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## Decline in the Use and Production of Red-Earthenware Cooking Vessels in the Northeast, 1780–1880

Meta F. Janowitz

*Ceramic collections from archaeological sites dating to and before the early 19th century are often dominated by red-earthenware vessels used in the foodways complex. By the late 19th century, redware vessels are much less common in New England and the Middle Atlantic region. This decline in the use and production of red earthenwares has many causes, including decreased costs of alternative materials (stoneware, refined earthenware, metal, and glass) and an awareness of the harmful effects of lead glazes, but the most important factor is the change in food-preparation technology from open-hearth to stove cooking.*

*On retrouve souvent une prédominance de contenants en terre cuite commune rouge associés à la consommation d'aliments dans les collections d'objets de céramique mises au jour sur des sites archéologiques datant du début du XIXe siècle. Dès la fin du XIXe siècle, on retrouve moins de contenants de terre cuite commune rouge qu'auparavant en Nouvelle-Angleterre et dans les États Mid-Atlantic des États-Unis. Plusieurs causes expliquent ce déclin de la production et de l'utilisation des terres cuites communes rouges : le coût décroissant des matériaux alternatifs tels le grès, la terre cuite fine, le métal et le verre, de même qu'une sensibilisation aux effets néfastes des glaçures à base de plomb. Toutefois, un changement technologique dans la préparation des aliments fut le facteur principal : on est passés d'une cuisson des aliments à l'aide du foyer ouvert à une cuisson à la cuisinière.*

### Introduction

Archaeologists know, from the perspective of what is found in the ground, what happened to red earthenwares between about 1780 and 1880. At the start of this period almost every archaeological assemblage in the Northeast included many different redware vessel forms (see Gible [2005] for examples of many of these forms), but by the end of the period, for the most part, only a few forms are found, predominantly storage jars, a few pans and dishes, and vessels unrelated to food (flowerpots and stovepipes). The relative percentage of red-earthenware vessels in ceramic assemblages decreases compared to that of refined earthenwares. There are two common explanations to account for these changes, one based on awareness of health issues and the other on economics. The most common, health-based explanation is that people became aware of the poisonous effects of the lead glaze used on redwares (Stradling and Stradling 1977: 8; Greer 1981: 22; Ketchum 1991a: 8). The economic explanation is that redwares were replaced by metal, glass, and other ceramic types because the relative costs of these other materials declined, as a result of industrial methods of production and better transportation networks, to the point where they were affordable for almost everyone (Hunter 1985: 244; Starbuck

and Dupré 1985: 137; Worrell 1985: 168; Ketchum 1991a: 15). Factory-produced objects—metal vessels for food preparation and refined ceramic and glass vessels for food service and storage—became kitchen and dining room staples when they moved closer to redwares in price. There are two underlying assumptions in this cost-based explanation: first, there was always a desire for things other than redwares, and, second, consumers tend to buy the most expensive things they can afford. Any discussion of consumers' preference for more expensive goods is a complex question that is far beyond the scope of this paper. As for the first assumption, the latent desire for vessels other than redwares, the *aesthetic* and possibly *engendered* appeal of light-colored, refined wares on the table, as opposed to red earthenwares, has been discussed by other archaeologists (Yentsch 1990, 1991; Wall 1991, 1994; Fitts 1999).

The wish to avoid lead glaze and the decreasing prices of alternatives certainly factored into the declining use of red earthenwares in the Northeast during the 19th century, but another reason, changes in food-preparation technology, should be taken into account. In this paper, period cookbooks and household advice manuals are used to examine what 19th-century writers and their readers thought about lead-glazed

vessels, other types of kitchen wares, and the functions of redware vessels, i.e., the practical question of how red earthenwares were used to cook food.

### Contemporary Ideas about Lead Glaze

The most common explanation for the decline of redwares—the belief that 19th-century consumers were aware of the dangers of lead glaze—has been accepted by some archaeologists and ceramic historians. The origin of this idea seems to have been Lura Woodside Watkins's *Early New England Potters and Their Wares*, first printed in 1950. Watkins included an excerpt from a letter, published in the *Pennsylvania Mercury* on 4 February 1785, that seems to imply that the deleterious effects of lead glaze were widely known (Watkins 1950: 80). Watkins and others following her lead (see, e.g., Stradling and Stradling 1977: 8; Ketchum 1991a: 8) have taken this to mean that the fear of lead poisoning was one of the reasons, if not the principal reason, for the decline of redware use and production: housewives abandoned their lead-glazed vessels in favor of substitutes because they were afraid of poisoning their families.

When the entire letter is perused, however, it reads more as an attempt on the part of a would-be stoneware manufacturer to set the stage for requesting a state subsidy. This is the text of the letter with the sections not quoted by Watkins in italics (capitalization is as in the original):

#### OF POTTERIES

*Preceding the glorious Revolution, freights on goods from England being on the VALUE, all bulky and low priced articles were imported so exceedingly cheap as to discourage manufacture of them among us of any importance. Here and there were a few scattered Potteries of EARTHENWARE, infamously bad and unwholesome, from their being glazed with a thin, cheap washing of LEAD. The best of Lead-glazing is esteemed unwholesome, by observing people. The mischievous effects of it, fall chiefly on the country people, and the poor everywhere. Even when it is firm enough, so as not to scale off, it is yet imperceptibly eaten away by every acid matter; and mixing with the drinks and meats of the people, becomes a slow but sure poison, chiefly affecting the nerves, that enfeeble the constitution, and produce paleness, tremors, gripes, palsies, &c, sometimes to whole families.*

*It is wished the Legislatures would consider of means for discountenancing the use of LEAD in glazing Earthen-Ware, and encourage the application of the most perfect and wholesome glazing, produced only from SAND and SALTS: materials, these, everywhere to be collected within these states. But, what if public encouragement was to be given on home-made STONE-WARE, rather than on Earthen-Ware? In Stone-ware, Lead is never used: no other glazing need be used for stone than what is produced by a little common salt strewed over the ware, which operates as a flux to the particles of sand that stick on the sides of the ware, whilst it is in the furnace full in blast.*

Stone-Ware is now scarce and dear amongst us, as the housewife knows. This is owing to its great bulk and low value, that scarcely affords to pay the freight on measure. It is this circumstance that renders the manufacturing these wares an object to our enterprising people, peculiarly promising of profit and permanent advantage. It indeed is becoming more and more necessary to the calls of the country that Stone and Earthen-ware should be made and improved on at home.

