 1901-ca. 1924 (Bethman 1991:388)



Figure 9: Whitall Tatum Mark – ca. 1912- ca. 1915 (Miller 1999:67)

ca. 1880-1881. Bethman (1991:735) illustrated two examples of this variation, both with a "P" above the logo. He dated the bottles ca. 1887 and ca. 1892. He also included a variation with the patent date ("PAT JAN 24 '88") embossed above the letter A, both above the logo. He dated this variation ca. 1888. Preble (2002:485, 598, 633) also showed examples of the mark with date ranges extending from 1883 to 1888. In one case, however, he noted a range from 1894 to 1900. We have also observed two examples (N and 1) with the letter/number above the "W. T. & Co."

Preble (2002:458) showed an interesting variation on this mark. His example had a single star below "W. T. & Co." He dated the drug store using the bottle as having been in business between 1895 and 1900. Although a series of three stars was used on marks dating from the early 1890s to 1901 (see below), this is one of only two examples we have found with a single star.

W. T. & Co. / (letter or number)

[ca. 1880-1895]

Bethman (1991:79) dated this mark "1889-1893" and only found letters included in his sample [Figure 2]. He illustrated 34 examples of the mark that generally ranged in date from ca. 1885 to ca. 1895 with occasional outliers on both ends. Outliers ranged to extremes of 1879 or 1880 to 1903. All of Bethman's marks were shown with a capital "O" in "CO".

Elliott and Gould (1988:196, 205), however, listed 15 bottles marked W. T. & Co. above a letter or a number and dated them ca. 1880 or ca. 1881. We have found letters ranging from A-O and AA-AO with numbers from 1-9 (including one marked "9."). Miller (1999:87) also showed the mark with AJ below the logo. All but two of the marks we have found contained the lower-case "o"; the remaining two used capitals. Ring (1980:146) listed a single bitters bottle marked with "W T & CO/1" on the base. Schulz and Schulz (1990:311, 319) reported two bottles with the letters "A" and "P" from California pharmacies that can be dated 1873-1898 and 1886-1889, respectively. We found an interesting engraver's error when we examined the Tucson Urban Renewal collection at the Arizona State Museum in Tucson, Arizona. This bottle base has "W. T. & Co./AO" embossed on the base in mirror form.

Elliott and Gould (1988:196) showed an interesting variation with "PAT. JAN.

22 78" between the W. T. & CO. and the accompanying letter. The letters included C, E, and F, although one example is marked C N, the only case we have found with two letters that were not in the "A" series. Bethman (1991:597, 608) also showed the patent number variation. Along with the date shown in Elliott and Gould, he added "PAT. 5 MO 7 78."³ He dated his examples 1885-1888. Based on the above, we amend the date range to ca. 1880-1895 but suggest that the middle-to-late end of the range (1885-1895) is the most likely.

Preble (2002:578) illustrated the only known example of this mark with a single star embossed above the logo. He dated the bottle ca. 1881. A series of three stars in conjunction with the "W. T. & Co." logo were found on bottles that dated from the early 1890s to 1901. Only one other example of a single star associated with the mark is known, also from Preble (see previous). Since all other published examples of Whitall Tatum marks with stars date to the ca. 1890-1901 period, this mark likely does also. It is possible that the mark was intended to have three stars, but two were bad "strikes" and were too indistinct to be noticed.

W. T. & Co. / (letter) U. S. A.

[ca. 1890-1894]

For this mark, we rely mostly on Bethman (1991:79) who noted that "this marking dates from about 1891-1894." Bethman (1991:533, 612, 734-735, 737, 775, 804) illustrated eight examples of this mark [Figure 3]. His dates ranged from 1889 to 1892. Miller (1999:87) showed a single example of this mark with an "I" to the left of U. S. A. He dated the bottle 1891. In our collections, we have examples with a "1" and "K" to the left. Bethman (1991) illustrated marks with the letters B through K and AM. He also showed one example with a patent date of JAN 18 81. Preble (2002) included numerous examples of this mark with date ranges from 1889 to the mid-1890s.

W. T. & Co. / U. S. A.

[1896-1901]

Although Bethman (1991:79, 730) did not note this configuration in his discussion of the marks, he illustrated a single example that he dated ca. 1896 [Figure 4]. Three examples of the mark were recorded by Elliott and Gould (1988:196, 207), and we have observed the mark. Elliott and Gould dated one example at ca. 1880 and the other

two ca. 1911. We do not accept the 1911 date because all other dated examples we have seen of the mark with the ampersand (&) were from the pre-incorporation period (i.e., pre-1902). The U. S. A., however, was not generally used until the 1890s. Pollard (1993:254) showed this bottle with neither a letter nor a numeral. These were likely made between 1896 and 1901, although the style could have been used earlier. Griffenhagen and Bogard (1999:130) dated the inclusion of USA from 1890 to 1903 but did not address the variations. Ring (1980:420) listed a single bitters bottle with this mark embossed on its base.

W. T. & Co. / (letter or number) / U.S.A.

[ca. 1890-1901]

Bethman (1991:79) included this with the mark discussed below. However, we have listed it separately because it is a notable difference, even though both marks date to the same period. The mark was likely introduced ca. 1890 and used until Whitall Tatum incorporated in 1901 [Figure 5]. Bethman (1991) illustrated 31 examples of this mark on Washington drug store bottles. Inclusive date ranges for the bottles stretched from ca. 1887 to 1896 with two outliers dated ca. 1900. The bulk of the examples fell within the 1890-1896 range.

Elliott and Gould (1988:190-207) showed numerous bottles with this pattern embossed on the bases and generally included similar date ranges. It should be noted that Elliott and Gould date occasional marks of this type to the ca. 1910 period, although other sources suggest that the ampersand (&) was not used after the company incorporated in 1901. Most marks contained a capital "O" in "CO.," but a single example had a lower-case "o" and the number "4." Those with capital "Os" included letters from A to O or the number 1. Bethman (1991) added B and J along with 1-4, 6, and 8. Ring (1980:84, 198, 487) listed two bitters bottles with this mark. Schulz and Schulz (1990:311, 313-314, 319, 329) reported eleven bottles with this mark (seven including patent dates), all made for California pharmacies. Letters and numbers include A, H, J, Y, 8 and 901. Dates assigned for the bottles were 1889-1893, 1892-1901, 1894-1901 and 1898-1901.

