

## The Rockhill Furnaces

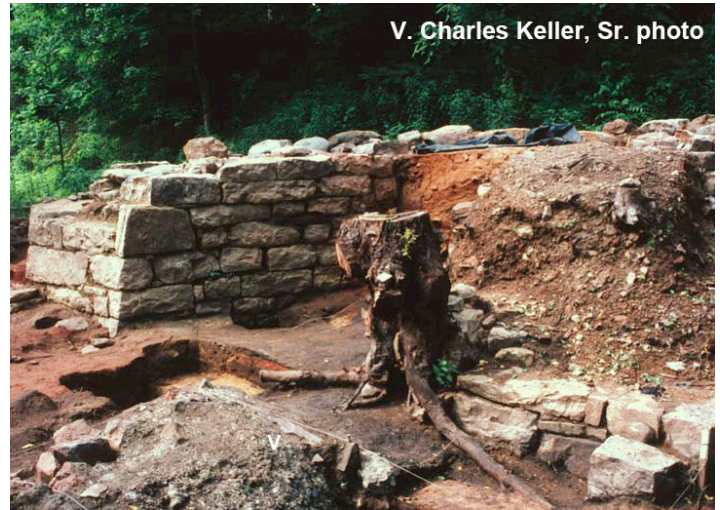
by Vagel Keller

This discussion covers the Rockhill Iron & Coal Company's blast furnace complex operated from 1876 through 1907. However, it is perhaps of interest to note that there is a history of iron making in the immediate vicinity that predates the RI&C Co. Two charcoal iron furnaces operated in nearby Blacklog Narrows, on the southeastern outskirts of Orbisonia, Pennsylvania, in the first half of the 19th Century. The earliest, Winchester Furnace, was relatively short-lived. The second furnace to be built there was the first Rockhill Furnace, which opened in 1831 and remained in almost continuous operation until 1857, reopening briefly during the Civil War. The foundations of both furnaces and the stone walls of a grist mill associated with the old Bedford Furnace were visible for many years in the undergrowth immediately adjacent to the north side of U.S. Highway 522 on the southern outskirts of Orbisonia. But they were destroyed by PennDOT road widening in the late-1990s after first being excavated and documented by professional industrial archaeologists.

Construction of the new Rockhill Furnace, two state-of-the-art coke fired blast furnaces, began in 1873, the same year that the EBT's tracks reached the site from Mt. Union. In fact, early EBT records complain of their construction crews being interrupted by "furnace trains" hauling construction materials to the site. But the furnaces also benefited the EBT's civil engineers: several long trestles were filled in with slag over the next 10 years.

The furnace complex was completed in 1874, but the depression following the financial Panic of 1873 delayed its opening until January, 1876. The Rockhill operation centered around two blast furnaces, 65 feet high and 17 feet in diameter at the boshes (SEE Map, p. 2). Today, two large piles of dark rubble mark their location. They were quite large for the period; as late as 1907, furnaces of their size were still being built in England. Typically, one furnace was in blast while the other was being re-lined with fire brick and undergoing other needed repairs, a job of several months. The casthouses extended north from the base of the furnace stacks to a point nearly parallel with the front wall of the blast enginehouse.

(Download "An 1870s Iron Making Primer" to gain a better understanding of Blast Furnace Operation.) Air for the blast was heated by four hot ovens located between the furnace stacks and was pumped to the furnaces by two air pumps, which had 48" diameter cylinders and a stroke of 8 feet. These were powered by two 635-horsepower steam engines, each of which turned two 24' diameter fly wheels at a maximum rate of 30 rpm. The red



V. Charles Keller, Sr. photo

The base of the Winchester Furnace, above, and the ruins of the Thomas Cromwell grist mill, below, were documented in 1998 before being destroyed to make way for widening of US 522.

