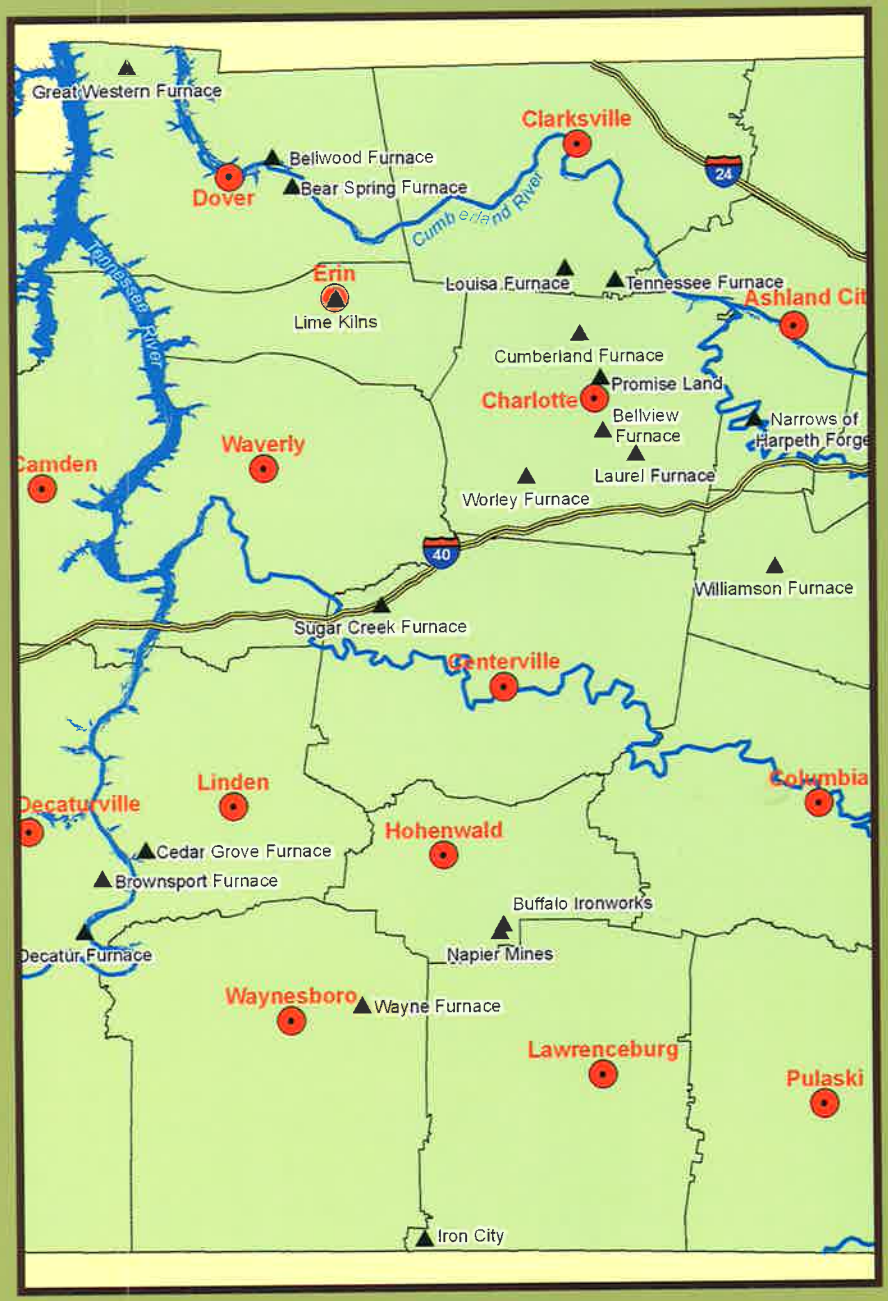
TENNESSEE IRON FURNACE TRAIL

A Guide to Resources on the Western Highland Rim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Wayne Furnace
Lawrenceburg
Pulaski
Iron City

ABOUT THE

Tennessee Iron Furnace Trail Project

The Tennessee Iron Furnace Trail is a partnership project, funded in part by the United States Department of Agriculture (USDA) Forest Service, in cooperation with the Buffalo Duck River and Five Rivers Resource Conservation and Development Councils (RC&D), the Center for Historic Preservation (CHP), and the Tennessee Civil War National Heritage Area (TCWNHA), at Middle Tennessee State University.

The purpose of the project, which began in 2004, is to research, identify, and document existing nineteenth-century iron industry resources along the Western Highland Rim, and to assist the counties within the trail to preserve and tell the stories of these places. This publication is provided to the counties at no cost to use and distribute as a part of their overall heritage development plan.

