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## Telling Time for Archaeologists

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## **Cover Page Footnote**

I would like to thank Robert H. Hunter Jr. and The Chipstone Foundation of Milwaukee, Wisconsin for providing color photographs from their journal *Ceramics in America* to illustrate this article. The first issue of *Ceramics in America* was published during the summer of 2001. I would also like to thank Anthony J. McNichol for the glass drawings he did for this publication. I began compiling this list of dates while employed at Parks Canada and much of the information came from my former colleagues in Ottawa.

# Telling Time for Archaeologists

George L. Miller, with contributions by Patricia Samford, Ellen Shlasko, and Andrew Madsen

*This essay presents an accumulation of data on the dates for common types of artifacts found on archaeological sites from the historical period. These dates come from a variety of sources and include a mix of types of dates. These dates are based on such things as patents, pattern registrations, dates when commercial production began, estimates of when production stopped, and the popularity ranges for various styles of wares based on makers' marks. The introductory essay discusses some of the problems in the sources of the dates presented.*

*Ce texte présente une accumulation de données sur les dates de types d'artefacts communs trouvés sur des sites archéologiques de la période historique. Ces dates proviennent de diverses sources et sont de plusieurs natures. Elles se basent sur divers indicateurs tels brevets, enregistrements de modèles, dates de début de production commerciale, estimations du moment où a cessé la production et périodes de popularité de divers styles d'articles d'après les marques des fabricants. Le texte évoque certains des problèmes que posent les sources des dates présentées.*

## Introduction

Publication of Ivor Noël Hume's *A Guide to Artifacts of Colonial America* in 1970 provided historical archaeologists with their major source for identification and dating of historical artifacts. This text became the standard reference for dating 17th- and 18th-century artifacts and to some extent artifacts from the early 19th century. As such, it is the most cited work by historical archaeologists. In this seminal work, Noël Hume presented in clear and simple terms the importance of and use of the concept of *terminus post quem* dates for dating archaeological contexts. The latest-made artifact in an archaeological context represents the earliest date that the context could have been deposited (Noël Hume 1969: 11). Unfortunately, the dating of contexts by their *terminus post quem* artifact is an under-utilized concept in historical archaeology. For some, the mean ceramic date seems to be the focus of analysis. Knowing the mid-date of a context and not knowing if it was for an assemblage that represents ten years or 100 years seems rather short sighted. It is hoped that the dates provided here will help archaeologists become more familiar with artifacts and their chronologies.

## Sources for Dating Artifacts

Not all dates are created equal. Dates for artifacts used to interpret archaeological contexts come from a variety of sources that should be taken into account during the interpretation process. For example, consider the following types of sources for artifact dates.

### Group 1: Dated objects

Coins, silver touch mark dates, armorial decorated wares, presentation pieces and dated ceramics and glass, manufacturers' date codes such as those used by Wedgwood, Worcester, Owens-Illinois Glass, and others (FIG. 1). One obvious question is what does the date represent? Is it the date the object was made, or does the date commemorate some event or relate to a presentation of the object?

### Group 2: Known introduction dates

Patented objects, design registrations, makers' marks, model years, known date of introduction, dates of changes in technology, dates of changes in style, marks for institutionally owned wares such as used by military regiments, hospitals, hotels, schools, etc (FIGS. 2-4). Many of these dates have been estab-

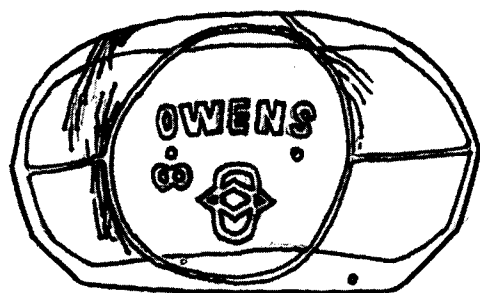


Figure 1. The base to a bottle with an Owens-Illinois Glass Company mark. The bottle has an Owens suction scar to the left and top right of the parison mold line. This from the knife that cuts the glass off once it has been sucked up from the glass tank. Owens scars are very distinct, and sometimes are carried up onto the heel of the container, especially on small bottles. The Owens Automatic Bottle Blowing machine was patented in 1904. Suction scars are common on bottles made from 1903 until around 1940. Drawing by Anthony J. McNichol.

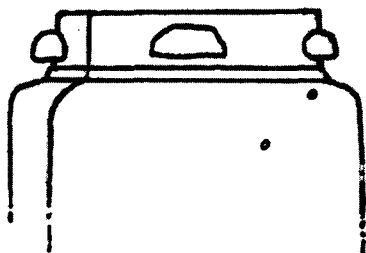


Figure 2. Lug top finish to a machine-made bottle. This type of closure was almost impossible to make on mouth-blown bottles. Lug top closures were introduced on machine-made bottles in 1906. There are many styles of lug top closures and they are still in common use today. Drawing by Anthony J. McNichol.



Figure 3. Continuous-Thread Finish. This finish on glass containers had one continuous line that overlaps itself for a quick and easy opening lid. The glass industry came together to set the first standards for the Continuous-Thread Finish in 1919 (Lief 1965: 27–29). The closure became very popular and basically replaced the cork for most containers. Drawing by Anthony J. McNichol.

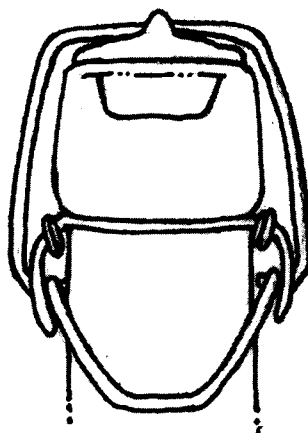


Figure 4. Bail and yoke "Lighting Stopper" stopper. Lief lists this stopper as being patented in 1882, but a patent date on the hard rubber cork on a Lighting stopper in Miller's collection has the date "Jan. 5, 1875." These closures were common on beer bottles and to a lesser extent on pop bottles until ca. 1910. They lost their market position to the crown stopper which was patented in 1892. Drawing by Anthony J. McNichol.

Table 1. Chronology for shell-edged earthenware, after Miller and Hunter 1990, keyed to Figure 5.

| Figure | Style                         | Rim                    | Mean beginning date | Mean end date |
|--------|-------------------------------|------------------------|---------------------|---------------|
| 5A, B  | Rococo                        | Impressed curved lines | 1784                | 1812          |
|        | Impressed curved lines        | Even scalloped         | 1802                | 1832          |
| 5D     | Impressed straight lines      | Even scalloped         | 1809                | 1831          |
| 5C     | Impressed bud motif           | Even scalloped         | 1813                | 1834          |
| 5E, F  | Embossed patterns             | Patterned scalloping   | 1823                | 1835          |
| 5G, H  | Impressed repetitive patterns | Unscalloped            | 1841                | 1857          |
|        | Unmolded                      | Unscalloped            | 1874                | 1884          |

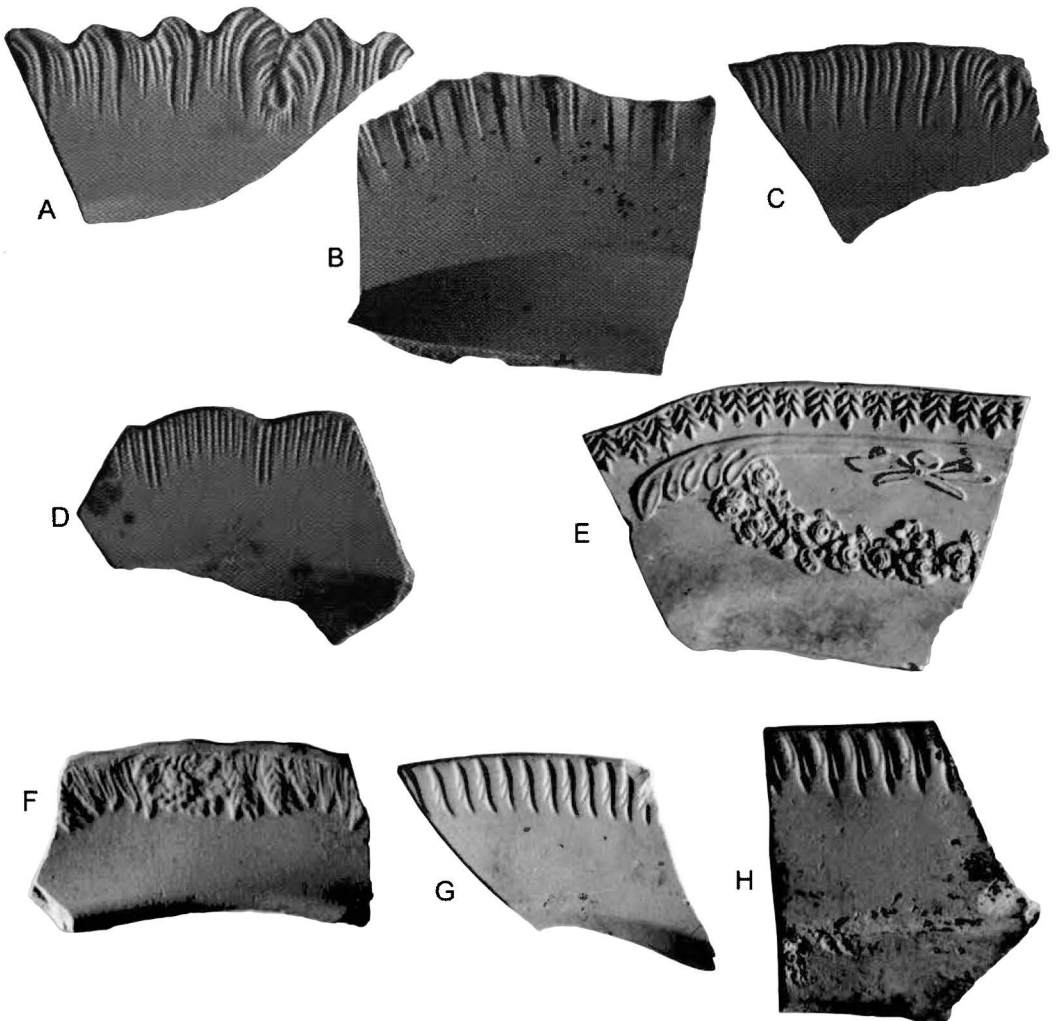


Figure 5. Bisque fired shell-edged waster sherds from Staffordshire. The chronological information on these rim types is presented in Table 1.

lished from documents such as patent office records, research in city directories, published histories, and other such sources.

