

Black Rock Forges & Rock Furnaces

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The excavation in the streambed of the West Branch of the Octoraro Creek at Black Rock in 1967 for the piers of another bridge across the stream revealed evidence of some of the past iron history of Southern Lancaster County.

In the two excavations of pits for the bridge piers, two to four feet thick layers of blackened earth were found. Closer examination proved them to be charcoal fines from an iron forge that had been located there a number of years before.

It was a practice to discard the small pieces of charcoal as unusable and this was a dumping area for the waste material below a former forge dam.

Later, when this dam was removed and another much larger dam was built downstream for the Rock Furnaces, the silt from the backwater covered and preserved the charcoal in these layers.

Thomas Clark, Esq., of Chester County, is credited with the building of the first forge here about 1800.

This site was ideal for a dam. On the east bank, there was a large section of rock jutting from a steep hillside into this narrow valley. A dam was anchored to it and extended to the west side of the stream where the forge was built according to Joshua Scott's map of 1824.

In 1804, a petition was presented to the Lancaster Co. Court for a road from Samuel Pusey Mill to Thomas Clendenin Mill stated "that Black Rock Forge, lately erected and not having a public road near them, their proprietors labor under great disadvantage for want of a road." This road was built and crossed the stream below the forge site and below a small adjoining stream where evidence of the road still exists in the present woodland

This site was not the earliest forge on the Octoraro Creek for on the east branch there was the Kurtz Forge of 1726. It was probably a Catalain forge but some sources refer to the Kurtz Iron Works as a bloomery. Little is known about the site or operation of Kurtz's.

Other iron-making activities on the Octoraro, according to Lancaster County tax records were: J. Webb's Forge—Pine Grove (1800), John Withers—Sadsbury (1802), James Cuthbertson—Duquesne (1805-1809), and Joseph Heslip and Co.—Ringwood (1808).

Joshua Scott's map of 1824 shows that a second forge had been built about $\frac{3}{8}$ mile below the upper forge and nearer to Pusey Mill. Tax records confirm it for 1807 and later.

At this site, all that remains is a small ditch that was the race and a solid, heavy-type of slag. A similar type of slag is found at other early refining forges.

Tax records for 1805 show that the West branch of the Octoraro enterprise comprised 250 acres, 1 forge and 10 horses.

The 1808 records show the operation had grown to 647 acres, 2 forges and 16 horses. They also show a court attachment for \$1500 by Henry B. Grubb, probably for iron for the forges.

Growth continued. In 1814, 770 acres, 2 forges, but only 12 horses.

In 1815, tax records list 627 acres, a coal house, 2 forges and also a two-story log house 30' x 15', a barn, 40' x 20', and 7 dwelling houses of log 16' x 16'. Apparently these were in the area midway between the two forges on a flat along the stream on the west side.

At the upper forge site is a slag that looks like coke. It is foamy looking and light and porous, suggesting the final refining of the iron to steel by the use of higher heat at this forge. This metal was probably used by the sickle industry in nearby Drumore Township.

The next owner was Nathan Hays, who purchased the forges in 1815 for \$26,528 from Thomas Clark. The agreement stated that it was payable only "in gold or silver coin" due to the money and conditions of the day.

Thomas Clark was indebted for half of the sale price. The property was known as Hempatch and Emsworth forge and covered 580 acres.

Hays operated the two forges in 1817 and 1818 but the records list nothing for the following years until 1826 when his heirs sold the property of 533 acres to John Caldwell for \$8,000. There had been economic collapse and panic in that period.

John Caldwell used only one forge from 1826 to 1832 but the tax records show he had built a furnace by 1832.

This was not the first furnace in lower Lancaster County. From 1808 to 1825 there was a Mount Eden furnace in Eden Township, and the Conowingo Furnace (1810-1866) produced good quality iron in Drumore Township. Both had been built by the Withers ironmasters.

In 1832 John Caldwell, by agreement with Henry Kunkle, began to search for iron ore on the Kunkle lands and was allowed to take as many acres in three fields as needed at \$300 an acre. Some ore was found at these sites. This land is southeast of Quarryville. By 1834, Caldwell secured two acres of the Mohler ore lands in Martic Township, now Providence Township. This is where the Martic furnace of 1755 is believed to have mined its ore.

