

Vanishing Ghosts of Michigan's Upper Peninsula Charcoal Iron Industry

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For decades before there was a U.S. Highway 41, a set of charcoal kilns was located along its future route, just south of the Carp River. The kilns operated from 1874 to 1907.¹ In the mid-twentieth century many charcoal kilns still existed along Michigan's major roadways and were touted as prime tourist attractions,² and this site had that potential. Highway rerouting in the mid-1930s resulted in most of these Carp River kilns being destroyed.³ In the summer of 1970, the second-to-last still-existing Carp River kiln collapsed, leaving one sole survivor.⁴ That sole charcoal kiln sat in front of the Marquette Area Wastewater Treatment Plant and by early 2019 it too had collapsed.⁵ Only a weathered sign which described the two kilns still exists at the site, indicating that these were the last two of 36 kilns that provided fuel to the nearby Carp River Furnace.⁶



The last surviving Carp River Furnace charcoal kiln along U.S. Highway 41 in 2014. Credit: Jimmy Emerson, DVM, Creative Commons license CC BY-NC-ND 2.0.



The Carp River kilns as they sat along the highway. Credit: Superior View.



The roadside sign in 2021 describing the last two Carp River Furnace charcoal kilns, now collapsed, located along the west side of U.S. Highway 41.



The restored charcoal kiln in 2021 stands on the north side of the Carp River on U.S. Highway 41, very close to the site of the old kilns, and welcomes visitors to Marquette by celebrating the city's mining history.

The loss struck a nerve in Marquette, and pleas went out to “resurrect our beloved, historic and now collapsed beehive kiln that stood in Marquette for over 130 years,” and a project was started to “save a piece of Marquette Iron Range’s iconic past.”⁷ With nearly \$100,000 in donations the kiln was reconstructed as part of the Iron Ore Heritage Trail on the opposite side of the highway.⁸ The collapsed kiln was one of the few survivors in the state when charcoal kilns were inventoried in the Upper Peninsula about 40 years earlier. That survey was a broad inventory of historic engineering and industrial sites on Michigan’s Upper Peninsula.⁹ It included the significant charcoal kilns that still existed on the Upper Peninsula in 1978 and is the foundation of this discussion (hereafter referred to as the 1978 inventory).

Charcoal kilns are relics of the Upper Peninsula’s once most important industry. A 1939 newspaper account from an iron furnace community noted their historical role: “Tumble-down limestone kilns, which tourists mistake sometimes for Paul Bunyan’s beehives, stand along railroad tracks in various part of the upper peninsula as silent reminders of a once flourishing charcoal industry.”¹⁰ The 1978 inventory identified the most representative Upper Peninsula charcoal kilns, describing the sites as:

The charcoal iron industry nevertheless had a significant impact in the Upper Peninsula, particularly in a few individual districts, like Marquette County, where employment was considerable. The production of charcoal probably generated more employment than the furnace proper, and the inventory includes a reasonable representative sample of nineteenth century charcoal kilns, with nine sites containing a total of twenty kilns. It should be pointed out, however, that there may have been as many as two hundred charcoal kilns operating in the Upper Peninsula in the 1880’s and 1890’s.¹¹

The 1978 inventory noted the Marquette charcoal site with the two surviving remnants originally had 36 kilns, probably built in 1890 by Charles H. Schaffer, the Alger County “Charcoal King,”¹² who had gained partial ownership of the Carp River Furnace. Schaffer contracted with the State of Michigan to remove hardwood from the nearby Marquette State Prison property. The kilns were reported to be made of sandstone in a beehive shape, with a 25-foot diameter base, which tapered to a height of 20 feet at the dome.¹³ Any estimate of the number of charcoal kilns at a particular site is nebulous, as kilns burned out and were abandoned, and new kilns were often added, plus ownership changed over time. By the time Carp River Furnace shut down, 43 kilns were reported to be fueling the operation.¹⁴

The 1978 inventory did not claim to identify all charcoal kiln remnants in the Upper Peninsula. Those would be nearly impossible to identify. Charcoal kiln foundations are very stable and easily persist for several centuries. This discussion, following the 1978 inventory, emphasizes the better-known and best-surviving kiln remnants. In the last volume of this journal, we described the history of Michigan’s Upper Peninsula’s charcoal burning industry and charcoal kiln operations.¹⁵ In this volume we complement that article and describe exact locations of the charcoal kilns in the state (based on the 1978 inventory’s representative sample of the best-remaining kilns), including photographs of their current conditions. We limit our discussion of kiln history to synopses, as the prior article presented detailed historical background on the charcoal kilns. All uncredited photographs were taken by the senior author in October 2021. All charcoal locations include geographical coordinates (decimal degrees) in the endnotes.

Charcoal Kiln Background

All over the Upper Peninsula charcoal kiln foundations hide in plain sight. At the west end of Lakewood Lane in the Harvey area, for example, there are circular charcoal kiln foundations along the side of the road in a yard. These kilns likely furnished the nearby Northern Furnace.¹⁶ The kilns were on the east side of the Chocolay River and the Northern Furnace was at the mouth of the river on the west side.¹⁷ Foundations typically are easier to identify from a satellite photograph than from on-ground observation. As one would expect, these foundations were part of a much larger set of charcoal kilns. In the woods nearby are more substantial kiln foundations, indicating a large set of charcoal kilns were at this site.



Charcoal kiln foundations on Lakewood Lane in the Harvey area near the mouth of the Chocolay River. Credit: Google Maps@2021, Maxar Technologies, USDA Farm Service Agency, Map Data@2021.

Tending the charcoal kilns could be dangerous work. In 1905 an 18-year-old man was killed while whitewashing this set of kilns. Whitewash was applied to seal the kilns before a burn. While applying whitewash to a burning kiln with an air leak, he fell through its top into the burning coals when the sealed cover on top became loose. He was charred beyond recognition and when water was used to douse the charcoal, the steam cooked his body. Firemen were injured from the steam created from extinguishing the fire.¹⁸ The kilns themselves could be dangerous. Gas could build up in them causing an explosion, demolishing the kiln.¹⁹



Charcoal kiln foundation on Lakewood Lane in 2021 as it stands in the yard.

Even transporting the charcoal from the kilns to the furnace location could be dangerous. An important responsibility of a collier (charcoal maker) was to ensure all charcoal loaded on to a charcoal wagon was totally extinguished. If not, the charcoal and the wagon might be lost in transit. A charcoal wagon had planks on its bottom which could be pulled out so that the charcoal could be easily unloaded at the coalhouse, but also to allow the teamster to dump a load of burning charcoal on the road if necessary. In 1877, Bay Furnace and the surrounding village were destroyed by a fire caused by a wagon transporting a load of still hot charcoal which reignited. The teamster managed to unhitch the horses, and meanwhile the fire spread to adjacent buildings. The furnace, 60,000 bushels of charcoal, and all the village, except the schoolhouse and church, were destroyed.²⁰



The forest adjacent to the kiln foundations in the Lakewood Lane yard contains several more kiln foundations with the bases extending well above the ground. This would be typical for other kiln foundations around the state.

The Upper Peninsula's charcoal iron industry relied on fuel produced from the region's hardwood forests. While charcoal kilns were the more noticeable fuel source, charcoal pits also produced much fuel. Charcoal pits were earth-covered, tightly-packed mounds of wood burned with a "dead fire," meaning a fire with an almost total lack of oxygen from the air. To gain efficiency, stone, brick, or a combination of both were used to construct permanent charcoal kilns near the wood source. The kilns became well-known local landmarks, due to the economic activity attached to them and the highly visible and odorous nature of the business. Even after the industry's decline, the charcoal kilns remained as ghosts of a forgotten industry. The 1978 inventory listed only charcoal kilns supporting the iron industry. There were also charcoal kilns supporting the copper industry. A 1941 tourist guide lists "old structures that look like Paul Bunyan's Beehives," along the Portage Canal in Houghton and includes a photograph of a beehive kiln charcoal from that location.²¹

An industry expert compared charcoal pits and kilns, then gave a description of how the charcoal kilns worked:

The pit method of making charcoal was very crude and wasteful, so some keen mind invented the stone kiln, which were constructed in an igloo, or bee-hive shape, and wherever feasible were built along hillsides to facilitate loading or filling from

the top with cordwood, or if a hillside was not available, an elevated platform was constructed.