### **Group 3: Dates by association**

In most cases artifacts date the sites and contexts in which they are found. In some cases, such as shipwrecks, sites destroyed by catastrophic events, sites occupied for very short time periods, or activities such as military battles, the site often provides better dates for the objects found than our established artifact chronologies. In these cases, the dates are for a period when the artifacts were in use and deposited and generally do not represent the beginning or end date of the artifacts recovered.

### **Group 4: Artifact dates generated by accumulated data**

The earliest example of this for historical archaeology is the Binford clay pipe stem formula dates based on the research by Pinky Harrington (Binford 1978). Later examples include Stanley South's mean ceramic date formula, based on data provided by Ivor Noël Hume (South 1978). Others have used accumulated dates from artifacts to generate ranges of popularity. Ellen Shlasko used the information from hundreds of dated delftware vessels to generate popularity curves and date ranges for the different styles of English delftware (Shlasko 1989). Andrew D. Madsen built a similar chronology using information from dated armorial Chinese porcelain and Chinese porcelain from shipwrecks (Madsen 1995). Patricia M. Samford used the beginning and end dates from English potters' marks to generate a set of popularity date ranges for different styles in printed wares in the 19th century (Samford 1997). Likewise, I used the beginning and end dates from English potters' marks to generate a set of popularity date ranges for different styles of English shell-edged wares (Miller and Hunter 1990).

These chronologies are beginning points to further improve our ability to date the artifacts recovered from excavations. All of these studies have their limitations and raise questions concerning the meaning of the data and their reliability. For example, taking the chronology for shell edge outlined in Miller and Hunter produced the following mean

beginning and end dates for the seven major decorative types (TAB. 1; FIG. 5).

Taken at face value, the above series would suggest that shell-edged wares were not being produced between 1835 and 1840 and between 1858 and 1873. Throughout the 1830s, shell edge was the most common type of plate being sold in the American market. A close look at Samford's data may reveal similar time gaps.

Andrew Madsen's data are based on Chinese porcelain decorated with English armorial designs. The British East India Company controlled the importation of Chinese porcelain to England. Because of a dispute with the London merchants who sold the Chinese porcelain imported by the Company, the Company stopped importing these wares in 1791 (Godden 1980: 28). This put an end to English armorials on Chinese porcelain at a time when the American trade in Chinese porcelain was taking off. Thus the dates that Madsen generated for the later patterns may have lasted longer in the American market (FIGS. 6–8). Anyone using the dates and chronologies in this paper should take into consideration how the dates were generated and what the limitations might be on their accuracy.

Many of the dates from the following list come from marginal sources that have been collected over the last 25 years. Some of the sources are newspaper clippings such as inventors' obituaries and company histories and promotional material about their own products. Many books and articles used were written by those involved in the antique trade. These authors commonly do not cite their sources and often come up with erroneous conclusions. While I have tried to filter out the material that is clearly wrong or suspect, there probably are cases in which the dates are wrong. The material presented here is a starting point rather than an end point for what needs to be done on chronologies. The gathering of material is a never-ending process, and what has been presented here represents a mish-mash of sources. In another five years it may be time to rework this list. I invite my colleagues to send me chronological information for a future update of this list.

One issue that has not been dealt with in this presentation is that of time lag between



Figure 6. Grape and Bamboo marly pattern on Chinese porcelain. This pattern was popular from ca. 1730 to ca. 1760 (Madsen 1995: 200). Photographed by Andrew Madsen.



Figure 7. Blue spearhead motif on Chinese porcelain. This pattern was popular from ca. 1730 to ca. 1780 (Madsen 1995: 200). Photographed by Andrew Madsen.





Figure 8. Blue trellis motif on Chinese porcelain. This pattern was popular from ca. 1720 to ca. 1795 (Madsen 1995: 200). The painting of the blue trellis pattern becomes much simpler in later examples. Photographed by Andrew Madsen.

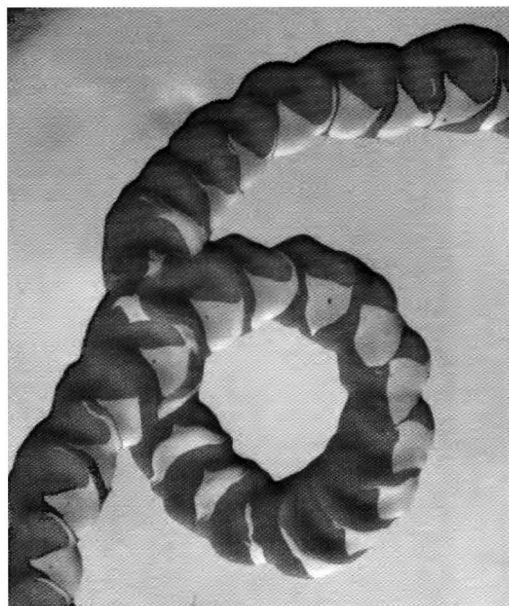
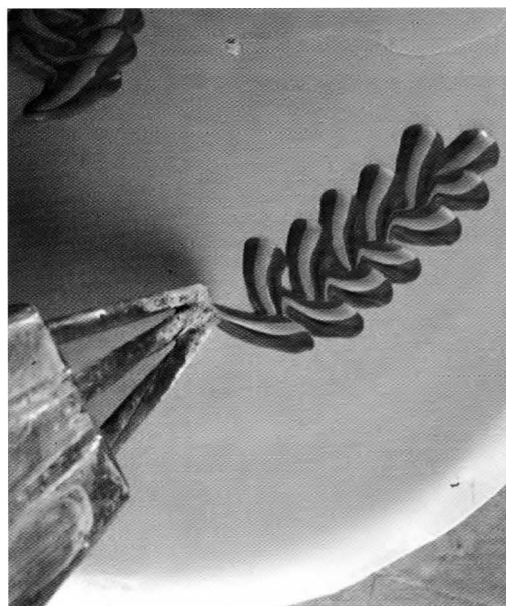


Figure 9. Don Carpentier of Eastfield Village reproducing slip decoration with a three-chambered slip trailer. The worm-like pattern on the right was called common cable by the Staffordshire potters and was created by a series of drops, each one overlapping the previous drop. This type had been called "finger trailed" in the literature. Clearly, there was not any finger trailing involved and this term should be dropped in favor of common cable. Photographs by Gavin Ashworth and are from Carpentier and Rickard 2001, courtesy of The Chipstone Foundation and *Ceramics in America*.



when an object was purchased and when it became part of the archaeological record. William H. Adams has been working on an extensive paper on this subject that will be published in the near future. In addition to the time lag based on typical length of artifact life, there is the issue of time lag from when a product is invented and when it goes into production and becomes a common item in households. Often a patent date will predate production by a number of years. Moving from an invention to funding for production can take years, and is greatly dependent on the consumers' level of acceptance of a new product. One well-documented example of this is the zipper. An early version of the zipper was patented in 1893. Zippers did not become common until 1923, however, after some of the initial bugs were worked out and the B. F. Goodrich Company began using them on their rubber boots (Panati 1987: 316-317).

It is hoped that the dates given in this paper will improve the ability of historical archaeologists to tell time when they are interpreting their contexts. Far too many archaeological reports are done after lumping whole

site collections into one mega-assemblage and then applying South's mean ceramic date formula to these lumped data. Why do archaeologists excavate in a grid system and by depositional layers if they are going to lump the whole assemblage in the lab? What will a mean date tell them for a site that has been occupied for over 40 years? Historical archaeologists need to begin to work more with the dates of different contexts and the evolution of their sites. The use of the *terminus post quem* dates for excavated contexts should become more of a standard practice and archaeologists should be working toward improving their ability to describe and date the changes that took place in the sites they have excavated. The lumping of data from sites that have been occupied for more than ten years should be discouraged. Further work needs to be encouraged on the development of chronologies and typologies.

One last note: those dates that have been set in bold face are some of the most useful ones because of the frequency with which they occur in the archaeological record.

Table 2. TPQ (*terminus post quem*) List.

