

Carnegie (Cranberry) Furnace

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Figure 1 Cranberry Furnace in Johnson City, Tennessee: early 1900s

John T. Wilder was a young family man with a growing millwright business in Greensburg, Indiana when the Civil War broke out. He quickly enlisted in the First Independent Battery of Artillery, an Indiana volunteer unit, and was elected captain the next day. Within two months, he was promoted to lieutenant colonel of the 17th Indiana Volunteer Infantry which would later be known as “The Lightning Brigade”.

Over the next three years, Wilder led troops in over two hundred engagements and moved up through the ranks, eventually reaching the rank of Brigadier General. He resigned his commission in October 1864, as a result of a health problem. Wilder’s wartime service provided him with connections and knowledge that would serve him well over the next half century.

In 1866, Wilder moved his family from Indiana to Chattanooga, Tennessee. A year later he and two associates, Major W. A. Rockwood and Captain H.S. Chamberlain, organized the Roane Iron Company. They constructed the first coke-fired blast furnace in the south, at Rockwood in Roane County between Chattanooga and Knoxville. Wilder then established the Roane Rolling Mills Company in Chattanooga for the manufacturing of railroad rails.

Wilder expanded his mining and manufacturing interests over the next few years, becoming one of the south’s leading industrialists. In the early 1870s, Wilder purchased seven thousand acres on the crest and slopes of Roan Mountain. He constructed a twenty room hotel of spruce logs, on top of the mountain, and named it “Cloudland.” When the East Tennessee & Western North

Carolina Railroad reached the area, in the early 1880s, Wilder saw the opportunity to expand his tourist business. A much bigger Cloudland Hotel was completed in 1885. He also built the Roan Mountain Inn, next to the ET&WNC depot, at the Village of Roan Mountain.

While developing his Roan Mountain properties, Wilder moved his home to Johnson City and began promoting it as a potential center of the iron and steel industry in the South. The mountains to the east had abundant deposits of iron ore. The Pocahontas coal fields were nearby and the area had plenty of the necessary limestone. By 1888 there were plans for five blast furnaces and two steel mills in the area.

A key element in Wilder's plan for developing Johnson City was the improvement of transportation in the area. **On September 30, 1886**, Wilder chartered the Charleston, Cincinnati, & Chicago Railroad Company, commonly referred to as the 3-Cs Railroad. He planned to build a 621-mile line from Charleston, South Carolina to Ironton, Ohio, on the Ohio River, and then down the Ohio River to Cincinnati. **Johnson City would serve both as the headquarters and as a division point on the railroad.**

Wilder began lining up financial backing for the estimated \$21 million cost of the 3-Cs line. The most substantial funding source was the London-based Baring Brothers Bank. Construction was started at three different locations. One crew worked south from Ashland, Kentucky, across the Ohio River from Ironton. Another crew worked north from Camden, South Carolina, toward Marion, North Carolina. Track construction crews worked south from Johnson City toward Erwin, Tennessee, and north from Johnson City toward Dante, Virginia. **The company also constructed shops and a freight station in the Carnegie section of Johnson City and began construction of a depot near the junction of Broadway Street and the parallel tracks of the CC&C and the East Tennessee, Virginia & Georgia Railroads.**

Wilder organized the **Watauga Improvement Company** on November 30, 1888 to develop an industrial and residential section along the CC&C and ETV&G Railroads. The development was a mile northeast of downtown Johnson City. Within a few months it was renamed the Carnegie Land & Improvement Company, apparently in an effort to attract financial backing from northern industrialist, Andrew Carnegie. **Carnegie quickly became a boomtown with a variety of businesses and a hotel.**



Figure 2 Carnegie Hotel 1890s

In January 1890, Wilder traveled to Birmingham, Alabama to find a contractor to build a blast furnace. The person he hired was Harry Hargraves, who had constructed over thirty furnaces throughout the south. The new furnace was to be built just east of the Carnegie Addition, two miles from downtown Johnson City.

Hargraves apparently built the furnace to a relatively new design by James L. White, a consulting engineer whose plans were used to construct dozens of similar iron furnaces across the country. Drawings of White-designed furnaces appeared in several 1890 issues of the trade journal, *Iron Age*. The furnace would produce Bessemer Iron; however, the complex did not include a Bessemer converter. The iron from the Johnson City furnace would be sold and shipped to other steel mills, where it would be converted to Bessemer steel.

Hundreds of workers were hired to build the furnace. Many of the workers were Italian immigrants. A Johnson City newspaper, the *Comet* reported in February 1890, that a “number of Italians with all their worldly good arrived on railcar No. 4 Sunday and were put to work on Monday on the furnace. The paper also stated that more Italians were expected daily and that “in a few weeks a stranger coming to Johnson City will think he is in Italy.”

Not all the workers were Italians. Many Blacks were hired to work on the furnace as well. A later edition of the *Comet* described the “large crowd of workers” at the furnace as being “all kinds, colors, and age.” Hargraves constructed sixty-eight small houses near the furnace for the workers.

The Carnegie Furnace was apparently the second Bessemer-type blast furnace to be constructed in Tennessee, and possibly the South. The first was constructed at Chattanooga in 1887. Over the next few years, Bessemer furnaces were built all across the South, especially at Birmingham, Alabama.

