

# NORTHEAST HISTORICAL ARCHAEOLOGY



Volume 29

2000

# 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-

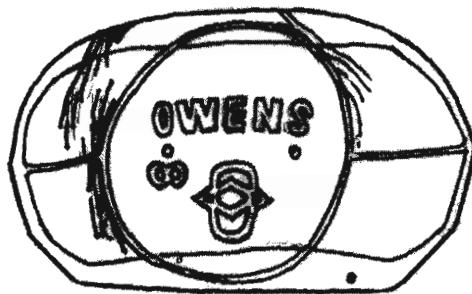


Figure 1. The base to a bottle with an Owens-Illinois Glass Company mark. The bottle has an Owens suction scar to the left and top right of the parison mold line. This from the knife that cuts the glass off once it has been sucked up from the glass tank. Owens scars are very distinct, and sometimes are 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 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.

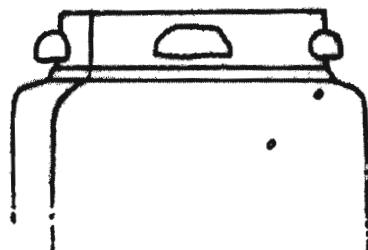


Figure 2. Lug top finish to a machine-made bottle. This type of closure was almost impossible to make on mouth-blown bottles. Lug top closures were introduced on machine-made bottles in 1906. There are many styles of lug top closures and they are still in common use today. Drawing by Anthony J. McNichol.

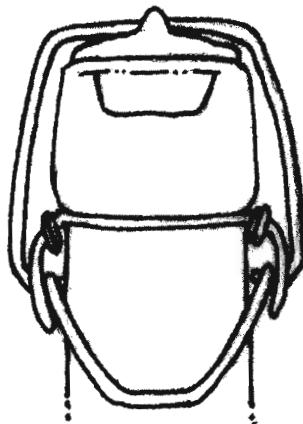


Figure 4. Bail and yoke "Lighting Stopper" stopper. Lief lists this stopper as being patented in 1882, but a patent date on the hard rubber cork on a Lighting stopper in Miller's collection has the date "Jan. 5, 1875." These closures were common on beer bottles and to a lesser extent on pop bottles until 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
		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	Unscallopated	1841	1857
	Unmolded	Unscallopated	1874	1884

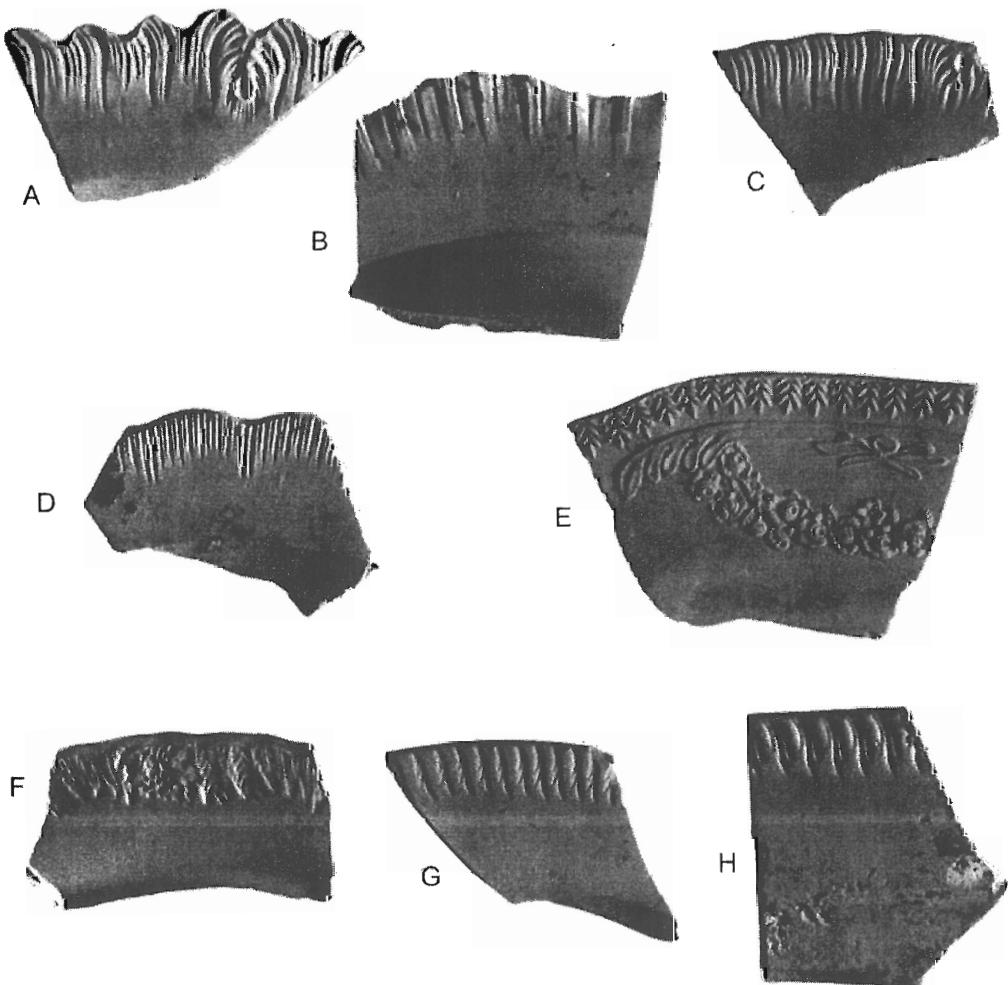


Figure 5. Bisque fired shell-edged waster sherds from Staffordshire. The chronological information on these rim types is presented in Table 1.

