

From
Teacups
to
Toilets

A Century Of Industrial Pottery
In Trenton, Circa 1850 To 1940

Made possible by the New Jersey
Department of Transportation

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Commemorative plate made in 1929 by the Scammell China Company to celebrate the 250th anniversary of the settlement of Trenton.

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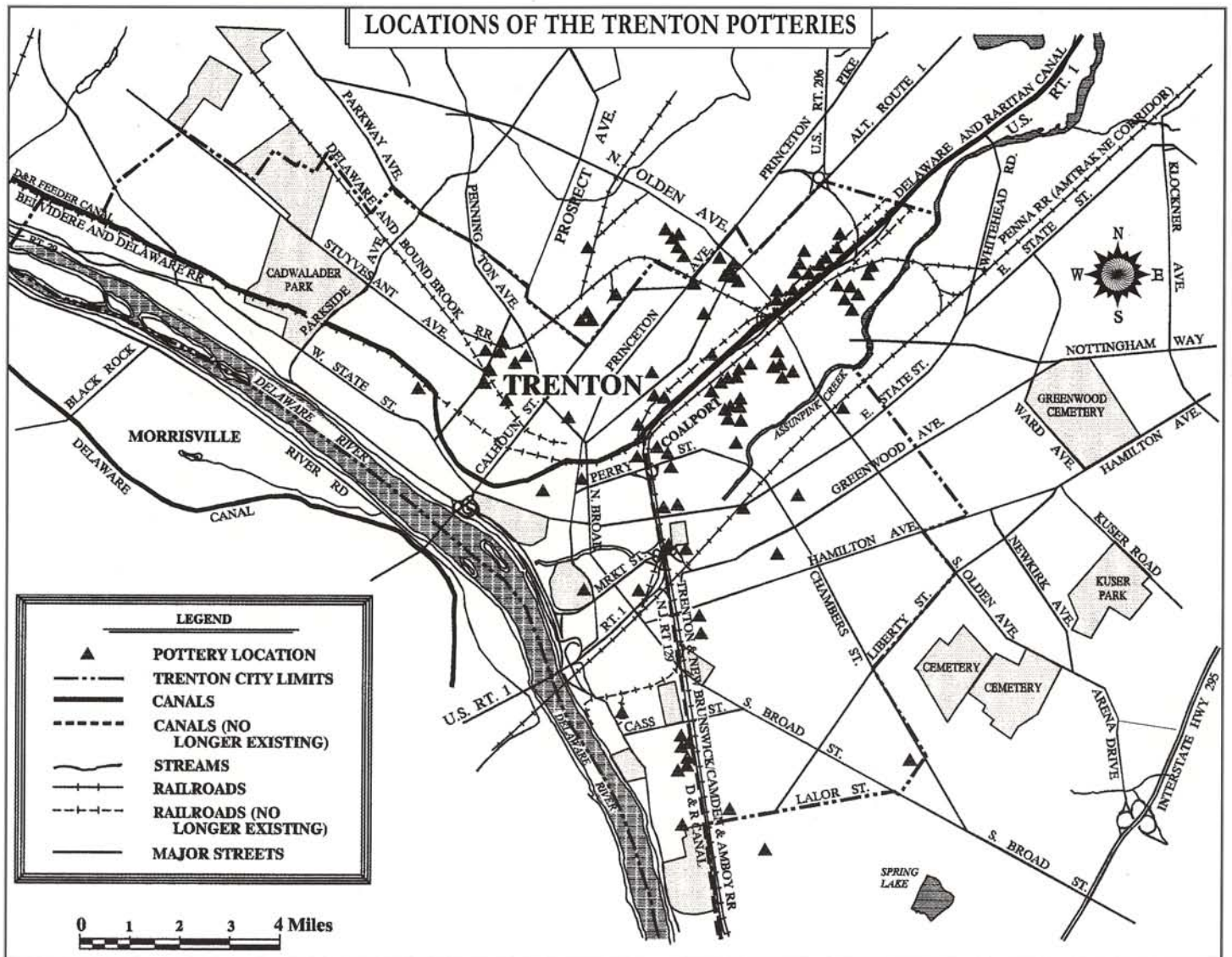
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Introduction

From Teacups to Toilets was originally published as a teacher's guide for introducing students to one of Trenton's greatest industrial endeavors – the mass production of pottery for a period of almost a century during America's Industrial Revolution. This booklet covers a variety of issues and subjects related to the industry, and is intended to instill a sense of pride in Trenton's industrial accomplishments and offer a link to the city's not-so-distant past. It should be of interest to all who are interested in Trenton's pottery industry.

The information that follows has been gathered from a variety of sources. A list of the most pertinent and accessible published materials (books and articles) is provided in the back for educators and students who may wish to pursue the subject further. Much of the information is derived from primary sources available in the Trentoniana: Local History and Genealogy Collection at the Trenton Public Library, where archival materials such as historic maps, photographs, industrial censuses, tax records and city directories were consulted. Students interested in the Trenton potteries should be encouraged to visit the Trenton Public Library which holds a wealth of information on all aspects of the city's past.

A database of information collected during this project is available for public use at selected libraries and research facilities in the Greater Trenton area – for example, the Trenton Public Library and the Trenton City Museum.



Notable pieces and a variety of facets of the pottery industry are highlighted in this wood engraving from Frank Leslie's Illustrated Newspaper, June 23, 1888. New Jersey State Museum