*The man who understands making Earthen-ware, I presume can readily conduct a STONE-WARE work. During the late war, a young man expressed his wish to know what the matter is that constitutes STONE-WARE, of which jugs etc. are made. I prevailed on him, instantly, to grind some sand, and mix it in different proportions with separate parcels of a blue clay. These mixtures with an addition of water, were then made into pastes. Little cakes were forced out of the masses, and dried and burnt. Some appeared too nearly like earthen-ware, and some were brittle; others ran too much into glass; others, to our great satisfaction, were a perfect Stone-ware of an excellent grain and colour! In this was a justly proportioned mixture of the sand and clay (Anonymous 1785).*

There are several obvious inaccuracies in this letter. First, there were many more than a “few scattered potteries of earthenware” in the colonies before the Revolution (Guilland 1971; Spargo 1974; Barber 1976; Branin 1988; Ketchum 1991a). Philadelphia and its surrounding counties, the area where the *Mercury* probably had its largest circulation, had a thriving and longstanding redware potting tradition throughout the 18th and well into the 19th centuries (Barber 1976; James 1978; Myers 1980; Bower 1985).<sup>1</sup> Second, stoneware (salt-glazed

1. Philadelphia-area potters set the standard for colonial redwares. In early 1773, a Philadelphia potter named Jonathan Durell advertised in the *New-York Gazette and Weekly Mercury* that he had moved to New York and was making “Philadelphia Earthenware ... the ware is far superior to generality, and equal to the best imported from Philadelphia, or elsewhere” (Ketchum 1991a: 44).

stoneware) potteries, although not as common as earthenware potteries, were in operation in New York City, Trenton, Philadelphia, Boston, central New Jersey, and other places before the Revolution (Denker and Denker 1985; Ketchum 1987, 1991b; Branin 1988; Skerry and Hood 2009). Finally, the transition from the production of coarse earthenware to salt-glazed stoneware was not simply a matter of switching from one clay to another. Some different skills were needed, such as how to stack vessels in the kiln for maximum exposure to the salt vapor and judging when to introduce salt into the kiln.

The letter is correct in one respect: stoneware is not common in Philadelphia archaeological assemblages from the late 18th and early 19th centuries (see, e.g., Louis Berger & Associates, Inc. (LBA) 1991; Dent et al. 1997; Yamin 2008). It is common in New York City assemblages, however—for example, Geismar (1983) and LBA (1987, 1990)—because stoneware was made there in quantity and had been since the 1720s (Janowitz 2008). It had been made in Philadelphia early in the 18th century by the Duche family, but its manufacture ceased in the 1760s (Giannini 1981; Rauschenberg 1991). Stoneware was also made in large quantities in several potteries in central New Jersey during the 18th and 19th centuries (Mitchell 1973; Branin 1988; Goldberg, Warwick, and Warwick 2008). The freight costs from New York City or New Jersey to Pennsylvania are probably what are referred to in the *Mercury* letter.

## Cookbooks

This single newspaper advertisement should not be taken as proof that the majority of people, even “observing people,” was aware of the potential toxicity of lead-glazed earthenwares. One way to determine what people thought about the issue is to turn to contemporary documents. A review of 19th-century cookbooks casts doubt on the assumption that housewives and cooks considered redwares to be poisonous and deleterious to the health of their families. A number of contemporary cookbooks were consulted for this project, but two cookbooks from 1832 and 1851, and a household advice manual from 1869 were particularly helpful. They differ

in their guidance concerning earthenwares, but not in expected ways.

The first is an 1832 cookbook by a Mrs. N. K. M. Lee, entitled *The Cook's Own Book*. In her preface Lee states:

The various utensils used for the preparation and keeping of food are made either of metal, glass, pottery ware, or wood; each of which is better suited to some particular purpose than the others. ... The metals commonly used in the construction of these vessels are silver, copper, brass, tin, iron, and lead. Silver is preferable to all the others, because it cannot be dissolved by any of the substances used as food. ... Copper and brass are both liable to be dissolved by vinegar, acid fruits, and pearl-ash. ... Vessels made of these metals are generally tinned, that is, lined with a thin coating of a mixed metal, containing both tin and **lead** [emphasis added]. ... The utensils made of what is called block tin are constructed of iron plates coated with tin. ... iron is not an unwholesome substance ... Iron is therefore one of the safest metals for the construction of culinary utensils; and the objection of its more extensive use only rests upon its liability to rust, so that it requires more cleaning and soon decays. ... The best kind of pottery ware is oriental china, because the glazing is a perfect glass, which cannot be dissolved, and the whole substance is so compact that liquid cannot penetrate it. Many of the **English pottery wares** [emphasis added] are badly glazed, and as the glazing is made principally of lead, it is necessary to avoid putting vinegar and other acids into them. Acids and greasy substances penetrate into unglazed wares, excepting the strong stone ware, or into those of which the glazing is cracked, and hence give a bad flavor to anything they are used for afterwards. ... Glass vessels are infinitely preferable to any pottery ware but oriental china, and should be used whenever the occasion admits of it. ... Wooden vessels are very proper for the keeping many articles of food, and should always be preferred to those lined with lead. ... Never put by any soup, gravy, &c. in metal utensils; ... the acid, vegetables, fat, &c. employed in making soups, &c. are capable of dissolving such utensils: therefore stone or earthen vessels should be used for this purpose. ... In small families we recommend block-tin saucepans, &c. as lightest and safest. ... [and] by far the cheapest; the purchase of a new tin saucepan being little more than the expense of tinning a copper one (Lee 1832: xviii–xx).

Thus, the only proper use for earthenwares—and the reader is left to wonder if these are *all* earthenwares or only the “English pottery

wares”—is as storage vessels, according to this preface.<sup>2</sup> The implication could be that redwares had already been replaced with other cooking vessels by 1832. This is not the case, however, as Lee did not prohibit the use of earthenwares and sometimes actually called for their use in the preparation of her recipes.

The most common earthenware vessel mentioned in Lee's recipes is a pan (FIG. 1). Of the 45 recipes that specifically mentioned "earthen pans," as opposed to just general "pans," 20 used pans for mixing; 7 were for baking—6 in a brick oven and 1 "over a charcoal fire"; 2 were for storage (for a meat paté and for prepared roux); 1 was for boiling "over a gentle fire"; 1 was for slowly stewing mushrooms over a bed of ashes; and, in the remaining 15, pans were used to soak various ingredients or as cooling and setting vessels, particularly for preserves.