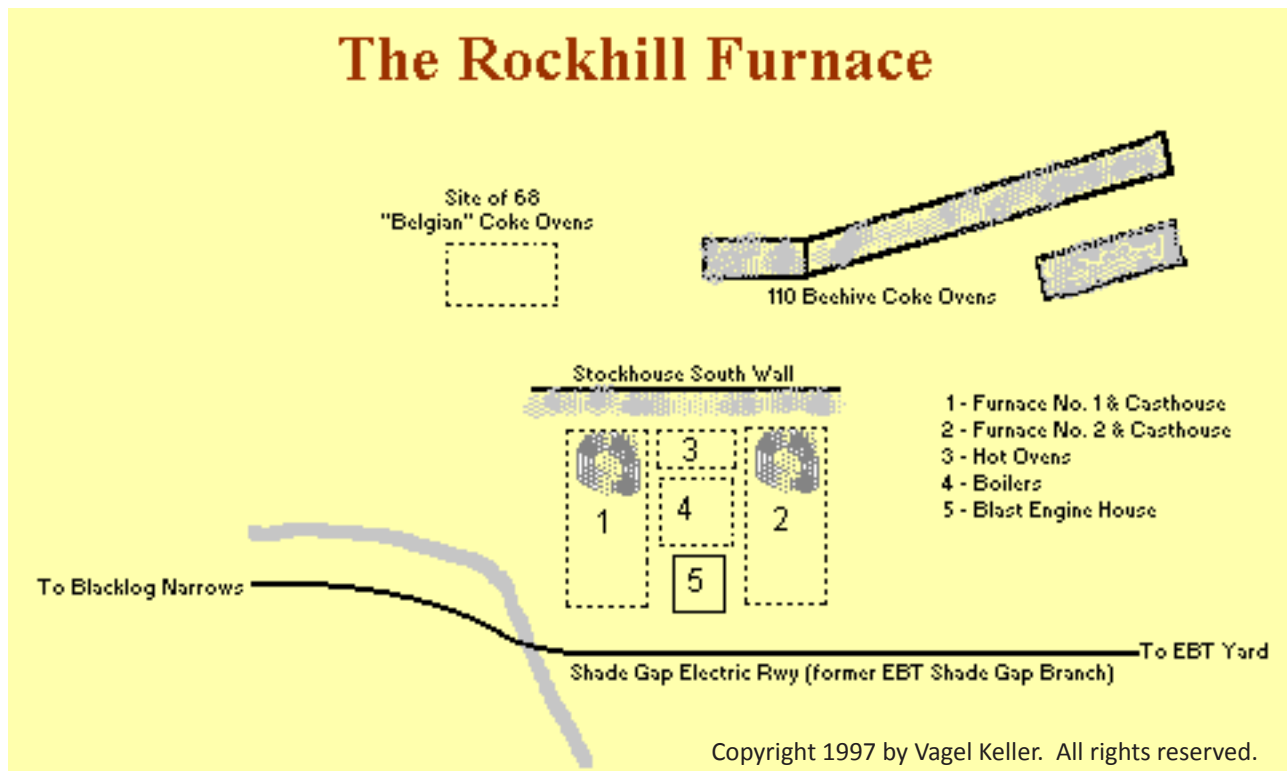


V. Charles Keller photo

brick walls of the enginehouse still stand beside the tracks of the Shade Gap Electric Rwy, operated by the Rockhill Trolley Museum on the grade of the EBT's Shade Gap Branch. Inside, one can see the heavy stone foundations and pits for the massive flywheels of the blast engines.

The engines were made by the Southwark Foundry & Machine Company of Philadelphia at an estimated cost of \$70,000 -- a massive cost at a time when the average narrow gauge steam locomotive cost \$8000. Twenty-four boilers, also heated by hot furnace gases, supplied the steam for the engines. According to legend the stationary steam engine now in the EBT's shops came from the furnace complex when the EBT built the machine shop in 1882. The legend says it had been used to

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power the water pumps for the boilers at the furnace, but it proved to be inadequate for that task.

Originally, coke for the furnaces was made near the mines in Robertsdale. At Rockhill, RI&C also experimented with 68 Belgian-type coke ovens, designed by one J. King McLanahan of Hollidaysburg, Pennsylvania. While in fact much more efficient than the more common beehive ovens then gaining widespread popularity in Southwestern Pennsylvania's Connellsville region, the Belgian process was difficult to master and the ovens were also difficult and expensive to repair. After tinkering with them for 11 years, the company abandoned them in 1887 and built 110 beehive ovens.

It is not known when the coking facilities in Robertsdale were abandoned. This author has located one suspected pit directly adjacent to the EBT tracks, several yards south of the tipple for the No. 5 mine. At the furnace site, the foundations of the Belgian ovens are visible near the southeast corner of the stockhouse wall. Virtually all of the beehive ovens survive, arranged in two banks to the southwest of the furnace complex, but their faces have caved in. It is very probably the largest single group of beehive ovens still in existence anywhere in the United States. If you wish to see what they looked like before being scavenged, visit the reconstructed beehive ovens in Riddlesburg, a short drive south from Raystown Lake Recreation Area.

Limestone for flux came from Grove's Quarry, located at the eastern end of Blacklog Narrows. Ore was taken from the old mines near the charcoal furnace

sites on the north side of the Narrows, carried over Blacklog Creek on a high trestle, and dumped into the cars of the RI&C tram railway for transfer to the furnace complex. Other iron ore was hauled by wagon from mines north of Three Springs (on the EBT south of Rockhill) and, after 1885, over the Shade Gap Railroad from new iron ore mines in Shade Valley.

Raw materials (iron ore, coke, and limestone) were stored in a two story stockhouse, 280' long, running from east to west behind the furnace stacks. The bottom story was of stone, while the upper story was sheathed in wood. The remains of the outer (southern) wall of the bottom story mark its location today. Coke, ore, and limestone were lifted from stockhouse floor to charging platforms by vertical air hoists. Up on the charging platform, men would move the materials to the furnace throat in hand barrows and simply tip the contents into the conflagration. Imagine the heat and smell these workmen endured.