In the meantime, Caldwell demolished the upper forge and dam and built a much larger dam downstream. He cleared the area beside it on the west side of the stream, quarrying a large amount of rock for a furnace stack, foundations of building walls and retaining walls and for the dam breast.

At the furnace site there was a projecting knoll, the base of which was quarried and cleared to set up the furnace stack and buildings. Near the top of the knoll a retaining wall was placed and the area leveled for the charcoal house and the charging house. Also an area was cleared by quarrying for a roadway between the buildings and the hillside. Remnants of the older road are above this quarry. The furnace was about 60 feet from the dam and hillside and the water needed to operate it must have been conveyed by a wooden flume to operate the water wheel for the furnace bellows. The area of the remains indicate a furnace 28 feet square stood here in its last years and this was probably the size of the original furnace. For blowing the furnace the tuyere side and bellows were on the lower side of the furnace and the foundry faced the stream. This furnace was later converted to a hot blast furnace.

After having spent so much effort to build the furnace, John Caldwell sold it and 624 acres of his iron plantation for \$21,000. This was in 1836 and the new owners were Samuel Horner and Charles Slocum, hardware merchants from Philadelphia.

In 1837 the property passed on to a Mr. Babbitt and by 1839, records show the iron plantation in the hands of a partnership formed by Charles Brooke, Jr., Clement Brooke and Mathew Brooke Buckley. It was a $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{4}$ partnership.

They were related, and were experienced operators of iron plantations. Clement Brooke was manager of Hopewell Furnace of Berks County. Mathew Brooke Buckley operated Buckley forge in Lancaster County and Charles Brooke, Jr. was at Conowingo furnace. His father, Charles Brooke, Sr., was operator of the Hibernia Iron Works of Chester County with its forges, furnaces and rolling mill.

In 1837, Charles Brooke, Jr. sold his interest in the nearby Conowingo furnace, probably to secure capital for this new venture and to finance changes on the plantation.

The tax list of 1840 reports two furnaces, showing he had built a new furnace on the east side of the stream. To secure a site for this furnace he made substantial changes in the general landscape on the east side of the

stream. By quarrying into the steep hillside below the dam he cleared a site for the second furnace and secured stone to build its stack and other retaining walls. A bend in the streambed below the dam was walled off for about 150 feet and raised several feet with large blocks of cut stone (the base is still visible in the streambed in 1976). Then the area was leveled for the furnace stack, bellows house, water wheel and foundry. The area was about 60 feet wide and the stack was 85 feet from the dam breast. The base was 29 feet square with the tuyere side on the stream side and the foundry facing downstream. Other roads were cut into the hillside above and the furnace support buildings were built. Near the furnace a new stone home was started for Charles Brooke. The former owners had their home down the valley, on the hillside beyond the stables and other plantation buildings but could look up the valley to the iron works. A furnace ledger of 1840 shows sandstone to line the furnace was secured from White Oak in July of 1840.

To finance these changes, Charles Brooke secured more capital by selling $\frac{1}{2}$ of his share in the partnership to Robert Cabeen for \$12,150. This was a profitable iron period and the real sale value was considered to be \$15,250 and was to be repaid with interest in three annual payments. The $\frac{1}{4}$ share sold to Cabeen consisted of 208 acres at the furnace site, a tract of 6 acres at the Kunkle minehole, $1\frac{1}{2}$ acres at the Mohler's hole, 86 acres at the Groff place and the Mohler wash trough of 2 acres.

These latter places are just north of the railroad at Quarryville and west of Route 222, near the railroad underpass.

For some reason, Cabeen decided to retire from the iron manufacturing business in 1841 but later would ship many tons of ore from this region to other furnaces.

Brooke decided to convert the old furnace to a hot blast furnace. It was known by then that this conversion could produce a worthwhile increase in iron and use less charcoal.

To do this, the waste heat at the top of the furnace was used to heat the air going to the tuyere. The early method called for the erection of a small brick or stone building atop the stack to the maw of the furnace. Pipes were installed to carry the forced hot air. Heat entered through an opening at the base of the building and was controlled as it left by a chimney on the top of the building. Later this method was improved and the stoves were set on the ground and heat was piped to the stoves. This led to the anthracite blast furnaces.