TABLE GLASS

| <i>Date</i> | <i>Product</i>   | <i>Source</i>                |
|-------------|--|------------------------------|
| 1650ca      | Mold-blown table ware.   | Jones 1983: 169.             |
| 1670ca      | English lead crystal.  | Noël Hume 1969: 186.         |
| 1690ca      | Heavy baluster stem wines.   | Noël Hume 1969: 189.         |
| 1725ca      | Air twist stems on English wines.                                    | Noël Hume 1969: 193.         |
| 1743        | Opaque white "milk glass."   | Noël Hume 1969: 196.         |
| 1750ca      | Cut glass stems on English wines.                                    | Noël Hume 1969: 193.         |
| 1750ca      | Enamel twist in English stemware.                                    | Noël Hume 1969: 193.         |
| 1825ca      | Pressed glass table ware.  | Jones et al. 1985.           |
| 1840        | Red stained table glass.   | Jones 2000: 150.             |
| <b>1864</b> | Development of a colorless soda-lime glass.                          | McKearin & McKearin 1948: 8. |
| 1883        | Heat-sensitive glass that produces two colors, used on Hobnail, etc. | Jones 2000: 147.             |
| 1905        | Pressed carnival glass.  | Jones 2000: 151.             |
| 1915        | Pyrex production begins.   | Baker 1983: 8.               |
| 1970        | Corning introduces Corelle Ware.                                     | Panati 1987: 125.            |

## BOTTLE GLASS

| <i>Date</i>   | <i>Product</i>  | <i>Source</i>   |
|---------------|---|---|
| 1730ca        | Dip-mold-blown English wine bottles.  | Jones 1983: 168.  |
| 1750ca        | Lead glass commercial containers.   | Jones 1983: 169.  |
| 1750ca        | Bottles with letters blown in the glass.  | Jones 1983: 169.  |
| 1750ca        | Two-piece hinge molds.  | Jones 1983: 169.  |
| <b>1821</b>   | Rickets' style three-piece mold.  | Jones 1983.   |
| <b>1825ca</b> | Lipping tool finish on bottles.   | Jones et al. 1985.  |
| 1825ca        | Post-bottom mold.   | Jones et al. 1985.  |
| 1845ca        | Bare iron pontil, American bottles.   | Deiss 1981: 54.   |
| 1850ca        | Snap-case held bottles.   | Jones et al. 1985.  |
| <b>1858</b>   | Screw-top jar, ground lip (Mason jar).  | Lief 1965: 11.  |
| 1863          | Lug finish on mouth-blown canning jar.  | Lief 1965: 13.  |
| <b>1864</b>   | Development of colorless soda-lime glass, first used on pressed glass, later on bottles.                            | McKearin & McKearin 1948: 8.                                  |
| 1867          | Plate molds (other than base plates).   | Toulouse 1969a: 584.  |
| <b>1869</b>   | Opaque white "milk glass" canning jar lid liner.  | Toulouse 1969b: 350.  |
| 1870ca        | Turn-paste molds.   | Jones et al. 1985.  |
| 1873          | Codd's Patent Ball Stopper on American bottles.   | Lief 1965: 14.  |
| 1874          | Patent for vented molds granted to Charles Fox.   | Thomas 1977: IV.  |
| 1875          | Bail and yoke "Lightning stopper." (Lief says 1882, but a Lightning stopper patent date is Jan. 5, 1875.)           | Lief 1965: 13.  |
| 1876ca        | Traditional ketchup bottle introduced.  | <i>Daily Press</i> 1985: D1.                                  |
| 1876          | U. S. trade-mark act prohibits refilling of bottles with registered trademarks.                                     | Busch 1983: 193.  |
| <b>1879</b>   | Hutchins stopper "blob top."  | Lief 1965: 14.  |
| 1880ca        | Manganese decolorized glass (solarizes upon exposure to sunlight).  | Miller & Pacey 1985: 44.                                      |
| 1886          | Introduction of the milk bottle.  | Lief 1965: 22.  |
| 1899          | Machine-made production of narrow-mouth bottles (semi-automatic).   | Miller & Sullivan 1984: 85.                                   |
| <b>1892</b>   | Crown bottle cap.   | Lief 1965: 17.  |
| 1893          | Machine-made production of wide-mouth containers (semi-automatic).  | Miller & Sullivan 1984: 85.                                   |
| <b>1903</b>   | Owens automatic bottle-blowing machine, "suction scar," by 1917 half of bottles in U. S. made on the Owens machine. | Miller & Sullivan 1984: 85.                                   |
| 1906          | Lug finish on machine-made bottles.   | Lief 1965: 22.  |
| 1917          | Cutex introduced the first commercial nail polish.  | Staten 1998: 125.   |
| <b>1927</b>   | Introduction of plastic bottle and jar caps.  | Lief 1965: 30.  |
| 1933-1964     | "Federal Law Prohibits sale or reuse of this Bottle" embossed in the glass; this regulation ended in 1964.          | Deiss 1981: 95; Pollard 1992.                                 |
| 1935          | Applied color label on commercial glass containers.   | Deiss 1981: 95.   |
| 1935          | Non-returnable lightweight beer bottle developed, but not introduced until 1938.                                    | Glass Container Manufacturers Inc. 1967: 32; Busch 1983: 196. |
| 1936          | Vitamin pills introduced.   | Hagen 1999: A-1 & 12.   |
| 1938          | Nestle's introduces instant coffee.   | Hagen 1999: A-1 & 12.   |
| 1939          | New non-returnable lightweight beer bottle, with stippled base.   | Busch 1983: 226.  |
| 1948          | Non-returnable soft drink bottle.   | Busch 1983: 253.  |

|      |   |  |
|------|---|--|
| 1951 | Bristol-Myers introduced roll-on deodorants.  | Staten 1998: 122.                            |
| 1959 | Introduction of the stubby non-return beer bottle.  | Glass Container Manufacturers Inc. 1967: 30. |
| 1962 | Food, Drug, and Cosmetics Act of 1962 decreed that all drugs, old or new, had to be safe and proven effective. This was the end date for many old patent and proprietary medicines. | Staten 1998: 141.                            |
| 1971 | 32-oz. ketchup bottle introduced by H. J. Heinz Co.   | <i>Daily Press</i> 1985: D1.                 |

## OTHER GLASS

| <i>Date</i> | <i>Product</i>  | <i>Source</i>                        |
|-------------|---|--------------------------------------|
| 1846        | Hand-made glass marbles.  | Cleland 1983: 9.                     |
| 1892        | "Wire Glass," security window glass with imbedded wire (Schuman Patent).                            | <i>Encyc. Britannica</i> 1898: 1408. |
| 1901        | Machine-made glass marbles.   | Cleland 1983: 9.                     |
| 1906        | Thermos bottles (invented in 1892) first imported to the U. S.                                      | Panati 1987: 116–117.                |
| 1915ca      | Safety glass invented in France, used for gas mask lenses. After WWI adapted to automobile windows. | Panati 1987: 158.                    |

## CHINESE PORCELAIN

| <i>Date</i> | <i>Ware</i>  | <i>Source</i>          |
|-------------|--|------------------------|
| 1685        | Appearance of <i>famille rose</i> Chinese porcelain.                               | Noël Hume 1969: 259.   |
| 1700        | Armorial Chinese porcelain for English market.                                     | Madsen 1995: 200.      |
| 1710–1730   | Most popular period for Imari decoration on armorials.                             | Madsen 1995: 200.      |
| 1720–1790   | Most popular period for <i>famille rose</i> on armorial porcelain.                 | Madsen 1995: 200.      |
| 1720–1795   | Blue trellis border.   | Madsen 1995: 200.      |
| 1730–1760   | Most popular period for Grape & Bamboo border on armorials.                        | Madsen 1995: 200.      |
| 1730–1780   | Blue spearhead border.   | Madsen 1995: 200.      |
| 1740        | "Batavia" ware.  | Noël Hume 1969: 260.   |
| 1770–1795   | Most popular period for Nanking porcelain with butterfly, scroll, & diaper border. | Madsen 1995: 165, 200. |
| 1800–1830   | Canton porcelain.  | Noël Hume 1969: 262.   |

## OTHER PORCELAIN

| <i>Date</i>  | <i>Ware</i>  | <i>Source</i>             |
|--------------|--|---------------------------|
| 1709         | German hard-paste porcelain developed in Meissen.  | Savage & Newman 1976: 52. |
| 1739         | "Onion" pattern introduced on Meissen porcelain.   | Röntgen 1997: 563.        |
| 1745–1795    | English soft-paste porcelain.  | Noël Hume 1969: 137.      |
| 1760–present | Underglaze printing on English porcelain.  | Watney 1964: 52.          |
| 1768         | English hard-paste porcelain.  | Fisher 1966: 229.         |
| 1794–present | Bone china.  | Miller 1991a: 11.         |
| 1868ca       | Japanese porcelain imported to America.  | Stitt 1974: 121–122.      |
| 1921         | After 1921, Japanese porcelain could no longer be marked "Made in Nippon," but was to be marked "Made in Japan." | Stitt 1974: 149.          |

