

Bricks, Stones, and Traprock

Few people today think of the Hackensack River valley as a source for building materials. But it once was where millions of tons of bricks, “brownstones,” and crushed rocks forming the basic foundation beneath roadways were quarried. The history of utilizing local Earth resources is worth knowing.

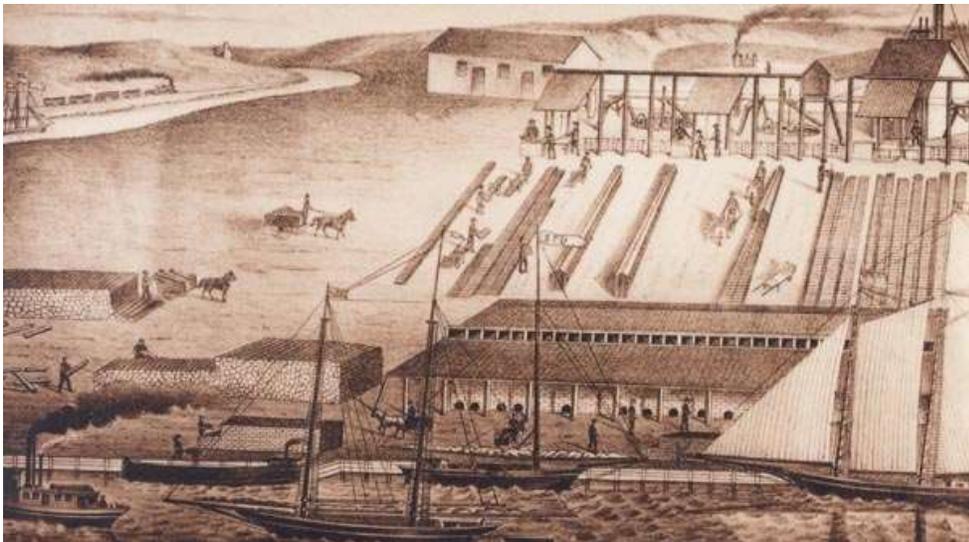
Bricks

Think of all the buildings in the area and elsewhere made of brick. Did you ever think about where they came from?

Brick has been one of the most widely used building materials worldwide, perhaps for as far back in time as 5,000 years ago. The Native Americans in this region made their longhouses (‘wigwams’) out of twigs and branches. Early colonial homes were mostly made of wood from the abundant forests that existed in the area at that time. Farms in those days often used ‘fieldstone,’ rocks which had been left when the glaciers melted after the last Ice Age.

But as communities grew, wood became scarcer, and fires became a bigger threat. Along the Hudson River, and along the Hackensack, brick manufacturing developed that utilized the clays deposited in the glacial lakes. The most common method of making bricks involves mixing clay, sand, lime, iron oxide, and/or magnesia, placing it in a mold, and heating it. It did not require extensive land, so in the late 19th century, there were hundreds of clay pits with nearby brick kilns in the region to meet the needs of the growing New York metropolitan area.

The Little Ferry clay pits operated from the 1870s until the 1940s. Several companies excavated clays that had been deposited at the bottom of Glacial Lake Hackensack. Manufacturing took place on the site. Then the finished bricks were loaded onto schooners that sailed down the Hackensack River, delivering them to New York City, Newark, and other cities in the Northeast.



19th Century brick-making facility in Little Ferry, NJ, along the Hackensack River

(Source: <http://www.njmeadowlands.gov/njmc/about/district/history.html>)

Even before the brickyards, flower pots were manufactured in Little Ferry using clay from the pits. These were often shaped by hand before baking. A horse-drawn rail cart transported finished pots from the kiln plant to the Hackensack River. Like bricks later, the flower pots were loaded aboard schooners for delivery to cities along the Eastern seaboard.

In the 1920s, C. A. Reeds of the American Museum of Natural History made a thorough study of [“The Varved Clays at Little Ferry, New Jersey.”](#) Varves are layers in the clay of a glacial lake created when smaller particles settle during the quiet, ice-covered period of winter and are then covered by coarser-sized particles brought in by runoff during spring melts. Reeds and his team carefully counted more than 2,550 consecutive years of varves. Eventually, water broke through the terminal moraine and the lake drained, leaving behind its remnants as the Hackensack Meadowlands.

Today, the Little Ferry clay pits are small lakes in parks or backyards. But the bricks that came from them still proudly, if anonymously, carry on their legacy.

Stones

Many of the buildings in Manhattan, Brooklyn, and other communities proudly display their “brownstone” facades. Sandstone slabs affixed over bricks in row after row of homes in the Upper West Side, Harlem, Park Slope, Bay Ridge, and other section of New York came from New Jersey. The reddish-brown rock was quarried in deposits of the Passaic formation (also known as the Brunswick formation). The sediments that comprise the brown sandstones were deposited during filling of the Triassic-Jurassic-age Newark Basin. (Learn more in [“Bedrocks of the Newark Basin—Sediments and Volcanics.”](#))

Fresh-cut surfaces were pink, but soon weathered to a chocolate brown due to the hematite mineral grains in it. Its popularity came because it was a less-expensive alternative to granite or limestone, and more available locally. It was easy to cut and carve into elaborate designs. Many brownstones in New York City now sell for millions of dollars.