This guide is designed to introduce the history and some of the more intact and significant of the many iron industry sites. A glossary and a selected bibliography are provided which includes sources for those readers who wish to have more information on the technology associated with the production of iron.

Please note that several of the sites described are on private property, and though they may be viewed from the road, they may not be accessible to the public without the consent of the owner or owners. The remains of the furnace stacks are historic, each one is fragile, and all require and deserve the respect of the visitor. Please view the stacks with caution and leave each one of these sites as you found it.

For more information, contact the local organizations listed within this publication or visit the Iron Furnace Trail link at the CHP Web site at **http://histpres.mtsu.edu/histpres.**

Acknowledgements

Michael T. Gavin, preservation specialist with the Tennessee Civil War National Heritage Area, is the principal researcher and author of the text of this publication. Caneta S. Hankins, assistant director of the Center for Historic Preservation, is the project director. The Buffalo/Duck River RC&D administers the USDA Forest Service grant and provide advice and assistance in all aspects of this project. Five Rivers RC&D also contributed support to this project. Erin Lobb and Kevin Cason, graduate assistants at the CHP in 2005 and 2006, supported the work of the project staff. All scrip images are from Tennessee Merchant Scrip, courtesy of Dennis Schafluetzel and Tom Carson, (used with permission; published online at Schafluetzel's Onomastics, Genealogy, History & Numismatics.) Photographs are by Gavin or Hankins unless otherwise noted. Tom Nolan, director of the Remote Sensing Center in the Department of Geosciences at MTSU provided the maps. The cover art work, depicting an iron furnace in production, is an original work by artist Barry Graham of Vicksburg, Mississippi, and is used with his permission and provided courtesy of the Tannehill Iron Works Historical Park in McCalla, Alabama. The project staff is indebted to many individuals and to local governments, historical societies, organizations, and agencies of the counties along the Iron Furnace Trail for their cooperation and hospitality.

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Map of Geological Regions

THE IRON INDUSTRY

Few substances have played a larger role or had more of an impact on the peoples of this planet than iron. From approximately 4000 BC until the commercialization of the Bessemer process of steel manufacture (1867), iron has been a constant and consistent element in the development of races, cultures, and nations. From primitive spearheads and knives to plows, kettles, weapons, cannon, munitions, battleships, railroads, bridges, and buildings, generations have relied on the iron found within the earth's crust to survive, to farm, to wage war, to build, and to flourish.

The colonists arriving in North America constructed an iron furnace in Virginia as early as 1609, and by 1771, the colonies were producing iron at seventy-two blast furnaces. Pennsylvania soon emerged as the largest producer of iron supporting thirty-two blast furnaces and forty-two forges. Valley Forge, Pennsylvania, where George Washington and his troops camped in 1777-78, was named for an iron forge on the Valley Creek. As the young nation grew and settlers pushed south and west across the mountains, the need for tools, nails, guns, wheels, kitchenware, and various equipment expanded the domestic market for iron products. Blast furnaces began to appear in the new states of Ohio, Illinois, Kentucky, and Tennessee.

The iron ore deposits of the Volunteer State occur in two main areas: the red ores in East Tennessee and the brown ores in the Western Highland Rim of Middle Tennessee. A large portion of the upland areas of the Tennessee River Valley, from Stewart to Decatur counties, has long been the source of a brown iron ore from which special grades of pig iron, such as charcoal iron, high silicon, and high-iron ferro-phosphorus, have been smelted and cast, and then shipped to northern and western destinations. Considerable ore deposits remain distributed throughout several counties but are too widely scattered to provide producers the economy of scale enjoyed by the Great Lakes region, among others. Only relatively modest local operations survived into the twentieth century, and the last, at Rockdale in Maury County, ceased production at the end of World War II.

Numerous blast furnaces and forges existed in middle Tennessee, primarily during the nineteenth century. Early adventurer James Robertson and his partners established the first iron furnace in the region in 1797 and others quickly followed suit. The early iron making operations took place on large, remote, self-sustaining plantations and

often employed hundreds of workers, male and female, young and old, black and white. They mined the ore, burned charcoal, hauled raw materials, produced the metal itself, grew and prepared food, or performed the many and varied tasks of the village and its surrounding farms.