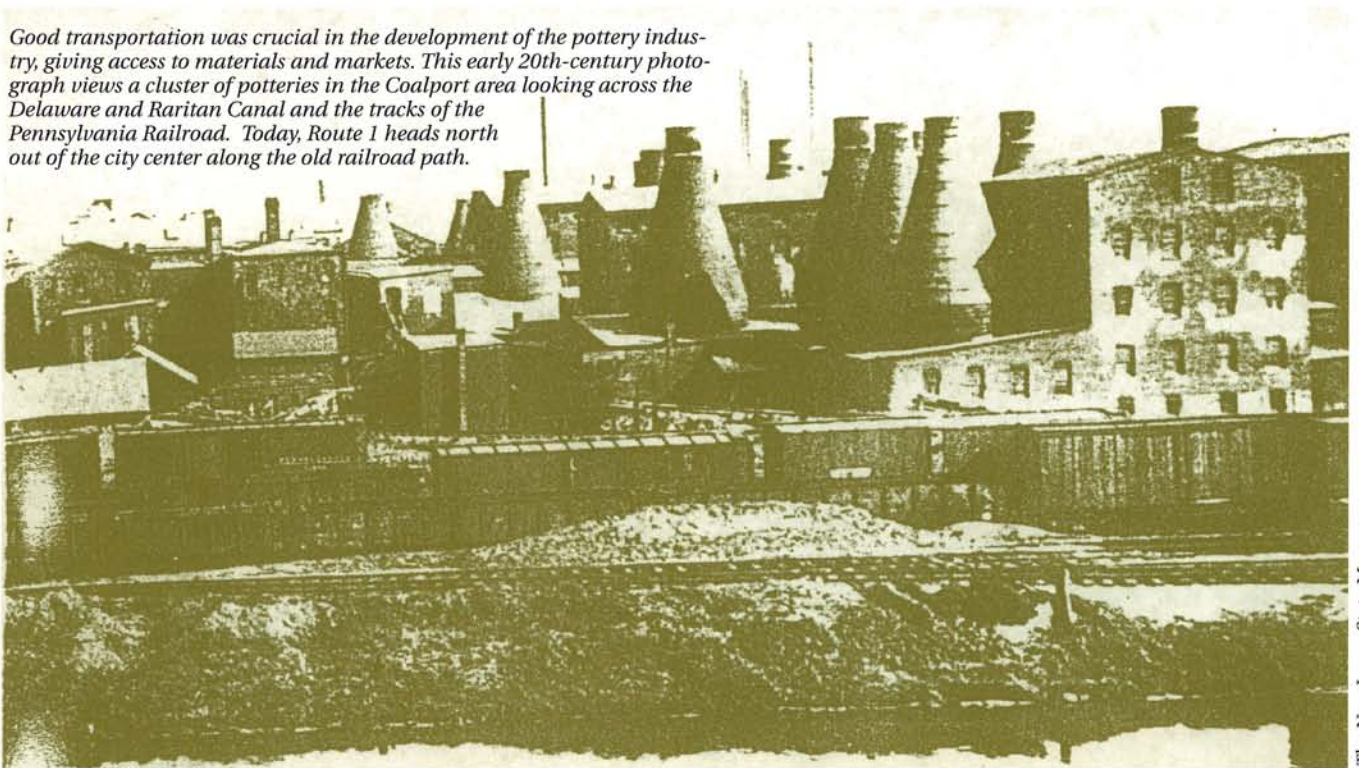
*Please Note: Terms included in the glossary are shown in bold italics the first time they appear in the text. In the section titled **Entrepreneurs and Workers**, key potters, potteries, and products are also bolded in regular type the first time they appear.*

The Rise and Fall of the Trenton Potteries

In the second half of the 19th century, Trenton emerged as the premier pottery-producing center in the eastern United States. In 1850 there was one traditional *redware* pottery in the city, but by the turn of the century there were close to 50 factories churning out a variety of utilitarian ceramics. The city became known as the “Staffordshire of America,” a reference to the industrial potteries of the English Midlands, where many Trenton potters learned their trade before emigrating to the United States. Trenton products were supplied to markets throughout North America and overseas, chiefly in the form of hotel china, *sanitary ware*, *electrical porcelain* and art pottery. At the peak of the industry, between roughly 1880 and 1920, only one other industrial center in the United States (East Liverpool in Ohio) came close to challenging Trenton as the nation’s leader in pottery manufacture.

The reasons for the growth of the Trenton potteries during the second half of the 19th century lie in the city’s superior location in relation to raw materials and markets, and in its role as a hub in the rapidly developing regional transportation network. Canals and railroads both played their part in supporting the industry. The Delaware and Raritan Feeder Canal, the Delaware Canal and the Belvidere-Delaware Railroad brought coal from Pennsylvania to power equipment and to fuel the kilns. The main stem of the Delaware and Raritan Canal, the Camden & Amboy Railroad and the Delaware & Bound Brook Railroad (both later absorbed into and supplemented by the Pennsylvania Railroad system) brought clay and *tempering materials* in addition to coal. These latter transportation routes were also used to ship the finished products out to consumer markets across the country. Trenton’s geography was not, of course, the only reason for the growth of the potteries. Other important factors were the convergence and interaction in the city of many *entrepreneurs* and *master potters*, the city’s acceptance of industrialization (not just in pottery manufacture, but also in iron and steel, textile and rubber manufacture), and the ready availability of capital and industrial labor.

Good transportation was crucial in the development of the pottery industry, giving access to materials and markets. This early 20th-century photograph views a cluster of potteries in the Coalport area looking across the Delaware and Raritan Canal and the tracks of the Pennsylvania Railroad. Today, Route 1 heads north out of the city center along the old railroad path.





New Jersey State Museum

Greenware is sanded and sponged in the Lenox factory on Prince and Mead Streets about 1923.

The first true industrial potteries in Trenton appeared in the mid- to late 1850s, and by 1860 at least four were in operation. Most were located just east and northeast of downtown along the Delaware and Raritan Canal and the Trenton to New Brunswick branch line of the Camden & Amboy Railroad, two transportation routes that ran side by side through the outskirts of the city. These early factories began by producing utilitarian *yellowwares* and *whitewares* for household use.

From 1860 to 1875 the number of industrial potteries in the city expanded. Again, most new factories were built along the canal and railroads, while the surrounding areas underwent residential development for pottery workers. During this period a section of Trenton known as Coalport emerged around a group of railroad sidings just north of the city where shipments of coal were unloaded for industrial use. Immediately adjacent to the sidings, a cluster of some of Trenton's largest and most notable potteries grew up in the 1860s and 1870s -- the Etruria Pottery Works, Coxon & Company's Pottery (later the Empire Pottery), John Maddock & Sons Coalport Works (later the New Jersey Pottery Company) and the Mercer Pottery (later taken over by John Moses). By the late 1870s, the pottery industry had also expanded southeast of the city along the canal and railroad into the neighboring community of Lambertton. By the early 1890s, the dominant pottery in this area was the Maddock Pottery Company's Lambertton Works (later taken over by the Scammell China Company).

There was an explosion of growth in the industry during the 1880s and early 1890s, accompanied by a diversification into a number of new product lines, notably in sanitary earthenware and electrical porcelain. Art ceramics also began to emerge as an important Trenton specialty. During this decade, the Ceramic Art Company (later known as Lenox, Inc.) took root in the city. The geographic distribution of potteries within the city was also extended with new factories like the Delaware Pottery (later the Artistic Porcelain Company) being established in the Prospect Street area, west of the city center, along the Delaware & Bound Brook Railroad.

