

Forests into Charcoal: “Coal” Kilns and Railroads

By Thomas J. Straka

An article written for *Woodchips* (April 2024) and the Forest History Association of Wisconsin on a significant forest product that impacted Wisconsin’s early forests. Charcoal burning was a major wood consumption activity, and it was centered on railroad stations to facilitate charcoal transport to the iron furnaces. It is a forgotten, but extremely interesting, industry.

Wisconsin’s forests were the nucleus for some of its early industries. One of those, while not utilizing the wood volume of the lumber or pulp and paper industries, still consumed much of the state’s forest resources. Charcoal burning (production) was critical to the state’s economy in the late nineteenth and very early twentieth century, as a supporting industry to the iron smelting furnaces. Apart from iron furnaces in Milwaukee Country and two furnaces in Dodge and Pierce Counties, which converted to coke fuel in the late nineteenth century, iron production in Wisconsin was fueled by charcoal.

Charcoal burns hotter than wood, with up to twice the heat value. It concentrates heat, burning cleaner and faster than mineral coal. Charcoal was the largest expense of an iron furnace, making its supply an important aspect of furnace location. The smelting of Lake Superior ores expanded from Michigan’s Upper Peninsula into Wisconsin, due to its immense forest resources and charcoal supply.

After the Civil War, huge iron smelters were erected, first in Brown County,

near Green Bay, De Pere, and West De Pere (Green Bay, National, and Fox River Furnaces in 1869-1870, and later further up the Fox River Valley in Appleton in 1872, and Fond du Lac in 1874). Charcoal kilns were built at or near the furnaces at first, but as wood quickly became scarce, the kiln locations expanded along railroad lines as far as 80 miles from the Brown County furnaces, which had major kiln locations west of the county line at Seymour, Black Creek, and Snyderville (see the Appleton Furnace Kilns map below).

Brown County had dozens of charcoal kilns and those were described in the Winter/Spring 2020 issue of *Voyager: Northeast Wisconsin’s Historical Review*, with many batteries of charcoal kilns located on local railroad lines. The National Furnace, for example, had extensive kilns south of De Pere on the Milwaukee and Northern Railway, and kilns as far north as Marinette County on the same line, and the Fox River Iron Company erected charcoal kilns at several locations on the Chicago and North Western Railway on Michigan’s Upper Peninsula.

The *Voyageur* article did not cover the many batteries of charcoal kilns built along the railroad lines of Central and Northern Wisconsin; this article describes those locations. These were local landmarks. The smoke and heat fascinated train passengers. Even the shape could spark engrossment; some were shaped like giant beehives or igloos. Railroad tourist guides would list them as attractions. Surprisingly, in many of the railroad kiln communities, charcoal burning is a forgotten industry.



Smoking Charcoal Kiln: A typical railroad charcoal kiln. Note the door at the bottom and the smoke coming from the row of vents along the bottom (Ohio Agricultural Research and Development Center).

The charcoal kilns were economic engines, often the foundation of a new community. Except for locations at or near the furnace, they were nearly all along a railroad line, near forest resources to fill the kilns. Often, they were built as soon as new communities were established because the railroad provided access to the timber.

In some areas of the country charcoal burners were accused of “forest devastation.” In Wisconsin they were often considered a godsend. Some communities, like Colby, Spencer, and Unity, campaigned to attract an iron furnace kiln location. Some formed stock companies and provided the investment to secure a location. New settlers considered a nearby kiln location a way to turn the expense of land clearing into a revenue source. In 1887 the Hurley newspaper proclaimed that, along the new Wisconsin Central Railroad, “the woods will be full of loggers soon, and coal kilns will be built to make use of the immense hardwood growth on the upland, and farming follows charcoal-burning as naturally as day follows dawn.”

The charcoal kilns on the railways were made of brick, some beehive-shaped and some round with dome-shaped tops. Capacity ranged from 35 to 50 cords. A door at the bottom was used for loading wood and unloading charcoal, and a door at the top was used for loading wood. A row of vent holes circled the bottom, often the size of a brick so that they could be easily sealed. Charcoal was made in an oxygen-deprived environment; the kilns were whitewashed after each burn, not for aesthetic reasons, but to seal any tiny cracks that might have developed.

Some of the charcoal kilns were owned by the furnace companies, others were leased, and some were owned by investors who had agreements to supply the furnace. Ownership changed over time as demand and

supply of wood changed. Thus, any reference to which iron furnaces controlled which kilns is subject to a particular date.

Appleton Furnace Kilns (1871-1888)

The Appleton Iron Company furnace went into blast in 1871, with a set of beehive charcoal kilns located near the ironworks. The kilns near the furnace were insufficient to meet charcoal demand, so kiln locations were established along the line of the Milwaukee, Lake Shore and Western Railway. Primary locations were at Bear Creek, Clintonville, Buckbee, and Marion. The company also had kilns north of Appleton at Mackville and Apple Creek. To ensure availability, the furnace company built its own charcoal railcars. The furnace burned in 1888 and was not rebuilt, as plans were to shut it down within a few months due to an “irreparable shortage of timber.