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 delftwares (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.

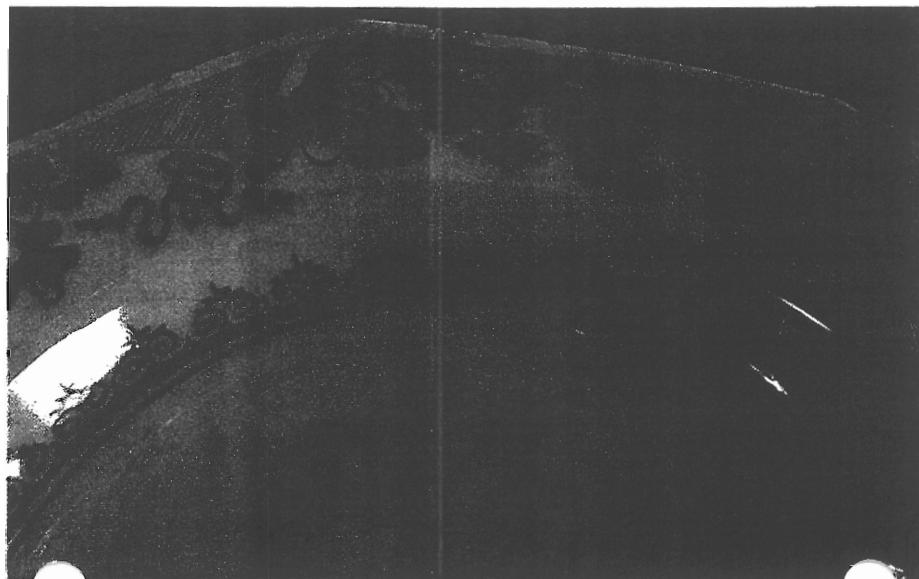




Figure 8. Blue trellis motif on Chinese porcelain. This pattern was popular from ca. 1720 to ca. 1795 (Madsen 1995: 200). The painting of the blue trellis pattern becomes much simpler in later examples. Photographed by Andrew Madsen.



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

Date	Product	Source
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.
1864	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

Date	Product	Source
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>	Ricketts' 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

Date	Product	Source
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

Date	Ware	Source
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	Can ton porcelain.	Noël Hume 1969: 262.

## OTHER PORCELAIN

Date	Ware	Source
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

Date	Ware	Source
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 (lusted) 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.
<b>1805–1920</b>	Albany slip.	Ramsey 1939: 21–22, 59.

## WHITE-BODIED STONEWARES

Date	Ware	Source
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	Littler'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.
<b>1842–1930</b>	White granite, also known 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

Date	Ware	Source
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

Date	Ware	Source
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	Caudle 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

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

## REFINED WHITE-FIRING EARTHENWARE

Date	Ware	Source
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; 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; Miller 1991a: 7.
1774–1800	Shell-edged creamware.	Miller & Hunter 1990: 202–204; 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; 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; Hunter & Miller 1994: 434–436.
1782–1810	Variegated (dip) 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

Date	Ware	Source
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

Date	Pattern or color	Source
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

Date	Material or product	Source
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

Date	Material or product	Source
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

Date	Material or product	Source
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

Date	Material or product	Source
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

Date	Material or product	Source
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;
1896	Introduction of tooth paste in a squeeze tube.	Panati 1987: 101.
		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.	Stefton 2001: B-1.

## RUBBER, PLASTIC, AND OTHER SYNTHETICS

Date	Material or product	Source
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.

### Acknowledgments

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.

### 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*.
- 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.
- City of Stoke-on-Trent Museum and Art Gallery, Stoke-on-Trent, England.

- 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. Mackenzie
- 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.
- Klippert, 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 City Drugstore*. Simon & Schuster, New
- 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.

*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.

George L. Miller is the Laboratory Director at URS Corporation in Florence, New Jersey. He has his B.A. degree from Wayne State University and has been working in material culture research for over 30 years. He has held research positions at the Historic St. Mary's City Commission, Parks Canada, Colonial Williamsburg, and the University of Delaware. He has published articles on the economic history of ceramics and glass in *Historical Archaeology*, *Northeast Historical Archaeology*, and *Winterthur Portfolio*.

Patricia M. Samford is Archaeologist and Head of Museum Services at Tryon Palace Historic Sites and Gardens in New Bern, North Carolina. She has her B.A. and M.A. degrees from the College of William and Mary, and a Ph.D. from the University of North Carolina at Chapel Hill. She has been working in archaeology and research for over 20 years. She has held positions at the Colonial Williamsburg Foundation and is currently adjunct professor at East Carolina University. She has published articles on ceramics in *Historical Archaeology* and *Early American Life*. She co-authored a children's book on archaeology with David Ribblett and has published on African-American archaeology.