Each kiln was approximately twenty-five feet in diameter at its base, gradually tapering upward to a height of twenty feet to the dome-cap which was about ten feet in diameter. There were two large openings in each kiln, one at the top and the other at the bottom. The top opening was about four feet high and five feet wide and faced the hillside or elevated platform, and was used to receive all of the cordwood. The bottom opening was a little larger and used to start the fire, and later, to carry the charcoal out of the kilns. About fifteen four-inch square openings, called "air vents" were located two feet apart all around the kiln about three feet above its base.

To fill the kiln, the green hardwood was cut into four-foot lengths and these wood cuts were dropped into the kiln through the top opening. Each piece was piled parallel to the ground floor around the kiln in two concentric circles. The vacant center circle, about eight feet in diameter was filled with dry kindling wood, in most instances cedar wood plus brands from a previous burning. A small tunnel was made from the large opening at the bottom of the kiln to the kindling in the center for later ignition.

About 40 cords of hardwood were required to fill one kiln and when filled, a rag saturated with oil was tied to the kindling material in the center of the kiln. After lighting, the kindling and green wood continued to burn until flames were visible through the large top opening, and immediately the large opening at the base of the kiln and all but a small hole in the top opening were sealed by stone and plaster. The fire within the kiln gradually worked its way downward and when the kiln boss saw red glowing coals in an air vent he would take one-half of a brick and seal these openings. At this particular stage of fireing [sic] the kiln was completely sealed and allowed to burn or char for eight days.

When the burning or charring had apparently ceased, the plastered openings at the bottom of the kiln was reopened to empty the kiln of charcoal. The charcoal was shoveled with 15-tine forks into "scuttle baskets" which were made by local Chippewa Indian Squaws. Each man could carry two or three bushels of charcoal in these "scuttle baskets" to nearby carts which conveyed it to the furnace.²²

One interesting charcoal operation that did not involve stone or brick charcoal kilns was included in the 1978 inventory. Charcoal was produced in a large industrial complex in Dickinson County at the Ford Motor Company Kingsford Manufacturing Complex.²³ In the early 1920s Ford Motor Company was using large amounts of wood to manufacture its automobiles (chassis, dashboards, steering wheels, and wheels). Henry Ford used a strategy of integrating timber operations into his company to reduce wood cost. He acquired timberland near Iron Mountain and constructed a massive sawmill complex to produce the wood products needed for automobile production.

The operation produced large amounts of wood scrap and waste; providing an opportunity to profit from that by producing charcoal in a chemical plant which was part of the sawmill complex, and marketing it as a new product, Ford Charcoal Briquets, sold to the public via its automobile dealership network. It is a notable example of Ford's commitment to minimizing waste.²⁴ The charcoal was not produced in kilns, but in a distillation or carbonization plant.²⁵



Upper Peninsula charcoal history should include Ford Charcoal Briquets. A Ford Motor Company carbonization plant near Iron Mountain (Kingsford) produced wood chemicals and charcoal; the charcoal was marketed by Ford Motor Company dealerships. Credit: From the collection of The Henry Ford. Gift of Ford Motor Company.

journey is enhanced. The kilns or ovens are great cones built of fire-brick, and capable of holding immense quantities of wood which is filled in from the top. The apertures are then closed, and as the wood undergoes the process of conversion into [char]coal, steam and smoke burst out of the circles of vent holes in the sides of the cones. The process is interesting, and the sight of a collection of thirty or forty of these ovens in operation is very picturesque.²⁸

Ford Motor Company eventually sold the operation to an investment group and it became Kingsford Charcoal.²⁶ While nothing remains of the carbonization operation, the Cornish Pumping Engine and Mining Museum in Iron Mountain contains a permanent exhibition describing the Ford Motor Company plant, including the charcoal production enterprise.²⁷

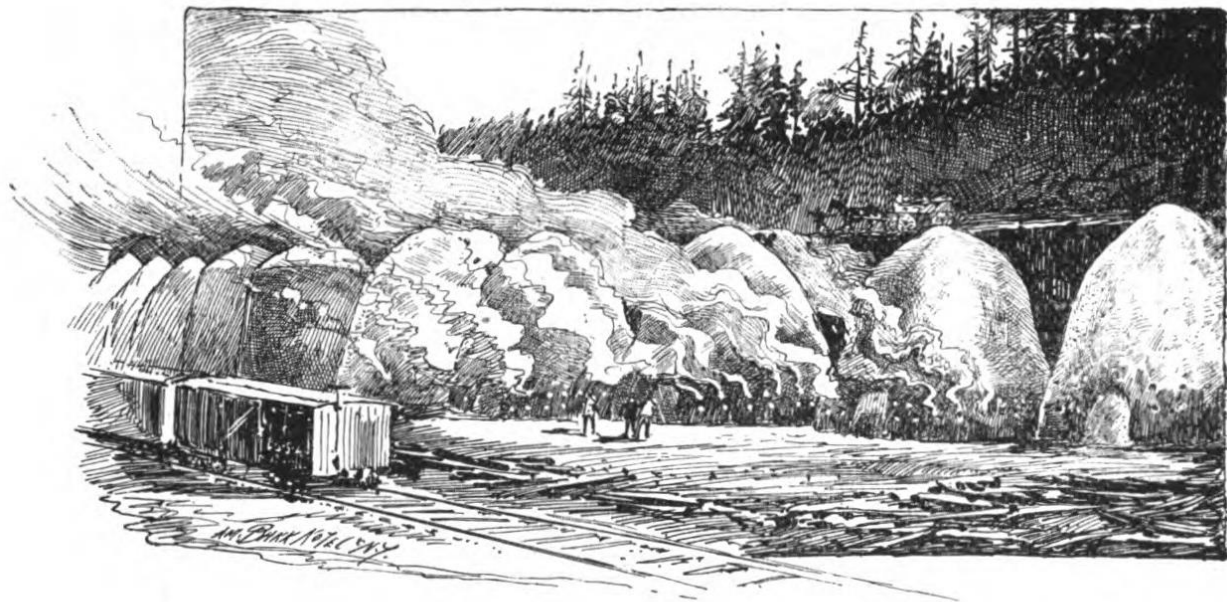
Other Kilns in Marquette and Alger Counties

Charcoal kilns were often built adjacent to the railroads, for easy transport of the fuel to the furnaces. Many Upper Peninsula railroad stations had the word “kilns” in their names, as that was the most obvious feature of the location. In 1891 a traveler published an account of his journey along the railroad that ran from Marquette to Munising and described Onota, one of the kiln locations:

One of the forest industries is charcoal-burning, and as the kilns in use can be seen from the cars the novelty of the



Charcoal kilns were often at railroad sidings or very close to railroads to minimize transportation cost in getting the charcoal from the kiln to railcar. These kilns were at Daggett in Menominee County, late nineteenth century. Credit: Menominee County Historical Society



CHARCOAL BURNING AT ONOTA.