Other earthen vessels shared some of the same functions as pans. Of the two "earthenware basins"<sup>3</sup> mentioned, one was for mixing and one was for baking in an oven. The one "earthen skillet" was used to stew garlic on hot ashes. Two "earthen dishes" were mentioned: one was to be placed under spitted meat to catch drippings during open hearth roasting, the other was used to lay preserved ginger on while drying. Similarly, an "earthen plate" was used to dry samphire<sup>4</sup> after boiling. Melted butter was poured over macaroni through an "earthen cullender" before the macaroni was baked in an oven. Sorrel was to be scalded and then stewed in either a silver saucepan or an earthen pipkin. Eight other pots, used for

mixing, baking, steeping, and storage, were identified simply as "earthen vessels." It is unlikely that any of these, with the possible exception of the colander and the plates used to dry preserves, were made of English refined wares.

Three "earthen jars" and two "earthen pots" were called for to steep and to store various foodstuffs: lemons in brandy, angelica in water, uncooked sausage meat, "tomatas" in brine, and baked trout covered in clarified butter. Some of these foods had sufficiently high acidity (especially lemons and tomatoes) to make storage in lead-glazed earthenwares harmful, but I cannot tell from the way the recipes are worded whether the earthenwares referred to are redwares or refined earthenwares—the author's "English pottery wares"—although storage forms in refined earthenwares are not common, so it is likely that redwares are the vessels in question.

The 1851 cookbook consulted for this study is by Elizabeth Ellicott Lea, a Quaker born in Maryland (Lea 1869). Her receipt book and domestic manual were designed as a "project to help young housekeepers ... a simple, straightforward, but complete guide" (Feeding America 2012). Lea was more negative about the use of earthen jars: she recommended that "anything acid should not be put in earthen vessels, as the glazing is poisonous" (Lea 1869: 143–144). This remark was included in the discussion of making apple butter, which the author said should be put into stoneware jars for storage. She added that "earthenware jars are not suitable for butter as during the decomposition of the salts, they corrode the glazing; and the butter becomes rancid and unhealthy" (Lea 1869: 179). Archaeologists and some ceramic historians often identify redware jars glazed only on the interior as "apple butter" or "butter" jars when they are from late 19th-century contexts.<sup>5</sup> Jeannette Lasansky, for example, in her monograph *Central Pennsylvania Pottery 1780–1904*, states that "the apple butter crock, both with and without

2. In 1774, an English chemist, Thomas Percival, tested the lead content of English creamware vessels. He concluded that "[l]ead is an ingredient in the glazing of the Queen's ware; but the proportion of which it is used, or at least the quantity dissolved by the vinegar acid, appears to be very inconsiderable. ... The present experiment therefore furnishes no objection to the common use of this beautiful pottery; but it shews that vessels of it are improper for the preservation of acid fruits and pickles" (Percival 1774: 62–65). George L. Miller kindly informed the author of this reference.

3. A "basin," as defined by Gible (2005: 47), has the same shape as a pan, but has a pouring spout on a thick rolled rim and is larger (13–16 in. rim diameter) and thicker bodied than a pan. It was used primarily for washing rather than cooking. Using this definition, the "basins" called for in Lee's cookbook were most probably large pans.

4. True samphire is a European plant, but the name was used for several species of edible plants that grow in wet areas in eastern North America.

5. As one of the reviewers of this article pointed out, one of the problems for archaeologists and ceramic historians who study red earthenwares is that names for vessels are often regionally, temporally, or ethnically based, and, as yet, very few comparative studies of red-earthenware terminology have been published—but see Gible (2005) for a discussion of the regional use of the term "butter pot" and other vessel names.





Figure 1. Pan interior, exterior, and profile. Pans and dishes designed for cooking and serving were almost always decorated with trailed slip in designs that ranged from simple lines to complex patterns. (Image courtesy of the Pennsylvania Department of Transportation, the Federal Highway Administration, and URS Corporation; photo by Thomas Kutys, 2014.)

handles, glazed all over ... or glazed only on the interior, is the most common redware shape” for this time and region (Lasansky 1979: 34). She included a 1922 photograph of outdoor apple-butter making that depicts a group of stoneware and earthenware jars in the background, ready to receive the boiled-down apple butter (Lasansky 1979: 6–7).

Lea’s strictures concerning apple butter and lead-glazed earthenwares were not endorsed by other 19th-century authors. Catherine Beecher and Harriet Beecher Stowe are perhaps the best known of all those who wrote advice manuals for 19th-century homemakers. Included in their instructions and admonitions for women are recommendations about kitchen and pantry equipment. Writing in the late 1860s, they *did* recommend earthenware jars for storing butter and endorsed earthenware pans (specifically red earthenwares) for use in the dairy:

Brown earthen pans are said to be best for milk<sup>6</sup> and for cooking. Tin pans are lighter, and more convenient, but are too cold<sup>7</sup> for many purposes. Tall earthen jars, with covers, are good to hold butter, salt, lard, etc. Acids should never be put into the red earthen ware, as there is a poisonous ingredient in the glazing which the acid takes off. Stone ware is better and stronger, and safer every way than any other kind (Beecher and Stowe 1869: 373–374).

Beecher and Stowe, those exemplars of proper housekeeping and food preparation, did not condemn red earthenwares, except for storage of “acids,” almost certainly pickled foods preserved with vinegar.

6. Douglas F. Hawes studied the ca. 1830–1860 account book of a rural Maine potter, Joseph Philbrick, and found that Philbrick’s redware production closely correlated with local dairy production. Like other rural New England potters, milk pans (vessels used to cool milk while cream rose to the surface) were by far his most common form, followed by butter-storage jars (Hawes 1995: 62–63).

7. That is, they do not hold heat well, unlike earthenwares, which hold heat and release it gradually.

Thus, these sources do not agree, and the authors of the latest and presumably most “scientific” manual—Beecher and Stowe—are the ones who *recommend* red earthenwares.<sup>8</sup> Based on the evidence from these works, fear of lead glaze was not the primary factor in the demise of redwares.

### Red Earthenwares in Foodways

Going back to one of the basic maxims of historical archaeology, James Deetz (1977: 50) wrote that the presence of ceramic artifacts in the foodways complex, and subsequently in the archaeological record, is dependent on four factors: availability, need, function, and social status. This can be expanded to include price, as part of availability; and style, interlinked with social status. The first three are the practical factors under consideration here.