Between 1880 and the Depression in the late 1920s and early 1930s, Trenton reached its zenith as a center of industrial pottery production. Factories large and small ranged across the city, tied to the all-important canal and railroad network that gave access to the outside world. City directories published between 1901 and 1918 list between 38 and 47 pottery establishments, reaching a peak of 52 facilities in 1924. The number of plants dwindled to around 30 at the time of the Depression and by the end of World War II only 18 were listed as being in operation. The Depression was responsible for much of the industry's decline, but other factors, such as labor disputes, resistance to the introduction of new labor-saving technologies, and the increasing use of plastics in the home, also played a role. Today, only a handful of industrial potteries -- the Bartley Crucible and Refractories Company, the General Porcelain Manufacturing Company, the National Ceramic Company, and the Star Porcelain Company -- still operate within the city limits. Lenox, Inc., historically one of Trenton's most eminent potteries, has moved out of the city, but is still a New Jersey-based, nationally recognized producer of quality ceramics. Cybis Porcelains and Boehm, Inc., both founded after 1940, are two major manufacturers of art pottery in the Trenton area today. American Standard, Inc., the successor to Thomas Maddock's Sons, operates a major sanitary ware manufacturing plant in Hamilton Township.



The Process of Making Pottery



The main ingredient in pottery is clay, a material that is pliable when moist, but which hardens when fired. Clays are made up of decomposed rocks and minerals that have been laid down in lake beds and as marine sediments; they are also deposited along river valleys through the actions of rivers and streams. Clays from different areas and parts of the world are distinctive, and their composition depends upon the parent material from which they were formed as well as on their depositional environment. Some clays are well-suited to pottery manufacture; others are not. The Raritan Formation of New Jersey's Inner Coastal Plain contains thick *Late Cretaceous* clay beds laid down some 70 to 100 million years ago in a marine environment. These clays are excellent for making pottery and bricks and were widely used in the Trenton factories as well as by other pottery producers elsewhere in New Jersey and along the eastern seaboard. Other specialty clays were also shipped in to Trenton from other states and from overseas.



Trades and Occupations, Dover Books

In the pottery factories of Trenton, mechanized industrial processes eventually replaced most of the work traditionally done by hand, making for uniform wares. This view shows a traditional potter's workshop with the potter throwing a pot by hand using a kick wheel.

While most clays, when wet and well-mixed, are quite *plastic*, they often require the addition of less pliable filler materials to make a good quality ceramic product. Common fillers or tempering materials used in industrial pottery manufacture were ground-up *flint*, *feldspar* or *talc*, which reduced shrinkage of the clay body during firing and improved the clay's drying behavior and strength.

There are three broad categories of fired pottery: *earthenware* is fired at temperatures below approximately 1100 degrees Centigrade (2010 degrees Fahrenheit) and is usually porous, thus requiring a glaze to make the clay body watertight; *stoneware*, fired at temperatures above approximately 1200 degrees Centigrade (2190 degrees Fahrenheit), produces a harder and stronger fabric, but is usually still porous and requires a glaze; and *porcelain*, fired at approximately 1300 degrees Centigrade (2370 degrees Fahrenheit), so the glaze and clay body fuse or *vitrify* into a completely watertight material. The type of pottery produced depended upon the type of clay used, the fillers added, and the temperature at which the ware was fired.

Trenton's industrial potteries mass-produced large quantities of identical ceramic products and relied on fixed, closely guarded recipes (often written in code). In this manner, the factories were entirely different from the traditional, individualistic handcraft pottery shops in which the *pug mill* (for mixing clay) and the *kick wheel* (for shaping vessels) were the only forms of mechanization in widespread use. Industrial pottery manufacture developed first in 18th-century Europe and flourished especially in Staffordshire, England. It was further characterized by more consistent production techniques (such as the use of molds), an organized and skilled labor force, an improved and expanding supply of raw materials (especially, coal for fuel), and an expanding market for good-quality ceramics.

Industrialization pervaded virtually every aspect of pottery manufacture in the Trenton factories. Dry powdered clay and filler materials were mixed with water in a *blunger* (a vat with a mechanized paddle) until a *slip* – a clayey fluid the consistency of cream – was created. After blunging, the slip was passed through vibrating screens, known as *lawns*, to remove pebbles, wood or other organic materials. After impurities were removed, the slip was poured into giant canvas bags. The water was then pressed out, leaving slabs of clay which were stored in a cellar to settle and age, thus making the clay more plastic and easier to work with.

After aging, the clay was ready to be formed into shapes. Sometimes the clay was shaped by master potters in the traditional manner on a *potter's wheel*, but this was

neither cost nor time effective. More elaborate mechanized shaping techniques involved pressing slabs of clay into **press molds** or pouring liquid clay into **slip molds**. Circular pieces, such as plates, were made on a **jigger**, a potter's wheel with a metal band that fit into a plaster mold. Clay blanks were then pressed flat onto the **jigger wheel** and the worker forced the clay into the mold with a metal profile tool. Techniques such as these resulted in mass-produced, consistently shaped items that could be made much more quickly than by traditional potting methods.

In the early 20th century two other industrial techniques were introduced: **extrusion** and **dry pressing**. With the former technique, the clay body was extruded under high pressure using a de-airing machine or hydraulic cylinder press. This method was used particularly in the manufacture of **electrical porcelain**, producing blanks that could then be shaped on a lathe. Dry pressing involved pressing semi-dried clay slabs into metal molds, a method that was widely used in the production of electrical porcelain, bathroom fixtures, tiles and refractory brick.

Once individual pieces were shaped, they were next allowed to dry in a room called the green room. After inspection for defects, intact pieces were prepared for **bisque (or biscuit) firing**, a first heating that fused the ingredients in the clay body into a hard ceramic ware. Following bisque firing, pieces were glazed and then **glost fired**; if decorated, a third firing was necessary to fuse the decoration to the body. Firing was one of the most unpredictable procedures in the manufacturing process and easily prone to failure. Skilled kilnmen loaded the wares into **saggers**, large clay boxes that protected the pottery while it was being fired. While in the kiln, individual pieces were kept from touching each other and fusing together by using variously shaped bits of clay kiln furniture. Items of kiln furniture came in a variety of shapes and sizes, and were known by such colorful names as **wads, pips, stilts** and **cranks**.

Two main types of kiln were used in the Trenton potteries. Most common were **updraft kilns**, also known as **bottle kilns**, which were 14 to 24 feet in diameter and gave Trenton its distinctive skyline in those parts of the city where the pottery firms were concentrated. Bottle kilns were fueled from below by coal loaded into a fire chamber; hot gases thus passed upward through the wares and out through a chimney at the top of the kiln.

Lenox China, George Sanford Holmes



Wares are placed in saggers to protect them from fluctuations in the intense heat of the kiln. Here, workers loading a kiln carry saggers on their heads.

The second type of kiln, not perfected until the 20th century, was the **tunnel kiln**. As its name implies, this type of kiln comprised a tunnel between 300 and 400 feet long built of refractory brick, with a series of burners to heat the kiln and fans to circulate hot air within it. Trucks or cars carrying the wares slowly passed from one end of the kiln to the other, taking the ceramics from a warming zone to a firing zone, then to a cooling zone to emerge fully hardened at the other end of the kiln.