## STONEWARE

| <i>Date</i> | <i>Ware</i>  | <i>Source</i>                         |
|-------------|--|---------------------------------------|
| 1620–1700   | Poorly made bellarmines.   | Noël Hume 1969: 56–57.                |
| 1650–1750   | Rhenish stoneware with sprig molding, combed lines, blue and purple decoration.  | Noël Hume 1969: 280–281.              |
| 1671–1775   | Fulham brown salt-glazed stoneware (Dwight's patent) 1684.   | Oswald, Hildyard, & Hughes 1982: 24.  |
| 1683–1810   | Nottingham stoneware (lustred) production begins before 1684. Dwight sues Nottingham potters for infringement of his stoneware patent in 1684. | Oswald, Hildyard, & Hughes 1982: 102. |
| 1690–1710   | Embellished Höhr grey Rhenish stoneware.   | Noël Hume 1969: 284.                  |
| 1690–1715   | Eler's dry-bodied red stoneware.   | Noël Hume 1969: 120–121.              |
| 1700–1775   | Westerwald, stamped blue floral devices, geometric designs.  | Noël Hume 1969: 284–285.              |
| 1705–1930   | American salt-glazed stoneware.  | Ketchum 1991: 86.                     |
| 1750–1780   | Staffordshire refined dry-bodied red stonewares.   | Barker & Halfpenny 1990: 44–46.       |
| 1750–1850   | Black Basalt, also called Egyptian black.  | Edwards 1994: 33–35.                  |
| 1763–1775   | Engine-turned red stoneware.   | Noël Hume 1969: 121.                  |
| 1805–1920   | Albany slip.   | Ramsey 1939: 21–22, 59.               |

## WHITE-BODIED STONEWARES

| <i>Date</i>  | <i>Ware</i>   | <i>Source</i>  |
|--------------|---|--|
| 1715–1775    | Slipped white salt-glazed stoneware.  | Noël Hume 1969: 114–115.                                       |
| 1720–1730    | Scratch-brown white salt-glazed stoneware, earliest dated piece is 1723. Fairly rare on American sites.                     | Mountford 1971: plate 58.                                      |
| 1720–1805    | White salt-glazed stoneware, earliest dated piece, 1720. Noël Hume gives 1805 as end date, but these wares rare after 1790. | Mountford 1971: plate 53; Noël Hume 1969: 115–117.             |
| 1733–1750    | Shaw brown-slipped stoneware.   | Noël Hume 1969: 118–119.                                       |
| 1740–1765    | Molded white salt-glazed stoneware.   | Mountford 1971: 30, 32, 40.                                    |
| 1744–1775    | Scratch-blue white salt-glazed stoneware.   | Mountford 1971: 48–51.   |
| 1746–1775    | Enameling on white salt-glazed stoneware.   | Mug dated 1746, Dewitt Wallace Gallery, Colonial Williamsburg. |
| 1750–1765    | Little's Blue.  | South 1978: figure 1.  |
| 1755–1765    | Transfer printed white salt-glazed stoneware.   | Mountford 1971: 60–62.   |
| 1765–1795    | Debased scratch-blue white salt-glazed stoneware (scratch-and-fill technique continues on pearlware).                       | Noël Hume 1969: 118.   |
| 1805–1840    | Stone Chinas, decorated.  | Miller 1991a: 8–9.   |
| 1813–1900    | Mason's ironstone china; these dates should not be used for undecorated ironstone, see White Granite above.                 | Noël Hume 1969: 131; Miller 1991a: 9–10.                       |
| 1835–present | Bristol white-glaze lined wares.  | Oswald, Hildyard, & Hughes 1982: 19.                           |
| 1842–1930    | White granite, also know as white ironstone. (see also Miller 1991b, 1991c, 1992).  | Miller 1991a: 10; 1993: 5–6.                                   |
| 1896         | Rolled chip-resistant rim introduced on hotel wares.  | Conroy 1998: 325.  |
| 1908         | Underglaze decal printing on hotel wares.   | Conroy 1998: 350.  |
| 1933         | Narrow marley hotel ware plates introduced.   | Conroy 1998: 325.  |

## COARSE EARTHENWARE

| <i>Date</i>  | <i>Ware</i>   | <i>Source</i>                 |
|--------------|---|-------------------------------|
| 1624–1720    | Dutch/North German-style redwares and slipwares.                              | Fayden 1993: 179–191.         |
| 1630–1660    | Metropolitan slipware.  | Noël Hume 1969: 103.          |
| 1635–1710    | North Devon sgraffito slipware.   | Watkins 1960: 53–54.          |
| 1675–1760    | North Devon gravel-tempered ware.   | Watkins 1960: 58–59.          |
| 1660–1745    | North Midlands combed slipware.   | Noël Hume 1969: 107, 134–136. |
| 1720–1775    | Buckley ware.   | Noël Hume 1969: 132–135.      |
| 1745–1780    | Flat-rimmed Iberian storage jars with sandy pink body & vestigial folded rim. | Noël Hume 1969: 144.          |
| 1750–1810    | Coarse agate ware.  | Noël Hume 1969: 132.          |
| 1835–1860    | Hand-made terra cotta field-drain tiles in U. S.                              | Klippart 1861: 27.            |
| 1848–present | Machine-made terra cotta field-drain tiles.                                   | Klippart 1861: 27.            |

## TIN-GLAZED EARTHENWARE

| <i>Date</i> | <i>Ware</i>  | <i>Source</i>             |
|-------------|--|---------------------------|
| 1628–1718   | Bird-and-rock motif on English delftware.  | Shlasko 1989: 39.         |
| 1628–1673   | Overall powdered decoration on English delftware.                                  | Shlasko 1989: 39.         |
| 1628–1724   | Barrel-shaped mugs or drinking pots in English delftware.                          | Shlasko 1989: 39.         |
| 1645–1776   | Armorial English delftware.  | Shlasko 1989: 39.         |
| 1645–1728   | Candle cups in English delftware.  | Shlasko 1989: 39.         |
| 1671–1788   | Oriental landscapes on English delftware.  | Shlasko 1989: 39.         |
| 1682–1709   | Globular-shaped mugs or drinking pots in English delftware.                        | Shlasko 1989: 39.         |
| 1687–1703   | Green/turquoise glaze on English delftware.  | Shlasko 1989: 39.         |
| 1696–1788   | Dot-&-diaper painted borders on English delftware.                                 | Shlasko 1989: 39.         |
| 1700–1800   | Everted rim, plain delftware ointment pots.  | Noël Hume 1969: 204–205.  |
| 1708–1786   | Sponge decoration used on English delftware.                                       | Shlasko 1989: 39.         |
| 1709–1774   | Painted marley panels on English delftware.  | Shlasko 1989: 39.         |
| 1710–1740   | Mimosa pattern delftware.  | Noël Hume 1969: 108–111.  |
| 1725–1788   | Scratched decoration used on English delftware.                                    | Shlasko 1989: 39.         |
| 1729–1793   | Rim-painted lines on English delftware.  | Shlasko 1989: 39.         |
| 1730–1830   | Pedestal-footed delftware ointment pots.   | Noël Hume 1969: 204–205.  |
| 1738–1764   | Powdered decoration used with stencils on English delftware.                       | Shlasko 1989: 39.         |
| 1745–1765   | Ogee-shaped mugs or drinking pots in English delftware.                            | Shlasko 1989: 39.         |
| 1747–1768   | <i>Bianco-sopra-bianco</i> decoration on English delftware.                        | Shlasko 1989: 39.         |
| 1748–1774   | Cracked-ice pattern on English delftware.  | Shlasko 1989: 39.         |
| 1750–1770   | Fazackerly palette on delftware (Liverpool mug inscribed “T. F. Fazackerly 1757”). | Garner & Archer 1972: 33. |
| 1752–1771   | Blue-glazed English delftware.   | Shlasko 1989: 39.         |
| 1775–1780   | Rouen faience on American sites, earlier and later on Canadian sites.              | Noël Hume 1969: 141–142.  |
| 1783–1793   | Glass-bottomed mugs and drinking pots in English delftware.                        | Shlasko 1989: 39.         |

## REFINED EARTHENWARE

| <i>Date</i> | <i>Ware</i>                                 | <i>Source</i>   |
|-------------|---|---|
| 1610–1660   | Marbleized North Italian red slipware.      | Noël Hume 1969: 77.                                     |
| 1725–1750   | "Astbury" ware, white sprigged and trailed. | Barker & Halfpenny 1990: 23–27;<br>Noël Hume 1969: 123. |
| 1740–1775   | Refined agate ware.                         | Barker & Halfpenny 1990: 31–33.                         |
| 1740–1800   | "Jackfield."                                | Noël Hume 1969: 123;<br>Barker & Halfpenny 1990: 34–35. |
| 1830–1940   | American yellow ware.                       | Ramsay 1939: 61.  |