Taking these factors in turn, *availability* is the first and most fundamental factor. In 1780, there were hundreds of potteries making red earthenwares for cooking and food storage. In 1880 there were relatively few, thus reducing the availability of these vessels (Barber 1976; James 1978; Lasansky 1979; Ketchum 1991a). In addition, many redware potters, especially those working in or near urban areas, changed the types of vessels they made during the middle decades of the 19th century, or began to make salt-glazed stonewares or Rockingham. For example, after about 1825, the forms made by the Seymour pottery in West Hartford, Connecticut, were restricted mainly to flowerpots, and the nearby Goodwin potters added stoneware vessels to their earthenware production (Warner 1985: 174–177). In Philadelphia, the Haig pottery, established in 1819, was listed in the 1820 Census of Manufacturers as making “earthenware generally” (Myers 1980: 93). In an 1840 commercial directory they advertised that they had

constantly for sale ... tea & coffee pots, pitchers, pans, basins, cake moulds, etc. suitable for house use, together with a general assortment of common earthenware, portable furnaces, cylinders for coal stoves, pipe cases, tile for coal grates, stove makers’ & bakers’ fire bricks, etc. (Wright 1840: 364).

8. Although Beecher copied this section of the work directly from her earlier and often reprinted *A Treatise on Domestic Economy* (Beecher 1845), it is assumed here that she still stood by these recommendations in the later work.

By 1893, shortly before the pottery closed, they made “fire-brick, tile, Rockingham, and yellow wares ... flower-pots, fancy earthenware pitchers, glazed hanging baskets, and vases after antique designs, which latter are furnished in biscuit [fired but unglazed] to decorators” (Barber 1976: 117). Other potters who changed either their vessel forms, wares, or organization of production during this period are discussed in Hunter (1985), James (1978), Kelly (2014), Ketchum (1987, 1991a, 1991b), Lasansky (1979), Myers (1980), Pendery (1985), Starbuck and Dupré (1985), Stradling and Stradling (1977), Watkins (1950), and Worrell (1985).

Lura Woodside Watkins (1950) was of the opinion that the decline in the number of redware potters was due to internal competition among potters, who produced more wares than the market could absorb. She based her opinion on a document published in 1791 (Lord Sheffield’s *Observations on the Commerce of the United States*) that stated: “Coarse tiles and bricks of an excellent quality, potter’s wares, all in quantities beyond the home consumption, a few ordinary vessels of stone mixed with clay ... are all that are now made” (Watkins 1950: 81). She noted that the number of redware potters in operation around Boston at the turn of the 19th century declined precipitously within a generation: “The redware potter either succumbed to competition or removed to the frontier” (New Hampshire or the “wilds of Maine”) (Watkins 1950: 81). Lord Sheffield’s observation was an oversimplification, as is Watkins’s unqualified acceptance of it. The population of the new United States, especially in urban centers, was growing at a rate that could have absorbed any excess production of redwares, even if excess production were real and not a false perception. The decrease in the number of redware potters in urban areas was the result, not the cause, of the decline of redwares: the decrease was in desirability, rather than availability.

Because price is a factor in availability, it would be useful to compare red-earthenware prices to those for metal and glass vessels by looking at the amounts recorded in merchants’ or household-account books. Future research would benefit from such a study on a broad scale. For this study, however, a preliminary comparison of prices for red-earthenware and stoneware vessels can be made using the

pricelists of potters who manufactured both types of vessels, although not many lists are easily accessible. A ca. 1864 pricelist for A. E. Smith's Sons, who operated in Norwalk, Connecticut, but whose warehouse was in New York City, is one source (Winton and Winton 1981: 30–31).<sup>9</sup> A later (1902–1907) pricelist for the Mount Jordan Pottery, operated by E. Stanley Grier in Chester County, Pennsylvania, is another (James 1978: 84–87).<sup>10</sup> Not all vessel forms were made in both wares, but “pots, jugs, & pitchers” and “milk pans” were, and these are the vessels used for comparison (TAB. 1).

Stoneware vessels were more expensive than earthenware, with one possible exception: the Smith's Sons milk pans. The problem in comparing these milk-pan prices is that sizes are given only in relative terms, “1st size, 2nd size,” etc., and there is no way to be certain that “1st size” earthenware and stoneware pans have the same capacities. If the capacities were the same, earthenware milk pans might have been more expensive because, as Beecher and Stowe noted, they functioned more efficiently for cooling milk and, thus, were more desirable.

Comparing costs over time is complex because of inflation, deflation, and other economic factors, but there was some consistency in the relative costs of earthenware vs. stoneware vessels. Stoneware “pots” and “jars” were between two and three times as expensive as their earthenware equivalents, with the relative prices of the stoneware vessels actually increasing slightly in the later Grier pricelist. The relative prices of stoneware “jugs,” however, decreased very slightly. Stoneware “milk pans” were more expensive than earthenwares in the Grier list, at about the same ratio as pots and jars to earthenwares. The picture is changed,

9. Asa Edward Smith operated a large pottery in Norwalk with a variety of partners, including his sons, from 1825 until sometime between 1860 and 1864. After his retirement, the firm was named “A. E. Smith's Sons” until 1874, when it became “A. E. Smith's Sons Pottery Co.” (Winton and Winton 1981: 22, 28).

10. The Mount Jordan Pottery was operated by the Grier family from 1828 until 1910. They produced red-earthenware vessels throughout the entire period and began to produce stoneware between 1840 and 1850 (James 1978: 73–89). The first stoneware vessels were possibly made under the guidance of a member of the Remmy family, as suggested by a stoneware bank inscribed: “Joseph B. Remmy made at the J. P. M. Grier Pottery, Chester County, Pa., July 20 1850”. The bank is illustrated by James (1978: 75).

however, by the discounts offered: the 1864 Norwalk pricelist included a “liberal discount for cash,” but the early 20th-century Grier pottery gave “[t]en percent off Earthenware and thirty per centum off Stoneware. Net cash on delivery” (James 1978: 87; Winton and Winton 1981: 31). When the discounts are calculated, the price of stoneware relative to earthenware vessels decreases to roughly twice as much for pots, jars, and milk pans, and to an equal price for jugs, suggesting that stoneware vessels became relatively less costly during the last half of the 19th century. More pricelists, from potters who made both stoneware and earthenware, will be examined as they are encountered to see if this pattern holds true.

If *need* is assessed based on the types of foods consumed, the need for redware vessels did not change during this period. The standard types of foods that European Americans living in northeastern North America ate did not change significantly during the first three-quarters of the 19th century: wheat and other grains, dairy products, fish, meat from a narrow range of domestic animals, and a rather limited array of fruits and vegetables were the staples. African Americans also ate the same types of foods, although often using different styles of food preparation and in different proportions. Asian food traditions did not yet have a significant effect on northeastern foodways. There were regional differences, such as a taste for muskrat seen in some Delaware faunal assemblages, but general foodways were fairly standard throughout the Northeast, and the regional variations that did exist did not significantly affect the types of vessels used in food preparation, storage, and consumption (Beard 1972; Jones 1975; Ross 1993; Comer 2000). The new food products that were introduced before about 1875 generally did not require new methods of preparation (see Pipes and Janowitz, this volume).