The uncertain economic times of the 1890s were not kind to Wilder’s financial fortunes. Several sections of the 3-Cs railroad were in operation and hopes were high that the entire line would soon be completed **when the Financial Panic of 1893 brought construction to a halt.** The failure of Baring Brothers, the British financiers, brought on the demise of the 3-Cs. **Baring Brothers lost millions, Wilder lost \$760,000 and Johnson City was left with \$70,000 in unpaid bonds.**

Construction of the furnace also stopped when Wilder’s Carnegie Furnace Company went bankrupt. Eventually the Virginia Iron, Coal & Coke Company acquired the property and the furnace was “blown in” in 1898. Ore for the furnace was purchased from Cranberry Iron and Coal Company and shipped from Cranberry, North Carolina to Johnson City over the East Tennessee & Western North Carolina Railroad. The ore was then transferred to standard gauge rail cars to be taken to the furnace.

The Carnegie Furnace broke down on June 1, 1900, and the Virginia Iron, Coal & Coke Company went bankrupt during the summer of 1901. The receivers contacted Cranberry Iron & Coal officials with an offer to sell or lease the Carnegie Furnace in Johnson City. The CI&C Board of Directors considered the offer and negotiated a short-term option to lease the furnace for three years.

The lease called for the payment of a royalty of 15 cents per ton of iron the first year, 20 cents per ton for the second year, and 25 cents per ton the third year. VIC&C controlled the shipment of

coke from the nearest coalfield and agreed to protect CI&C with a favorable freight rate on coke during the duration of the lease. CI&C had the option to purchase the furnace for \$70,000 at anytime during the lease.

Cranberry management estimated that the furnace could produce at least 30,000 tons of special low-phosphorus pig iron per year. With the cost of mining the ore at \$1.30 per ton and the cost of shipping the ore on the ET&WNC at \$.70 per ton, they estimated a profit of at least \$2 per ton of pig iron. The railroad would also realize a profit of 35 cents per ton of ore hauled. The directors also estimated that \$100,000 would be needed to repair the furnace and provide operating capital.

Unfortunately CI&C had no money and already owed nearly \$350,000 to individual stockholders. The Board of Directors proposed issuing \$500,000 in bonds backed by a mortgage on the mines and the railroad. The creditor stockholders would accept the bonds to liquidate their claims and would purchase an additional \$100,000 in bonds to fund the furnace operations.

When some of the creditor stockholders balked at the proposal and the plan fell apart, a syndicate of the substantial stockholders took matters into their own hands. The Cranberry Furnace Company was incorporated in New Jersey on September 6, 1901, with authorized capital of \$100,000. The new company leased the Carnegie Furnace and began making repairs. The CI&C Board of Directors then leased all of the Cranberry properties including the mines, mine machinery, store, farm, and houses to the furnace company.

Under the arrangement between the two companies, all the furnace company's profits would go the iron company to be used to reimburse furnace company stockholders for their investment. Once they recouped their investment, Cranberry Furnace Company would become a subsidiary of CI&C, and additional profits would be used to pay off the iron company's creditor stockholders.

The Carnegie Furnace was renamed the Cranberry Furnace and put into blast in the spring of 1902. The Cranberry mines went into full production to supply ore to the furnace.

The Cranberry companies now had a stable market for iron ore that was, of course, shipped over the ET&WNC Railroad. Coke for the furnace was brought in over the Virginia & Southwestern Railroad to Elizabethton then shipped by way of the ET&WNC to the furnace in Johnson City. Limestone was brought from a new quarry located near Happy Valley, next to the ET&WNC main line. Shipments of these products were to be the economic backbone of the railroad for the next two decades.

The Cranberry Furnace had a 75-foot high blast furnace, three hot-blast stoves, a 160-high chimney, twelve 50-horsepower boilers, three 500-horsepower steam blowing engines, an open stock house, and a steel-framed cast house. Water for the steam engines came from an adjacent man-made pond fed by Brush Creek.

The furnace was built to have a 125-ton capacity meaning that it could produce 125 tons of iron per day. This was more than double the production capacity of the coke-fueled blast furnace John Wilder had built at Rockwood, and it was more than either one of the large blast furnaces he had constructed at Dayton, Tennessee.

Once the furnace was in full production, management began working to streamline the movement of raw materials. When the dual-gauge track was completed between Johnson City and Elizabethton in 1905, coke could be brought into Johnson City over the ET&WNC without

having to be transferred back and forth between standard and narrow gauge cars. One from the mines still had to be transferred to standard gauge hoppers and hauled by the Southern Railway (successor line to the ETV&G) to the furnace.

Railroad President, Frank Howe, and general manager, George Hardin sought to eliminate this bottleneck by building a spur from the narrow gauge directly to the furnace. Since the spur would have to cross the Southern tracks, they were forced to negotiate with the larger railroad.

After lengthy negotiations the two railroads finally reached an accord. The agreement provided for joint ownership of a dual-gauge spur from the ET&WNC mainline near Exum Furniture, crossing the Southern mainline at grade, to the furnace. As a result, the Southern had access to the Exum plant and the ET&WNC could haul Cranberry ore directly to the furnace in narrow gauge cars. The Carnegie Extension was completed on February 8, 1908.

The Cranberry ore could now be shipped directly to the furnace, but it still had to be unloaded from gondolas by hand once it got there. To solve this problem, the ET&WNC began constructing hopper cars. Soon there were forty-five hoppers on the railway roster.

The iron business provided the Cranberry companies solid profits until the end of World War I. Over the years, improvements were made at the Cranberry Furnace. A brick shed, limestone house, machine shop, laboratory, and blacksmith shop were added to the complex not long after it was put into blast. Sometime after 1908 a fourth stove was added and improvements were made to the hoist and charging mechanisms for feeding the furnace.

By the 1920s the iron market had changed and the furnace could not compete with more modern facilities. The furnace and mines were shut down periodically through the 1920s. Finally, in 1929, the furnace was permanently closed. Within a few years, most of the facility was torn down. Today only one of the original buildings remains on the site.



Figure 3 Vicinity of original Cranberry Furnace