Brooke ordered limestone from Potts' quarry; roofing slate and hot blast pipes from Brinton's foundry. Apparently the conversion didn't work out. The 1850 records show he was back to a cold blast furnace. Anthracite found at the furnace site indicates he tried to use an anthracite blast furnace also.

But the furnace was producing. A ledger of 1840 shows they hauled four tons of pig iron and 39 hundredweight of stove castings and scrap metal to Port Deposit as well as castings to Noblesville and Lancaster.



East or tuyere side of Rock Furnace, 1968

Brooke's main line included stoves, side hearths, coal stoves, 10-plate stoves, riddles, castings, pig iron and scrap metal. His markets included Lancaster and Philadelphia and extended into Virginia.

The 1849 ledger gives some insight into the Brooke operation. Men were cutting wood at the Groff place, while 16 men were at the mine hole on July 15. The company lost a half day when an iron ore cart went through a plank bridge, and there were no spikes to nail down new planks. They cut wheat at the mine hole in July and were hauling charcoal from Hagen's in September.

The year 1841 shows a February payment of \$4,315 from Clement Brooke & Co. of Hopewell, mostly for stove castings. Brooke also bought furnishings for his new home at Black Rock in 1841. A ledger at the Historical Society of Berks County shows Brooke was now on the tax books in Lancaster County and taxed for his carriage, gold watch and furniture. Tax records on sales for the year suggest that in spite of all this, the company's profit must have been higher than the previous year.

Furnishings for the Black Rock mansion cost Brooke \$913.90 and ranged from \$1.00 for a walnut towel stand to \$255.46 for carpeting from Henderson, Clarkson Co. (See Appendix for attached list.)

Things weren't so bright in 1842. A depression had set in and prices soared. The prices on stoves were so high that merchants could not sell

Brooke apparently weathered the storm and even added five more horses to his stable and purchased \$180.40 worth of side hearth stove patterns from a Jacob Steffe of Philadelphia. His state tax was also higher than the previous year.

Tax records also indicated improved sales for 1843 and Brooke arranged a settlement with Cabeen and changed the company's name to Brooke and Co. Cabeen apparently moved out of the area at this time. He had been paying a furniture tax and he was not on the books in 1844.

Prosperity returned from 1844 to 1847 and Brooke and Co. shared well in these profitable years but there was new trouble on the horizon. Large, hot blast anthracite furnaces were springing up along the Susquehanna River. These furnaces had cheap water transportation available and were producing mostly pig iron. Rock Furnace was also producing a great deal more pig iron as the stove market continued to dry up. Brooke and Co. were not in direct competition with these furnaces, however, because charcoal iron had some different properties than the anthracite iron and was used for bar iron at forges and for boiler plate at the rolling mills.

There appear to be no records detailing operations at the iron plantation, such as whether they used the two furnaces and how long they used the hot blast system. There is a record of the 1850 Iron Masters of Pennsylvania Convention in Philadelphia that shows Rock Furnace had two furnaces but was using only one cold blast furnace. The report also stated they were using water and steam for power and employed 100 people.

Some of their clients were:

- 1845-51 Greenwood Furnace, Buckley Brothers, pig iron.
- 1848 Steinman & Son, Lancaster, stoves.
- 1848-49 Steel & Darlington, stove merchants.
- 1849 Curtis & Hand, Phila. Commission merchants, \$31,448.87
- 1849 White Rock Forge, J. Alexander, \$1,964.37 $\frac{3}{4}$
- 1850 Sadsbury Forge, Ellis P. Erwin, \$3,390.29
- 1850 Pine Grove Forge, Enos Pennock, \$1,952.69
- 1850 Springton Forge, Christman & key, \$1,400.

These later forges used pig iron.

Brooke & Co. store ledgers showed they employed an average of 12 moulders, 12 men to supply and operate the furnaces, 10 haulers, 9 colliers, 6 woodcutters and, in 1849, 38 miners at the mine hole.

From 1845 to 1855, when they closed and dissolved the company, Brooke & Co. maintained 250 acres and stabled 26 to 30 horses and mules at the furnace. This does not include holdings at the mine holes and wood areas.