The industrial production of food did cause changes in the need for vessels in the foodways complex, but this did not have a significant impact on the use of red earthenwares because the greatest effects of industrial production occurred after the period under discussion, after ca. 1880 (Levenstein 1988: 25–28; Ross 1993: 47–49). The availability of canned goods—condensed milk and soup,



Table 1. Prices per dozen for stoneware and earthenware vessels made by A. E. Smith's Sons (ca. 1864) and E. Stanley Grier (ca. 1902–1907) (James 1978: 84–87; Winton and Winton 1981: 30–31). The ratio is the stoneware price divided by the earthenware price. It illustrates the relative prices of the two wares and shows how many earthenware vessels could be purchased for the price of one stoneware vessel. Discounts were offered for sales paid in cash on delivery.

Norwalk Pottery A. E. Smith's Sons ca. 1864				E. Stanley Grier 1902–1907			
	Stoneware	Earthenware	Ratio		Stoneware	Earthenware	Ratio
<b>Pots</b>				<b>Pots &amp; Jars</b>			
4 Gallon	\$10.00	\$3.60	2.80	4 Gallon	\$10.00	\$3.50	2.85
3 Gallon	\$8.00	—	—	3 Gallon	\$7.50	\$2.50	3.00
2 Gallon	\$6.00	\$2.75	2.20	2 Gallon	\$5.00	\$2.00	2.50
1 1/2 Gallon	\$4.50	\$2.00	2.25	1 1/2 Gallon	\$4.00	\$1.60	2.50
1 Gallon	\$3.50	\$1.50	2.30	1 Gallon	\$3.00	\$1.30	2.30
1/2 Gallon	\$2.50	\$1.05	2.40	3/4 Gallon	—	\$1.00	—
1/4 Gallon	\$1.50	\$0.75	2.00	1/2 Gallon	\$2.00	\$0.80	2.50
				1/4 Gallon	\$1.20	\$0.50	2.40
<b>Jugs &amp; Pitchers</b>				<b>Jugs</b>			
1 Gallon	\$3.50	\$2.70	1.30	1 Gallon	\$3.00	\$2.50	1.20
1/2 Gallon	\$2.50	\$1.80	1.40	1/2 Gallon	\$2.00	\$1.60	1.25
1/4 Gallon	\$1.50	\$1.20	1.25	1/4 Gallon	\$1.20	\$1.00	1.20
1 Pint	—	\$0.60	—	1/8 Gallon	\$0.85	—	—
<b>Milk Pans</b>				<b>Milk Pans</b>			
1st size	\$3.50	\$4.50	0.77	3 Gallon	—	\$3.00	—
2nd size	\$3.00	\$3.75	0.80	2 Gallon	\$5.00	\$2.00	2.50
3rd	—	\$3.00	—	1 1/2 Gallon	\$4.00	\$1.30	2.30
4th	—	\$2.50	—	1 Gallon	\$3.00	—	—
				1/2 Gallon	\$2.00	—	—

preserves and canned fruit, canned vegetables, and condiments—did not have a great effect on the use of redwares, except to decrease the need for storage jars. Metal vessels of various kinds were already in use for heating the multiplicity of canned goods available to consumers. The need for milk pans also decreased as refrigerated railroad cars made it possible to transport fresh milk from farmers to urban markets. Fluid milk became a practical and profitable commodity because farmers could sell their milk directly to consumers, rather than processing most of it into butter and cheese. There was no longer a need to let milk cool in earthenware pans while cream separated. Instead, milk was put into large metal containers and shipped off to market within hours of milking.

As for the third of Deetz's factors, *function*, red earthenwares, at the beginning of the period under consideration (ca. 1780), served food consumption, preparation, and storage functions, whereas refined earthenwares, for the most part, were restricted to consumption with only minor usage for storage and preparation. During the third quarter of the 18th century, ceramic vessels for food consumption, i.e., tea wares and tablewares, were made of creamware, with some older tin-glazed and white salt-glazed vessels still in use, and pearlware vessels becoming quite common. Chinese porcelain tea wares, and occasionally tablewares, were used in some households. Redwares, on the other hand, were more versatile and were used for both cooking and serving food, as well as for storage. Porringers, mugs, and small bowls were used for consumption of liquids and semi-liquid foods, such as porridges and gruels. Pans and dishes (the latter sometimes anachronistically called pie plates by archaeologists<sup>11</sup>) were used for both cooking and serving food (FIGS. 2, 3, and 4). Small dishes (called "plates" by Beaudry et al. [1991: 26], even though they have no marleys or cavettos) could have been used for individual

consumption, and larger dishes for old-fashioned communal consumption or for serving. Dishes and pans could go from the oven or hearth directly to the table, or their contents could be removed and placed in vessels that matched other tablewares, such as those made of creamware or pearlware.

Red-earthenware vessels lost their food-preparation functions when hearths and brick bake ovens were replaced by ranges and enclosed stoves for cooking. In early 19th-century terms, a "cooking stove" was an enclosed structure with provisions for cooking both on its top surface and in an integral oven. "Ranges," as defined in Brewer (2000: 45), were "a row of copper or iron vessels built permanently into brick fireboxes to the side of a fireplace." This change in cooking technology, from hearths to stoves, is most likely the primary reason for the decline in redware use during the 19th century.

In discussing the decline of red earthenwares, William Ketchum, a scholar of decorative arts in general, and ceramics in particular, stated that "the ceramic article was often less suitable to the task at hand, heavier or more fragile than its counterpart in glass, tin, or iron; and when the other materials became available, pottery [redware] quickly lost favor among consumers" (Ketchum 1991a: 15). Redwares were "less suitable to the task at hand," in this case cooking, because they were not suited for cooking on stoves. The rapid changes in temperature and more concentrated heat of a stove are better suited to metal cooking utensils. Iron and copper cooking pots were not new; they had been used since antiquity and were common in English and Anglo-American cooking. For example, settlers coming to New England in 1630 were advised to bring "a great copper kettle, two smaller kettles, an iron pot, two frying pans, two skillets, a grid iron, and a spit" (Brewer 2000: 12). Other metals were also available for fashioning into cooking vessels. Tin-plated cooking vessels had been used since the late Middle Ages, particularly in Germany. Later, enameled cast-iron cooking pots, first made in Germany about 1788, were available, especially after commercial production of these vessels began in the United States in 1867 (Miller et al. 2000: 15). American production apparently took a while to be generally accepted, as Beecher and Stowe (1869: 374),

11. As Gible (2005: 38) notes, using the term "pie plate" for relatively flat, circular baking vessels is a late 19th- and early 20th-century convention. Barber is probably the originator of this terminology for the vessels he described as "curved shallow discs with notched edges" (Barber 1970: 100), but this usage is an anachronism: Pennsylvania potters' price-lists mention "pie dishes" (see, e.g., James 1978: 87, 151, 155)—or simply "dishes" (James 1978: 160–161; Bower 1985: 278), but not, as far as has been determined, "pie plates."