## REFINED WHITE-FIRING EARTHENWARE

| <i>Date</i> | <i>Ware</i>   | <i>Source</i>   |
|-------------|---|---|
| 1740–1770   | Clouded wares & mottled glazes on molded wares.   | Noël Hume 1969: 123; Barker & Halfpenny 1990: 50–57.  |
| 1759–1775   | Wedgwood's green glaze, a refinement of earlier green glazes used by other Staffordshire potters.   | Noël Hume 1969: 124–125;<br>Barker & Halfpenny 1990: 63.  |
| 1762–1820   | Creamware, dates dependent on the shade of the creamware. Dark colored creamware dates from ca. 1762 to ca. 1780. See light-colored creamware.  | Noël Hume 1969: 125–126.  |
| 1765–1815   | Enameled creamware.   | Noël Hume 1969: 126–128.  |
| 1770–1825   | Lined: enameled or underglaze brown or blue lines parallel to rims of creamware & pearlware tableware. Later as green lines on hotelware.   | Finer & Savage 1965: 116–118;<br>Miller 1991a: 7.   |
| 1774–1800   | Shell-edged creamware.  | Miller & Hunter 1990: 202–204;<br>Hunter & Miller 1994: 433–435.  |
| 1775–1810   | China glaze, Chinese motifs, blue painted.  | Miller 1987: 87; Miller & Hunter 2001.  |
| 1775–1830   | Underglaze floral blue painting on pearlware.   | Miller 1987; Miller & Hunter 2001.  |
| 1775–1820   | Light-colored creamware: gets lighter in shade through time. This in part results from refining iron out of the lead glaze. By 1790, light-colored creamware referred to as CC ware & was cheapest refined ware. Rare on tea wares after 1812, but continued on toilet ware well into the 19th century. | Noël Hume 1969: 126–128;<br>Miller 1991a: 5; Miller 1993: 4–6; Miller, Martin, & Dickinson 1994: 222–223. |
| 1779–1830   | Pearlware, blue-painted, non-Chinese motifs.  | Miller 1987: 87.  |
| 1780–1815   | Rococo shell-edged blue or green under the glaze.   | Miller & Hunter 1990: 115;<br>Hunter & Miller 1994: 434–436.  |
| 1782–1810   | Variegated (dipt) pearlware.  | Miller 1987: 91; Miller 1991a: 6–7.   |
| 1790–1820   | Dipt creamware.   | Noël Hume 1969: 132; Rickard 1993: 184.   |
| 1790–1840   | Lustre decoration.  | South 1978: figure 1.   |
| 1795–1810   | Polychrome-painted China glaze wares with Chinese patterns.   | Miller & Hunter 2001.   |
| 1795–1830   | Underglaze painted polychrome pearlware, floral patterns.   | Miller 1991a: 8.  |
| 1795–1840   | Mocha.  | Miller 1991a: 7; Rickard 1993: 184.   |
| 1800–1835   | Even scalloped blue or green shell-edged pearlware with impressed patterns.   | Miller & Hunter 1990: 116.  |

|              |  |                            |
|--------------|--|----------------------------|
| 1805–present | White ware production begun at Wedgwood, not common on American sites until after 1820.  | des Fontaines 1990: 4.     |
| 1805–1840    | Stone Chinas, decorated.   | Miller 1991a: 8–9.         |
| 1810–1840    | London- or Grecian-shaped teacup.  |                            |
| 1810–1833    | Brown lines painted parallel to the rim of tableware, underglaze, usually on creamware. Blue lines usually occur on pearlware.   | Miller 1991a: 7.           |
| 1811         | Introduction of the three-chambered slip cup for making common cable dipt wares (FIG. 9).  | Rickard 1993: 185.         |
| 1813–1900    | Mason's ironstone china.   | Noël Hume 1969: 131.       |
| 1820–1835    | Embossed blue- and green-edge ware.  | Miller & Hunter 1990.      |
| 1830ca       | Appearance of chrome colors on painted white wares, underglaze red being a good indication of this. Stems of flowers for this group usually painted black vs. brown on earlier polychrome-painted wares. | Miller 1991a: 8.           |
| 1840–1860    | Unscalloped blue shell-edge with simple repeating lightly impressed patterns.  | Miller & Hunter 1990: 117. |
| 1842–1930    | White granite begins as a vitrified ware, but later white granite often just a high-fired earthenware.   | Miller 1991a: 10.          |
| 1845–1930    | Cut-sponge stamped wares.  | Miller 1991a: 6.           |
| 1851         | Victorian Majolica.  | Wakefield 1962: 84.        |
| 1865–1895    | Blue shell-edged, unscalloped & unmolded.  | Miller & Hunter 1990: 117. |
| 1870–present | "Bright gold" gilding, also known as "liquid gold" on English wares.   | Miller 1991a: 10.          |
| 1875–1890ca  | "Ivory" body introduced in U. K.   | Samford 1997: 19.          |
| 1933         | Narrow marley hotel ware plates introduced.  | Conroy 1998: 325.          |

## PRINTED WARES

| <i>Date</i>  | <i>Ware</i>  | <i>Source</i>              |
|--------------|--|----------------------------|
| 1762         | Overglaze printing on creamware first shipped to America.                  | Price 1948: 35.            |
| 1783–1830    | Underglaze printing on pearlware.  | Shaw 1829: 214.            |
| 1790–1830    | Underglaze black printing. Jug dated 1790 in a Litchfield auction catalog. | Litchfield 1990.           |
| 1795–1830    | Willow pattern on pearlware.   | Noël Hume 1969: 130.       |
| 1800–present | Royal coat of arms as part of potters' makers' mark.                       | Godden 1964: 11.           |
| 1807–1830    | Stippling in printed pearlwares.   | Coysh & Henrywood 1982: 9. |
| 1809–1825    | Brown-printed pearlware.   | Miller 1991a: 9.           |
| 1810–present | Printed pattern names as part of makers' mark.                             | Godden 1964: 11.           |
| 1828–present | Red, green, purple, and brown-printed white wares.                         | Shaw 1829: 214.            |
| 1845         | Flow blue printed wares first imported to North America.                   | Collard 1984: 17.          |
| 1875–1900    | Japanese-style patterns printed on English wares.                          | Miller 1991a: 9.           |
| 1890–present | Decalcomania on English wares.   | Shaw 1900: XIX.            |
| 1908         | Underglaze color decals introduced.  | Conroy 1998: 350.          |

## MEAN BEGINNING AND END PRODUCTION DATES FOR PATTERNS ON PRINTED WARES

| <i>Date</i> | <i>Pattern or color</i>                                  | <i>Source</i>    |
|-------------|--|------------------|
| 1797–1814   | Chinese patterns on China glaze/pearlware (22 patterns). | Samford 1997: 6. |
| 1813–1839   | British views (401 patterns).                            | Samford 1997: 6. |



|           |   |                   |
|-----------|---|-------------------|
| 1816–1836 | Chinoiserie-style patterns (33 patterns).           | Samford 1997: 6.  |
| 1819–1835 | Negative dark blue patterns (122 patterns).         | Samford 1997: 20. |
| 1819–1836 | Pastoral views (88 patterns).                       | Samford 1997: 6.  |
| 1820–1842 | Exotic views (214 patterns).                        | Samford 1997: 6.  |
| 1826–1838 | American views (192 patterns).                      | Samford 1997: 6.  |
| 1826–1842 | American historical views (49 patterns).            | Samford 1997: 6.  |
| 1827–1847 | Classical views (104 patterns).                     | Samford 1997: 6.  |
| 1831–1846 | Two-color printed wares (18 patterns).              | Samford 1997: 20. |
| 1831–1851 | Romantic views (376 patterns).                      | Samford 1997: 6.  |
| 1833–1849 | Floral central patterns (56 patterns).              | Samford 1997: 6.  |
| 1841–1852 | Gothic views (20 patterns).                         | Samford 1997: 6.  |
| 1868–1878 | No central view (11 patterns).                      | Samford 1997: 6.  |
| 1881–1888 | Brown-printed patterns on ivory body (24 patterns). | Samford 1997: 20. |
| 1882–1888 | Japanese views (44 patterns).                       | Samford 1997: 6.  |
| 1883–1889 | Black-printed patterns on ivory body (26 patterns). | Samford 1997: 20. |

#### METALS, NAILS, AND OTHER FASTENERS

| <i>Date</i>  | <i>Material or product</i>                                   | <i>Source</i>            |
|--------------|--|--------------------------|
| 1790–1810    | Machine-cut nails with hand-finished heads.                  | Nelson 1968: 6.          |
| 1805–present | Cut nails with machine-made heads.                           | Nelson 1968: 6.          |
| 1839         | Machine-made railroad spikes.                                | Drepperd 1946: 69.       |
| 1846         | Self-starting gimlet-point wood screw patented Aug. 20, 1846 | Devoto 1943: 214.        |
| 1850         | Small wire nails introduced in France.                       | Nelson 1968: 7.          |
| 1860ca       | Large wire nails become common after ca. 1885.               | Nelson 1968: 7.          |
| 1901         | Galvanized roofing nails introduced.                         | Fontana et al. 1962: 50. |

#### CONTAINERS

| <i>Date</i> | <i>Material or product</i>                                       | <i>Source</i>    |
|-------------|--|------------------|
| 1837        | Commercial production of goods canned in metal containers began. | Keen 1982: 316.  |
| 1898        | Crimped top "Sanitary can."                                      | Keen 1982: 316.  |
| 1928        | Key-opened vacuum-packed coffee can.                             | Keen 1982: 318.  |
| 1935        | Crown cap on beer cans.  | Keen 1982: 319.  |
| 1953        | Marketing of canned soft drinks (attempted in 1938, but failed). | Busch 1983: 246. |

#### ARMS RELATED

| <i>Date</i> | <i>Material or product</i>                           | <i>Source</i>      |
|-------------|--|--------------------|
| 1814–1816   | Percussion cap patented, iron or pewter before 1816. | Logan 1959: 3.     |
| 1816        | Copper percussion cap.                               | Logan 1959: 3.     |
| 1846        | Brass or copper cartridge cases for ammunition.      | Logan 1959: 5.     |
| 1850        | Shotgun cartridges.                                  | Logan 1959: 6.     |
| 1852        | Minie Ball introduced in France.                     | Logan 1959: 6.     |
| 1866        | Rim-fired cartridges.                                | Logan 1959: 8.     |
| 1871        | Bottle-necked cartridges.                            | Logan 1959: 9.     |
| 1958        | Introduction of plastic-bodied shotgun shell.        | Bussard 1993: 384. |