The Wisconsin Coal Company out of Milwaukee had kiln locations northwest of the Appleton Furnace kilns, confusing ownership issues, as they did change hands. Appleton Furnace purchased the Marion kilns from the Wisconsin Coal Company in 1886, for example. H. F. Whitcomb, of the railroad’s general office, confirmed development was rapid northwest of Clintonville with over 60 charcoal kilns already erected by 1879, providing “the settlers a chance to get rid of the timber cleared in opening their farms, at a profit instead of their being obliged to burn it in immense piles as has been the usual way.”



Appleton Furnace Kilns: Major charcoal kiln locations for the Appleton Iron Company along the line of the Milwaukee, Lake Shore and Western Railway (red), the Wisconsin Coal Company (green), and those supplying Green Bay, De Pere, and West De Pere (orange).

Fond du Lac Furnace Kilns (1883-1895)

The Fond du Lac Furnace (later Wisconsin Furnace Company) was constructed in 1873-1874. Due to poor economic conditions and the conflicting business interests of the owner, it did not go into blast until 1883. The four other iron furnaces in the Fox River Valley had been in blast for over a decade and charcoal from local sources was limited. The company had been offered liberal freight rates by several railroad companies and decided to obtain charcoal from kilns along the Wisconsin Central Railroad. The furnace would stay in blast until 1895 when it was destroyed by a fire.



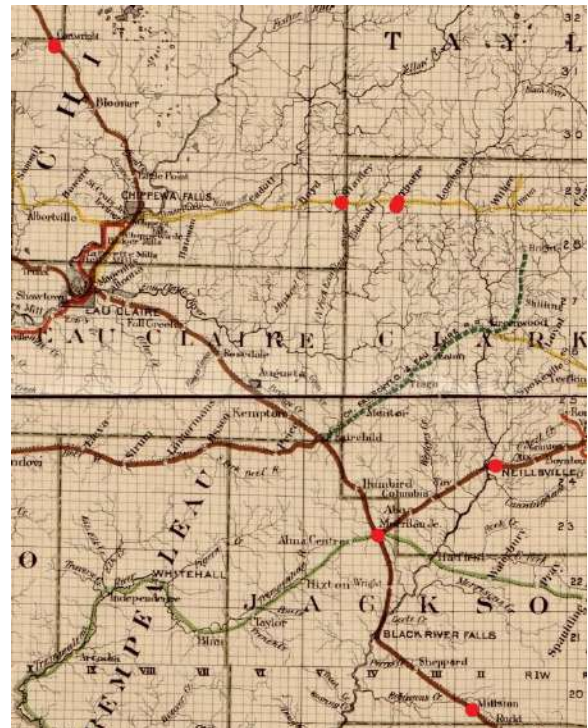
Fond du Lac Furnace Kilns: Major charcoal kiln locations for the Fond du Lac Furnace along the line of the Wisconsin Central Railroad.

James B. Taylor established the first Fond du Lac Iron Company kilns at Hewitt when the furnace went into blast. Hewitt would be the central point in the company's kiln locations with ten charcoal kilns with a capacity of 32 cords each. Local farmers supplied the wood; each summer the company issued handbills with specifications for wood to be delivered to the kilns. Three kilns each would be erected south of Hewitt at Auburndale, Milladore, and Sherry (constructed by Sherry Lumber Company). The charcoal kilns and their woodyards could be dangerous; in 1885 a fire burned 1,200 cords of wood at the kilns and threatened the town.

Black River Falls and Spring Valley

The York Iron Company charcoal iron furnace at Black River Fall went into blast in 1886 and was dismantled and moved to West Superior in 1892 due to high operating costs and troubling litigations (with plans to build charcoal kilns at Rice Lake).

The furnace required 30-35,000 cords of wood each month to produce 1,500,000 bushels of charcoal. Prices for hardwood lands along the railroad near its kilns increased 30-40 percent due to increased wood demand. The furnace smelted ores from the Gogebic Range in Northern Wisconsin and Michigan. Charcoal kilns were located at the furnace site and on railroad lines at Neillsville, Millston, Merrillan, New Auburn, Stanley, and Thorp.



York Iron Company Kilns: Major charcoal kiln locations of the York Iron Company furnace in Black River Falls, spread across several rail lines.

The Eagle Iron Company charcoal iron furnace at Spring Valley went into blast in 1894, obtaining ore and charcoal from the Wisconsin Iron & Lumber Company, an independent company. The ore was mined