Ellen Shlasko is an Assistant Professor of Anthropology at the University of Memphis in Memphis, Tennessee. Her primary research interest is the archaeology of plantation life,

but she is also involved in research in the areas of Civil War archaeology, the formation of ethnic identity, and ceramic analysis. She holds an M.A. from the College of William and Mary and a Ph.D. from Yale University.

Andrew D. Madsen is a professional archaeologists residing in Frederick, Maryland. He has a B.A. in anthropology and history from the University of California, Berkeley, and an M.A. in anthropology from the College of William and Mary in Virginia. His research interests have focused on the chronological aspects of Chinese export porcelain and artifact conservation. He has held positions at Colonial Williamsburg, the Virginia Department of Historic Resources, the James River Institute for Archaeology, and R. Christopher Goodwin & Associates, Inc. He has presented papers at the Society for Historical Archaeology and the Mid-Atlantic Archaeological Conference meetings and has taught workshops on Chinese porcelain.

George L. Miller, Laboratory Director  
URS Corporation  
561 Cedar Lane  
Florence, NJ 08518  
[george\\_miller@urscorp.com](mailto:george_miller@urscorp.com)

Patricia Samford, Archaeologist  
Tryon Palace Historic Sites & Gardens  
P.O. Box 1007  
New Bern, NC 28563  
[psamford@tryonpalace.org](mailto:psamford@tryonpalace.org)

Ellen Shlasko  
Anthropology Department  
316 Manning Hall  
University of Memphis  
Memphis, TN 38152-0001

Andrew Madsen  
364 Madison Street  
Frederick, MD 21701

**ETHICAL STANDARDS  
of  
THE COUNCIL FOR NORTHEAST HISTORICAL ARCHAEOLOGY**

*The attainment of knowledge should be the primary objective of all archaeological excavations.*

*The archaeologist should have working knowledge of the history and material culture of the area and historical periods in which he/she is working.*

*Comprehensive historical research must be an integral part of the investigation of any historic site.*

*All historical site excavations should be conducted according to the accepted basic standards of the profession.*

*The archaeologist in charge of excavation shall be responsible for determining the manner of excavation, the size of the work-force, and the required qualifications of those employed.*

*Adoption of uniform and acceptable methods of field procedures, reporting and mapping shall be encouraged. A Master Plan should be applied on all large sites, and detailed maps to which future excavations can be related should be drawn.*

*Field and laboratory manuscripts should be made available to anyone who requests them for scholarly research purposes. Researchers should respect the on-going research of others.*

*It is the responsibility of the organization financing or conducting the excavation to see that a comprehensive final archaeological report is completed in either manuscript or published form. This should be prepared by the archaeologist in charge.*

*Artifacts should be properly cleaned, conserved, catalogued, and stored to prevent deterioration so that the data are easily accessible. Archaeologically retrieved faunal and vegetal matter should receive the same care.*

*Collections should be maintained at appropriate institutions which have the capability and means for the proper handling and use of archaeological material. Where possible, archaeological assemblages should be kept together and made available for purposes of scholarly study and research.*

## TABLE OF CONTENTS

MARY C. BEAUDRY Editor's Introduction .....	v
GEORGE L. MILLER, WITH CONTRIBUTIONS BY PATRICIA SAMFORD, ELLEN SHLASKO, AND ANDREW MADSEN Telling Time for Archaeologists .....	1
JOHN BEDELL AND GERALD P. SCHARFENBERGER Ordinary and Poor People in 18th-Century Delaware .....	23
WENDY ELIZABETH HARRIS AND ARNOLD PICKMAN Towards an Archaeology of the Hudson River Ice Industry .....	49
DAVID R. STARBUCK Waiting for the Second Coming: The Canterbury Shakers, An Archaeological Perspective on Blacksmithing and Pipe Smoking.....	83
JAMES G. GIBB AND APRIL M. BEJSAW Learning Cast up from the Mire: Archaeological Investigations of Schoolhouses in the Northeastern United States .....	107
<i>Review Essay</i> EDWARD L. BELL On the Care and Feeding of Preservation Managers .....	130
<i>BOOK REVIEWS</i> JAMES A. DELLE Review of <i>Imagining Consumers: Design and Innovation from Wedgwood to Corning</i> by Regina Lee Blaszczyk .....	138
DIANA DIPAOLO LOREN Review of <i>Death by Theory: A Tale of Mystery and Archaeological Theory</i> by Adrian Praetzellis.....	140
ALAN LEVEILLEE Review of <i>The Archaeological Northeast</i> by Mary Ann Levine, Kenneth A. Sassaman, and Michael S. Nassaney.....	142
KATHLEEN L. WHEELER Review of <i>Dangerous Places: Health, Safety, and Archaeology</i> edited by David A. Poirier and Kenneth L. Feder .....	146
JAMES C. GARMAN Review of <i>Archaeology and Created Memory: Public History in a National Park</i> by Paul A. Shackel .....	150
Guidelines for Contributors .....	152