Bottles marked with this logo included several patent dates (although bottles with no patent dates are common with this

pattern): “PAT. JAN. 22 78;” “PAT. FEB. 24, 1891;” “PAT. JAN. 5 1892;” or “PAT. DEC. 11 1894.” Patent dates were usually embossed below the “U. S. A.,” but Elliott and Gould (1988:196-197) listed four examples with the patent date between the “W. T. & CO.” and the single letter. In three of these, the pattern is “(letter) U. S. A.,” a format previously unrecorded. In two other examples, the patent date is between “W. T. & CO.” and “U. S. A.” with a “J” at the very bottom. All of the variations noted in this paragraph carry a patent date of “JAN. 22 78.” All of the exceptions are dated between the 1880s to early 1890s [we suggest late 1880s]. It is notable that some bottles used during the late 1880s-1890s carry a patent date for 1878. While patent dates provide an absolute not-used-before date, they may also not be reliable as initial use dates.

(letter) / W. T. & Co. / U. S. A.
[1890-1901]

Although Bethman (1991:79, 618, 327) did not list this as a variation, he illustrated two examples with AD and AE above the logo and U. S. A. below it. He dated the bottles 1890-1896. Schulz and Schulz (1990:323-324) report this mark (below “PAT JAN 27 88”) on three bottles from a California pharmacy that began operation in 1892 and continued into the 20th century. Letters included were “B” and “C.”

W. T. & Co. / U. S. A. / (letter)
[1889-1890]

This is another subvariation that was unlisted by Bethman (1991:79, 755), although he showed a single example of the mark with “PAT JAN/22 78” between the “U. S. A.” and the letter “A.” He dated the bottle 1889-1890.

*** * * / W. T. & Co. / (letter) / U. S. A.**
[early 1890s-1901]

Bethman (1991:79) stated, “This base embossing was used from the mid-1890s to 1901. The same embossing exists without the ‘stars.’”⁴ Bethman (1991:567, 580, 618, 626, 731, 762, 825, 847) illustrated 10 examples of the mark on Washington drug store bottles [Figure 6]. All but two of these fell into a date range of 1898-1903. One outlier was dated ca. 1890; the other was 1892-1895. Preble (2002:e.g., 461, 602) noted date ranges from the mid-1890s to 1904 with an outlier range from 1886-1890.

Elliott and Gould (1988:206) listed two

bottles with this mark, both patented January 5, 1892. Pollard (1993:278) also showed the mark but offered no date range. At least one minor variation exists on this theme. Letters under the W. T. & Co. logo in Bethman (1991) include A-D, G, and R. Patent dates illustrated were only “JAN 5 1892” and “DEC. 11 1894.” Miller (n.d.:16) added another slight variation, this one with stars, “W. T. & CO./U.S.A.” but no capital letter below “W. T. & CO.” He dated the bottle 1890s.

W. T. & Co. / * * * / (letter) / U. S. A.
[mid-1890s-1901]

Bethman (1991:666) included a single example of this configuration with the letter B. He dated the bottle ca. 1899. Preble (2002:e.g., 629, 687) offered five more illustrations of the mark with date codes ranging from 1895 to 1915. The end date, of course is too late for the W. T. & Co. mark. It should be noted that the date ranges are for individual drug stores and were not intended as ranges for the marks.

*** * * / (letter or number) / U. S. A.**
[early 1890s-1901]

Bethman (1991:79) noted that “a few bottles produced by Whitall Tatum & Co. had this style of base marking, which date (*sic*) to the mid-to-late 1890s.” Although he did not include the letter or number in his discussion, he almost certainly meant the mark that included those digits [Figure 7]. Elliott and Gould (1988:194) and Pollard (1993:244, 252), however, showed this style along with a patent date of January 5, 1892. The patent date was always below the U. S. A.

Bethman (1991) illustrated 11 examples with four letters: A, B, F, and J. He dated these marks between 1895 and 1902 and showed patent dates of “JAN 5 1892” and “DEC. 11 1894.” We found no examples of the mark without letters or numbers in his book. Miller (n.d.:6) showed a single example of this mark with the January 5 patent date. He dated the bottle 1890s or later. Preble (2002:e.g., 676, 713) illustrated numerous examples of this mark. His dates ranged from 1890 to 1907. Preble (2002) also showed a single example with a series of three stars in a row replacing the letter or number above the “U.S.A.” He dated the drug store that used the bottle bearing the mark from 1894 to 1901, the approximate date range for other star-associated marks.

*** * * / W. T. & Co. / (letter) U.S.A.**
[early 1890s-1901]

Preble (2002:e.g., 694) showed three examples of this mark. He dated the range of two drug stores using the mark at 1891-1909 and the third at 1905-1909. Since the “W. T. & Co.” mark could not have been used after 1901, a reasonable date range is early 1890s-1901. Preble (2002:467) also illustrated two examples of a variation that had the same configuration without the “W. T. & Co.” with a date range of 1890-1896.

Logos with Stars to One or Both Sides

Miller (1999:72) noted a single bottle with the stars embossed vertically to the left of “W. T. & Co./A/U.S.A.” The date range for the bottle was 1898-1900. Preble (2002) listed four variations with stars beside the marks, including the configuration illustrated by Miller:

1. “W. T. & Co./(letter)/U.S.A.” with three vertical stars to the left – Preble (2002:465, 503, 505) listed three examples of this mark. He dated them between 1894 and 1898 with one example dated 1908 to 1909. The latter date range is too late for the mark. This mark should be dated from the mid- to late 1890s.

2. “W. T. & Co./(number)” with “U.S.A.” vertically to the left and three stars in a vertical line to the right – Preble (2002:430, 634) showed two examples of this mark with date ranges of 1898-1899 and 1894-1909. We assign the mark a range of late 1890s-1901.

3. “W. T. & Co./(letter)” with three stars in a vertical line to the left and “U.S.A.” vertically to the right – Preble (2002:485, 493, 519, 581) illustrated four examples of this mark. The combined date ranges extend from 1894 to 1902 with a single outlier to 1915. Our suggested date range for the mark is mid-1890s-1901.

4. “W. T. & Co./(letter)” with three stars in a vertical line to both the left and right sides. Preble (2002:442) showed only a single example of this mark with a date range of 1900-1906. Since the ampersand was only used until 1901, we assign this mark a date range of ca. 1900-1901. This mark may be an engraver’s error, in which case, the logo was probably intended to have “U.S.A.” on one side.