Charcoal burning at Onota, a station on the Detroit, Mackinac & Marquette Railroad. Credit: From "Along the Bowstring, or South Shore of Lake Superior."²⁹

The charcoal kilns at Onota in Alger County, about 20 miles southeast of the Carp River kilns, are a second set of charcoal kilns included in the 1978 inventory.³⁰ Onota was first used as

the name of the Bay Furnace location until it was destroyed by fire in 1877; the name was then applied to a charcoal kiln location about 20 miles to the west.³¹ The Onota charcoal kilns were part of the Union Fuel Company. Construction of the Detroit, Mackinac, and Marquette Railroad began in 1879, and several of its railroad stations would serve as charcoal kiln sites.³² While most railroads were constructed east to west, construction began in Marquette and moved east towards the Straits of Mackinaw. As the tracks were being laid charcoal kilns were constructed on both sides of the main line to supply the insatiable demand of the iron furnaces in the Marquette area.³³ These charcoal kilns sites became the “nuclei of little settlements.”³⁴

The Union Fuel Company, later purchased by Charles Schaffer (The Alger County Charcoal King), constructed charcoal kilns at Deerton (Whitefish River Kilns), Glenwood (later Onota), and Rock River Kilns.³⁵ The three sites eventually had 35 charcoal kilns.³⁶ Fourteen of the 35 charcoal kilns would have been at Onota.³⁷ Today this is the abandoned railroad bed of the Duluth, South Shore, and Atlantic Railway bed which runs from Marquette to AuTrain, and is maintained as a trail by the Department of Natural Resources.³⁸

In 1978 one kiln remained, the ruins of another, and the ruins of rectangular stone building, 15 feet wide by 25 feet long. The inventory reported the surviving kiln had a base of 25 feet in diameter and stood about 25 feet high. The kilns were constructed of stone and had a conical shape.³⁹ The definition of what constitutes “ruins” is subjective. Today the site has one partially intact surviving kiln and at least six kiln foundations. All foundations have significant stone



The best-surviving charcoal kiln at the Onota location, covered in moss, 2021.



A surviving charcoal kiln foundation at the Onota location, 2021.



Stone building at the Onota site, 2021, stonework suggests it was built by the same stonemasons that built the kilns.

above the ground level. One foundation survived much better than the rest and is the probable kiln that was referred to as ruins. The rectangular stone building, most likely constructed by the same stonemasons that built the kilns, is immediately adjacent to the kilns, at the top of an embankment used to feed wood to the top of the kilns. The building would have served as an office or for some other use by the charcoal company. A long stone wall still exists at the end of the embankment. The location is on private property.

Surprisingly, the 1978 inventory lists the Onota site, but not the Rock River Kilns site, which is located on the same USDA Forest Service road that the Onota kilns are on.⁴⁰ Remnants of the Rock River charcoal kilns still exist as a USDA Forest Service interpretative historic site. Its status as an interpretive historic site merits including it in this discussion.

By 1881 Rock River Kilns was a thriving metropolis along the line of the Detroit, Mackinac, and

Marquette Railroad, at the end of the first 28 completed miles. It had a boarding house and was a supply station for men employed by the railroad.⁴¹ The kilns operated there from 1880 to 1896, when local hardwood supplies were exhausted. Originally, a set of circular “tub-type” kilns were built and later sandstone “beehive-type” were added to the site, for a total of 12 kilns. The tub kilns held 45 cords of wood and required 25 days for a complete burn. The smaller beehive kilns held 35 kilns and required 13 days for a complete burn.⁴² Like many of the other charcoal kiln sites, an embankment is adjacent to the kilns that allowed for wood to be loaded into the top of

the kilns. Most of the Rock River kilns are just foundations and it is difficult to locate all 12 kilns. A satellite image of the site from above provides fairly clear circular outlines of the round kiln remnants.⁴³



One of the partial charcoal kilns at the Rock River interpretative historic site, 2021.



One of the charcoal kiln foundations at the Rock River location, 2021.

A third charcoal kiln site in the 1978 inventory is in Marquette County at the intersection of Mangum Road and Greenfield Road, about eight miles southeast of Marquette. Google Maps labels this area Mangum and these were called the Mangum Kilns. The Carp River Furnace (Peninsular Iron Company) constructed 16 kilns south of Harvey to supply fuel for the furnace and this site likely had some of those 16 kilns. They were built against a hill, with two openings, one at ground level, and one at the top abutting the hill. Both doors were arched with stone and five feet in height. The kilns were built about 1878 and were 20 feet in diameter and height, with rough stone construction.⁴⁴

The location is 0.3 miles northeast of the intersection of Mangum Road and Greenfield Roads.⁴⁵ The 1978 inventory reported one surviving kiln. In 2021 the kiln has partial walls with no top. It is in a woody, brushy area, which makes access difficult. The stonework and engineering are impressive. The location is on private property.



A Peninsular Iron Company charcoal kiln, circa 1878, at Mangum, included in the 1978 inventory. Credit: Hyde and Abbott, "The Upper Peninsula of Michigan."⁴⁶



The Mangum charcoal kiln in 2021, with its stone arched door.



From the back only a partial wall remains on the Mangum charcoal kiln in 2021.

A Second Restored Charcoal Kiln, Fayette Kiln

Charcoal kiln remnants are not just in Marquette and Alger Counties. They are scattered across the Upper Peninsula. The Marquette restored charcoal kiln has a sister restored charcoal kiln in Fayette and Menominee and Delta Counties have major concentrations of kilns, just like those further north. Similar to Marquette, there were early pleas to preserve the Fayette Furnace charcoal kilns as historical artifacts of an important regional industry and possible tourist attraction.⁴⁷ Like Marquette, the kilns crumbled into ruins before the need for preservation was heeded.⁴⁸ The 1978 inventory included the Fayette Furnace site and described its original charcoal kilns, but because the original kilns no longer existed, did not include them in the survey.⁴⁹

Like most weathered kilns, these first lost their tops,⁵⁰ and efforts to repair them from that point failed.⁵¹ Eventually a historic state park was established around Fayette Furnace and a second restored charcoal kiln was built, this one on Lake Michigan.⁵² None of the original kilns survived; several partial kilns and photographs were used to build the replica of the beehive kilns at the park. The kiln restoration was important because the charcoal kilns were an “object of curiosity to thousands of park visitors.”⁵³ Today, the site of the town and furnace is Fayette Historic State Park.⁵⁴ The park includes much of the original furnace complex.

The Fayette Furnace illustrates the dependence of the ironworks on charcoal, and thus, on wood supply.⁵⁵ The Jackson Iron Company located the furnace on the Garden Peninsula in Delta County “on account of the abundance of timber,” despite its mines being 100 miles away.⁵⁶ In 1876 it needed 48 charcoal kilns to supply fuel, and six more were planned for construction that year.⁵⁷ By 1890 the timber had run out and the number of kilns had increased to 72.⁵⁸ The local newspaper summarized the closure: “When the hardwood timber in the vicinity of the furnace became scarce, it was impossible to manufacture iron profitably as the expense of shipping charcoal from longer distances became too great. Consequently, the furnace fires were extinguished in the early nineties, never again to illuminate the skies at night, visible for miles around.”⁵⁹

Fayette Furnace went into blast in 1867 and operated until 1890. At first charcoal was produced in pits, then in about a dozen rectangular (square) kilns adjacent to the furnace.⁶⁰ These were top-loading kilns with arched roofs and a capacity of 75 cords; plus, other sets of kilns were situated within a few miles of the furnace.⁶¹ The cordwood was delivered to the kilns via a narrow-gauge railroad and wood was loaded from the top of a ridge into the kilns from the top.⁶²

The square kilns proved to be unsatisfactory and in 1872 were replaced with beehive kilns.⁶³ Soon there were 30 beehive kilns producing charcoal, adjacent to or near the furnace.⁶⁴ The Company owned over 10,000 acres of hardwood near the furnace and charcoal kilns were located along the railroad line that extended from Fayette to Fairport, a distance of about 12 miles. Also, timber was supplied from Summer Island, about 15 miles away, using barges in summer and ice roads in winter. In 1884 there were plans to build six charcoal kilns on Summer Island, at a cost of \$300 each.⁶⁵ Charcoal kilns produced constantly until wood supply gave out.⁶⁶ Fifty or more horses were used to haul wood from nearby woodland and charcoal from Garden Peninsula kilns.⁶⁷

In 1883 the furnace company reported on its operations to a charcoal iron industry association journal and gave an overview of its charcoal supply organization:

We make our charcoal in kilns, of which we have 68. Four of these are oblong, supported by frame-work; capacity, 74 cords each. The others are bee-hive kilns, holding 35 to 50 cords each. When our wood is at its best age—say six months old—we get 40 bushels per cord. Our best hard [char]coal weighs 22 pounds per bushel of 2748 cubic inches. The soft [char]coal weighs about 12 pounds per bushel. Our hard woods are beech, birch, maple. The soft woods are basswood, hemlock, and white pine tops. We operate a private railroad 6½ miles long, its business being the transportation of wood and [char]coal to the furnaces.