If the wares were to be decorated, this was typically done after bisque and glost firing. Decorating was an important and highly skilled part of the pottery industry and was frequently done by small specialty firms. Decorative techniques included the application of gold and colored bands and transfer print patterns, as well as hand painting. Stenciling, embossing, stamping and gilding were also used in the decoration of the more finely detailed wares.

A key task in the production process involved the addition of a **makers mark** which served as a means of identifying the manufacturers of individual pieces. Usually marks were stamped on the base of a piece prior to the bisque firing, and there was sometimes deliberate misrepresentation of wares by Trenton potters. By applying misleading motifs, manufacturers tried to get people to believe that their wares were actually produced in England, whose products were held in high esteem by consumers.

Entrepreneurs and Workers

Trenton emerged as a leader in pottery manufacture in part because master potters and entrepreneurs with money to invest both saw the potential of the city as an industrial center. Many potteries were established by partnerships of two to four investors, some of them potters, others venture capitalists. These partnerships were often fluid with stockholders selling off their interests and then realigning with different, sometimes newly established companies.

There were many prominent individuals and families associated with the Trenton potteries. **Charles Hattersley**, for example, a cutlery manufacturer by trade, is credited with first recognizing the advantages of establishing an industrial pottery in Trenton. In 1852 he set out to start his own business specializing in ceramic hardware. Having no experience in making pottery himself, he lured a number of master potters to Trenton from East Liverpool, Ohio. Among them were James Taylor, Henry Speeler and William Bloor who joined him in his venture. While Hattersley was in England learning about modern manufacturing techniques, his three partners bought the site he had in mind for his pottery. On his return, Hattersley purchased an alternate site where he established the **City Pottery**, employing William Young, Richard Millington and John Astbury to operate the factory. Within a few years Young left to set up his own pottery and by 1856 Hattersley had quit the pottery business entirely. Young proceeded to develop the first

effective whiteware factory in Trenton at the **Excelsior Pottery**, producing a wide variety of tableware and hardware.

Joseph Ott and his nephew, **John Hart Brewer**, were two other seminal figures in the Trenton pottery industry. Ott joined William Bloor and Thomas Booth in founding the **Etruria Pottery** in 1863 where initially cream-colored and white granite wares were produced. By 1871 the factory was wholly in the hands of Ott and Brewer. Always innovative, the Etruria Pottery was one of the few factories at the time to employ an in-house decorator and the company moved increasingly into producing fine quality wares and art pottery. **Porcelain sculpture**, usually fashioned with a type of clay body referred to as **parian ware**, became a specialty resulting in such notable pieces as the **Cleopatra bust** and a pair of the **Baseball vases**, designed by artist **Isaac Broome** for the Centennial celebrations in 1876. Around the same time, in an effort to imitate Irish **Belleek ware**, Ott and Brewer perfected what became known as ivory porcelain. Brewer eventually became a powerful political figure in both the New Jersey Legislature and the United States Congress, where he pursued protective measures for the pottery industry, including the imposition of tariffs on imported ceramic goods.

Another innovative pioneer in the Trenton pottery industry was **Thomas Maddock**. Born in England in 1818 and apprenticed there as a potter, he came to the United States in 1847 to establish his own pottery decorating business. In 1873, Maddock joined Richard



The Polished Earth, Archibald M. Maddock II

Trenton entrepreneur Thomas Maddock was largely responsible for developing the mass production of sanitary ware in the United States. He was also instrumental in perfecting the toilet flushing mechanism we still use today.



Lenox China, George Sanford Holmes

Fine porcelain wares are modeled at the Lenox pottery in Trenton.

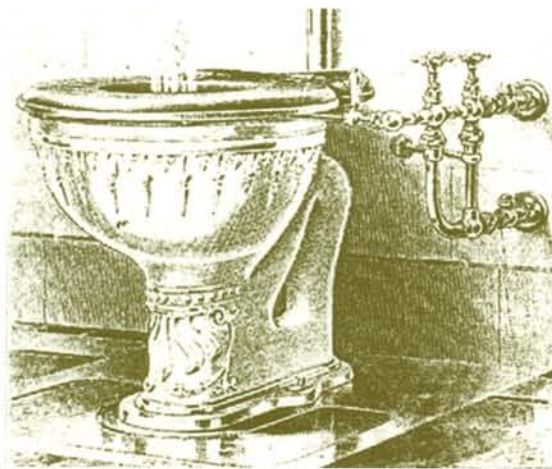
Millington and John Astbury in operating the **Carroll Street Pottery**; today the former pottery buildings at this site house the Trenton Rescue Mission. This firm produced dinnerware, but Maddock was more interested in producing good quality sanitary earthenware, such as toilets, bathtubs and sinks. After much perseverance, he perfected these items and went on to receive many patents for toilet design. Maddock was also largely responsible for devising the flushing mechanism used in today's toilets. However, his innovations did not immediately convince the public to buy his products, so he imprinted his American-made toilets with the words, "Best Staffordshire Earthenware made for the American Market," fooling enough people into thinking that they were buying English toilets, and eventually leading to the success of his sanitary ware. As he gained increasing control over the Carroll Street Pottery, he shifted the production emphasis from tableware to sanitary ware. By 1891 almost all of the sanitary ware sold in the United States originated in Trenton, but a labor dispute that year resulted in the city losing its grip on the industry. Even so, **Thomas Maddock's Sons** continued to produce sanitary ware into the 1920s. In 1929 the company was purchased by **American Standard, Inc.**, which continues to operate a facility in Hamilton Township.

Walter Scott Lenox was born in Trenton in 1859 and decided early on in life that he wanted to be a pot-



Lenox China, George Sanford Holmes

A parian ware bust of Walter Scott Lenox, founder of Lenox China, who was at the forefront of Trenton's art pottery industry from the 1880s until his death in 1920.



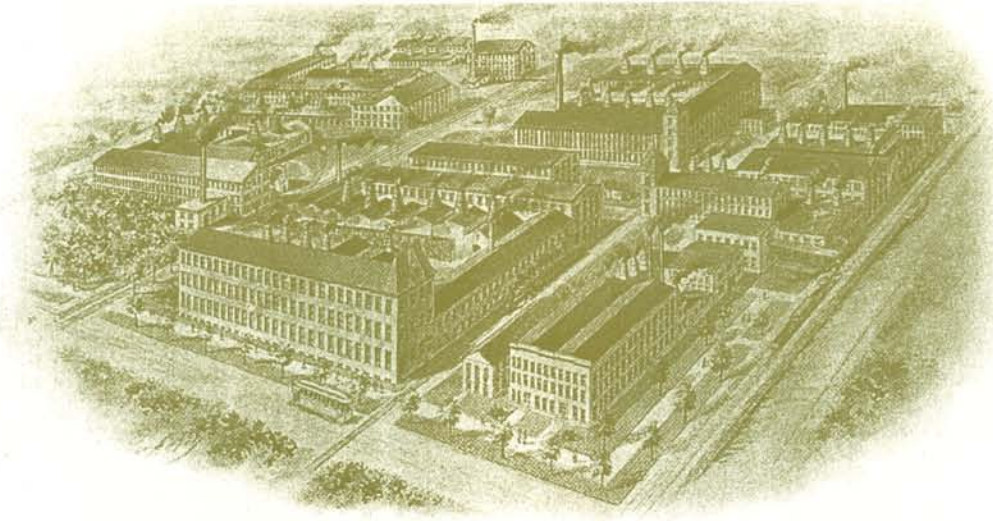
The Polished Earth, Archibald M. Maddock