W.T.C.

Ring (1980:338) listed a single bitters bottle with this mark embossed on its base. She identified the bottle as Muller’s Genuine Bismark Bitters but offered no

other information about it. W.T.C. was either a misreading of the bottle, a typographical error (of which she had many), or the mark of a different company. We have found no other source that mentions such a mark.

W. T. Co. / U. S. A.

[1901-ca. 1905]

This mark appeared in Pollard (1993:243, 255). Because of its similarity to the final W. T. & Co. mark, we have assumed it was the earliest of the new corporations marks. It was probably only used during the first few years, possibly 1901-ca. 1905, although a later use is possible. One example was marked "PAT. JAN. 4, 1898" below the "U. S. A." Pollard (1993:251) also showed a single example with a letter (E) to the left of the "U. S. A."

W. T. Co. / (letter or number) / U. S. A.

[1901-ca. 1924]

Although he only noted a letter beneath the company initials, Bethman (1991:79) explained, "After the company was incorporated in 1901, this base marking was used throughout the rest of the operations that produced hand-blown prescription bottles." [Figure 8] He provided an end date by saying that "the production of hand-blown prescription ware was discontinued in the 1920s" (Bethman 1991:78). Although Elliott and Gould (1988:198-199) date bottles with this mark to the mid- to late 1890s, we agree with Bethman's post-1901 date. This is the most common mark we have found. The mark was ubiquitous in Bethman's work. Date ranges on illustrated bottles varied from 1904 to 1922 with a single outlier with a 1900 date. It is notable, however, that the number of examples made after 1918 noticeably decreased. Although production dramatically decreased after 1920, the change to machine-made bottles (and a different mark) probably did not occur until ca. 1924, a date confirmed by Griffenhagen and Bogard (1999:40). The accompanying letters could include virtually the entire alphabet (A-X), and double letters up to AJ have been observed. The letters could also be replaced by single-digit numbers (3-8 that we have seen so far). By far the most common in the literature are letters A-C.

This pattern was shown in Pollard (1993:245-246, 250, 253-254, 256-259, 263, 268, 270, 280-282) and was often accompanied by patent dates, including:

"PAT. JAN. 5, 1892;" "PAT. DEC 11, 1894." The patent date was always below the U. S. A. Similar patterns were recorded in Miller (1999:57-58, 60,64-65, 70-72, 74, 78-79, 82, 86, 89, 95, 97, 100, 104-105, 106-107, 112). In addition to the 1892 patent, Bethman (1991) recorded patent dates of "JAN 22 78" and "DEC 11 1894." Ring (1980:84, 338, 487) listed four bitters bottles with this mark on the base.

*** * * / W. T. Co. / (letter or number) / U. S. A.**

[1901-ca. 1905]

Preble (2002) showed three examples of this mark. The date ranges for drug stores extended from 1892 to 1915. All other known examples of the star-series marks were in conjunction with the "W. T. & Co." logo and were dated between ca. 1891 and 1901. It is likely that these marks were used only during the first few years after the change to the "W. T. Co." logo.

W. T. Co / (letter or number)

[1901-ca. 1924]

Pollard (1993:277) recorded this variation, and we, too, have seen a single example. It, too, postdates 1901. This system may have been used in conjunction with the "letter/number" system or may have followed it. Until further evidence is uncovered, this variation must also be dated 1901-ca. 1924.

(letter) / W. T. Co.

[1901-?]

Bethman (1991:735) illustrated a single bottle with this mark. The letter on the example was "P." He dated the bottle ca. 1892, but this is problematical. The ampersand (&) was dropped in 1901, so the bottle was either made later than Bethman suggested, or the logo was miscopied.

(letter) / U. S. A.

[ca. 1912-ca. 1915]

Although these marks cannot be positively identified as belonging to Whitall Tatum, they follow a very similar pattern. Miller (1999:67, 97) noted three instances of the mark's use on Arizona pharmacy bottles [Figure 9]. The date range for Miller's bottles, 1912-1915, is currently our best estimate for the use of the mark.

A Note on the End Date

The 1924-1925 Whitall Tatum catalog makes it clear that hand-made, plate-mold

prescription bottles were still being offered by the plant as of September 1, 1924. Thus, the W. T. Co. mark may have been used on mouth-blown bottles for a few more years. Dating by collectors, however, indicates that few of those bottles were actually being ordered by drug stores. Paper label identification had taken over, and the era of embossed, proprietary drug store bottles was at an end (Whitall Tatum Co. 1924).

Design Patents

Bethman (1991:89-91, 93) reproduced some of the pages from the 1895, 1898, and 1904 Whitall Tatum catalogs. Other patent dates came from the Whitall Tatum 1902 catalog [Figures 10 - 11]. Some of the drawings and descriptions include patent dates for specific styles [Table 2].

Many of these (including Millville Rounds, Knickerbocker Ovals, Manhattan Ovals, Seal Ovals, and Penn Ovals) were shown in the 1902 catalog. Many others (including Kinckerbocker Ovals, Manhattan Ovals, Manhattan Ointment Pots, and Bronx Ointment Pots) also appeared in the 1909 Whitall Tatum catalog. The implication is that bottles embossed with patent dates of 1878 and 1888 were being used 15-25 years later, and dates of 1892 and 1894 were still listed fifteen years later. Thus, patent dates, while providing absolute beginning dates may not be even close to reflecting the year of manufacture.

Other Markings, Colors, and Other Container Types

Whitall Tatum made cobalt blue glass bottles from at least 1876 (Pepper 1971:230). According to bottle collectors advertising on eBay (who dug bottles at the Whitall Tatum factory), cobalt blue bottles found at the site contained no markings on the bases. However, at least one cobalt blue bottle was marked "W. T. Co./U. S. A." (eBay). Although Toulouse (1971:544-547) claimed that Whitall Tatum began making "opal [milk] glass" at the Glasstown plant in 1893, Pepper (1971:230) cited the Whitall Tatum catalog from 1876 as including opal in its list of colors. This indicates that the company was making white opaque glass by at least that date. By 1934 (ad in the *Glass Packer*), the company stated, "W.T. bottles come stocked in Crystal Clear Flint, Rich Amber, Light Green, and Emerald Green."