Our kilns are scattered over a territory of 16½ miles in extent, the set furthest south being 4½ miles away, and those furthest north being 12 miles from the furnaces. The latter set is accessible by water in summer. We originally owned about 12,500 acres of timbered land, but have sold it off for farms as cleared, so that we now have but about 8,500 acres left, and much of that has been cut over. Much of that sold land has been extensively improved, and we now have many valuable farms about us, where a few years ago it was all wilderness. Our second-growth timber in this section is valueless for furnace purposes, so we sell the land as soon as possible after removing the first crop. The second-growth timber comes up very thick, and grows fast, and soon adds materially to the difficulty and cost of preparing for cultivation.⁶⁸

It is difficult to establish the exact number of kilns that were in a row adjacent to the furnace at Fayette. LaFayette reported 11 kilns, but those were likely the earlier rectangular ones.⁶⁹ The quoted material immediately above suggests some of the rectangular kilns might have still been in use as late as 1883. A cultural resource management plan for the townsite states there were “remains of ten conical brick charcoal kilns standing in a row east-northeast of the furnace complex,” but that does not mean additional kilns did not exist there earlier.⁷⁰ Photographs of the furnace complex suggest the number of kilns was ten.



The charcoal kilns in a row next to the furnace at Fayette about 1907. Credit: Delta County Historical Society.



View of the Fayette Furnace complex, with the furnace and charcoal kilns, and the relation to the harbor, about 1910-1915. This view makes it clear that these were conical kilns. Credit: Delta County Historical Society.



A closeup view of the Fayette charcoal kilns. Credit: Delta County Historical Society.



The restored charcoal kiln at Fayette Historic State Park, 2021.

Other Kilns in Delta and Menomonee Counties

Besides the Fayette charcoal kiln, the 1978 inventory included three sets of kilns in Menomonee and Delta County. All three are located near U.S. Highway 41 between Menomonee and Escanaba; thus, they were also very close to the Chicago and North Western Railway which provided for the transportation of the charcoal. The railroad company considered lumbering and charcoal burning to be critical to marketing its land grants.⁷¹ Rail transportation of charcoal was extensively used throughout the iron regions of the United States, and the Upper Peninsula of Michigan depended largely on the railroads to move charcoal.⁷² Almost all of the Upper Peninsula charcoal kilns were adjacent to furnaces or railroads, or at least close to a railroad.⁷³ Charcoal was so important to an iron furnace that the location was usually based on a policy “to bring the furnace to the charcoal rather than the charcoal to the furnace.”⁷⁴

When driving the U.S. Highway 41 between Menomonee and Escanaba virtually all of the communities on or near the highway had charcoal burning as one of their early industries.⁷⁵ The number of kilns at a location (as kilns were constructed or burned out) and ownership changed over time. For example, the kilns at Kloman were operated by the Escanaba Furnace, Menominee Furnace, and Carp River Furnace at various times.⁷⁶

Like the charcoal kilns in Marquette and Alger Counties were associated with the Detroit, Mackinac, and Marquette Railroad, charcoal kilns in Delta and Menomonee Counties were associated with the Chicago and North Western Railway. In 1886 Charles H. Schaffer, the

“Charcoal King” purchased all the kilns and timberland of the defunct Union Fuel Company, including the kilns on the Detroit, Mackinac, and Marquette Railroad, and began to operate batteries of charcoal kilns along the Chicago and North Western Railway at Kloman, Spalding, Wilson, DeLoughary (now Harris), and Schaffer (named for himself).⁷⁷

These kilns changed hands often to meet the varying demands of the iron furnaces. When the iron furnaces of Wisconsin’s For River Valley (Green Bay, Fond du Lac, and Appleton) found charcoal resources depleted, they reached out to these counties for supply. In 1880 Fox River Iron Company in West De Pere, Wisconsin was constructing or had kilns at Bagley, Kloman, Nadeau, and Ingalls,⁷⁸ and the Florence Furnace had kilns Waucedah and Wilson.⁷⁹ Other locations with kilns include Carbondale,⁸⁰ Wallace,⁸¹ Stephenson,⁸² Daggett,⁸³ Carney,⁸⁴ Spaulding,⁸⁵ Bark River,⁸⁶ and Hyde.⁸⁷ Five miles west of Powers and Spalding on U.S. Highway 2 is Hermansville, well-known for lumber, shingle, and hardwood flooring production; there were 12 charcoal kilns there to utilize the vast amount of scrap wood and unmerchantable timber.⁸⁸ When the De Pere Furnace closed in 1893 it was reported that many charcoal burners in Northern Michigan were put out of work.⁸⁹

A 1946 overview of Upper Peninsula charcoal kilns identified the old Juneau farm at Wilson as of the best-preserved sites in the state.⁹⁰ The 1978 inventory referred to the charcoal kilns at Wilson as the Kloman kilns. At the time the kilns were built the name of the community was Kloman, but it later changed to Wilson. Kloman was also the name of a once-bustling charcoal burning community located on the railway about three miles south of Powers. In 1942 crumbling charcoal kilns marked the site of Kloman, while Wilson still had substantial charcoal kilns standing.⁹¹

The Escanaba Furnace went into blast in 1873 and only remained in blast for a few years. But in 1874 it had 49 kilns supplying charcoal, all along the Chicago & North Western Railway between Escanaba and Powers.⁹² While the 1978 inventory reported ten kilns being built at Wilson, William Juneau, son of the kiln builder, stated six charcoal kilns were built at Wilson, with an additional foundation that never became a kiln. Five were built of fieldstone and one of brick. In 1959, the brick kiln was best survivor, due to stronger mortar. A kiln held 45 cords and took eight days to burn.⁹³ The kilns had three or four rows of vents along the bottom.⁹⁴ Currently, remnant kilns lack tops, with some having substantial sides remaining.

After the Escanaba Furnace shut down, the kilns were leased to other furnaces, and in 1879 the Carp River Iron Company leased the Peat Furnace (renamed Excelsior Furnace), with sets of kilns that included the Wilson kilns.⁹⁵ These kilns are associated with Charles H. Schaffer and were one of the many batteries of kilns operated by him along the Chicago and North Western Railway. Schaffer induced farmers and other timberland owners to locate kilns on their land and produce charcoal to fill his contracts with furnaces.⁹⁶

Today the evidence at the site suggests William Juneau’s family history was correct, with six partial kilns and a foundation remaining. These are the only kiln remnants that can be seen from the highway off Old U.S. Highway 2 & 41.⁹⁷ Much vegetation grows around and through the kilns’ open tops. They are still substantial enough to give an idea of what the battery of kilns looked like in its prime.