A turn of the century bidet of the type manufactured by Thomas Maddock's Sons.

ter. He served his apprenticeship with Elijah Tatler, became skilled in the techniques of pottery decoration and rose to become art director for Ott & Brewer and later **Willets Manufacturing Company**. In 1889 he joined with **Jonathan Coxon, Sr.**, formerly a superintendent with Ott and Brewer, to found the **Ceramic Art Company**. By 1906 Lenox had introduced his now-famous tableware and reorganized the company as **Lenox China**. In 1895 Lenox was stricken with a disease that caused him to gradually lose his sight as well as the use of both legs, but rather than retire, he hired **Frank Graham Holmes** to develop a renewed sense of design. By the time of Lenox's death in 1920, his china had earned a reputation as one of the finest wares in the United States, gracing the table at the White House and other prominent residences throughout the world. Lenox was also one of the first firms to sell its wares by the piece, and not just in whole sets, which added to their popularity. Still in operation today in New Jersey, Lenox is one of the few ceramic companies that can trace its origins back to the height of Trenton's pottery industry.

Trenton's industrial potteries required skilled workers, or journeymen, at various critical stages in the manufacture of their wares. The *slipmaker* mixed the ingredients that would form the clay body; *throwers* and *jiggermen* shaped the pieces; the *green room* inspector determined if the wares were of good enough quality for bisque firing; *saggermakers* made saggors for the kilns; *kilnmen* loaded and fired the kilns; *glazemakers* mixed the glazes; *dippers* dipped the bisque wares into the glaze; *gilders, printers*, and other skilled decorators executed various decorative styles; expert *packers* packed the wares for shipping.

Not all the laborers employed by the potteries



ENTERPRISE POTTERY DELAWARE POTTERY CRESCENT POTTERY
EQUITABLE POTTERY EMPIRE POTTERY IDEAL POTTERY

Trentoniana Collection, Trenton Public Library

THE TRENTON POTTERIES COMPANY

A composite engraving of the six plants that made up the Trenton Potteries Company (established 1892), which was the city's largest pottery conglomerate. The company specialized in the production of sanitary ware and was the chief competitor of factories run by the Maddock family.

were considered skilled, and at each stage of production the skilled journeymen were assisted by apprentices and unskilled helpers. Except for the apprentices, the journeymen's helpers were paid by the journeyman himself, and not by the owners of the pottery. Since most of the tasks performed in the potteries were paid for on a piece-work basis, it was in the interest of the skilled worker to hire unskilled laborers to do those tasks that might prevent him from maintaining his own output. Thus, jiggermen hired *runners* to carry clay from the storage room to the clay room, *moldrunners* to carry freshly formed ware from the clay room to the drying room, and finishers to remove defects from the completed wares. Dippers hired helpers to clean and lay out the wares ready for dipping, to remove dipped wares from the draining grid, and to wipe their bases clean and place them on boards to dry.

Few women were employed in the potteries in the mid-19th century, but by the turn of the century almost 20 percent of the workers in the potteries were female. Most of these women were young and unmarried, and the majority left the shops between the ages of twenty and thirty. Trenton companies differed from those in England and Scotland, where women often worked at men's jobs for a lower rate of pay. In Trenton, a strict division of labor by sex was maintained, and, with the exception of decorating (but not printing), women were barred from most of the skilled tasks. Limited use of mechanical equipment, such as the pull-down jigger, which was not widely adopted in Trenton, also served to keep women in the lower skilled jobs.

The workforce in the Trenton potteries was young with a mean age below 30 years persisting throughout the 19th century. Until child labor laws were passed, children made up a large percentage of the workforce (sometimes as high as 25 percent), performing unskilled jobs such as carrying clay to the clay room and turning the jigger wheel. Journeymen claimed that because their own wages were low (pottery owners also passed along the costs of fuel, supplies and certain services to journeymen), they were forced to hire children to serve as their helpers. Many journeymen were therefore opposed to child labor laws.



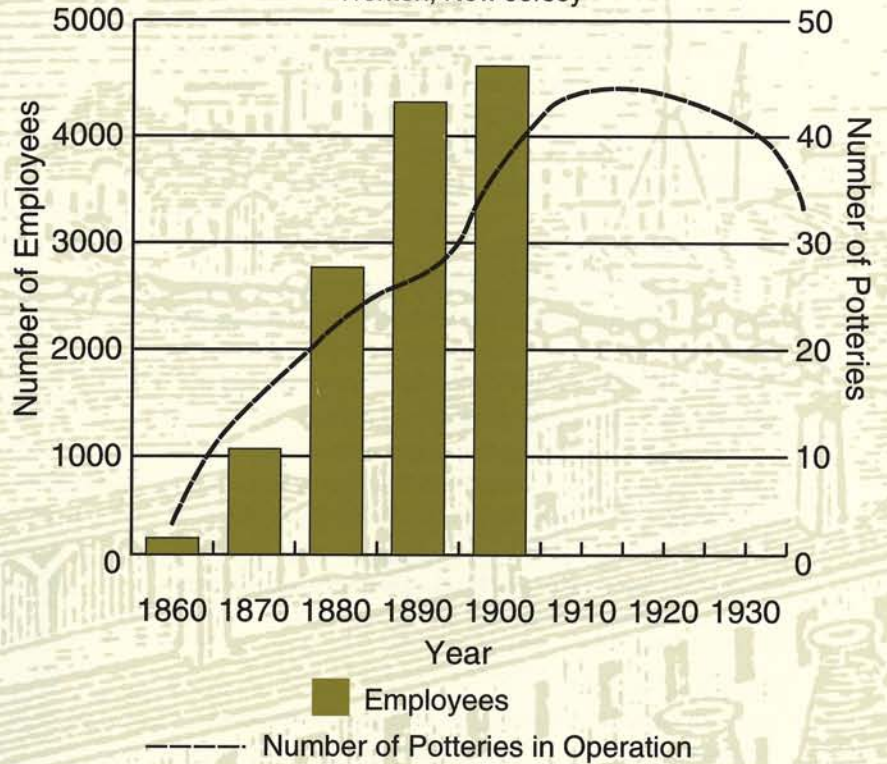
Makers marks have carried the identity of Trenton's potters into homes and businesses all over the world.