## ELECTRICAL AND LIGHTING

| <i>Date</i> | <i>Material or product</i>  | <i>Source</i>                |
|-------------|---|------------------------------|
| 1859        | Drake drills first oil well; cheap kerosene caused an increase in lamp and lamp chimney production. | Thur 1976: 15.               |
| 1865        | Production of glass electrical insulators with internal threads for attaching to pole begins.       | Cleland 1983: 6.             |
| 1870ca      | Hand-crimped lamp chimney tops.   | Davis 1949: 155.             |
| 1876        | First commercial application of arc lighting of streets, later department stores.                   | Weitz 1930: 28.              |
| 1878        | Dust-pressing of electrical insulators (oil mixed with clay before insulator is mold-pressed).      | Jameson 1958: 663.           |
| 1879        | Machine crimped lamp chimney tops.  | Davis 1949: 155.             |
| 1879        | Invention of the carbon-filament light bulb.  | Jarvis 1958: 214.            |
| 1888        | Introduction of the ceramic part of the spark plug.   | Jameson 1958: 663.           |
| 1895        | Machine-made electric light bulbs.  | Scoville 1948: 331.          |
| 1901        | Mercury vapor lamps (fluorescent lights) introduced.  | Weitz 1930: 35.              |
| 1906        | Tungsten filament light bulbs introduced.   | Weitz 1930: 6.               |
| 1911        | Neon lighting introduced.   | Weitz 1930: 46.              |
| 1926        | Light bulbs with frosted interior surfaces.   | Weitz 1930: 17.              |
| 1959        | First commercially viable alkaline batteries introduced.  | <i>The Times</i> 1999: D-10. |
| 1999        | Introduction of multicolored extension cords.   | <i>The Times</i> 1999: D-10. |

## OTHER METALS AND PROCESSES

| <i>Date</i> | <i>Material or product</i>  | <i>Source</i>                              |
|-------------|---|--|
| 1743ca      | Introduction of Sheffield Plate, fusing silver to copper with heat.   | Luscomb 1967: 177.                         |
| 1788        | Enameled cast-iron cooking pots developed in Germany.   | Panati 1987: 100.                          |
| 1820        | Seamless lead pipes.  | Chadwick 1958: 627.                        |
| 1824        | German silver or nickel silver.   | Chadwick 1958: 608.                        |
| 1835        | Machine-made horseshoes.  | Chappell 1973: 104.                        |
| 1836        | Practical process for galvanizing iron created in U. K.   | Chadwick 1958: 624-625.                    |
| 1840        | Electroplating patent taken out in U. K.  | Chadwick 1958: 633.                        |
| 1840        | Brass key-hole covers & sleeves on iron padlocks "do not seem to have been used on iron padlocks until the nineteenth century, most of them dating no earlier than 1840." | Noël Hume 1969: 251.                       |
| 1840        | Cylinder locks patented by Linus Yale.  | Noël Hume 1969: 249.                       |
| 1844        | Galvanized corrugated iron roofing introduced in U. K.  | Chadwick 1958: 625.                        |
| 1858        | Can opener patented.  | Petroski 1992: 187.                        |
| 1865        | James H. Nason receives patent on December 26, 1865, for coffee percolator.   | <i>The Times</i> 1998: A-10.               |
| 1867        | Commercial production of enameled tin pots for cooking begins in the U. S.  | Keen 1982: 296.                            |
| 1884        | Ball-bearing roller skates patented December 9, 1884.   | <i>The Times</i> 1996a: A-12.              |
| 1886        | Invention of barbed wire.   | Cleland 1983: 61.                          |
| 1893        | Zipper patented in 1893, not in common use until improvements in 1913.  | Panati 1987: 316-317.                      |
| 1891        | Aluminum household items appear on the market; aluminum cookware production begins in 1903.   | Trench & Luty 1918: 343; Panati 1987: 101. |
| 1896        | Introduction of tooth paste in a squeeze tube.  | Staten 1998: 105.                          |

|      |  |                               |
|------|--|-------------------------------|
| 1898 | Paper clip patented.   | Petroski 1992: 63.            |
| 1908 | Electric coffee pot introduced.                                | Kovel & Kovel 2000b: AA-3.    |
| 1910 | Electric toaster introduced.                                   | Kovel & Kovel 2000b: AA-3.    |
| 1911 | Electric frying pan introduced.                                | Kovel & Kovel 2000b: AA-3.    |
| 1918 | Electric waffle iron introduced.                               | Kovel & Kovel 2000b: AA-3.    |
| 1921 | Stainless steel flatware (knives, forks, & spoons) introduced. | Bidwell & Haughton 1999: E-1. |
| 1935 | Electric blender introduced.                                   | Kovel & Kovel 2000b: AA-3.    |
| 1937 | Home model of the electric coffee grinder.                     | Kovel & Kovel 2000b: AA-3.    |
| 1956 | Electric can opener introduced.                                | Kovel & Kovel 2000b: AA-3.    |
| 1981 | First computer mouse came onto the market.                     | Steffton 2001: B-1.           |

## RUBBER, PLASTIC, AND OTHER SYNTHETICS

| <i>Date</i> | <i>Material or product</i>   | <i>Source</i>                               |
|-------------|--|---|
| 1851        | Hard rubber buttons patented.  | Luscomb 1967: 91.                           |
| 1863        | The term <i>Linoleum</i> coined by F. Walton for new English floor covering.                                       | <i>Webster's New World Dictionary</i> 1982. |
| 1868–1920   | Celluloid plastic (imitation of ivory, amber, coral, tortoise shell, and mother-of-pearl).                         | Wolfe 1945: 15.                             |
| 1870        | Rubber fire and garden hose.   | Panati 1987: 165.                           |
| 1871        | Rubber bottle corks.   | Panati 1987: 165.                           |
| 1871        | Rubber fruit jar rings and other gaskets.  | Panati 1987: 165.                           |
| 1871        | Asphalt paving, first used in Philadelphia.  | Parrington 1983: 21.                        |
| 1876        | Portland Cement first produced in U. S in 1876, but output not significant until invention of rotary kiln in 1899. | Cleland 1983: 93.                           |
| 1887        | Wooden clothes pins with steel springs patented June 28, 1887.   | Schneringer 2001: cover.                    |
| 1900        | Flat disk records invented in Germany in 1895, overtook cylinder records by 1900.                                  | Thorgerson & Dean 1977: 8.                  |
| 1902        | "Fisheye" cut pearl buttons.   | Claassen 1994: 55.                          |
| 1905        | First marketing of aspirin, invented in Germany in 1899.   | Shartar & Shavin 1981: 6.                   |
| 1907        | Bakelite plastic, black electrical parts, telephone parts.   | Wolfe 1945: 19.                             |
| 1915        | Pyralin plastic, tooth brushes, combs, pens, baby toys, kitchen gadgets.   | Wolfe 1945: 22.                             |
| 1917        | Asphalt roofing advertised, but probably produced earlier.   | Luetkemeyer Co. 1917: 2126.                 |
| 1917        | U. S. Rubber introduced Keds™ (first rubber-soled canvas-top gym shoe).  | Panati 1987: 299.                           |
| 1922        | Introduction of the Popsicle™ stick.   | <i>Daily Press</i> 1986b: B-15.             |
| 1924ca      | Introduction of Easter Bunny as marketing device.  | <i>Progressive Grocer</i> 1924: 17.         |
| 1938        | Introduction of the Nylon-bristle tooth and other brushes.   | Panati 1987: 209.                           |
| 1938        | Federal law required listing ingredients on many types of foods.   | Kovel & Kovel 2000a: AA-3.                  |
| 1940        | Melmac™ plastic, used by the Navy during WWII, commercial production of table ware after the war.                  | Wolfe 1945: 29.                             |
| 1943        | Postal codes introduced, the precursor to ZIP codes.   | Kovel & Kovel 2000a: AA-3.                  |
| 1944        | Invention of Styrofoam™ by Ray McIntire of Dow Chemical.   | Anonymous 1996: 25.                         |