An Escanaba Iron Company charcoal kiln, circa 1872, at Wilson, included in the 1978 inventory. In 1946 an Escanaba Daily Press article provided an image of the Wilson charcoal kilns while some were still in good shape and noted "They're not beehives or igloos," but charcoal kilns on the old Juneau farm at Wilson, built by Charles H. Schaffer of Marquette.⁹⁸ Credit: Hyde and Abbott, "The Upper Peninsula of Michigan."⁹⁹



The Wilson charcoal kilns in a row back in the day they impressed tourists (undated). Credit: Delta County Historical Society.



Tree growing from top of a Wilson charcoal kiln, 2021. Unfortunately, trees are growing out of many of the remaining kilns around the Upper Peninsula.



The Wilson charcoal kilns in a row today, 2021, showing the effects of time.



Typical Wilson charcoal kiln, with only some of the side remaining, 2021.

When the Peat Furnace was leased by the Carp River Iron Company in 1879, six kilns were built at Barkville (now Bark River),¹⁰⁰ on the Chicago & North Western Railway (about seven miles east of the Kloman Kilns), plus the first logging camp in the area was established to furnish wood to the kilns.¹⁰¹ Four more must have been built later, as Barkville is later reported to have ten charcoal kilns.¹⁰² In 1978 there were reported to be six kilns remaining, with another three foundations. They were conical stone structures, 25 feet in diameter and 20 feet tall.¹⁰³ Currently, remnant kilns lack tops, with some having substantial sides remaining.

A new school was constructed in Barkville just before the kilns went in and the smoke from kilns made the school unusable. The furnace company was required to buy the school building and the foreman's family lived in it.¹⁰⁴ Wash day for local residents depended on the direction of the wind, as the smoke from the kilns was so dense.¹⁰⁵ One explanation of why so few charcoal kilns still exist on the Upper Peninsula could be in the newly-constructed Bark River Town Hall in 1935. It was built from bricks obtained from the Kipling Furnace charcoal kilns.¹⁰⁶

Charcoal kiln operations provided major economic opportunity to the small communities along the railroad lines. Bark River was no different. Town history acknowledged that "a large factor in the development of Bark River was the consummation of hardwood timber into charcoal ... which was sold to iron furnaces of the upper peninsula for the manufacture of iron."¹⁰⁷ Charcoal kilns provided an array of employment opportunities which allowed small communities to grow. One pioneer businessman/merchant in Bark River was credited with furnishing those opportunities: "He cleared the land, hiring many men who did all kinds of work, they cut the timber, hauled it to the kilns or railroad tracks, they cleared the farms and were employed at the charcoal kilns, either firing the kilns or loading the charcoal aboard cars for shipment."¹⁰⁸

The 1978 inventory described the location of these kilns as "located in an almost inaccessible, heavily-wooded, and insect-infested area,"¹⁰⁹ The kilns are located in forested area and there are still six partial kilns and three foundations. Older sources give a location of east of St. George's Church (St. Elizabeth Ann Seton Catholic Church on that site today) on a hillside (Two Mile Hill).¹¹⁰ The kilns are just east of the Catholic Church, but nearly a mile north.¹¹¹



The Bark River charcoal kiln, located in woodlands north of Bark River, 2021.



The bottom door and inside of a Bark River charcoal kiln, 2021. Notice the rows of air vents.



The Bark River charcoal kilns have been somewhat preserved by their location "hidden" in a wooded area. Even a bottom door lays near a kiln, something almost always scavenged at other kiln sites.



A Menominee Furnace Company charcoal kiln in 1885 at Stephenson, included in the 1978 inventory. Credit: Hyde and Abbott, "The Upper Peninsula of Michigan."¹¹²

In 1873 the Menomonee Iron Company put the Menomonee Furnace into blast and used charcoal kilns at the furnace to produce fuel from pine slabs from lumber mills. This proved to be an insufficient fuel source and charcoal kilns were erected 22 miles north at Stephenson near the Chicago and North Western Railway. Later other kilns, including the Kloman kilns, were leased to support the furnace (renamed Champion) until it became idle in 1884.¹¹³ In 1978 there reported to be five kilns at the site, with one foundation. They are conical stone kilns, 25 feet in diameter and about 20 feet tall.¹¹⁴ There are still five partial kilns and a foundation on the site. The location is about three miles east of Stephenson in an agricultural field.¹¹⁵ Currently, remnant kilns lack tops, with some having substantial sides remaining.



One of the best-surviving Stephenson charcoal kilns, 2021.



Stephenson charcoal kilns in a row near an embankment for top loading, 2021.

Fuel Supply Critical to Charcoal Iron Furnaces

Charcoal iron furnaces were major early Upper Peninsula industries. Obviously, the location decision for these furnaces considered iron ore supply, but equally important was the fuel source, as it was the largest expense of a furnace.¹¹⁶ A regional history emphasized the importance of wood supply and charcoal fuel to the charcoal iron industry:

The greater part of the ore mined in the Upper Peninsula is shipped in its natural condition, and reduced into iron by the coke and anthracite furnaces of other States. The furnaces of Michigan use charcoal, and produce a superior quality of pig metal. They are located near large tracts of hardwood, and depend for their prosperity upon the abundance of that supply of fuel. The building of new railways in the Upper Peninsula has opened immense tracts of charcoal timber which have been hitherto inaccessible, and an extensive revival in the manufacture of charcoal pig iron in that region is confidently expected. The production of charcoal gives employment to a large amount of labor, and it can be pursued at a season when other labor is suspended.¹¹⁷

Our discussion of charcoal iron furnaces has shown fuel supply was the common reason for charcoal iron furnace closures (both temporarily and permanently). Even the furnaces in Fox River Valley of Wisconsin, which smelted Upper Peninsula iron ores, after depleting local timber supplies, expanded their charcoal procurement area into the Upper Peninsula counties near Wisconsin, and eventually were forced to close when that fuel supply was also exhausted.¹¹⁸

Only two charcoal iron furnaces were in blast in Marquette County in 1887. The reason for the “idleness” was identified as the scarcity of charcoal and explained as:

The lumbermen have cut down nearly all the best pine, and their tracks have been closely followed by the charcoal burners, who cut down the best of the standing hardwood. As wood grows scarce near the furnaces, the charcoal burners were compelled to go further into the forests, and the cost of hauling increased with the distance and the advancing price of hardwood timber. At the present [1887] charcoal burning is almost one of the lost arts in the county, although there are hundreds of deserted kilns scattered over its surface.¹¹⁹

Charcoal's role in one of the Upper Peninsula's most dominant early industries often isn't appreciated for its importance. The early history of the region would have been much different without its vast timber resource. Not just lumbering relied on that resource, but so did iron production. The engine of iron production was fueled by charcoal and charcoal kilns were critical to produce that fuel. The restored charcoal kilns at Marquette and Fayette show that there is historical appreciation of that importance. Unfortunately, the Paul Bunyan Beehives scattered around the Upper Peninsula no longer arouse tourist questions.

Notes

¹ Kenneth D. LaFayette, *Flaming Brands: Fifty Years of Iron Making in the Upper Peninsula of Michigan, 1848-1898* (Marquette: Northern Michigan University Press, 1990), 42-43, 76-78; “Project Will Bring Back Beehive Kilns,” ABC 10 News. Accessed on October 15, 2021 at: <https://abc10up.com/2018/07/17/project-will-bring-back-beehive-kilns>.

² “Preserve Those Old Furnace Kilns.” *Escanaba Daily Press*, February 3, 1935, 10; “Charcoal Kilns Mark Scenes of Old Industries.” *Escanaba Daily Press*, July 20, 1939, 19 (part 2); “Old Kilns Are Relics of Charcoal Industry.” *Escanaba Daily Press*, October 20, 1946, 11; Jean Worth, “Charcoal Burners’ Kilns Are Peninsula Attraction,” *Escanaba Daily Press*, February 2, 1957, 6; Jean Worth, “Mud Shanties Needed to Preserve Charcoal Kilns,” *Escanaba Daily Press*, July 28, 1959, 4.