Typical brownstones in Harlem. Source: public domain (Moncrief)

Vast amounts of this rock were quarried in the 18th and 19th century. Much was carried by horse- or ox-drawn carts to schooners on the Hackensack River, then transported across the harbor to meet the need of the rapidly-expanding New York City. Brownstones from these and many other quarries were also used extensively in New Jersey, often transported on the canals that served as major arteries during the 19th century. [Historical information](#) about quarrying and the buildings made with brownstones is available from the New Jersey Geological and Water Survey.

Brownstone buildings in many other parts of the country used materials obtained from quarries in Pennsylvania, Connecticut, Wisconsin, and elsewhere. Quarrying ended in New Jersey in the 1930s, and the [last operating brownstone quarry](#), located in Portland CT, closed operations only in 2012.

Traprock

If you have ever watched highway construction or walked along the tracks of many railroads, you'll see that they lie atop rocks crushed to about 2 – 3 inches in length. In the area of the Hackensack River valley, much of the crushed rock for roads and other uses comes from "traprock." More than a century ago, there were dozens of small quarries in the region, but most were closed down long ago.

Traprock is a term applied to basalt, gabbro, diabase, peridotite, or other extrusive or intrusive fine-grained, dark-colored igneous rock. In many places, lava flows stacked atop earlier flows were eroded to create the appearance of steps; hence the name, from the Swedish word "trappa," meaning "stair step".

This step-like appearance can be seen in the Palisades that form the eastern boundary of the Hackensack watershed. It formed as a magma sill during the Late Triassic-Early Jurassic. Subsequent tilting and erosion removed the overlying sedimentary layers and formed the steep cliff along the west shore of the Hudson River. The vertical fractures within the trap rock produced tall columns. When Henry Hudson sailed up the river in 1609 looking for the "Northwest Passage" around North America, the columns reminded him of the vertical walls made of upright logs in a palisades fort wall, and the name has remained.

By the end of the 19th century, there were many quarries along the Palisades, taking advantage of their proximity to the river for shipping the quarried rocks. [The Federation of Women's Clubs in New Jersey and New York](#) united in a campaign to close the quarries and preserve the beautiful walls of the Palisades into a park. They successfully influenced the State Legislatures and created the Palisades Interstate Park.

Even though quarrying along the Hudson River was ended, traprock operations continued at other locations on the "back" (western) side of the Palisades. A small quarry in Englewood where the [Flat Rock Brook Nature Center](#) now exists was the source for crushed stone during the 1920s. Tilcon still operates a large quarry in West Nyack, NY, across the NYS Thruway from the Palisades Centre Mall. It is a tribute to the efficiency of their operations that few people are even aware of the quarry's existence.

The lava flows of the Watchung Mountains, near the Passaic River west of the Hackensack, were also quarried in the past. So, too, much more recently, was Laurel (Snake) Hill in the Meadowlands. (During Colonial times, there were many black snakes residing on its rocky surface, so it was called Snake Hill.) It formed as an intrusion through the then-overlying sedimentary rocks. Being more resistant to erosion, it eventually towered some 60 m (200 ft.) above the Meadowlands.

From the mid-19th to the mid-20th Century, the area housed a small, self-contained community that included a sanitarium, penitentiary, almshouses for the poor and elderly, lunatic asylum, 'potter's field' burial grounds, quarry, and other structures. By the 1950s, most of the structures were abandoned and deteriorating. The rock was extensively quarried for construction of the NJ Turnpike, prisons, and other structures. Its height has been reduced by about 25% to 46 m, and what remains is only about 20% of its original volume.

In recent years, Laurel Hill County Park has become very popular for its ballfield and easy access to a getaway from the crowded conditions in Hudson County and vicinity. The [Hackensack Riverkeeper](#) organization has its field office and one of its paddling centers in the park, enabling thousands of people to enjoy a day on the river.

Mineral collectors scouring the quarried rocks have found interesting and very rare minerals. In 1981, a specimen proved to be never previously identified, and was named "Petersite" in honor of brothers who were the Directors of Mineralogy at the Paterson Museum and American Museum of Natural History.

Suggested Activities:

1. Make arrangements for a class field trip with the [Hackensack Riverkeeper](#) or [NJ Meadowlands Commission](#). Participants can rent canoes or kayaks, or take an eco-cruise on a pontoon boat.
2. Develop a 'walking tour' of the buildings around your school or your community's Downtown. Ask students to identify what materials were used, and, if possible, find their origin. Invite cooperation with your community's government or Historian.

Example: "[Building Stones of the American Museum of Natural History and Its Neighborhood](#)"

References

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Hackensack Riverkeeper Activities and events: <http://www.hackensackriverkeeper.org/activities-and-events/>

"Snake Hill" from Wikipedia: https://en.wikipedia.org/wiki/Snake_Hill

["Building Stones of the American Museum of Natural History and Its Neighborhood"](#)