- |      |  |                                |
|------|--|--------------------------------|
| 1945 | Tupperware™ introduced.  | Panati 1987: 129.              |
| 1947 | Introduction of aluminum foil.   | Panati 1987: 113.              |
| 1951 | Introduction of Diners Club, first credit card.  | <i>The Times</i> 2000: D-4.    |
| 1954 | Introduction of the frozen TV dinner.  | Berry 1999: AA-5.              |
| 1955 | Velcro™ in production by mid-1950s.  | <i>Daily Press</i> 1990: B-5.  |
| 1957 | Introduction of pink plastic yard flamingo.  | <i>The Times</i> 1996b: A-15.  |
| 1957 | Child-proof cap introduced on St. Joseph's Aspirin for Children™ (not required by law until 1972). | Staten 1998: 53.               |
| 1958 | Disposable one-use ballpoint pen introduced by Bic.  | Busch 1983: 334.               |
| 1959 | Introduction of the Barbie™ doll.  | Lord 1994.                     |
| 1959 | American Express introduces first plastic charge card.   | <i>The Times</i> 2000: D-4.    |
| 1961 | Teflon™ nonstick coating on pans.  | <i>Daily Press</i> 1986a.      |
| 1961 | Plastic milk bottle.   | Busch 1983: 284.               |
| 1962 | Styrofoam™ cups.   | Busch 1983: 120.               |
| 1962 | Pull-tab pop & beer can closures.  | Keen 1982: 31.                 |
| 1963 | Postal ZIP codes introduced.   | Kovel & Kovel 2000a: AA-3.     |
| 1963 | Vinyl siding for buildings introduced.   | Hoagland 1997: 5.              |
| 1972 | Child-resistant caps required by law for aspirin containers.                                       | Glass Packaging Institute n.d. |
| 1973 | Bar codes introduced.  | Kovel & Kovel 2000a: AA-3.     |
| 1973 | Federal law requires nutrition information to be listed on food packages.                          | Kovel & Kovel 2000a: AA-3.     |
| 1975 | McDonalds™ introduces polystyrene "clamshell" package for its burgers.                             | Petroski 1992: 221.            |

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## References

- Anonymous  
1996 Obituary of Ray McIntire, invented Styrofoam at Dow Chemical. *Time* 147(7): 25.
- Baker, John C.  
1983 *Pyrex: 60 Years of Design*. Tyne and Wear County Council Museum, England.
- Barker, David, and Pat Halfpenny  
1990 *Unearthing Staffordshire: Towards a New Understanding of 18th-century Ceramics*. City of Stoke-on-Trent Museum and Art Gallery, Stoke-on-Trent, England.
- Berry, Walter  
1999 Inventor Enjoying Limelight for TV Dinner Innovation. *The Times* (Burlington County, NJ) November 19: AA-5.
- Bidwell, Carol, and Natalie Haughton  
1999 20th Century Brought Soda, Appliances, Instant Coffee, Chocolate Bars. *The Times* (Burlington County, NJ) December 29: E-1.
- Binford, Lewis R.  
1978 A New Method of Calculating Dates from Kaolin Pipe Stem Samples. In *Historical Archaeology: A Guide to Substantive and Theoretical Contributions*, ed. by Robert L. Schuyler, 66-67. Baywood Publishing Company, Inc., Farmingdale, NY.
- Busch, Jane Celia  
1983 The Throwaway Ethic in America. Ph.D. diss., American Studies, University of Pennsylvania, Philadelphia.
- Bussard, Mike, ed.  
1993 *Cartridges of the World*. DBI Books Inc., Northbrook, IL.

Carpentier, Donald and Jonathan Rickard

- 2001 Slip Decoration in the Age of Industrialization. *Ceramics in America* 1: 115-134.

Chadwick, R.

- 1958 The Working of Metals. In *A History of Technology. Volume V: The Late Nineteenth Century c. 1850-1900*, ed. by Charles Singer, E. J. Holmyard, A. R. Hall, and Trevor I. Williams, 605-635. Oxford University Press, New York.

Chappell, Edward

- 1973 A Study of Horseshoes in the Department of Archaeology, Colonial Williamsburg. In *Five Artifact Studies*, ed. by Ivor Noël Hume, 100-116. Occasional Papers in Archaeology 1. Colonial Williamsburg Foundation, Williamsburg, VA.

Claassen, Cheryl

- 1994 Washboards, Pigtoes, and Muckets: Historic Musseling in the Mississippi Watershed. *Historical Archaeology* 28(2).

Cleland, Charles E.

- 1983 *Tombigbee Historic Townsites Project Code Book*. Michigan State University, East Lansing, MI.

Collard, Elizabeth

- 1984 *Nineteenth-Century Pottery and Porcelain in Canada*. McGill-Queens University Press, Montreal.

Conroy, Barbara J.

- 1998 *Restaurant China: Identification & Value Guide for Restaurant, Airline, Ship & Railroad Dinnerware*. Volume 1. Collector Books, Schroeder Publishing Co., Inc., Paducah, KY.

Coysh, A. W., and R. K. Henrywood

- 1982 *The Dictionary of Blue and White Printed Pottery 1780-1880*. Antique Collectors' Club, Woodbridge, Suffolk, England.

Daily Press

- 1985 Ketchup Industry Strives to Cut Mustard. *The Daily Press* (Newport News, VA) July 7: D-1.  
1986 Teflon Making 25th Anniversary. *The Daily Press* (Newport News, VA) January 19.  
1986 The Popsicle on a Stick. *The Daily Press* (Newport News, VA) March 13: B-13.  
1990 Obituary for George de Mestral, inventor of Velcro. *The Daily Press* (Newport News,

VA) February 13: B-5.

Davis, Pearce

- 1949 *The Development of the American Glass Industry*. 1970 reprint ed. Russell & Russell, New York.

Deiss, Ronald William

- 1981 *The Development and Application of a Chronology for American Glass*. Midwestern Archaeological Research Center, Illinois State University, Normal.

des Fontaines, John

- 1990 Wedgwood Whiteware. *Proceedings of the Wedgwood Society* 13: 1-8.

Devoto, Bernard

- 1943 *Year of Decision: 1846*. Little, Brown & Co., Boston.

Drepperd, Carl

- 1946 Spikes, Nails, Tacks, Brads and Pins. *The Chronicle of Early American Industries* 3(8), August, 1946.

Edwards, Diana

- 1994 *Black Basalt: Wedgwood and Contemporary Manufacturers*. Antique Collectors' Club, Woodbridge, Suffolk, England.

*Encyclopedia Britannica New American Edition*

- 1898 Glass, Wire. Volume 3: 1408. Werner Co., New York.

Fayden [Janowitz], Meta P.

- 1993 Indian Corn and Dutch Pots: Seventeenth-Century Foodways in New Amsterdam/New York. Ph.D. diss., City University of New York, New York.

Finer, Ann, and George Savage, eds.

- 1965 *The Selected Letters of Josiah Wedgwood*. Cory, Adams, and Mackay, London.

Fisher, Stanley W.

- 1966 *English Ceramics*. Ward Lock & Co. Ltd., London.

Fontana, Bernard L., J. Cameron Greenleaf, Charles W. Ferguson, Robert A. Wright, and Doris Frederick.

- 1962 Johnny Ward's Ranch: A Study in Historic Archaeology. *The Kiva* 28(1 & 2).

Garner, F. H., and Michael Archer

- 1972 *English Delftware*. Faber and Faber, London.

- Glass Container Manufacturers Inc.  
1967 *Glass Containers 1966*. Glass Container Manufacturers Inc., New York.
- Glass Packaging Institute  
n.d. *Closures: Tops in Consumer Protection*. Pamphlet, Washington, DC.
- Godden, Geoffrey A.  
1964 *Encyclopedia of British Pottery and Porcelain Marks*. Crown Publishers, New York.  
1980 *Godden's Guide to Mason's China and the Ironstone Wares*. The Antique Collectors' Club Ltd., Woodbridge, Suffolk, England.
- Hagen, Tom  
1999 A Century of Memories: Depression Exerts Profound Change on Trenton Economy. *The Times* (Trenton, NJ) May 9: A-1, A-12.
- Hoagland, Alison K.  
1997 Industrial Housing and Vinyl Siding: Historical Significance Flexibly Applied. Paper presented at the conference, "Preservation of What, For Whom?" Goucher College, Baltimore, MD.
- Hunter Robert H., Jr., and George L. Miller  
1994 English Shell Edged Earthenware. *The Magazine Antiques* 165(3): 432-443.
- Jameson, Irene  
1958 Ceramics. In *A History of Technology. Volume V: The Late Nineteenth Century c. 1850-1900*, ed. by Charles Singer, et al., 658-670. Oxford University Press, New York.
- Jarvis, C. Mackechnie  
1958 The Distribution and Utilization of Electricity. In *A History of Technology. Volume V: The Late Nineteenth Century c. 1850-1900*, ed. by Charles Singer, et al., 208-234. Oxford University Press, New York.
- Jones, Olive  
1983 The Contribution of the Ricketts' Mould to the Manufacture of the English "Wine" Bottle, 1820-1850. *Journal of Glass Studies* 25: 167-177.  
2000 A Guide to Dating Glass Tableware. In *Studies in Material Culture Research*, ed. by Karlis Karklins, 141-232. The Society for Historical Archaeology, Tucson, AZ.
- Jones, Olive, and Catherine Sullivan, with contributions by George L. Miller, E. Ann Smith, Jane E. Harris, and Kevin Lunn  
1985 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures*. National Historic Parks and Sites, Canadian Parks Service. Ottawa, Ontario.
- Keen, Sharon  
1982 Metal Container Artifact Class. In *Artifact Analysis Manual for Historical Archaeology*, ed. by Dana-Mae Grainger. Manuscript report. Parks Canada, Prairie Region, Winnipeg, Manitoba.
- Ketchum, William C., Jr.  
1991 *American Stoneware*. Henry Holt and Company, New York.
- Klippart, John H.  
1861 *The Principles and Practice of Land Drainage*. Robert Clarke & Co., Cincinnati, OH.
- Kovel, Ralph, and Terry Kovel  
2000a Antiques. *The Times* (Burlington County, NJ) February 6: AA-4.  
2000b Antiques: Kitchen Gadgets are Hot Property. *The Times* (Burlington County, NJ) May 7: AA-3.
- Lief, Alfred  
1965 *A Close-up of Closures*. Glass Container Manufacturers Institute, New York.
- Litchfield Auction Gallery  
1990 Auction Catalogue for a sale to be held October 5th, 6th, and 7th, 1990.
- Logan, Herschel C.  
1959 *Cartridges: A Pictorial Digest of Small Arms Ammunition*. Bonanza Books, New York.
- Lord, M. G.  
1994 *Forever Barbie: The Unauthorized Biography of a Real Doll*. William Morrow, New York.
- Luetkemeyer Company  
1917 *The Luetkemeyer Company Hardware Catalog*. Cleveland, OH.
- Luscomb, Sally C.  
1967 *The Collector's Encyclopedia of Buttons*. Bonanza Books, New York.
- McKearin, George S., and Helen McKearin  
1948 *American Glass*. Crown Publishers, New York.
- Madsen, Andrew David  
1995 "All sorts of China ware . . . large nobel

and rich Chinese bowls." Eighteenth-century Chinese Export Porcelain in Virginia. Master's thesis, College of William and Mary, Williamsburg, VA.