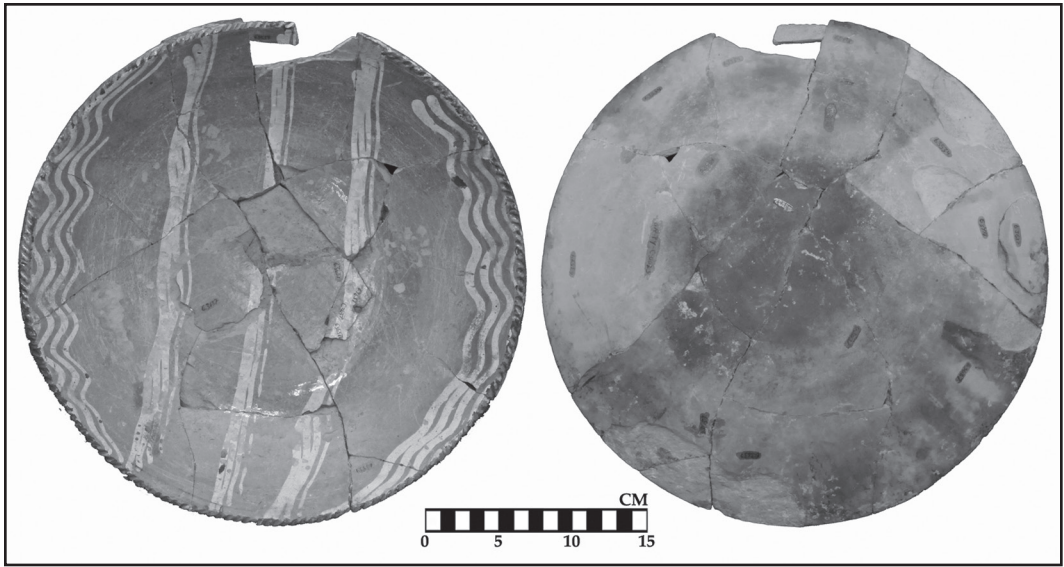


Figure 2. Dish interior and exterior. Note wear marks on the face and charring on the back of the vessel. (Image courtesy of the Pennsylvania Department of Transportation, the Federal Highway Administration, and URS Corporation; photo by Thomas Kutys, 2014.)



Figure 3. Philadelphia-made dishes. (Image courtesy of the Pennsylvania Department of Transportation, the Federal Highway Administration, and URS Corporation; photo by Thomas Kutys, 2014.)

writing two years later, stated that German iron kettles lined with porcelain were “the best.”

The initial impetus for the development of alternatives to hearth and brick-oven cooking was the growing shortage and costliness of wood for fuel in the coastal cities of colonial

America (Brewer 2000: 32–35; Diamond 2012: 111). Benjamin Franklin, ever the searcher for better and cheaper technology, possibly intended to have a European-style range installed in the new house he constructed during the mid-1760s (Brewer 2000: 45). After



Figure 4. Philadelphia-made dish. Note wear marks. (Image courtesy of the Pennsylvania Department of Transportation, the Federal Highway Administration, and URS Corporation; photo by Thomas Kutys, 2014.)

the Revolution, the famous Count Rumford (born in Massachusetts as Benjamin Thompson, but, after taking the side of the Crown in the war, an emigrant to Europe) developed plans for both a more efficient fireplace and for a range with cast-iron kettles and roasting ovens set in brickwork. His description of this contraption as the “machinery of a kitchen” (Reber 2012) speaks to an emerging, likely gendered attitude of the time: cooking was to be mechanized and made efficient (see also Brewer 2000; Yentsch, this volume). Other men, most of whom had no direct experience in the kitchen, came up with their own designs for kitchen machinery. In 1801, Charles Wilson Peale, the Philadelphia artist and entrepreneur who had developed his own version of a range, wrote to Thomas Jefferson that he had embraced Rumford’s ideas for cooking apparatus that would “lessen labour, ward off danger, ensure cleanliness, commend the power of fire, and economise fuel” (Brewer 2000: 47). Peale claimed that the mistress of the house and her daughters would “find amusement [rather than] trouble ... in ... their Kitchen”

(Brewer 2000: 48). He added that “the only Trouble of the Kitchen falls on the scullion,” i.e., that unfortunate person who had to empty and scrub out the permanently fixed pots (Brewer 2000: 45). A woman without servants (free or enslaved) would find this a distinct drawback.

Ranges never became popular in private homes, at least in part because they were expensive to install and after construction became an integral part of a building’s structure. When a family moved, it would have had to leave the expensive range behind. Cooking stoves were the most common successor to the hearth and bake oven. Stoves used for heating, both five-plate stoves that were inserted into chimneys or six-plate, free-standing stoves, had been brought to the colonies with settlers from Germany and other northern European countries. Such stoves had been made in the colonies as early as the late 1640s at the Saugus and Braintree (Massachusetts) foundries (Brewer 2000: 26), but cooking stoves were very rare. In the 1760s American iron manufacturers began to produce



stoves designed, at least in part, for cooking. These were ten-plate stoves, i.e., a six-plate stove that included a small four-plate oven (Brewer 2000: 37). The ovens, however, were too small to be practical. Production of workable cooking stoves began to expand after the Revolution, particularly after the first decade of the 19th century. Improvements in iron manufacturing, the development of canal transportation for raw materials and finished products, and the quest of American inventors for modern, more efficient and more scientific machines of all sorts led to their development. There is often a period of great diversity and innovation associated with the development of new technologies, and this was true for cooking stoves—between 1835 and 1839, for example, over 102 patents were granted for different cooking-stove models (Brewer 2000: 67). Of course, many of them were never developed or were short lived, but consumers still had a myriad of designs from which to choose.