³ “Bunyan’s Beehives Being Dismantled,” *Escanaba Daily Press*, December 15, 1935, 5.

⁴ *Escanaba Daily Press*, July 25, 1970, 4.

⁵ “Historic Charcoal Kiln Collapses.” *Mining Journal* [Marquette], April 1, 2019. Accessed on October 15, 2021 at: <https://www.miningjournal.net/news/front-page-news/2016/04/historic-charcoal-kiln-collapses>.

⁶ The weathered sign still existed and was in place at the Carp River Furnace charcoal kiln site in the fall of 2021. Debris from the two kilns had been removed, to become part of a reconstructed kiln across the road. The sign reads: “Charcoal Kilns—2 of original 36—Local hardwood burned to charcoal in these kilns supplied the fuel for the Carp River Blast Furnace, located across the road where ore from the Marquette Iron Range was reduced to pig iron from 1874 to 1907.” The sign is on the west side of U.S. Highway 41, just south of the Carp River. Geographic coordinates for the sign: 46.517562, -87.383916.

⁷ Iron Ore Heritage Trail. “Save a Piece of the Marquette Iron Range’s Iconic Past.” This website contains an excellent one-and-a-half-minute video that includes images of the sole surviving kiln and plans for a restored kiln. Accessed on October 15, 2021 at: <http://ironoreheritage.com/carp-river-kiln-fund>.

⁸ “History Preserved: Iron Ore Heritage Recreation Authority Turns Restored Structure Over to City.” *Mining Journal*, July 1, 2020. Accessed on October 15, 2021 at: <https://www.miningjournal.net/news/front-page-news/2020/07/history-preserved-2>. The restored charcoal kiln is on the east side of U.S. Highway 41, just north of the Carp River. Geographic coordinates: 46.518936, -87.384480.

⁹ Charles K. Hyde and Diane B. Abbott, *The Upper Peninsula of Michigan: An Inventory of Historic Engineering and Industrial Sites* (Washington, DC: U.S. Department of the Interior, Historic American Engineering Record, Office of Archaeology and Historic Preservation, Heritage Conservation and Recreation Service, 1978).

¹⁰ “Charcoal Kilns,” *Escanaba Daily Press*, July 20, 1939.

¹¹ Hyde and Abbott, *The Upper Peninsula*, 46.

¹² “Charcoal Iron Industry Pioneer Dies in West,” *Escanaba Daily Press*, December 11, 1945, 6.

¹³ Hyde and Abbott, *The Upper Peninsula*, 70-71; LaFayette, *Flaming Brands*, 76-78.

¹⁴ R. C. Allen, *Mineral Resources of Michigan with Statistical Tables of Production and Value of Mineral Products for 1910 and Prior Years*, Michigan Geological and Biological Survey Publication 8, Geological Series 6 (Lansing, MI: Wynkoop Hallenbeck Crawford Company, 1912), 238-239.

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- ¹⁵ Thomas J. Straka and Lawrence A. Gueller, "Charcoal Burning in the Lake Superior Region," *Upper Country: A Journal of the Lake Superior Region* 8 (2020), 1-17.
- ¹⁶ Jim Carter. "Old Railroad Grade Tells the Story of Harvey." *Mining Journal*, January 18, 2017. Accessed on October 15, 2021 at: https://www.miningjournal.net/news/superior_history/2017/01/old-railroad-grade-tells-story-of-harvey. For background on the Northern Furnace and its charcoal kilns see: *Chocolay Township History: Then and Now* (Marquette, MI: Pride Printing Company, 2008).
- ¹⁷ LaFayette. *Flaming Brands*, 15; Carter, "Old Railroad Grade," *Mining Journal*, January 18, 2017. The charcoal kiln foundations are located at the end of Lakewood Lane about 600 feet from the Chocolay River, across from where the Northern Furnace was located. Geographical coordinates: 46.498504, -87.351536.
- ¹⁸ "Was Burned to Death, Walter McCarthy of Marquette Loses His Life." *Evening News* [Sault St. Marie], August 4, 1905, 5.
- ¹⁹ "Our Days Before Yesterday," *Clare Sentinel*, January 22, 1969, 8.
- ²⁰ LaFayette. *Flaming Brands*, 50; *Escanaba Daily Press*, July 19, 1948, 5.
- ²¹ Upper Peninsula Development Bureau, *The Lure of Michigan's Upper Peninsula* (Ann Arbor, MI: The Ann Arbor Press, 1941), 9, 38.
- ²² R. A. Brotherton, "Fayette Furnace Opened After Railway Line Was Built Negaunee to Escanaba." *Escanaba Daily Press*, March 13, 1947, 9.
- ²³ Hyde and Abbott, *The Upper Peninsula*, 58-59.
- ²⁴ The Henry Ford, "Ford Charcoal Briquets." Accessed October 15, 2021 at: <https://www.thehenryford.org/collections-and-research/digital-collections/expert-sets/101417>.
- ²⁵ Hyde and Abbott, *The Upper Peninsula*, 58. There is a photograph of the wood distillation building on this page.
- ²⁶ Guy Forstrom, "Kingsford Fuel: The Burning Story of Charcoal Briquettes," *Daily News* [Iron Mountain], December 30, 2017. Accessed on October 15, 2021 at: <https://www.ironmountaindailynews.com/news/local-news/2017/12/kingsford-fuel-the-burning-history-of-charcoal-briquettes>.
- ²⁷ "Ford Plant Exhibit Debuts at Iron Mountain Museum," *Daily Press* [Escanaba], August 25, 2015, 7A.
- ²⁸ Julian Ralph, *Along the Bowstring, or South Shore of Lake Superior* (New York: Press of the American Bank Note Company, 1891), 24, 26.
- ²⁹ Ralph. *Along the Bowline*, 26.
- ³⁰ The Onota Charcoal Kilns are located south of Michigan Highway M-28 between Marquette and Au Train. From the intersection of U.S. 41 and M-28, south of Marquette, proceed east on M-28 for 15 miles to the Deerton Road exit, then south on Deerton Road for 1.5 miles to Deerton and Deerton-Onota Road. Take the graveled Deerton-Onota Road east for 2.25 miles to the intersection with Onota Hill Lane (to the south). The Deerton-Onota Road becomes the Onota-Au Train Road at this point. The Onota location is just ahead to the north of the Onota-Au Train Road, so close it is best to park at the edge of the large intersection. To the north of what has become the Onota-Au Train Road is the stone building, visible from the intersection, and just to the north of the building is the embankment with the charcoal kilns. Geographical coordinates: 46.471713, -86.995709.
- ³¹ Hyde and Abbott, *The Upper Peninsula*, 75.
- ³² "Charcoal Iron Industry Pioneer Dies in West." *Escanaba Daily Press*, December 11, 1945, 6.