The plantation employed two housekeepers and a maid at the mansion house, 2 boarding house masters, 1 boarding house mistress, 2 boarding house maids, 2 storekeepers, 1 store clerk. They also employed masons, carpenters, blacksmiths and a head farmer. The company maintained a store and boarding house at the plantation and at the mine hole.

The stores were also used by the general community and others in the iron business who maintained accounts with the company. The ledger recorded cash transactions in some accounts. The account books carried two doctors, a barber, butcher, 4 shoemakers, a brickmaker, 2 axe makers, a bellows maker, 4 cabinet makers, 4 blacksmiths, a wagon maker (who also hauled ore), a coach maker, wheelright, broom maker, 4 carpenters, 7 masons, plowmaker, papermaker, wood merchants and members of the Brooke and Buckley families who seemed to visit the plantation quite often.

There were also accounts of people who visited the store or furnace and bought meals at the boarding house.

One of the more interesting accounts was that of Abner Burnett, a shoemaker. He was on the books for several years and his account showed cash received for shoes transferred from another account in the book and cash transfers to the store, probably for supplies. He also used Charles Brooke to transport shoes to Philadelphia, to a E.W. Morrison, a shoe dealer.

Other items purchased by the store from a Mr. Hagens were two axes at \$2.50, items now sought by antique collectors.

The stores replenished their stocks from various firms in Lancaster and Lancaster County and it is understandable that when Brooke & Co. closed and sold out it was said to be a blow for all of Southern Lancaster County.

Brooke apparently had hopes of returning some day. In some of the deeds he retained the water rights and "the liberty to flood lands along the stream." In another case he asked to be allowed access to a spring and the pipe that carried drinking water to a tract where the stables, store and boarding house were located.

But this was not to be. In later years the furnaces were stripped of all iron furnishings and torn down so that only a small part of the works remains. And the dam, once said to be the highest in Lancaster County, was also destroyed. One thing remains. The stream, in the days of the forge and furnace, was known as a good fishing place. The West Branch of the Octoraro still holds that distinction.

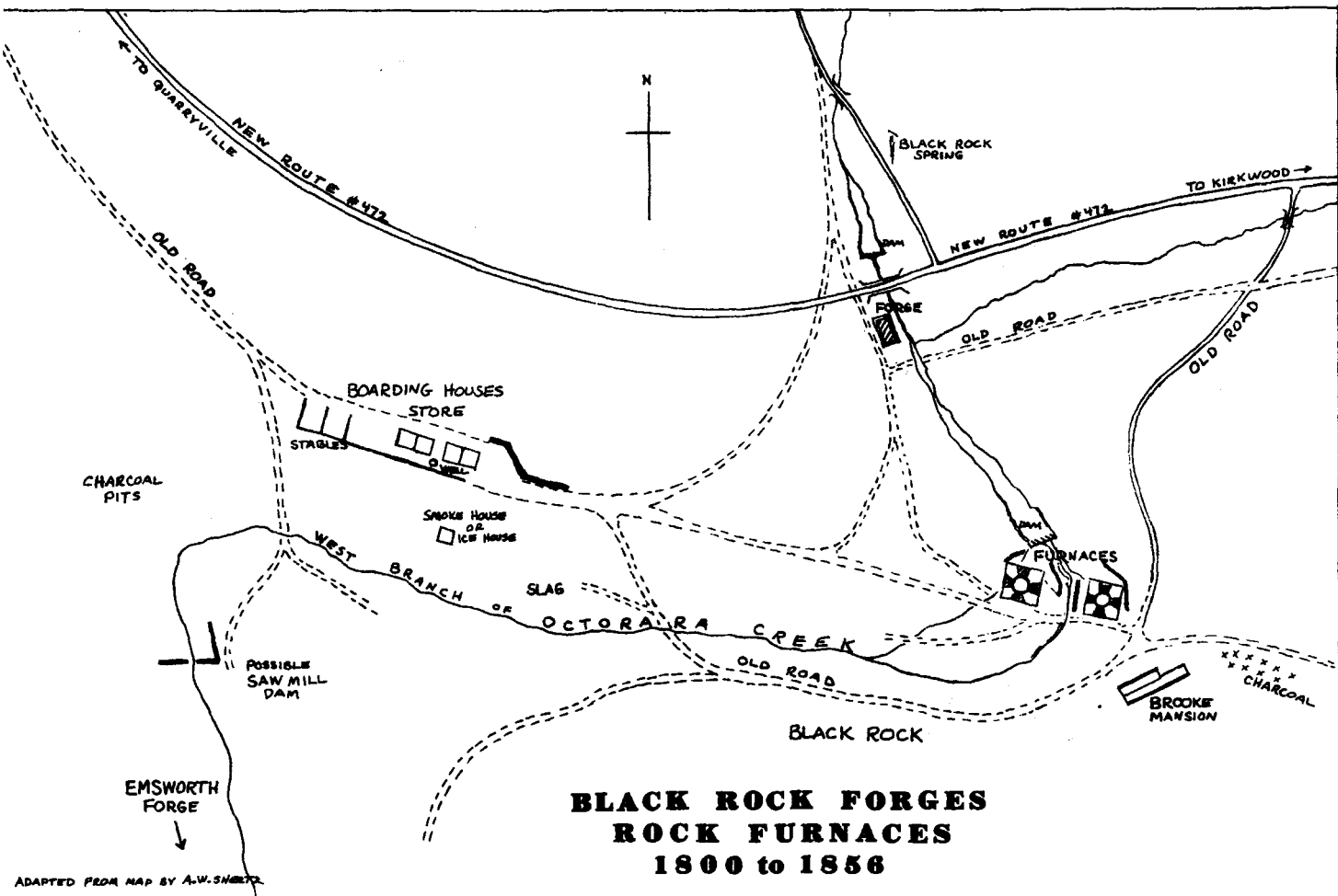
Slag from the furnace is still abundant in the area. Some is gray, or green or lavender, and very glossy. In some can be found a spongy-looking material that is a furnace-formed titanium material. And occasionally one finds a red cube.