Figure 10: Patent January 22, 1872 (Bethman 1991:755)



Figure 11: Patent January 5, 1892 (Bethman 1991:724)



Figure 12: Etched Mark on Beaker (eBay)



Figure 13: Etched Dose Glass (eBay)



Figure 14: Dose Glass Mark – ca. 1890-1901 (Lockhart)

Other Druggist Ware

The company expanded its line to include larger bottles for druggists' supplies (known as shop furniture) in 1870. A department for druggists' sundries was opened in 1876, and the company added perfume bottles in 1878 (historical addendum to 1880 catalog). The company began production of glass insulators at the Glasstown plant in 1922 (McDougald & McDougald (1990:133). It is currently unknown whether any of these (except insulators and laboratory glass – discussed below) were marked with a company logo.

An unusual trademark was used by Whitall Tatum for laboratory glassware. The mark, consisting of "NONSOL" above "W.T.Co." in an oval, was registered on September 19, 1916, although it had been used since 1904. Used on "glassware for chemical laboratories, namely, flasks and beaker glasses," the mark was "usually displayed by burning it directly into the goods, although it may be stenciled thereon, printed upon labels to be attached to packages containing the goods, or otherwise displayed." It is highly likely that the trademark was applied to wooden crates, cardboard boxes, and tags that accompanied the glass objects rather than being embossed, etched, or otherwise directly applied to the glass surfaces.

According to collectors, few, if any, perfume bottles were marked with makers' logos. It may have been an unofficial policy of Whitall Tatum as well as others, to leave perfume bottles unmarked, as in the tradition of most 'fancy' glassware, cut glass, and tableware items. From the point of view of most of the earlier glass companies, it seems to have been considered undesirable from an esthetic standpoint to clutter up the "grace" and "beautiful design" of this type of glass with

a mark or lettering on the base. It is also possible that the small size of the bottle played some part in the decision to leave the base unmarked.

Two graduated beakers (offered on eBay) had "WHITALL TATUM CO., PHILA. GUARANTEED ACCURATE. N.Y. CITY APPROVED TYPE III SERIAL A-9" etched into the glass on one side [Figure 12]. The absence of the ampersand (&) dates this mark after 1901. A variety of graduated beakers were offered in the 1880 catalog. Although the 1892 catalog listed a large variety of wares, no graduated beakers were listed. Numerous dose glasses were offered in the 1902 catalog (including a goblet-shaped beaker), but graduated beakers were again absent from the listings. At some point, however, beakers must have been offered again in the 20th century for this style to have been available. Graduated beakers also did not appear in the 1937 catalog.

A final, different mark is on an etched dose glass. Etched on the side of the glass is COMPLEMENTS/1928/WHITALL TATUM COMPANY [Figure 13]. While embossed dose glasses (similar to shot glasses – called medicine glasses in the catalogs) were available in 1880 and 1892, it was not until the 1902 catalog that "engraved" medicine glasses were available. Engraving appears to be what we would now call etching. Whitall Tatum dose glasses are reported by collectors all over the world – as far away as New Zealand.

Occasional pieces were simply marked with the Whitall Tatum name. Apparently, during the 20th century, the corporation had figured that free advertising was to its advantage. Although we are unable to positively date some of these, all were made after 1901 (as shown by the lack of the

Table 2: Patents Recorded by Whitall Tatum & Co.

January 22, 1878	Millville Round Prescriptions
May 7, 1878	Double Philadelphia Ovals
January 24, 1888	Seal Ovals
April 2, 1889	Rounded Square Recessed Ware
January 6, 1892	Manhattan Ovals
June 7, 1892	Manhattan Ointment Pots
June 21, 1892	Bronx Ointment Pots
December 11, 1894	Knickerbocker Ovals
May 28, 1895	Tooth Powder Bottles with Composition Caps
January 18, 1898	Penn Ovals

ampersand). An eBay seller describing a milk-glass apothecary jar noted that “text on the bottom of the jar forms a circle. The text reads Whitall Tatum Co. Phila & N. Y. At the center of the circle is the letter ‘B.’” A similar piece with identical marking on the base was described by McKearin and McKearin (1941:165; plate 62). Numerous eBay apothecary jars have been reported with similar markings. The Philadelphia and New York sales offices are of little help in dating as they were in place by at least 1880 (Whitall Tatum catalog).

MANHATTAN OVAL

[after 1891]

Giarde (1980:136) attributed this mark to Whitall Tatum and dated it “from 1891.” He offered no further information except that the mark “may not have been used at all on milk bottles,” and it certainly was not. The 1892 catalog called the Manhattan Oval a “new prescription bottle” and claimed that the bottles were “of a new and very handsome design, and are so shaped that no angles are presented, all the corners being rounded. The Moulds are arranged to take the same lettered Plates that are used for French Square Prescriptions and Philadelphia Ovals.” Sizes ranged from ½ ounce to 32 ounces. The bottle design was patented on January 5, 1892 (Bethman 1991:88, 91). However, Whitall Tatum claimed the mark had been used since September 1891 (Griffenhagen & Bogard 1999:38). Thus far, we have not actually seen this mark on Whitall Tatum bottles. It is important to note that the “use” of the mark does not necessarily indicate that it was embossed on bottles. This “use” probably indicates that “Manhattan Oval” was used in ads or catalogs.

W. T. & Co. / (single or double letter) / U. S. A.

[ca. 1890-1901]

Miller (1999:88) showed a dose glass with this mark and an “AN.” Dose glasses with the mark (and letters B, S, Q, AH, AN, and AM) have been offered on eBay [Figure 14]. The mark was likely used from about 1890 to 1901, the same time period as similarly-marked prescription bottles.

W. T. Co. / (double letter) / U. S. A.

[1901-at least 1913]

When Whitall Tatum incorporated in 1901, it slightly altered its markings for dose glasses in a similar way to its new markings for prescription bottles [Figure

15]. All examples from Miller (1999:66, 104, 112) and our collections have double letters from AL to AN. These were used from 1901 to at least 1913.

Food, Beer, and Milk Bottles

Whitall Tatum also made a limited line of food bottles. These included catsup bottles, pickle jars, honey jars, mustard bottles, and maple syrup bottles. Although these may have often been unmarked, Zumwalt (1980:436) showed photos of pickle jar bases marked “W. T. & Co./1”, a mark used by the company prior to 1901. Although Zumwalt dates the jars as “circa late 1860’s to early 1870’s,” the mark is similar to that claimed by Bethman (1991:79) as being used from 1886 to 1893. Bethman’s mark, however, used a letter instead of a number. It is possible that the company used single-digit numbers to mark food bottles prior to the use of numbers on pharmacy bottles about 1890. Marks found on ware other than pharmacy bottles are consolidated in Table 3.

