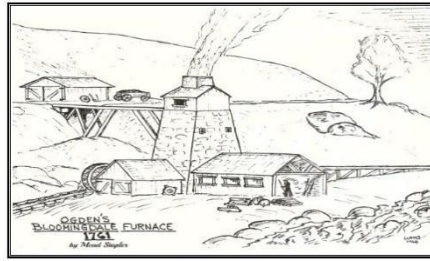


Butler's Ogden Furnace

By Tom Riley



Little is known about the construction and early operation of the Ogden furnace. Well-known ironmasters John and Uzal Ogden purchased the property from Peter Schuyler in 1759 and were producing iron there prior to 1765. Emil Salvini, in his book *Historic Bloomingdale*, points out that some evidence suggests that it may have been in operation as early as 1726. Archeologist Ed Lenik believes the furnace was constructed sometime between 1736 and 1755. It was probably the first charcoal furnace in Morris County and maybe the first in the state.

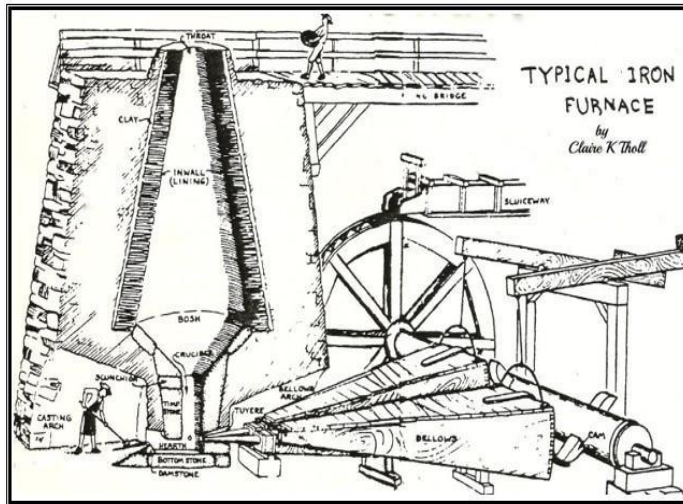
It is located on the south side of the Pequannock River in what was formerly known as West Bloomingdale (Butler). It is across the river from the former Wells Fargo Bank, in the yard of the Pequannock Coal & Lumber Company (now Vibration Mounting & Controls). The Midland Railroad, built in 1872, and the construction of a factory building on the site, basically obliterated all surface traces of Butler's first commercial enterprise.

The site was excavated in 1963 by members of the North Jersey Highlands Historical Society. They discovered the furnace was made of cut stone, measured 27 feet square at its base, and probably rose to a height of 25 feet. The headrace that brought water to power the waterwheel and bellows was also located, along with a number of artifacts.

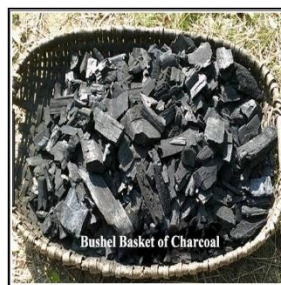
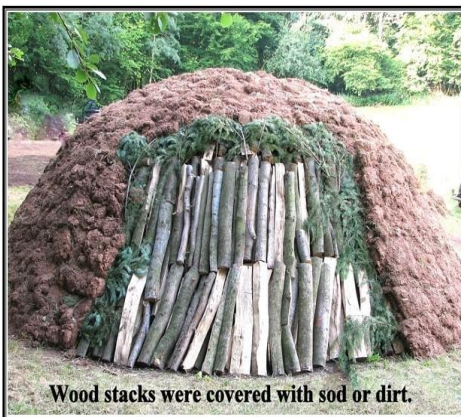
Making iron in a charcoal-fired furnace in the 1700s was not an easy task. It was very labor intensive and required a great deal of hard work. Just getting the iron ore out of the ground and transporting it to a furnace was a major challenge. Iron ore is not 100% iron and varies greatly in composition. The function of the furnace was to separate the iron from the rock that surrounds it. Furnaces were usually built next to a side hill, so the stack could be filled (charged) from the top. A typical charge consisted of 180 bushels of charcoal, two tons of iron ore, and a quarter ton of limestone to act as a flux to help the iron separate from the rock. This mixture would produce about one ton of cast iron which could be made into a great number of products like kettles, frying pans, and plates for stoves. Cast iron pigs could also be processed at a forge to make wrought iron, which could then be hammered into horseshoes, nails, nuts, bolts, chains and a host of other products.