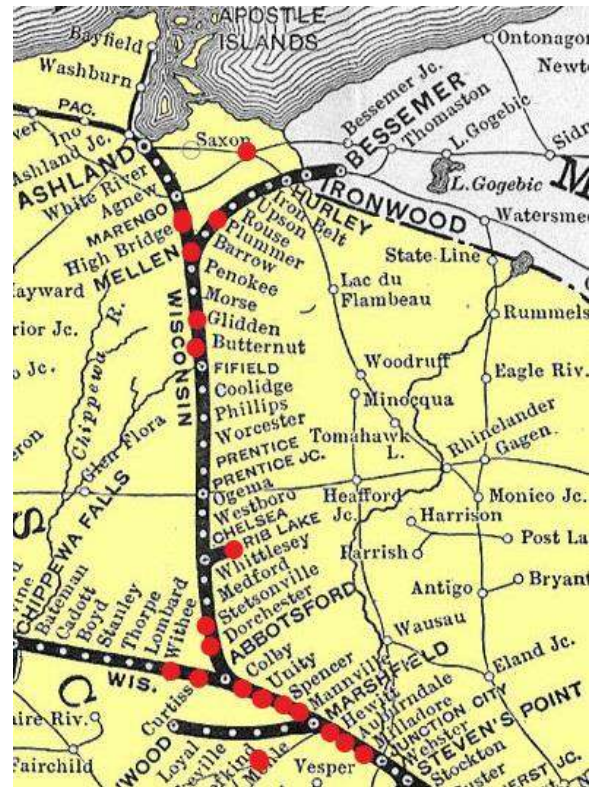
near the furnace and charcoal was obtained from a battery of charcoal kilns near the furnace. Within about a year the Spring Valley Furnace was in receivership, with one of the major creditors being Wisconsin Iron & Lumber Company. It was idle until 1899 when the fuel was changed from charcoal to coke, with the furnace still occasionally using charcoal as fuel. Charcoal was obtained from kilns along the rail lines belonging to abandoned furnaces. In 1894, for example, J. B. Taylor was supplying charcoal to the furnace from kilns at Thorpe, Withee, and Stanley.

The Florence Furnace in then-Marquette County went into blast in 1881 using ore from the Menominee Range. It had kilns at the furnace site and utilized railroad kilns located in Michigan's Upper Peninsula.

Ashland Furnace Kilns (1888-1902)

In the mid-1880s the vast iron deposits of the Gogebic Range, on the border of Michigan and Wisconsin, attracted the iron industry to northern Wisconsin. The Ashland Iron and Steel Company constructed a charcoal iron furnace at Ashland in 1887-1888, which would prove to be one of the best producers of charcoal iron in the country. It was the largest charcoal blast furnace in the world, creating an immense demand for cordwood (80,000 cords a year) to be made into charcoal to fuel the ironmaking process. The charcoal supply would be produced from many charcoal kilns erected by the company,

mainly along the line of the Wisconsin Central Railroad at major stations.



Ashland Furnace Kilns: Major charcoal kiln locations of the Ashland Iron & Steel Company along the line of the Wisconsin Central Railroad, including those acquired from the Wisconsin Furnace Company in 1894 and those owned by investors that supplied the furnace.

In 1901 the company decided to develop a new charcoal plant adjacent to the furnace to capture the chemical product lost in the regular production process (mainly wood alcohol and acetate of lime). The charcoal kilns along the railroad lines were abandoned in 1902 and over 100 charcoal kilns would be erected in Ashland, so that chemical products could add to the profits. The furnace continued in blast until 1925.

Communities along the railroad line with affected kiln locations suffered an economic calamity, but from 1888-1902 the Ashland Furnace kilns were a massive economic enterprise which supported many villages below Ashland. One main reason for the shift was a dwindling timber supply along the railroad, with the company reporting: "In many of the place the region immediately adjoining their charcoal kilns has been denuded of the timber suitable for the purpose and the wood is hauled now for many miles to reach a furnace."

At first the charcoal kilns were built in Ashland County, with the first in Saxon and Butternut, two sets of twelve 50-cord kilns each, erected in late 1887. The early plans were to erect 60-80 kilns, all within Ashland County at various locations along the Wisconsin Central Railroad. Some of these locations were Highbridge, Mellen, Glidden, and Plummer. Later major kiln locations, south of Butternut, were Stetsonville, Dorchester, Colby, Yolo at Chili, Curtiss, and Withee.

Many kiln locations along the Wisconsin Central Railroad supplied different iron furnaces as owners, leases, or markets changed. This fickle nature is illustrated by Pittsville in Wood County. After much campaigning and effort by the townsfolk, a Chicago investor built five charcoal kilns there. A two-year franchise was granted and by that time many felt the village had been cursed with the same

"smoke nuisance as are the cities of Pittsburg and Chicago." The investor was forced to abandon the kilns. Investors built kilns at Unity and Rib Lake which were an appreciated addition to the economy; given the market at the time, these must have supplied the Ashland Furnace.

In 1894 the Ashland Furnace purchased the charcoal kilns of the defunct Wisconsin Furnace Company at Spencer, Manville, Hewitt, Auburndale, and Milladore. It is hard to say if all the newly purchased kilns were put into production, as wood supply by that time was limiting the utility of many kiln locations.

In 1899 the entire system of charcoal kilns was managed out of Glidden and the company reported 11 charcoal kiln locations on the Wisconsin Central from Highbridge to a point south of Abbotsford. These kiln locations would support the furnace until the new kilns were erected in Ashland in 1902 and the railroad kilns in Wisconsin were abandoned. Newspaper articles at the time described the "economic calamity" inflicted on railroad villages. The root of the calamities was the depleted forest along the Wisconsin Central Railroad.

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