Pepper (1971:421) claimed that Whitall Tatum began beer bottle production in 1927, so some of those bottles should have the W/T in a triangle mark on them. However, this date makes no intuitive sense as it occurs in the middle of Prohibition when beer was legally forbidden in the U.S. She may have misunderstood certain Whitall Tatum ads. For example, an ad in the December 1933 *Glass Packer* (p. 774) illustrated a bottle type that was ubiquitous during the latter Prohibition era and has often been mistaken for beer bottles (Gershman 1990:153; Lockhart 2005:69-70; Pendergrast 1993:196). The ad calls the style an “amber beverage bottle.” Later ads (e.g., p. 471, July 1934, p. 8, January 1938 *Glass Packer*) showed both export-



Figure 15: Dose Glass Mark – 1901-ca. 1924 (Lockhart)



Figure 16: Household Fruit Jar (Creswick 1995:86)

One Gross in Original Package.

PHENIX OINTMENT POTS.

PATENTED JAN. 1, 1889.

No Shoulders. Inside Corners of Bottoms Rounded.

AMBER AND OPAL GLASS.

Furnished with cap having nickel plated screw and rim, and top of prepared wood pulp, to which a pasted label will adhere. This top is impervious to grease, and makes a tight joint with rim of jar.

No.	Capacity	Per gross	
		Amber	Opal
680	1 ounce	\$5 00	\$6 00
681	½ ounce	7 00	8 25
682	1 ounce	9 00	11 00
683	2 ounce	11 00	13 25
684	3 ounce	13 00	16 50
685	4 ounce	16 00	21 00

Figure 17: Phenix Ointment Pot (Whitall Tatum 1900 Catalog)

style and “Esslinger” beer bottles. These appeared in ads along with the W/T-in-an-inverted-triangle mark, although we have not seen any actual examples of beer bottles embossed with the logo.

The Crystal Milk Jar, patented September 11, 1888, was offered in the 1892 catalog. The jar came complete with a glass lid that used tension in a wire arrangement (similar to the lightning stopper) to seal the lid. The jars were available in pint and quart sizes. By 1902, the more modern “common sense” milk bottles were listed, although Whitall Tatum continued calling them “milk jars.” The drawings, however, depict the cap seat style of the common sense milk bottle developed by Hervey Thatcher. Milk bottles were obviously not a targeted item – the entire copy read, “All styles and sizes, furnished with Paper Tops or Metal Fittings. Prices on application.” Although Giarde (1980:136) suggested that the W. T. & Co. mark was used to 1924, it is much more likely that W. T. Co. was used from 1901 to 1924, followed by the inverted triangle mark (see below), used until the company sold to Armstrong Cork in 1938 (Griffenhagen & Bogard 1999:40).

Fruit Jars and Other Jars

Fruit jars were also a part of the company’s offering from an early date. Creswick (1995:158) and Roller (1983:380) both showed a grooved-ring wax sealer fruit jar embossed on the front with WHITALL’S PATENT (downward arch)/JUNE 18TH 1861 (upward arch). The accompanying lid was embossed WHITALL’S PATENT

(downward arch)/MILLVILLE NO. 3. (upward arch) on the top. Creswick dated the container “circa 1884 based on a separate patent (#292,386) assigned during that year. Another example was the HOUSEHOLD FRUIT JAR (Creswick 1995:86) embossed with W. T. CO. in the front center, produced ca. 1857-1938 [Figure 16]. The W. T. CO. embossing, however, was more likely used during the 1901-1924 period.

According to Caniff (2001:6-8), the 1861 patented jar was embossed on the side with “MILLVILLE ATMOSPHERIC FRUIT JAR.” He showed variations of the jar through time, usually with the full name embossed on the front. Some smaller jars were only embossed “MILLVILLE.” One style was completely unembossed, and another only had “W. T. & CO. U. S. A.” on the base. The last known advertisement for the jars was in 1891. Creswick (1995:226) listed a half-gallon jar embossed “W. T. & CO. 2” on the base. Roller (1983:251-253), apparently unaware of the 1891 ads, also included several of these jars, but dated them to the ca. 1860-1880s period.

Whitall Tatum & Co. also made three other fruit jars, but these were only marked with the company name (plus “PHILADELPHIA NEW YORK”) on the glass lids. These included the “museum jars” available from 1879 to as late as 1924 (Caniff 2001:8-9). Another fruit jar had “J. M. WHITALL’S PATENT APRIL 11 1865” embossed on the underside of its glass stopper. The jar, itself, was unmarked. The patent number was 540,890 (Creswick

1995:220-221; Roller 1983:280). Whitall Tatum also made a variety of other fruit jars (see Creswick 1995:158-159) and other jars including pickle jars and ointment pots.

W. T. & Co. / (number)

[late 1870s-ca. 1890]

As discussed above, this mark is found on pickle jars from Whitall Tatum and may grace other food jars made by the company. It may have been used as early as the late 1870s until about 1890. Pickle jars and other food containers were offered in the 1880 catalog.

W. T. & Co. / (3- or 4-digit number) / (letter)

[ca. mid-1890s-1901]

We discovered this variation on a Phenix⁵ Ointment Pot marked “W. T. & Co./681/D/PAT JAN 1 1889.” The marks included patent dates (below the other markings) of “JAN 1 1889” on an amber jar and “APR 15 1890” on a jar made of opal or milk glass. Both of these are salve jars with non-continuous-thread finishes. In both cases, the mold line continues to the top of the finish, indicating a machine-made jar. The numerals indicate catalog numbers. Whitall Tatum’s 1880 catalog (pp. 25, 68) only shows jars with fitted lids – none with continuous thread finishes. Unfortunately, the 1890 and 1892 catalogs were limited in scope and did not show short jars, such as the one described above. However, specimen jars had no threaded lids, and the only fruit jars listed were “for corks.” Glycerine Jelly jars were the only items listed with continuous thread finishes and “nickel-plated screw caps” (Whitall Tatum catalog 1892). By 1896, however, Phenix ointment pots (with the patent date “JAN 1 1889”), Millville ointment pots, and Manhattan ointment pots were offered (Whitall Tatum catalog 1896). These jars and ointment pots, therefore, probably became available from Whitall Tatum sometime between 1892 and 1896. Opal or milk glass jars could have been made at least as early as 1876 [Figure 17].