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- ³³ Aurele A. Durocher, "The Duluth, South Shore, and Atlantic Railway Company," *The Railway and Locomotive History Society Bulletin* No. 111, 33-41.
- ³⁴ *Northern Tribune* [Cheboygan], March 19, 1881, 1.
- ³⁵ LaFayette. *Flaming Brands*, 63, 75; "Detroit, Mackinac, & Marquette," *Northern Tribune*, February 26, 1881, 1; Map of Detroit, Mackinac & Marquette R. R., "The Mackinaw Short Line." Accessed October 15, 2021 at: <https://collections.lib.uwm.edu/digital/collection/agdm/id/4504>.
- ³⁶ LaFayette, *Flaming Brands*, 75.
- ³⁷ Daniel J. O'Rourke, "Rock Kilns: A Case Study of Michigan's Charcoal Industry," PowerPoint Presentation to Alger County Historical Society, 2008. In holdings of Marquette Regional History Center, 662.74 Or6; LaFayette, *Flaming Brands*, 75.
- ³⁸ Onota Township Website, Area Recreation. Accessed on October 15, 2021 at: <http://www.onotatownship.org/recreation>.
- ³⁹ Hyde and Abbott, *The Upper Peninsula*, 79.
- ⁴⁰ Both the Onota and Rock River Kilns are on the same road, the Onota-Au Train Road. If you drive to the Rock River Kilns site, use the directions given later in the endnotes which state you should use Rock River Road to access the Rock River charcoal kilns. Midway between the two kiln sites, the Onota-Au Train Road becomes impassible.
- ⁴¹ "Detroit, Mackinac, & Marquette," *Northern Tribune* [Cheboygan], March 19, 1881, 1.
- ⁴² Rock Kilns Historic Site (brochure). USDA Forest Service, Hiawatha National Forest, Munising. Accessed on October 15, 2021 at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprd3798340.pdf; O'Rourke, "Rock Kilns," PowerPoint Presentation; LaFayette, *Flaming Brands*, 75.
- ⁴³ The location of the Rock River Kilns site is west of Munising. From Munising take Michigan Highway M-28 for 15 miles west to County Highway H-01 (Rock River Road), continue south for about one mile and Highway H-01 turns west. After about 0.2 miles, H-01 turns south again; do not turn south at that intersection, but continue west on Onota-Au Train Road for about 0.15 miles, then turn right at the next intersection on to a one-lane, dirt Forest Service road. The dirt road has signage to lead you to the kiln site. The USDA Forest Service interpretative historic site brochure provides detailed directions, including a map; the web address of the brochure was included in the last endnote. Geographic coordinates: 46.459442, -86.941143.
- ⁴⁴ LaFayette, *Flaming Brands*, 43; Hyde and Abbott. *The Upper Peninsula*, 71-72.
- ⁴⁵ The Mangum charcoal kiln location is five miles southeast of Harvey, 1,600 feet northeast of intersection of Greenfield Road and Mangum Road. From the intersection, to locate the kiln, proceed north on Greenfield Road for 1,250 feet, then west for 950 feet. Geographic coordinates: 46.460412, -87.248677.
- ⁴⁶ Hyde and Abbott, *The Upper Peninsula*, 72. This page contains a circa 1878 photograph of the Mangum charcoal kiln.
- ⁴⁷ "It's a Good Idea," *Escanaba Daily Press*, October 10, 1945, 4.
- ⁴⁸ Clint Dunathan, "Seek Historical Data Relating to Ghost Town Park," *Escanaba Daily Press*, March 8, 1960, 6.
- ⁴⁹ Hyde and Abbott, *The Upper Peninsula*, 61-63.
- ⁵⁰ Jean Worth, "Fayette State Park Proposal Prompts a Winter Visit," *Escanaba Daily Press*, March 24, 1956, 12.
- ⁵¹ William J. Duchaine, "'Ghost Furnace Town' Becoming Attraction," *Lansing State Journal*, July 22, 1967, 10.

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- ⁵² Robert D. Pehlke, "Charcoal Iron Smelter Becomes Historic Site," *Journal of the Minerals, Metals & Materials Society* 14, no.10 (October 1962), 780-781.
- ⁵³ "State Restores Fayette Park's 'Beehive' Kiln," *Escanaba Daily Press*, November 1, 1963, 12. This newspaper article contains an excellent photograph of the restored Fayette Furnace charcoal kiln, with the remnants of one of the original kilns nearby.
- ⁵⁴ The charcoal kiln is located near the furnace in Fayette Historic State Park. Geographic coordinates: 45.718667, -86.667505.
- ⁵⁵ Jean Worth, "Exhaustion of Timber Near Marquette Caused Fayette," *Escanaba Daily Press*, September 28, 1937, 4.
- ⁵⁶ American Iron and Steel Association, *The Ironworks of the United States* (Philadelphia: American Iron and Steel Association, 1876), 53.
- ⁵⁷ Ibid.
- ⁵⁸ American Iron and Steel Association, *Directory to the Iron and Steel Works of the United States* (Philadelphia: American Iron and Steel Association, 1890), 60.
- ⁵⁹ "Fayette, Once Busy Furnace Town, Was Like Utopia to Old-Timers," *Escanaba Daily Press*, February 2, 1930, 8.
- ⁶⁰ Brotherton, "Fayette Furnace Opened," *Escanaba Daily Press*, March 13, 1947, 9. There is an excellent photograph of the rectangular charcoal kilns adjacent to the furnace in this newspaper article; in addition, there is a photograph of the kilns in LaFayette, *Flaming Brands*, 31.
- ⁶¹ LaFayette, *Flaming Brands*, 30-32, 71-73; Hyde and Abbott. *The Upper Peninsula*, 63.
- ⁶² "When Charcoal Kilns Smoked: U.P. Had 23 Furnaces Making Iron in 1903." *Escanaba Daily Press*, July 11, 1964, 10.
- ⁶³ *Escanaba Daily Press*, November 1, 1963.
- ⁶⁴ Brotherton, "Fayette Furnace Opened," *Escanaba Daily Press*, March 13, 1947.
- ⁶⁵ "Local Intelligence and Happenings," *Weekly Expositor. Independent* [Sturgeon Bay, WI]. October 10, 1884, 2.
- ⁶⁶ "Scenic Ghost Town Often Mentioned as Likely State Park," *Escanaba Daily Press*, May 10, 1936, 11 (part 2).
- ⁶⁷ "Fayette, Once Busy Furnace Town, Was Like Utopia to Old-Timers." *Escanaba Daily Press*, February 2, 1939, 7; "Historic Fayette Harbor Is Beauty Spot of Peninsula," *Escanaba Daily Press*, 10 (part 2).
- ⁶⁸ "Charcoal Blast Furnaces of Michigan," *Journal of the United States Association of Charcoal Iron Workers* 4, no. 2 (April 1883), 88-89.
- ⁶⁹ LaFayette, *Flaming Brands*, 31.
- ⁷⁰ SSOE, Inc. and Quinn Evans/Architects, "Fayette Historic Townsite Cultural Resources Management Plan," 1996. Accessed on October 15, 2021 at: <https://www.govinfo.gov/content/pkg/CZIC-e159-c85-1996/html/CZIC-e159-c85-1996.htm>.
- ⁷¹ Le Roy Barnett, "The Chicago & North Western Railway in Michigan: A History of Its Construction and Land Grants in the Upper Peninsula of the State," *Railroad History* No. 205 (Fall/Winter 2011), 50-69; *Annual Report of the Chicago and North Western Railway Company, for the Sixteenth Fiscal Year, Ending May 31st, 1875* (New York: John W. Amerman, Printer, 1875), 13.
- ⁷² "Transportation of Charcoal," *Journal of the United States Association of Charcoal Iron Workers* 6 (April 1885), 117-121.
- ⁷³ Richard H. Schallenberg, "Evolution, Adaptation and Survival: The Very Slow Death of the American Charcoal Iron Industry," *Annals of Science* 32 (July 1975), 355.