The furnaces were very successful in their day, providing the railroad with most of its tonnage and justifying, entirely, the continued existence of the Shade Gap Railroad, at the time a wholly owned subsidiary of the EBT. The nationwide financial Panic of 1893 depressed the iron industry and led to a prolonged strike. Violence of a particularly nasty nature occurred when the company convinced a few non-union laborers to return to work and one "strike breaker's" house was dynamited. In the wake of wide spread unrest, the company blew out the furnace.

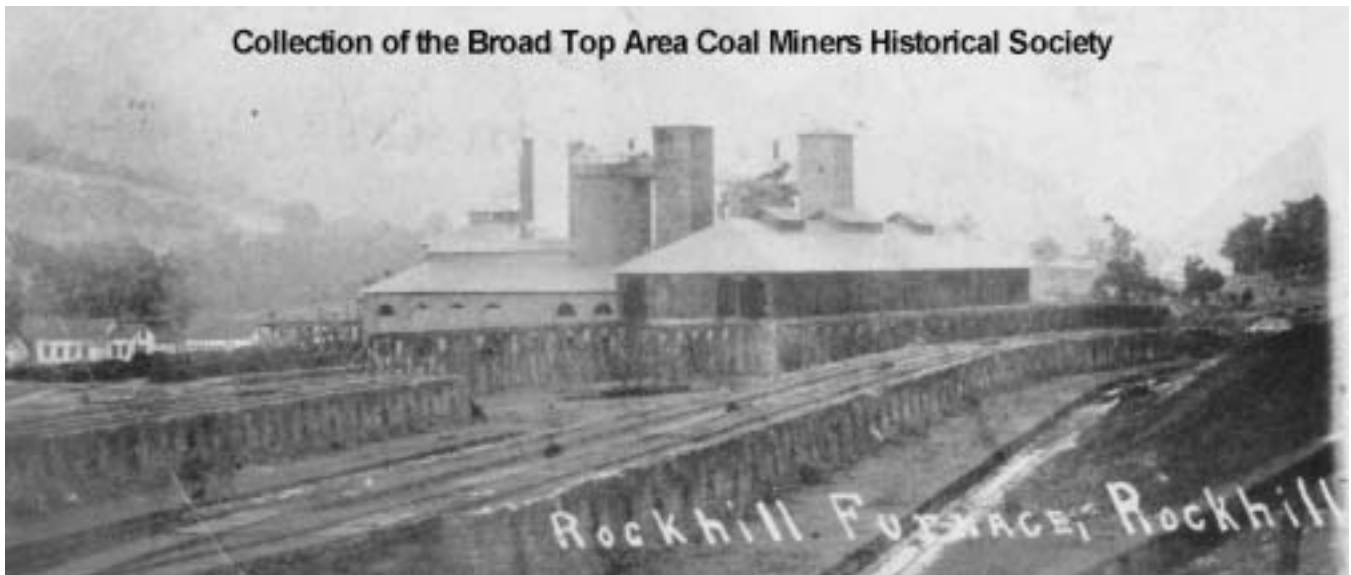
The Rockhill Furnace did not reopen until 1902. By that time, the furnaces were obsolete and the discovery of high grade iron ore in upper Michigan's Messabe Range rendered the quality of the RI&C's locally mined ores below standard. In an effort to remain competitive, the company imported 1/3 of its ore from the new Great Lakes region ore fields and another 1/3 from the best mines in the Juniata region, which increased yield but obviously at a much greater cost. When another depression hit in 1907, the Rockhill Furnace blew out for the last time.

The abandoned complex stood intact until 1915, when the brick buildings were demolished so the boilers and machinery could be shipped to an operation in Tennessee. The stacks were blasted to rubble to salvage their wrought iron sheathing. Much of the rubble was used in a large fill on a spur, built in 1916 to a new mine tipple at the end of the Coles Valley (Joller) Branch

on the now-dormant southern section of the EBT.

From 1923 through 1932, the McKelvey Brothers Lumber Company operated a logging railroad that connected to the Shade Gap Branch in the Narrows just east of the furnace complex. They operated a geared Shay locomotive, which was housed in one end of the old stock house. A small pile of coal lying in the undergrowth at the eastern end of the stockhouse wall marks the location. The McKelvey's operation closed down in 1932 and the rails were removed soon thereafter.

The "Iron Age" of the East Broad Top Railroad occupied a relatively short period in the railroad's history. But it should be remembered that the EBT was once part of a complete industrial system during the beginnings of America's Industrial Age. Today, the ruins of the Rockhill Furnace are a reminder of that time. They stand in mute testimony to the once-thriving economy of Southern Huntingdon County.



#### SOURCES:

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