Jars of this type were made by press molding, a technique used as early as the late 17th century. In this technique, glass is dropped into a mold, and a plunger is depressed into the center to force the glass to conform to the molded sides. The plunger is withdrawn, and the two (or more) part mold is opened to remove the final product. In this technique, the inside of the container does not conform to the

Table 3: Chronology for Other Whitall Tatum Marks

MARK	BOTTLE TYPE	DATES	SOURCE
W. T. & Co. (number)	Pickle Jars	1886-1893	Zumwalt (1980:436)
W. T. & Co. (3- or 4-digit number) (letter)	Jars and Ointment Pots	early 1890s- 1901	Bottle Research Group (BRG)
W. T. & Co. (single or double letter) U.S.A.	Dose Glasses	ca. 1890- 1901	BRG
W. T. Co. (double letter) U.S.A.	Dose Glasses	1901-1913*	Miller (2000)
W. T. Co. (number) (letter)	Jars and Ointments Pots	1901-1924?	BRG WT Catalog, 1902

* All of these that we have seen have threaded finishes.

outside (unlike blown bottles). External mold lines often resemble those of machine-made bottles, even in hand-pressed products (Jones & Sullivan 1989:33-35). The process, of course, advanced from hand pressing to semiautomatic to fully automatic machines, although we have not found a specific chronology for this. Presumably, it follows the same broad dates as other machine development. Although neither Toulouse, the historical section of the 1880 catalog, nor Bethman address pressed-glass machines in connection with Whitall Tatum, empirical evidence shows that the technique was used to form this type of jar.

In 1905, Whitall Tatum used five semiautomatic machines “making Mellon’s (*sic*) food, Horlick’s malted milks, Eskays, Wanamaker’s candy jars and morphines” (Anonymous 1912:1). This supports the Toulouse (1971:544-547) assertion that Whitall Tatum developed an automatic machine for wide-mouth bottles by 1904.

W. T. & Co. / (3- or 4-digit number) / (letter) U. S. A.

[ca. mid-1890s-1901]

Elliott and Gould (1988:192) showed a single example of a Hawaiian bottle that was embossed 1020/A. The authors dated the bottle “late 1890’s or early 1900’s.” Bottle No. 1020 in the 1902 *Drug, Perfume & Chemical Bottles* catalog from Whitall Tatum is a two-ounce tooth wash bottle that sold for \$6.25 per gross. The drawing in the catalog exactly matches the photo in Elliott and Gould. It is safe to say at this point that three- or four-digit numbers embossed on Whitall Tatum bases are catalog numbers.

Bethman (1991:680) illustrated three tooth powder bottles with this type of mark. The central number was 902, and he dated the bottles 1898-1903 [Figure 18]. The bottle is shown in the *Drug, Perfume & Chemical Bottles* 1902 catalog put out by Whitall Tatum. The bottle was described in two variations, both two-ounce. One had an “Acorn Cap,” the other an “L. 4 Slip Cap” (although the meaning of the designation is currently unknown). Two other tooth powder bottles with three-digit numbers (453, 491) and the same pattern of logo have been offered on eBay. Again, both matched the shape shown in the catalog. No. 453 is 2 ¼ ounces; No. 491 is 6 ½ ounces. They are otherwise identical.

W. T. Co / (number) / (letter)

[post-1901]

We have also noted this variation on an amber base that cannot as yet be identified. It postdates 1901 and was probably used until the next change of logo in 1924 (Griffenhagen & Bogard 1999:40). This is the only case we have found where a multi-digit number (600) on a base does *not* match up with the corresponding number in the 1902 catalog. Number 600 in the catalog is a sulfuric acid reagent bottle. The rounded base we observed does not match the squared-corner reagent base shown in the catalog. The base, however, matches the Bronx ointment pots, made of amber glass, in the 1937 Whitall Tatum catalog. The ½-ounce size is number 700.

Later Whitall Tatum Marks

W/T in an inverted triangle

[ca. 1922-1969]

Toulouse (1971:544) dated this mark “1935 to 1938” and included a WT monogram in an inverted triangle with the same date range. The date of final change is just prior to the sale to Armstrong Cork Co. According to McDougald & McDougald (1990:134), the W/T variation was used on insulators between 1924 and 1938. In support of the earlier date, the first triangle marks begin to appear in Whitall Tatum advertisements in 1925. That is ten years earlier than Toulouse has the mark on bottles, indicating yet another probable Toulouse typo. Giarde (1980:136) dated both marks at 1924 to 1938 but admitted that the time period was unsure. Griffenhagen and Bogard (1999:40) placed the W/T mark firmly in the 1924-1938 period.

The 1924-1925 Whitall Tatum catalog makes it clear that non-plate mold, pharmacy or medicine bottles were being made by machine and sold in large quantity lots by September 1, 1924 (the publication date). This suggests that the conversion to machine manufacture began by at least 1924. However, the catalog also offered many varieties of “hand made ware” in plate-mold prescription bottles. While the catalog did not specifically show marks, the presence of machine-made bottles suggests a use of the Triangle-W/T mark by 1924 (Whitall Tatum Co. 1924).

In support for the transition date, a January 1924 ad in the *American Druggist* is the last ad for a “Lettered Prescription Bottle” we have found. The ad noted that

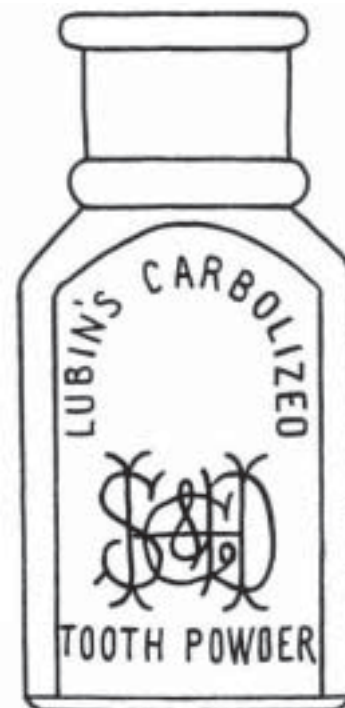


Figure 18: Marks on Tooth Powder Bottles (Bethman 1991:680)



Figure 19: Whitall Tatum Mark – ca. 1924-1969 (Whitall Tatum 1938)



Figure 20: Whitall Tatum Logo (Whitall Tatum 1938)

the bottles were used by “druggists who appreciate a distinctive message to their patrons.” Based on the decreasing frequency of accounts about plate mold pharmacy bottles in collectors’ literature (see e.g., Bethman 1991 or Elliott & Gould 1988), druggists who wanted the “distinctive message” embossed on bottles had been progressively declining since ca. 1908. Ads from 1925 use phrases such as “machine made” or “full automatic machine process,” suggesting that hand manufacture had completely ceased by that time. A 1925 article (Anonymous 1925:35) noted that “the automatic machine has ousted the men.”