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- ⁷⁴ Albert E. White, "Pig Iron Industry in Michigan." In *Mineral Resources of Michigan with Statistical Tables of Production and Value of Mineral Products for 1910 and Prior Years*, Michigan Geological and Biological Survey Publication 8, Geological Series 6, ed. R. C. Allen. (Lansing: Wynkoop Hallenbeck Crawford Company, State Printers, 1912), 225.
- ⁷⁵ Jean Worth, "The Railroad Came and Made a String of Towns," *Daily Press* [Escanaba], June 22, 1981, 4-A; Jean Worth, "Chicago & North Western Turns at Powers-Spalding," *Daily Press*, June 29, 1981, 4; "Powers and Spalding Are Enjoying Postwar Construction," *Escanaba Daily Press*, November 22, 1947, 6.
- ⁷⁶ LaFayette, *Flaming Brands*, 41, 44, 59; Worth, "Mud Shanties Needed," *Escanaba Daily Press* July 29, 1959.
- ⁷⁷ Worth, "Charcoal Burners' Kilns," *Escanaba Daily Press*, February 2, 1957; "Old Kilns Are Relics," *Escanaba Daily Press*, October 20, 1946; LaFayette. *Flaming Brands*, 75; Bill Cadeau, "DeLougharys [sic] Homestead in Harris Area in 1869," *Escanaba Daily Press*, January 24, 1976, 9
- ⁷⁸ "Depere Matters," *Green Day Advocate*, April 29, 1880, 3; *Green Bay Advocate*, May 4, 1882, 3.
- ⁷⁹ "An Attachment Served," *Daily State Gazette* [Green Bay], July 21, 1884, 3.
- ⁸⁰ Ted Foster, "What's in a Name? How Michigan Areas Were Christened," *State Journal* [Lansing], November 21, 1951, 4.
- ⁸¹ "82 Years of Fun, Heartaches," *Green Bay Press-Gazette*, January 18, 1976, A-5.
- ⁸² LaFayette, *Flaming Brands*, 43-44.
- ⁸³ The Anuta Research Center in Menomonee collection includes a photograph of the Chicago & North Western Railway station in Daggett, with a set of charcoal kilns in the background.
- ⁸⁴ R. L. Polk & Co., *Michigan State Gazetteer and Business Directory* (Detroit: R. L. Polk & Company, 1897), 1776.
- ⁸⁵ LaFayette, *Flaming Brands*, 59.
- ⁸⁶ Mrs. L. R. Nelson, "Bark River Origins and Growth Told by Pioneer," *Escanaba Daily Press*, May 26, 1963, 14.
- ⁸⁷ Jean Worth, "Peninsula '400' Head for Barn" *Escanaba Daily Press*, July 16, 1969, 6.
- ⁸⁸ Alvah L. Sawyer, *A History of the Northern Peninsula of Michigan and Its People*, Volume I (Chicago: The Lewis Publishing Company, 1911), 606-608; "Hermansville Stars as Wood Industry Museum," *Escanaba Daily Press*, December 15, 1965, 4,
- ⁸⁹ *Green Bay Press-Gazette*, June 30, 1893, 3.
- ⁹⁰ "Old Kilns Are Relics," *Escanaba Daily Press*, October 20, 1946. There is an excellent photograph of the Wilson kilns in this newspaper and also in: Worth, "Charcoal Burners' Kilns," *Escanaba Daily Press*, February 2, 1957.
- ⁹¹ John P. Norton, "Kloman," *Escanaba Daily Press*, July 19, 1942, 9.
- ⁹² LaFayette, *Flaming Brands*, 41.
- ⁹³ Worth. "Mud Shanties Needed," *Escanaba Daily Press*, July 29, 1959, 4.
- ⁹⁴ Hyde and Abbott, *The Upper Peninsula*, 57-58. There is an early photograph of the Wilson charcoal kilns on page 57.
- ⁹⁵ LaFayette, *Flaming Brands*, 44, 59.
- ⁹⁶ "Old Kilns Are Relics," *Escanaba Daily Press*, October 20, 1946.
- ⁹⁷ The Wilson kilns are on Old U.S. Highway 2 & 41 east of Wilson. On today's U.S. 2 & 47 (exactly at mile marker 163) take County Road 557 north across the railroad tracks to Old U.S. 2 & 47 that parallels the railroad and current U.S. 2 & 41. Turn right (east) for 0.4 miles. Just as

you cross Forty-Seven Mile Creek and the road turns to gravel, the kilns are visible to the north in a field. Geographical coordinates: 45.706775, -87.409068.

⁹⁸ “Old Kilns Are Relics,” *Escanaba Daily Press*, October 20, 1946.

⁹⁹ Hyde and Abbott, *The Upper Peninsula*, 57. This page contains a circa 1872 photograph of the Wilson charcoal kiln.

¹⁰⁰ “Bark River Was Called Barkville until 1900,” *Daily Press*, March 31, 1987, 5B.

¹⁰¹ LaFayette, *Flaming Brands*, 59

¹⁰² “Bark River to Stage Homecoming Festival, July 21,” *Escanaba Daily Press*, July 11, 1929, 4; Centennial Committee of Bark River, Michigan, *Bark River Centennial, 1871-1971: Memories That Linger* (Bark River: Centennial Book Committee, 1972), 25.

¹⁰³ Hyde and Abbott, *The Upper Peninsula*, 53.

¹⁰⁴ “Bark River Landmark: Oldest Building Is Coming Down,” *Escanaba Daily Press*, April 1, 1969, 2.

¹⁰⁵ Nelson, “Bark River Origins,” *Escanaba Daily Press*, May 28, 1963, 14.

¹⁰⁶ *Escanaba Daily Press*, August 3, 1935, 6; April 1, 1969, 2.

¹⁰⁷ Helen Flynn, “Bark River to Stage Homecoming Festival on Sunday, July 21,” *Escanaba Daily Press*, July 11, 1929, 3.

¹⁰⁸ “Merchant for Nearly 50 Years, Bark River Resident Started Business with Capital of \$50,” *Escanaba Daily Press*, March 30, 1930, 12.

¹⁰⁹ Hyde and Abbott, *The Upper Peninsula*, 53.

¹¹⁰ “Bark River Celebrates 100,” *Escanaba Daily Press*, July 2, 1971, 8.

¹¹¹ Sources for the location of these kilns are not clear. Accessibility is limited by private ownership (the current owner is Michael Stenberg) and a surprising lack of local knowledge of even the existence of current kilns near the community (a few local residents are aware of the kilns, like George Martin who guided the senior author to the kilns). The location is about 0.2 miles west of D Road (County Road 535), 0.8 miles north of its intersection with Old U.S. Highway 2 & 41 in Bark River. Geographic coordinates: 45.721952, -87.308819.

¹¹² Hyde and Abbott, *The Upper Peninsula*, 68. This page contains an 1875 photograph of the Stephenson charcoal kiln.

¹¹³ LaFayette, *Flaming Brands*, 43-44.

¹¹⁴ Hyde and Abbott, *The Upper Peninsula*, 67-68. There is an early photograph of the Stephenson kilns on page 68.

¹¹⁵ The Stephenson charcoal kilns are east of Stephenson on Old 352 Road. Take County Road G-12 east from Stephenson, then about 0.3 miles north on Old 352 Road. The kilns are in an old agricultural field, about 300 feet to the east with trees growing near and out of them. They are built on an embankment that made them easy to load from the top. Geographical coordinates: 45.410594, -87.551763.

¹¹⁶ Thomas J. Straka, “Charcoal as a Fuel in the Ironmaking and Smelting Industries,” *Advances in Historical Studies* 6, no. 1 (March 2017), 56-64.

¹¹⁷ Western Historical Company, *History of the Upper Peninsula of Michigan* (Chicago: Western Historical Company, 1883), 161.

¹¹⁸ Thomas J. Straka and Lawrence A. Gueller, “Fuel for Northeast Wisconsin’s Iron Smelting Industry: A History of Charcoal Kilns,” *Voyageur: Northeast Wisconsin’s Historical Review* 26, no. 2 (Winter/Spring 2020), 32-41.

¹¹⁹ “Forced Idleness. Charcoal Iron Furnaces in the Peninsula Nearly All Closed Down.” *Detroit Free Press*, November 13, 1887, 1.