Cooking stoves provided both a surface on which to cook and ovens in which to bake and roast. They demanded new cooking methods that might have been hard to learn for women used to the requirements and techniques of open-hearth and brick-oven cooking. Perhaps there was a generational switch, and young women setting up housekeeping might have been more open to the new technology than older cooks who had been preparing meals in the same way for many years. Becky Diamond, in her study of one of the earliest cookery schools in the United States, Mrs. Goodfellow's in Philadelphia, conjectured that Mrs. Goodfellow began her instructions using an open hearth, but switched to stove cooking when she moved in 1835, because insurance surveys for the new location noted that the house contained a stove and two ovens.<sup>12</sup> Diamond speculated that Mrs. Goodfellow might have continued to use the brick ovens for baking, while using the stove for other food preparation (Diamond 2012: 112).

The switch from open-hearth to stove cooking was a gradual one, but the pace picked up at mid-century. As an example from one northeastern city, in a sample of probate inventories from Providence, Rhode Island, Priscilla Brewer (2000: 84–85, 126) found that

in 1820 and 1825 no probate inventories included cooking stoves; in both 1830 and 1835 16% mentioned cooking stoves; by 1840 the number was up to 56%. Cooking stoves were initially more common in cities than in the country because fuel was more expensive and harder to come by, while iron cookstoves were more available.

Some cookstoves did make their way into the countryside. In the reminiscences of his youth, the 19th-century children's author James Baldwin recalled his mother's reaction when his father brought a cookstove home to their Indiana homestead in about 1850. Mr. Baldwin "laid out the greater part of his money [from a sale of wheat] for a wonderful new cookstove, with utensils to match and five joints of pipe" (Baldwin 1914: 396).<sup>13</sup> The hearth fire was put out and the cookstove was installed in the hearth with its pipe running up the chimney.

Mother's eyes filled with tears as the transformation was going on. She was told that the cookstove was to relieve her of a great deal of hard labor; there would not be more backaches from much bending over skillets and frying pans on the hearth; no more lifting of heavy kettles from the crane; no more fussing over hot coals or a superabundance of ashes. But the thing was not to her own choosing, and she looked upon it with suspicion and grave doubts. ... As for myself, I felt that we had made a great stride in the direction of progress, and I was puffed up with vanity when I thought of unfortunate neighbors who were too poor to buy a stove; but, oh, how I missed the bright blaze and the genial warmth of the open fire (Baldwin 1914: 407–409).

Baldwin did not describe the "utensils to match" the cookstove, but they were more than likely made of metal.

The gradual switch from hearth and brick-oven to stove cooking can be seen in cookbooks of the period: instructions for making some foods mention hearth cooking, and others require the use of a stove (see also Yentsch; this volume). Many recipes in the Lee 1832 cookbook were for open-hearth and bake-oven cooking. Mrs. Lee noted that covers of "boiling-pots" must "fit close" to prevent smoke from "insinuating itself" under the lid and affecting the taste of food. She discussed

12. Eliza Leslie, the noted cookbook and etiquette-book author, was one of her pupils.

13. George L. Miller kindly brought this work and its discussion of a new cookstove to my attention.

baking meats in bake ovens and mentioned sending meat to the baker to be cooked in commercial ovens. There were also recipes that mention cooking over or in a stove, however, and some that gave stove or hearth cooking as alternatives. The word “range” is not found in this 1832 cookbook. This is not surprising, as ranges at this time were best suited to institutional settings or the homes of the wealthy, due to their immovability, initial expense, and difficulty of cleaning (FIG. 5).

Nevertheless, Beecher and Stowe, writing about 35 years later, discuss the merits of ranges vs. stoves:

The most common modes of cooking, where open fires are relinquished, are by the range and the cooking-stove. The range is inferior to the stove in these respects: it is less economical, demanding much more fuel; it endangers the dress of the cook while standing near for various operations; it requires more stooping than the stove while cooking; it will not keep a fire all night, as do the best stoves; it will not burn wood and coal equally well; and lastly, if it warms the kitchen sufficiently in winter, it is too warm for summer. Some prefer it because the fumes of cooking can be carried off; but stoves properly arranged accomplish this equally well (Beecher and Stowe 1869: 69).

Their phrase “where open fires are relinquished” implies that, even at this late date, not all cooks either wished to or had been able to abandon open-hearth cookery, even though stoves were so common at the time that the urban family, depicted in an 1870 painting by Henry Mosler, had one as part of its personal furnishings that moved with the family from place to place (FIG. 6).

At the present time, as part of the slow-food and traditional-cooking movement, there is an increased interest in cooking in clay. Modern earthenware vessels can be used with stoves, but care must be taken. Paula Wolfert, a contemporary author who specializes in using earthenware vessels, says that they can “expand and contract enough that some of them can withstand direct heat. ...When using earthenware, either on the stovetop or in the oven, moderation is always key, as quick changes of temperature may cause the clay to crack” (Wolfert 2009: xiii). The earthenwares to which she refers are the products of modern industrial potteries, not lower-fired redwares. She also recommends the use of an asbestos pad for stove-top cooking, an item not available to 19th-century cooks. When used in front of a reflector oven or in a Dutch oven, redware vessels could be placed on trivets, sherds, pieces of

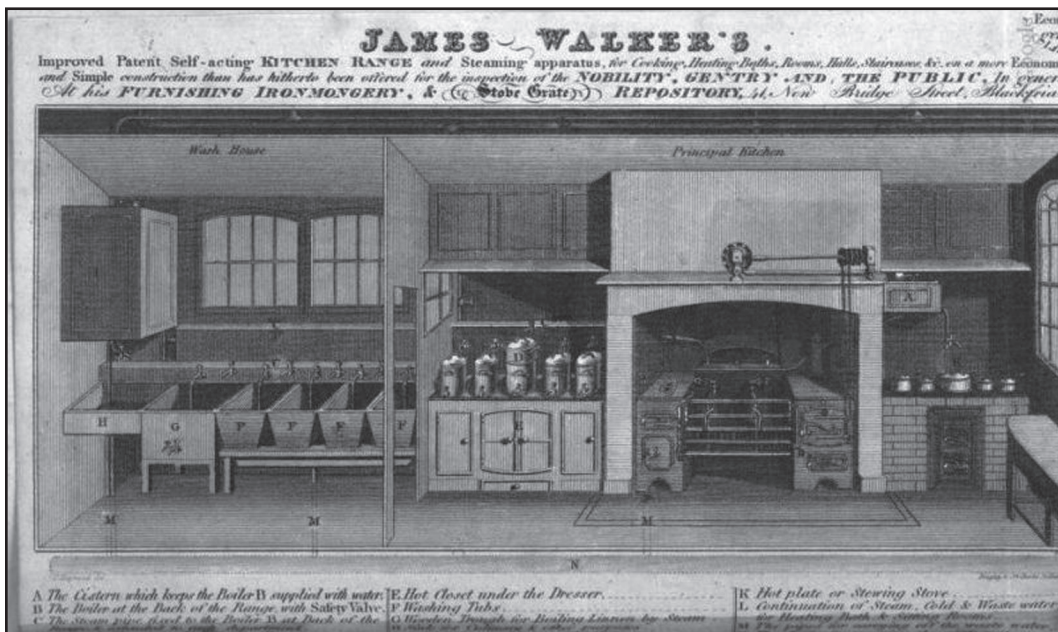


Figure 5. James Walker's Improved Patent Self-Acting Kitchen Range, 1818. (Hayward 1818).