Wood was the only source of fuel at the time and charcoal burns twice as hot as wood. When the burning charcoal, helped by a continuous flow or "blast" of air from the bellows, approached a temperature of about 3,000° F on the inside of the furnace, the iron melted, and molten metal began trickling down to the bottom of the furnace. Twice a day the furnace was tapped, and the hot liquid iron flowed into a series of channels in the sand floor of the casting shed. Impurities called slag floating on top of the liquid metal were skimmed off and discarded. The term "pig iron" originated because the system of channels resembled a mother pig feeding her young. A charcoal fired blast furnace the size

of the Ogden's, could produce about 15 tons of cast iron a week. The process was continuously repeated, and a blast might last from days, to weeks, to months.



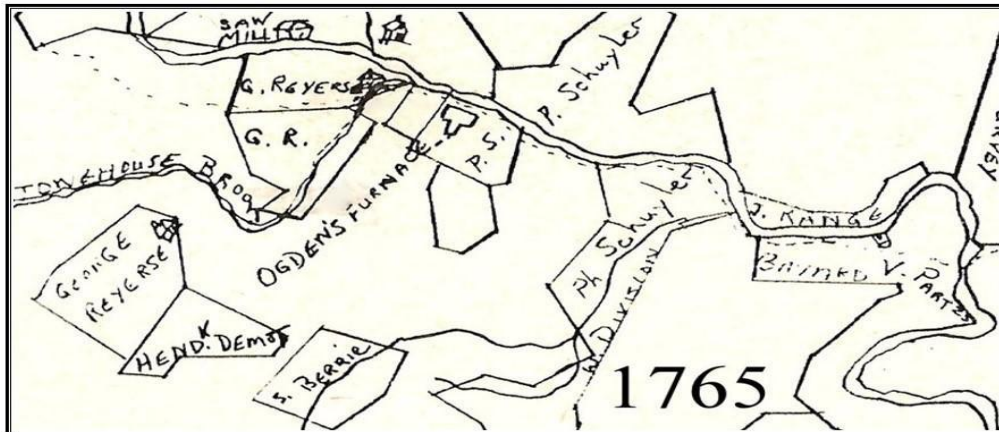
It took vast amounts of forest to keep a furnace supplied with charcoal. A furnace could consume from 250 to 350 acres of woodland per year depending on the size and type of trees. Chestnut was the preferred type of wood. A cord of wood measures 4 feet wide by 4 feet high by 8 feet long, and a furnace required at least 5,000 to 6,000 cords of wood annually. Most tree cutting took place during the winter months, while the sap was still in the roots. Stacks were fired from May to the end of October. All the work was done with axes and a ten to twelve-hour workday was the norm. Making charcoal took skill and experience. Stacking the 4-foot lengths of wood in the proper manner was especially important. Large cones containing 30 or more cords of wood covered with dirt or sod, could reach 25 feet in diameter by 6-8 feet high. Openings in the sides of the piles were created to supplement the central flue in providing the proper draft of air through the stack. Five days to two weeks were required to char a large cone properly and the process called for round-the-clock surveillance to keep the wood smoldering slowly. Each burning yielded about 300 bushels of charcoal.



Evidently the return on their investment was not high enough for the Ogdens because, in February 1771, they advertised in a New York newspaper that the furnace and surrounding properties were for sale. The "Furnace and Iron Works at Bloomingdale" were sold to William Ellsworth in January 1775, but it is not known if he ever made iron there. The surveyor, Benjamin Roome, noted that the furnace had not been in blast for many years, but was still in fair condition in 1812. It is

shown as “in ruins” on James Renwick’s map of the Morris Canal in 1823. In 1833, William Ellsworth’s daughter, Henrietta Leary, sold the property to Martin J. Ryerson.

In the end, it was probably the lack of a good transportation system that put the Ogden Furnace out of business. Transportation costs and the distance from the source of the ore were just too great to make the operation profitable. The price for iron fluctuated frequently. It was often a boom or bust industry.



As seen on the above map, the road through the area in colonial times passed on the south side of the river. This is one of the reasons why the furnace was located there. Another reason is the need to be close to the side of the hill so the charging bridge could be built from the bank to the top of the furnace.

The demand for goods and services needed to operate the iron works created the nucleus of the small village that grew up around the furnace. English, German and other workers came to live among the original Dutch settlers. Martin Ryerson built a gristmill, sawmill, and forge along the river. Farms, stores, hotels, stables, blacksmith shops, carpenter shops, and other establishments were built to meet the needs of the workers.



Pig Iron

Sources: *Vanishing Iron Works of the Ramapos*, 1966, *Bloomington Centennial History Book*, 2018, *Bierce Riley*, *North Jersey Highlander*, 1993, *Morning Post*, March 27, 1905, *Historic Bloomington*, 1984, *Suburban Trends*, Feb. 28, 2010, *Paterson Morning Call*, July 26, 1933, *Suburban Trends*, June 7, 1981