Benchmarks of Economic Growth and Decline

- 1853 · City Pottery established
- 1857 · William Young & Sons Excelsior Pottery in production
- 1859 · Carroll Street Pottery established
- 1861 · Civil War begins; the work force in industrial cities like Trenton is depleted to provide troops for the Union army
- 1863 · Etruria Pottery established
- 1874 · Nationwide economic depression; Thomas Maddock first successfully marketed American sanitary ware
- 1876 · The Arsenal Pottery established; Etruria Pottery exhibits Baseball vase and Cleopatra bust in Philadelphia exposition; Ott and Brewer perfect ivory porcelain
- 1877 · A violent strike erupts in protest of a 10-25% cut in the piece rate
- 1879 · Enterprise Pottery established
- 1880 · Thomas Maddock received a patent for connecting a toilet to a flushing water supply
- 1886 · The Operative Potters' National Union founded
- 1889 · Walter Scott Lenox and Jonathan Coxon, Sr. found the Ceramic Art Company
- 1890 · McKinley Tariff Act is passed to protect U.S. manufactured goods from being undercut by cheaper imported goods
- 1891 · Sanitary ware pressers go on strike, resulting in loss of power and influence of unions
- 1892 · Nationwide economic depression; the Trenton Potteries Company conglomerate established; Ott and Brewer close the Etruria Pottery
- 1894 · A six-month long strike results in the Potters' National Union being severely weakened
- 1895 · The Sanitary Pressers' Union strikes, demanding a 10 to 40 percent increase in the piece rate; first time a union takes the offensive
- 1917 · United States enters World War I leading to reduction in labor pool available to pottery industry
- 1922 · Federal anti-trust suit against the Sanitary Potters' Association
- 1923 · Maddock Pottery Company becomes Scammell China Company
- 1929 · American Standard purchases Thomas Maddock's Sons; it continues to operate in Hamilton Township

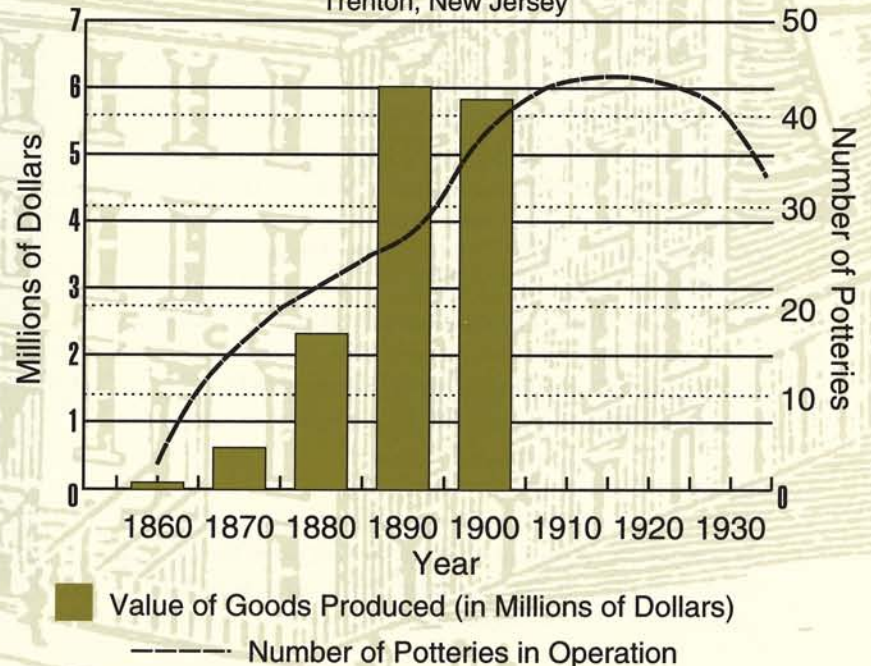
Employees in the Pottery Industry

Trenton, New Jersey



Value of Ceramic Goods Produced

Trenton, New Jersey



Products

Rockingham and Yellowware

These were the most common wares produced in the early years of Trenton's pottery industry. Typical items include pitchers, plates, cups and bowls. Successful production of whiteware resulted in a decline in popularity of Rockingham and yellowware.

Tableware and Hotel China

The potteries in Trenton can be credited with creating a manufacturing center in America for inexpensive whiteware and cream-colored ware products. These products were of similar, if not superior, quality to foreign imports, especially those from England. The shift in popularity from yellowware to whiteware and the high price of foreign wares during the Civil War spurred significant growth in Trenton's pottery industry. By 1870, a majority of the firms in Trenton emphasized whiteware production over other products, and a thriving industry in white tableware and hotel china was born.

Porcelain Hardware

Door knobs, door and lock plates and other hardware components were among the first items produced in Trenton's fledgling pottery industry. Charles Hattersley manufactured these items at his City Pottery in the early 1850s. William Young's porcelain door knobs, as well as his tableware, received a First Class Premium award at the Franklin Institute in 1854.

Electrical Porcelain

As the manufacture of porcelain was perfected and the demand for electrical components grew, the production of electrical porcelain items (e.g., insulators, receptacles, switch plates) became a vital part of the Trenton potteries. Electrical porcelain producers included Maddock's Carroll Street Pottery, the Electric Porcelain Manufacturing Company and Eagle Electric Porcelain. As Trenton gradually lost its grip on the tableware and china market in the early 20th century, the manufacture of electrical porcelain, along with sanitary wares, increasingly dominated the city's pottery industry.

Sanitary Ware

Thomas Maddock successfully developed a sanitary porcelain body and received his first order for the product in 1873. At first manufacturers had to compete with foreign, mainly English, firms that produced similar

items, but by the early 1890s most sanitary ware in use in the United States was produced by domestic firms, the majority of these being located in Trenton. The city's sanitary ware industry flourished up until the Depression with the Maddock family playing a prominent role throughout.

Art Ware

The Etruria Pottery, under the direction of Bloor, Ott and Booth, is credited with introducing the production of art ware to Trenton. By 1871, in addition to their line in tableware, the firm was marketing parian busts of Abraham Lincoln and Ulysses S. Grant. In 1876 Ott & Brewer, now the owners of the Etruria Pottery, exhibited the Cleopatra bust and the Baseball vase at the Philadelphia Exhibition. In the 1880s, the Greenwood Pottery Company, Ott & Brewer and Willets began producing art porcelain for sale in up-market stores like Tiffany and Company. The Ceramic Art Company (later Lenox China), and the Columbian Art Pottery were all founded by the 1890s, each producing its own line of art ceramics.