The furnace is gone but descendants of its workers are still residents of Southern Lancaster County.

Charles Brooke, Jr. never took advantage of his water right options in those old deeds but Southern Lancaster County kept drawing him back. He visited the area in the Summer for some years traveling by carriage from the Hibernia iron plantation in West Caln Township, beyond Coatesville. Brooke's father, Charles Brooke, Sr., conveyed the 1,594 acre property to Charles E. Brooke, Jr., Horace L. Brooke and Henry L. Brooke, including the "rolling mill, forge, grist mill and saw mill" in 1862.

Rock Furnaces 1832-1856. Drawing by A. & R. Shertz, 1976.





BLACK ROCK FORGES
ROCK FURNACES
1800 to 1856

ADAPTED FROM MAP BY A.W. SHREVE

Then, on March 24, 1870, these three partners sold the Hibernia property to Louisa C. B. Wickersham and Helen T. Brooke. Hibernia was eventually purchased by Chester County on Aug. 15, 1963 and is now known as Hibernia Park.

As for Black Rock Forge and Rock Furnaces, one can't help but wonder if that 1855 closing could have been postponed if the owners had discovered the deposits of magnetite ore now known to exist in the area of White Rock and Union.

Much help was received from Mr. and Mrs. Robert E. Bricker and Mr. and Mrs. Carl Reynolds, Sr., owners on record in 1976 of land where the old forges and furnaces once stood.

Also, records of Lancaster County Courthouse, Lancaster County Historical Society, ledgers at the Hopewell Furnace and Reading Historical Society and other miscellaneous sources were used. □

APPENDIX A COST OF FURNISHINGS FOR BLACK ROCK MANSION IN 1841

FURNITURE:

Mahogany Dining Table	\$ 50.00
Secretary-Bookcase	75.00
Ladies Work Table	14.00
Sofa-Plain Cloth	50.00
Center Table	9.00
Another Center Table	15.00
Double French Bedstead	30.00
Dressing Bureau	30.00
Basin Stand	5.00
Cupboard	8.00
Double French Bedstead	40.00
Dressing Bureau	35.00
Basin Stand	14.00
Wardrobe	35.00
Walnut Towel Stand	1.00
Painted Oak Stand	1.00
Six Half French Mahogany Chairs	34.50
Music Stool—Plain Hair Cloth	8.00
Carpeting (Henderson, Clarkson Co.)	255.46
Chairs	47.00
Carpet	49.38
Crockery	77.56
Window Blinds (7 Sets)	30.00
TOTAL	\$913.90