Pepper (1971:244) erroneously set the inverted triangle marks as beginning in 1902. The W/T mark is shown extensively in the 1937 Whitall Tatum Glassware Price List [Figures 19 - 20]. The company went as far as to brag, “When you find [the W/T in an inverted triangle] on the bottom of a glass container you recognize the symbol of highest quality” (Whitall Tatum & Co. 1937:4). Although Pepper (1971:244) did not specify exactly when, she stated that date codes accompanied by mold numbers appeared “in the 20th century” (1971:244). Likely, the use of date codes began sometime during the 1924-1938 period, although the exact date is currently unknown.

Scholes (1941:129) showed both the W/T inverted triangle mark and Circle A as used by Armstrong Cork Co. in 1941. Berge (1980:83) illustrated a chart from Owens-Illinois showing glass marks used in 1964. The chart showed both the W/T in an inverted triangle mark and the Circle A mark (see below) as being used in that year (1964). The McDougalds also noted that “eight years passed before the venerable Whitall Tatum name began to be replaced by Armstrong embossings” on insulators (1990:138). This body of evidence suggests that the W/T inverted-triangle mark was used in conjunction with the Circle A mark during the entire tenure of Armstrong Cork (1938-1969) which extends the entire use of the triangle mark from ca. 1924 to 1969.

However, bottles shown in Colcleaser (1965; 1966) show the W/T-in-an-inverted-triangle marks accompanied with numbers and, in one case, a letter: A, 22, 25, 26, 31. If our dating is correct, these marks were not used until 1924. The last three numbers fit perfectly into the scheme for date codes. However, the “22” would

be two years too early – unless we are incorrect by two years – or Colcleaser miscopied the mark. The “A,” of course, is a mystery.

Jones (1965:[22]; 1966:18) only showed the W-over-T variation of the inverted-triangle mark (but no monogram mark) as did Colcleaser. At this point, we have seen well over 100 of the W-over-T variation but not a single example of the WT monogram in an inverted triangle as shown by Toulouse. The monogram mark is likely bogus. It should be noted that Toulouse (1971) received information from a large number of bottle collectors (probably the May Jones network) and sometimes reported non-existent marks either because of misinterpreting a description (the likely cause in this case) or because the collector misread the mark on the bottle.

Thus far, we have found no machine-made Whitall Tatum bottles with marks earlier than the inverted triangle form. This suggests that prescription bottles were all mouth blown until about 1924. The inverted triangle marks also could have been used slightly earlier on machine-made glass bottles (as the “22” code on one bottle suggests). There may also have been a slight overlap (apparently at least two years) between the use of the W. T. Co. and inverted triangle marks.

Acknowledgments

We would like to thank George L. Miller for providing us with a photocopy of the 1937 Whitall Tatum Glassware Price List and numerous eBay sellers for unintentionally providing large amounts of empirical data. The Bottle Research Group (BRG) began on March 6, 2003, when Bill Lindsey e-mailed Bill Lockhart to discuss bottles. Carol Serr joined in the discussions on August 8, 2003, and the group became formalized when David Whitten became involved on March 19 of the same year. David withdrew from the group in August 2005 but continues to contribute information. Pete Schulz, the most recent member, joined us on October 21, 2005.

References:

- Anonymous
1896 “A Quaker Firm’s Rules.” *Friends’ Intelligencer* October 10, 1896: 687.
- Anonymous
1912 “Changes Wrought in 7 Years.” *National Glass Budget* November 30.

- Anonymous
1913 “The Present Status of the Glass Bottle and Hollow Ware Industries in the United States.” *Journal of Industrial and Engineering Chemistry* 5(11):951954.

- Anonymous
1925 “Passing Years Bring Changes at Old Millville, N. J., Factory.” *Glass Worker* 44(27):34-35.

- Berge, Dale L.
1980 *Simpson Springs Station: Historical Archaeology in Western Utah*. Cultural Resource Series No. 6. Bureau of Land Management, Utah.

- Bethman, David
1991 *The Pioneer Drug Store: A History of Washington State Drug Stores and Their Bottles*. Privately printed, n. p.

- Cannif, Tom
2001 “Fruit Jar Rambles.” *Antique Bottle & Glass Collector* 17(9):6-9.

- Colcleaser, Donald E.
1965 *Bottles of Bygone Days*. Privately Published, Napa, Cal.

- 1966 *Bottles of Bygone Days, Part II*. Privately Published, Vallejo, Cal.

- Creswick, Alice
1987 *The Fruit Jar Works, Volume II, Listing Jars Made Circa 1900 to Modern*. Privately printed, Grand Rapids, Michigan.

- 1995 *The Fruit Jar Works, Vol. I, Listing Jars Made Circa 1820 to 1920’s*. Douglas M. Leybourne, N. Muskegon, Michigan.

- Depew, Chauncey M.
1895 *One Hundred Years of American Commerce*. D.O. Haynes & Co., New York.

- Elliott, Rex. R. and Stephen C. Gould
1988 *Hawaiian Bottles of Long Ago*. Hawaiian Service, Inc., Honolulu, Hawaii.

- Gershman, Michael
1990 *Getting It Right the Second Time: How American Ingenuity Transformed Forty-Nine Marketing Failures into Some of Our Most Successful Products*. Addison-Wesley, Reading, Massachusetts.

- Giarde, Jeffery L.
1980 *Glass Milk Bottles: Their Makers and Marks*. Time Travelers Press, Bryn Mawr, California.