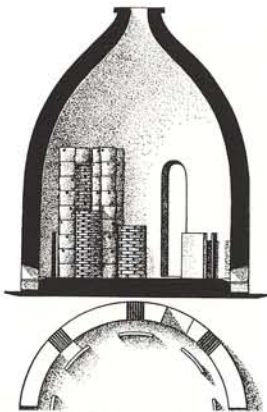
One of a pair of parian Baseball vases designed and modeled by artist Isaac Broome for Ott and Brewer for inclusion in the Centennial Exhibition in Philadelphia in 1876.

Glossary

Bisque Firing: the first firing, before the pottery is glazed.

Blunger: a tool or machine which mixes water and raw clay together.

Bottle Kiln: the name for a bottle-shaped, updraft, brick-built kiln (below).



Barton, K.J., 1976 Pottery in England: From 3500 BC – AD 1750, p. 40. A.S. Barnes and Company, New York.

Updraft (bottle) kiln, with saggars full of ware stacked inside.

Crank: an item of kiln furniture which holds plates and tiles apart while firing.

Decorator: the artisan who adds any embellishment to ceramics such as hand-painting, printing, enameling, ground-laying, etc.

Dipper: the factory worker who dips the green wares into a slip mixture.

Dry Pressing: the pressing of semi-dried clay slabs into metal molds, a technique used especially in the forming of electrical porcelain, sanitary ware, tile and brick.

Earthenware: a porous ceramic fired at temperatures below approximately 1100 degrees Centigrade, or 2010 degrees Fahrenheit.

Electrical Porcelain: a hard, dense, high-fired ceramic used for making electrical insulators.

Entrepreneur: a person who takes the risk of starting a new business.

Extrusion: a process of forming clay by pushing it through a die.

Feldspar: a mineral mixed into clay or glaze to help them fuse.

Flint: the mineral silica which is fired and ground into a powder and mixed into the clay to make it stronger; it is also used as a material in glazes.

Gilder: the factory worker who applies a thin band or highlight of gold to finished wares.

Glazemaker: the factory worker who mixes the ingredients for the different glazes.

Glost Firing: the firing in which glaze is fixed to the clay body; usually a second firing after the bisque firing.

Greenware: pottery which has not yet dried sufficiently to be ready for firing.

Green Room: an area where greenware is set to dry before firing.

Jigger: a spinning mold (either manual or machine-operated) which, in conjunction with the jiggerman's template, shapes a ceramic piece.

Jiggerman: the person who runs the jigger machine.

Jigger Wheel: a plaster of Paris batt upon which the clay was placed.

Kick Wheel: a wheel for forming pottery which is powered solely by the potter kicking it.

Kilnman: the person who watches over and fuels the kiln to maintain its temperature.

Late Cretaceous: a geologic period approximately 70 million to 100 million years ago.

Lawn: a fine mesh used in clay preparation to separate out the larger particles from the finer particles.

Makers Mark: words or symbols on a piece of pottery indicating the manufacturer.

Master Potter: the head potter who designs pieces to be copied in the factory.

Mineral: a natural, inorganic material which comes from the earth and has a crystalline structure.

Moldrunner: the factory worker who transports clay-filled molds to the green room for drying.

Packer: the factory worker who packs finished wares for shipment.

Parian: a porcelain clay body used for making unglazed ceramic art objects; named for the Greek island of Paros whose local marble was used extensively for sculpture in ancient times.

Pip: see "wad."

Plastic: capable of being molded or modeled.

Porcelain: a type of pottery which is highly vitrified, translucent, non-porous and fired at a high temperature (approximately 1300 degrees Centigrade, or 2370 degrees Fahrenheit.)

Porcelain Sculpture: statuettes, busts and other sculpted pieces made out of porcelain.

Potter's Wheel: a rotating disc, turned by foot or electricity, on which pots are formed; its purpose is to turn the clay while the potter's hands form the vessel.

Press Mold: a method of forming ceramic pieces by pressing a slab of clay into a mold.

Pug Mill: a machine used for mixing and compressing clay.

Redware Pottery: red colored low-fired earthenware with iron and other impurities fired to about 1000 degrees Centigrade or 1830 degrees Fahrenheit.

Rockingham Ware: a yellow-colored earthenware with a runny lead glaze stained dark brown by manganese and iron.

Runner: a worker who transports clay, molds, pots, and other materials around the factory.

Sagger: a fire-clay box that ceramics are placed within and which is then put into the kiln to protect the ware from flames and gases.

Saggermaker: a person who manufactures saggars.

Sanitary Ware: a class of ceramic which includes bathroom fixtures such as toilets and sinks.

Slip: a runny mixture of clay and water, often used to coat or decorate a piece of pottery.

Slipmaker: a person who mixes the slip in a factory.

Slip Mold: a process of forming pottery by pouring liquid clay into a mold.

Stilt: a triangular item of kiln furniture used to separate and prop up glazed wares within the kiln.

Stoneware: a hard, vitrified ceramic type in which the glaze bonds with the clay body; fired at 1200–1300 degrees Centigrade or about 2200 degrees Fahrenheit.

Talc: a powdered form of the mineral magnesium which is added to the clay.

Temper: a substance, such as sand or feldspar, added to or mixed with clay to modify its properties; tempering materials are typically used to make clay more malleable or durable, or to produce particular coloring effects on firing.

Thrower: a person who throws the wet or plastic wares on a revolving wheel.

Transferer: a person who takes a wet printed design from paper and applies it to bisque wares.

Tunnel Kiln: a type of kiln in which trucks with pottery stacked on them are moved through a tunnel where continuous heat is applied to fire the pottery.

Updraft Kiln: a kiln where the pottery is stacked above the fire, and hot air is drawn through the pottery to fire it.

Vitrify: to fuse or harden clay through firing, making the pottery non-porous.

Wad: a simple item of kiln furniture comprising a makeshift lump of refractory clay which is used to prop up or separate vessels being fired in the kiln.

Whiteware: a fairly hard white earthenware with no impurities; it is often used for tableware.

Yellowware: a yellow-bodied ceramic fired to a hard, durable body at around 1200 degrees Centigrade, or 2190 degrees Fahrenheit or less; yellowware vessels were often used in baking and mixing bowls and other kitchen pieces.

Suggested Student Projects

By 1924, there were fifty-two working potteries in Trenton. As all artisans and craftsmen do, potters marked their wares to distinguish them from the work of others. **Ask students to design their own "mark," and write an essay on why they came up with the design.**

The production of pottery changed greatly during the years preceding and during the Trenton potteries heyday.

Ask students to list some of the types of pottery that were made in Trenton's potteries, and illustrate with examples that can be found in use today in school or at home.

The pay of journeymen was based on piecework, which meant that they often used women and children as low-paid laborers to help them produce the maximum number of pieces, and receive a high wage.

Allow students to select their role, or assign them job titles such as master potter, runner, packer, kilnman, glazemaker, dipper, or owner. What gender and age might they be? After they have developed a story about their character, have them role play a labor strike.