Figure 6. *Just Moved*, painting by Henry Mosler, 1870. (Image courtesy of the Metropolitan Museum of Art, New York, Arthur Hoppcock Hearn Fund 1962 62.80, [www.metmuseum.org](http://www.metmuseum.org).)

brick, or small stones to separate them from the hot metal. This would not be practical for stove-top cooking, however. Wolfert (2009: xiii) notes that “[e]arthenware pots have a wonderful ability to coddle food, bringing out bright natural flavors and aromas and producing an unctuous tenderness.” This might be a bit of modern hyperbole, but redware dishes do hold heat very well and, as a result, cook evenly. In an experiment conducted by the author and a colleague using a replica redware dish with slip decoration, made by a craft potter using clays she dug herself from the banks of the Delaware River, an Indian pudding cooked in a dish over a charcoal fire (using a trivet) was still bubbling five minutes after it was taken off the fire (Janowitz and Bieling 2001).

During the 19th century, many people saw the abandonment of the hearth and bake oven

as an unpleasant and unnecessary concession to industrialism and modern life—see Brewer (2000: 98–193) for examples of this unease. At the same time, the ideal of the modern, proper home that made use of all available technology was a dominant cultural goal. Baldwin acknowledged both points of view in his memoir, *In My Youth*, when he remarked that his family’s new cookstove “typified the passing of the régime of the middle ages and the dawning of another order, more modern, more civilized if you will have it so, but whether more conducive to happiness, who shall say” (Baldwin 1914: 407). The subtitle of Beecher and Stowe’s book, *A Guide to the Formation and Maintenance of Economical, Healthful, Beautiful, and Christian Homes*, illustrates this common theme. Part of this ideal was the requirement for absolute cleanliness and proper hygiene in preparing and serving



food, and most cookbooks included sections on the proper cleaning of kitchen and table vessels. Beecher and Stowe, for instance, devoted two complete pages to the proper way to wash table dishes, including step-by-step instructions for achieving “the desired care and neatness” (Beecher and Stowe 1869: 372–373). Beecher had included the same instructions in an earlier work, complete with a suggestion that these rules should be written out and hung up by the sink (a fixture that she recommended should be included in all properly outfitted new and remodeled kitchens) for the benefit of servants or other inexperienced dishwashers (Beecher 1845: 318–319).

Red earthenwares would have been difficult to restore to a state of neatness after only a few uses (FIGS. 2 and 7). Their glazes craze and allow various substances to discolor their faces, and their unglazed backs are susceptible to staining and charring. Likewise, their porosity and susceptibility to acids may have made their use undesirable to the proponents of the domestic-reform movement of the late 19th century, who equated healthy food with cleanliness and standardization of tools and cookware. For example, the domestic reformers who operated the New England Kitchen, which sold “clean, wholesome [cooked] food” to the urban poor (Levenstein 1988: 50), were pleased with the “sharp rise in the cleanliness of the dishes brought to be filled,” after their kitchen had been in operation for several months (Levenstein 1988: 54). The “dishes to be filled” were not described, but it is not likely that they were redware vessels, with their scratched and chipped interior glazes, and stained, unglazed exteriors.

## Conclusion

Foodways studies by historical archaeologists commonly include descriptions of artifacts and faunal materials, and often include an assessment of the relative expenditures that each household chose to make when purchasing ceramics, based on the ceramic price indices developed by George L. Miller (Miller 1991). The impact of Miller’s studies concerning the consumption of goods and commodities in the foodways complex has been to make us, as historical archaeologists, think about the costs of the household goods and food remains we excavate. We need to remember, however, to include discussions about the functions of artifacts. In the case of red-earthenware vessels in the Northeast, the period from 1780 to 1880 saw great changes in food-preparation technology, which affected vessel functions. It was a time of innovation and a push toward modernization of many aspects of life, including food preparation. One of the most obvious changes, from an archaeological point of view, is a decline in the relative numbers of red earthenwares in the ceramic assemblages we excavate in New England and the Middle Atlantic. Many intersecting factors led people to stop using redware food-preparation vessels, including greater availability of other types of cookwares, a desire for cleaner-looking vessels, and a growing awareness of the effects of lead glaze, but a major cause for this change in the foodways complex was the shift in cooking technology from hearths and bake ovens to cooking stoves. Vessels made of other materials replaced redwares on the cooking surfaces and in the ovens of cast-iron stoves, reducing the

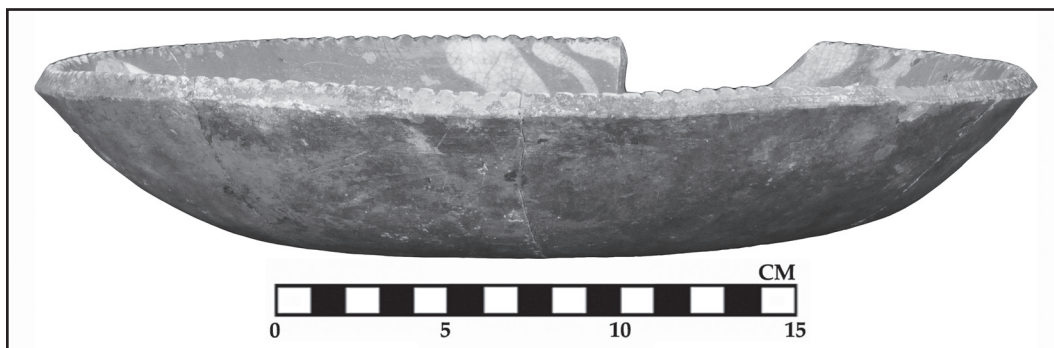


Figure 7. Philadelphia-made dish profile. Note charring around the rim. (Image courtesy of the Pennsylvania Department of Transportation, the Federal Highway Administration, and URS Corporation; photograph by Thomas Kutys, 2014.)



demand for forms, in particular dishes and pans, that had been essential for 17th- and 18th-century food preparation.

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