- Griffinhagen, George and Mary Bogard
1999 *History of Drug Containers and Their Labels*. American Institute of the History of Pharmacy, Madison, Wisconsin.

- Horner, Roy
1985 *Tempo, the Glass Folks of South Jersey*. Privately printed. Revision of the 1969 edition. [includes a reprint of the 1883 Cushing and Sheppard history of the Whitall

- Tatum & Co. Glass Works]
 Jones, May
 1965 *The Bottle Trail, Volume 5*. Nara Vista, New Mexico.
- 1966 *The Bottle Trail, Volume 6*. Nara Vista, New Mexico.
- Jones, Olive and Catherine Sullivan
 1989 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures*. Parks Canada, Ottawa.
- Knittle, Rhea Mansfield
 1927 *Early American Glass*. Appleton-Century, New York.
- Lefebvre, Marcel
 1949 Glass in the Indian Country. *Glass Industry* 30(2):88-91, 117.
- Lockhart, Bill
 2005 *Fourth Street, Near Manzanaras: The Carbonated Beverage Industry in Socorro, New Mexico, 1880-1967*. Socorro County Historical Society, Socorro.
- Markota, Peck and Audie Markota
 1972 *Western Blob Top Soda and Mineral Water Bottles*. Highlands Printing and Publishing Co., North Highlands, California.
- McDougald, John and Carol McDougald
 1990 *A History and Guide to North American Glass Pintype Insulators*. Volume 1. The McDougalds, St. Charles, Illinois.
- McKearin, Helen and George McKearin
 1941 *American Glass*. Crown Publishers, New York.
- 1949 *Two Hundred Years of American Blown Glass*. Bonanza Books, New York.
- McKearin, Helen and Kenneth M. Wilson
 1978 *American Bottles & Flasks and Their Ancestry*. Crown Publishers, New York.
- Miller, Michael R.
 1999 *A Collector's Guide to Arizona Bottles & Stoneware: A History of Merchant Containers in Arizona*. Privately Printed, Peoria, Arizona.
- Miller, Thomas
 n.d. "St Clair Co., Illinois Blown-in-the-Mold Prescription and Medicine Bottles, 1870-1920." Unpublished manuscript for the Metro-East Antique Bottle and Jar Club.
- Moody Manual Co.
 1914 *Moody's Manual of Railroad and Corporation Securities*. Vol. 2. Moody Manual Co., New York.
- Moulton, Tom T.
 2002 "Kissin Cousins: A History of Insulator and Fruit Jar Manufacturers." <http://www.insulators.com/articles/fruitref.htm#KERR>
- Pendergrast, Mark
 1993 *For God, Country, and Coca-Cola: The Unauthorized History of the Great American Soft Drink Industry*. Charles Scribner's Sons, New York.
- Pepper, Adeline
 1971 *Glass Gaffers of New Jersey*. Scribner's Sons, New York.
- Pollard, Gordon
 1993 *Bottles and Business in Plattsburgh, New York: 100 Years of Embossed Bottles as Historical Artifacts*. Clinton County Historical Association, Plattsburgh.
- Preble, Glen R.
 2002 *The Rise & Demise of Colorado Drugstores 1859-1915 - A Prescription For The Bottle Collecting Habit*. Antique Bottle Collectors of Colorado, Inc., Denver, Colorado.
- Ring, Carlyn
 1980 *For Bitters Only*. Nimrod Press, Boston.
- Roller, Dick
 1983 *Standard Fruit Jar Reference*. Acorn Press, Paris, Illinois.
- Scholes, Samuel R.
 1941 *Handbook of the Glass Industry*. Ogdon-Watney, New York.
- Schulz, Jeanette K. and Peter D. Schulz
 1990 Embossed California Bottles from the IJ89 Block, Sacramento. *Papers in Northern California Anthropology* 4:307-369.
- Schulz, Peter D., Betty J. Rivers, Mark M. Hales, Charles A. Litzinger, and Elizabeth A. McKee
 1980 *The Bottles of Old Sacramento: A Study of Nineteenth-Century Glass and Ceramic Retail Containers, Part I*. California Archaeological Reports, No. 20. Department of Parks and Recreation, Sacramento, California.
- Shoemaker, Robert
 1890 "The Olden-Time Apothecary." *Pharmaceutical Era* 4(23):21.
- Tatum, C. A.
 1900 "One Hundred Years of Achievement in American Glass Manufacture." *Scientific American Supplement* 1208:20329-20330.
- Toulouse, Julian Harrison
 1971 *Bottle Makers and Their Marks*. Thomas Nelson, New York.
- Whitall, Tatum, & Co. or Whitall Tatum Co.
 1880 [1971] *Whitall, Tatum, & Co. 1880*. American Historical Catalogue Collection. Pyne Press, Princeton.
- 1892 [n. d.] *Edited Reprint 1892 Annual Price List, Whitall, Tatum & Co.* Edited by Shirley R. Bailey, Milleville, New Jersey.
- 1896 *Whitall Tatum & Co.* Philadelphia, Pennsylvania. {Lloyd Library & Museum}
- 1898 *Whitall Tatum & Co.* Philadelphia, Pennsylvania. {Lloyd Library & Museum}
- 1900 *Price List of Laboratory Glassware and Sundries*. Whitall, Tatum & Co., Philadelphia, Pennsylvania. {Lloyd Library & Museum}
- 1902 [1967] *Drug, Perfume and Chemical Bottles, 1902*. (Whitall Tatum Company) Edited by D. James, Antiques Research Publications, Chattanooga, Tennessee.
- 1909 *Annual Price List*. Whitall Tatum & Co., Philadelphia, Pennsylvania.
- 1924 *Price List 1924-1925*. Philadelphia, Pennsylvania.
- 1937 *Glass Ware Price List*. Whitall Tatum & Co., Philadelphia, Pennsylvania.
- Zumwalt, Betty
 1980 *Ketchup Pickles Sauces: 19th Century Food in Glass*. Mark West Publications, Fulton, California.

Footnotes

¹ Virtually all early dates connected with the glass operations in Millville are disputed among the earlier researchers.

² The French Square was introduced sometime after 1850, and many were made by William McCully & Co. (Griffenhagen & Bogard 1999:35).

³ The meaning of this strange patent date is unknown.

⁴ Please note that the stars accompanying the Whitall Tatum logo are actually five pointed, although we are showing them as asterisks (*).

⁵ This is the Whitall Tatum spelling.