American Porcelain, Frelinghuysen

The Cleopatra bust, like the Baseball vases, was created by artist Isaac Broome for Ott and Brewer for inclusion in the the 1876 Centennial Exhibition in Philadelphia.

Clay is used in many common items.

List things that you use in the classroom or at home that are made from ceramics.

The Trenton potteries employed thousands of workers between 1880 and 1930. Did any of your ancestors, or your neighbor's ancestors, ever work in the industry?

If so, what did they do, and how long did they work there?

Pottery workers came from many countries and walks of life.

Have students write a journal covering the events of a couple of days in the life of an Irish immigrant packer, an English master potter, or a child working as a runner.

The Trenton potteries drew on a variety of raw materials in making the various wares for which the city became famous.

Name the chief raw materials used by the Trenton pottery industry, where did these come from and by what means were they brought to the city?

Thanks to Thomas Maddock and his descendants, the flushing toilet is a fixture in virtually every inhabited building not only in Trenton, but across the entire country.

Have students consider where the water and sewage go once they flush the toilet.

The pay of journeymen was based on piecework rather than an hourly wage or salary.

Have students work out the piece rate for various journeymen and calculate how much an average journeyman can produce in a day, both with and without hiring unskilled laborers. Is it worth it to hire help, and if so, what kind and how much?

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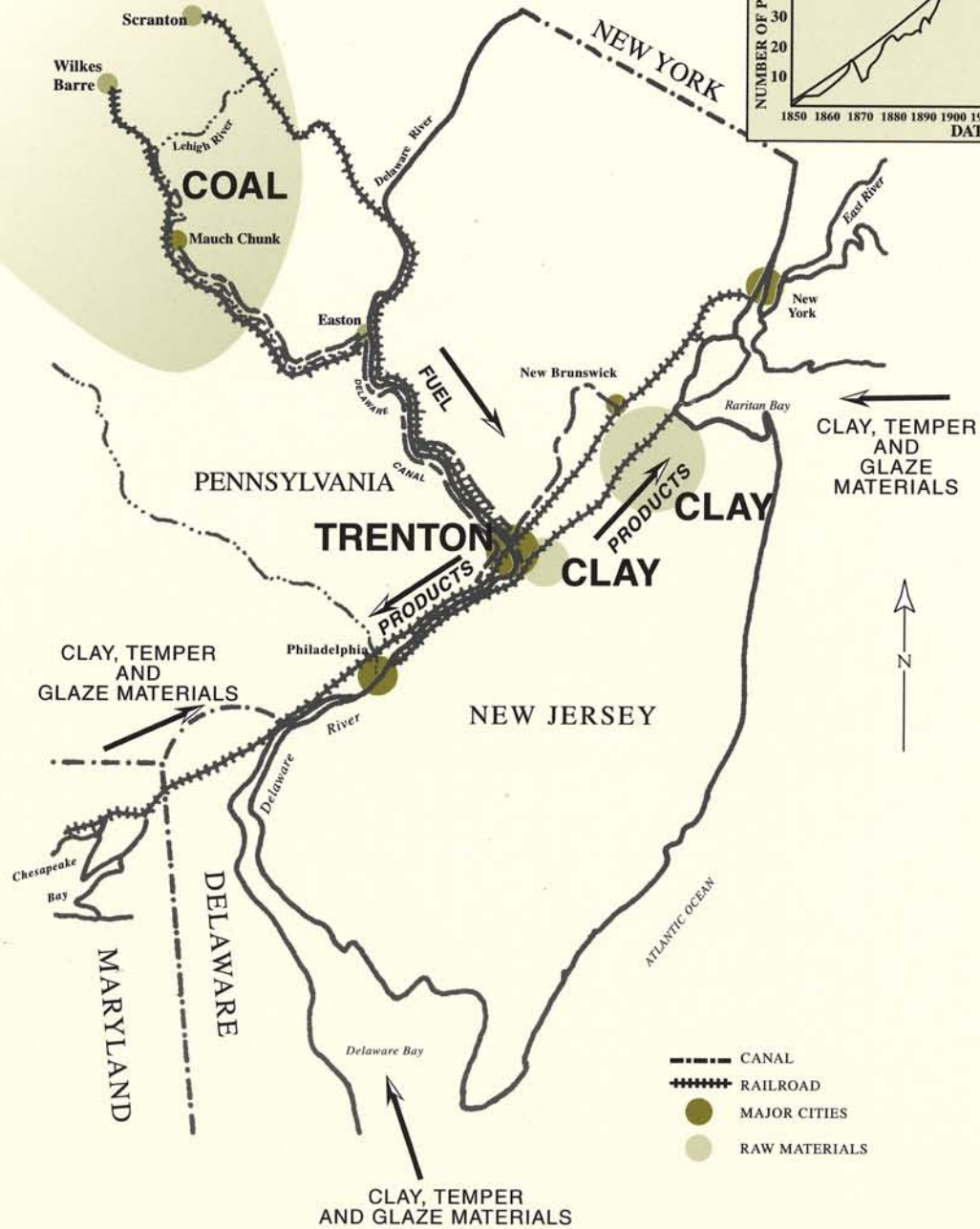
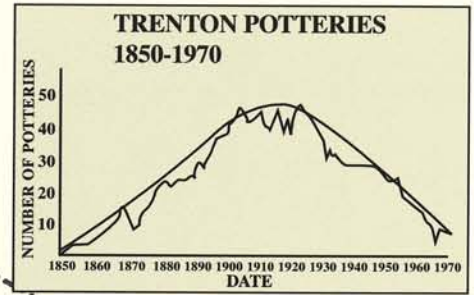
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Regional Map



This booklet is the product of a research project undertaken for the New Jersey Department of Transportation in mitigation of the effects of the construction of a new southbound exit ramp on U.S. Route 1 at New York Avenue, in the city of Trenton. This ramp passes through the property of the former Enterprise Pottery, which was found to contain significant historic architectural and archaeological remains relating to the Trenton pottery industry. The preparation of the booklet and other related research activities were therefore conducted in compliance with Federal and State historic preservation laws and regulations.

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Places To Go



Some Fascinating Trenton Pottery Factoids

- #1** In 1902, the first presidential bathtub was installed in the White House for President Taft, a *very* big man. Created by the J.L Mott Company of Trenton, it was large enough to hold four men. [The Polished Earth] **#2** In the early 1920s when the industry was still flourishing, as many as 7,000 cheesesteaks were sold daily to Trenton's pottery workers on their lunch hour. [Trenton Times] **#3** Walter Scott Lenox was so relieved to be free of financial obligations to the bank that, upon paying off the mortgage on his industrial property, he had a miniature kiln built and burned the bank notes and papers on his desk to celebrate. [Lenox China]