Miller, George L.

- 1987 Origins of Josiah Wedgwood's Pearlware. *Northeast Historical Archaeology* 16: 80-92.
- 1991a A Revised Set of CC Index Values for English Ceramics. *Historical Archaeology* 25(1): 1-25.
- 1991b Thoughts towards a Users' Guide to Ceramic Assemblages: Part One. Council for Northeast Historical Archaeology *Newsletter* 18: 2-5.
- 1991c Thoughts towards a Users' Guide to Ceramic Assemblages: Part Two. Council for Northeast Historical Archaeology *Newsletter* 20: 4-6.
- 1992 Thoughts towards a Users' Guide to Ceramic Assemblages: Part Three. Council for Northeast Historical Archaeology *Newsletter* 22: 2-4.
- 1993 Thoughts towards a Users' Guide to Ceramic Assemblages: Part Four. Some Thoughts on Classification of White Earthenwares. Council for Northeast Historical Archaeology *Newsletter* 26: 4-7.

Miller, George L., and Robert H. Hunter, Jr.

- 1990 English Shell Edged Earthenware: Alias Leeds, Alias Feather Edge. *Thirty-Fifth Wedgwood International Seminar* 201-232.
- 2001 How Creamware Got the Blues: The Origins of China Glaze and Pearlware. *Ceramics in America*, 1: 135-161.

Miller, George L., Ann Smart Martin, and Nancy S. Dickinson

- 1994 Changing Consumption Patterns: English Ceramics and the American Market from 1770 to 1840. In *Everyday Life in the Early Republic*, ed. by Catherine E. Hutchins, 219-247. Henry Francis du Pont Winterthur Museum, Winterthur, DE.

Miller, George L., and Antony Pacey

- 1985 Impact of Mechanization in the Glass Container Industry: The Dominion Glass Company of Montreal, a Case Study. *Historical Archaeology* 19(1): 38-50.

Miller, George L., and Catherine Sullivan

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

Mountford, Arnold R.

- 1971 *The Illustrated Guide to Staffordshire Salt-*

*glazed Stoneware*. Praeger Publications, New York.

Nelson, Lee H.

- 1968 Nail Chronology as an Aid to Dating Old Buildings. American Association for State and Local History Technical Leaflet 48. *History News* 24(11).

Noël Hume, Ivor

- 1969 *A Guide to Artifacts of Colonial America*. Alfred A. Knopf, New York.

Oswald, Adrian, in collaboration with R. J. C. Hildyard and R. G. Hughes

- 1982 *English Brown Stoneware 1670-1900*. Faber & Faber, London.

Panati, Charles

- 1987 *Panati's Extraordinary Origins of Everyday Things*. Harper & Row, New York.

Parrington, Michael

- 1984 The History and Archaeology of Philadelphia Roads, Streets, and Utility Lines. *Pennsylvania Archaeologist* 53(3): 19-31.

Petroski, Henry

- 1992 *The Evolution of Useful Things*. Vintage Books, New York.

Pollard, Gordon

- 1992 Glass Bottles: A Chronology of Some Major Developments. Handout, Council for Northeast Historical Archaeology annual meetings, Fort Edward, NY.

Price, E. Stanley

- 1948 *John Sadler: A Liverpool Pottery Printer*. Privately printed.

*Progressive Grocer*

- 1924 These Western Merchants Cash in on Easter Business. *The Progressive Grocer* 3(4): 17-18.

Ramsey, John

- 1939 *American Pottery & Porcelain*. Hall, Cushman & Flint, Boston.

Rickard, Jonathan

- 1993 Mocha Ware: Slip-decorated Refined Earthenware. *The Magazine Antiques* 164(2): 182-189.

Röntgen, Robert E.

- 1997 *Marks on German, Bohemian and Austrian Porcelains, 1710 to the Present*. Schiffer Publishing Ltd., Atglen, PA.



- Samford, Patricia M.  
1997 Response to a Market: Dating English Underglaze Transfer-printed Wares. *Historical Archaeology* 31(2): 1-30.
- Savage, George, and Harold Newman  
1976 *An Illustrated Dictionary of Ceramics*. Van Nostrand Reinhold, New York.
- Schneringer, Kenneth  
2001 *A Catalog Collection*. Catalog Number 141. Woodstock, GA.
- Scoville, Warren C.  
1948 *Revolution in Glass Making: Entrepreneurship and Technological Change in the American Industry 1880-1920*. Harvard University Press, Cambridge, MA.
- Shartar, Martin, and Norman Shavin  
1981 *The Wonderful World of Coca-Cola*. Capricorn Corporation Inc., Atlanta, GA.
- Shaw, Simeon  
1900 *History of the Staffordshire Potteries and the Rise and Progress of the Manufacture of Pottery and Porcelain; with Reference to Genuine Specimens and Notices of Eminent Potters*. Scott Greenwood and Company, London.  
1829 *History of the Staffordshire Potteries and the Rise and Progress of the Manufacture of Pottery and Porcelain; with Reference to Genuine Specimens and Notices of Eminent Potters*. 1968 reprint ed. Beatrice C. Weinstock, Great Neck, NY.
- Shlasko, Ellen  
1989 *Delftware Chronology: A New Approach to Dating English Tin-Glazed Ceramics*. Master's thesis, College of William and Mary, Williamsburg, VA.
- South, Stanley  
1978 Evolution and Horizon as Revealed in Ceramic Analysis in Historical Archaeology. In *Historical Archaeology: A Guide to Substantive and Theoretical Contributions*, ed. by Robert Schuyler, 68-82. Baywood Publishing Company, Inc., Farmingdale, NY.
- Staten, Vince  
1998 *Did Trojans use Trojans? A Trip inside the Corner Drugstore*. Simon & Schuster, New York.
- Steffton, Dru  
2001 The Mouse that Roared. *The Times* (Burlington County, NJ) April 30: B-1, 2.
- Stitt, Irene  
1974 *Japanese Ceramics of the Last 100 Years*. Crown Publishing, Inc., New York.
- Thomas, John L.  
1977 *Picnics, Coffins, Shoo-Flys*. Maverick Publications, Bend, OR.
- Thorgerson, Storm, and Roger Dean, eds.  
1977 *Album Cover Album*. Paper Tiger, A & W Visual Library, New York.
- Thuro, Catherine M. V.  
1976 *Oil Lamps: The Kerosene Era in North America*. Wallace-Homestead Book Company, Des Moines, IA.
- The Times* (Burlington County, NJ)  
1996 On This Day in History. Patent Granted for Ball-bearing Roller Skates. *The Times* (Burlington County, NJ) December 1: A-12.  
1996 The Plastic Pink Flamingo Yard Ornament Now 25 Years Old. *The Times* (Burlington County, NJ) May 29: A-15.  
1998 On this Date. *The Times* (Burlington County, NJ) December 26: A-10.  
1999 Changes in Electrical Appliances. *The Times* (Burlington County, NJ) August 27: D-10.  
2000 Key Dates in the 50-year History of the Credit Card. *The Times* (Burlington County, NJ) March 12: D-4.
- Trench, C. S. J., and B. E. V. Luty, eds.  
1918 *Metal Statistics 1918*. 11th annual edn. The American Metal Market Company, New York.
- Toulouse, Julian Harrison  
1969a A Primer on Mould Seams, Part 2. *Western Collector* 7(12): 578-587.  
1969b *Fruit Jars*. Nelson Inc., NJ.
- Wakefield, Hugh  
1962 *Victorian Pottery*. Thomas Nelson & Sons, New York.
- Watkins, C. Malcolm  
1960 North Devon Pottery and its Export to America in the 17th Century. *United States National Museum Bulletin* 225: 17-59. United States Government Printing Office, Washington, DC.
- Watney, Bernard  
1964 *English Blue and White Porcelain of the 18th Century*. Thomas Yoseloff, New York.

Webster's New World Dictionary of the American Language

1982 Linoleum. Simon & Schuster, New York.

Weitz, C. E.

1930 *Electrical Illuminates Prepared Especially for Home Study*. International Correspondence School, Scranton, PA.

Wolfe, Bernard

1945 *Plastics: What Everyone Should Know*. Bobbs-Merrill Co., New York.

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