Supervising the entire operation was the multitalented ironmaster who functioned as chief executive officer, head engineer, personnel director, and sales manager. Further, it was his ultimate responsibility to make sure there were adequate supplies of ore, wood, charcoal, and foodstuffs, as well as horses, mules, and workers to perform the many and varied tasks. Under the watchful eye of the founder, whose job it was to keep the furnace in blast twenty-four hours a day, seven days a week, the furnace chemically reduced large amounts of ore and limestone flux into molten metal and waste material.

This process was accomplished by subjecting the charcoal fuel to a continuous blast of air that produced temperatures high enough to separate the iron from the other elements. These impurities joined with the fluxing material and were drawn off as slag. Guttermen made the liquid iron flow into previously prepared channels in the sand floor of the casting house. When cool, these large hardened bars (known as pigs) could be transported to forges or rolling mills for further refinement. The highly trained (and well paid) molders fashioned castiron consumer products in a shed at the base of the furnace.

Finery forges served as adjuncts to the blast furnaces, heating the brittle pig iron in the presence of an oxidizing air blast to remove more of the carbon, and turning it into malleable wrought iron by mechanical pounding. Bloomery forges acted as small open blast furnaces that transformed relatively small amounts of rich ore directly into wrought iron by heating, cooling, and hammering. Beginning in the 1840s, most Middle Tennessee bloomeries were being abandoned in favor of puddling furnaces at the rolling mills. Some forges continued to use trip or steam hammers for turning bloomed or rolled iron into various shapes for mechanical purposes, i.e. crankshafts and axles.

In 1847, there were twenty-one blast furnaces, eleven forges, and three rolling mills operating on or near the Cumberland River in the greater-Nashville vicinity. Similarly, along the Tennessee River from Hardin County to Stewart County, twelve furnaces and eight forges were in production. By 1856 pig iron output in the Western Highland Rim region had peaked at just over 50,000 tons. Tennessee usually led the South in pig iron production during the first half of the nineteenth century.

Generally, however, the industry was in a decline by the mid 1850s. Financial difficulties that led to the economic Panic of 1857 and the mon-

umental technological changes that led to the new Age of Steel effectively doomed the charcoal iron industry of the Volunteer State. By 1860 only sixteen ironworks in the region remained operational, and less than a dozen reopened after the Civil War. As the Industrial Revolution of the late nineteenth century progressed, only a few companies, primarily in Dickson and Stewart counties, survived.

The furnace stacks, the water courses, a few buildings, cemeteries, piles of slag, archaeological remains, some documents, and oral traditions are the remnants of this nearly forgotten chapter of Tennessee's history. The remains of the hearths where immense quantities of wood were burned to make the charcoal that fueled the furnaces are still evident at some sites or are being rediscovered by archaeologists. The densely forested landscape surrounding the furnaces underwent a major change during the years of iron production because of the clear cutting of the virgin timber that was transformed into charcoal.

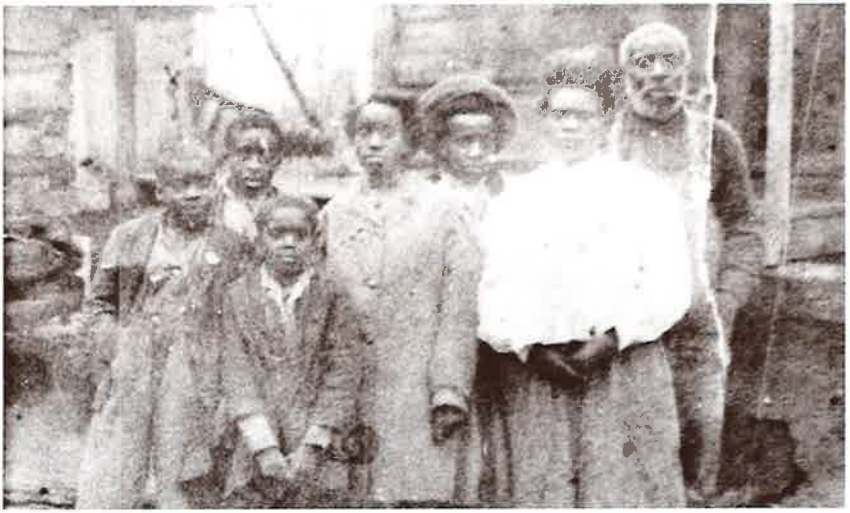
When visiting these quiet places, it is hard to imagine that all around once existed busy villages, characterized by an integrated work force, unceasing noise, the heat and smoke of the fires, and back-breaking, dirty, and round-the-clock work that was necessary for the production of iron. Rediscovering and telling the stories of these places and the people who lived and worked at them, whether or not their names are known, is the purpose of the Tennessee Iron Furnace Trail.

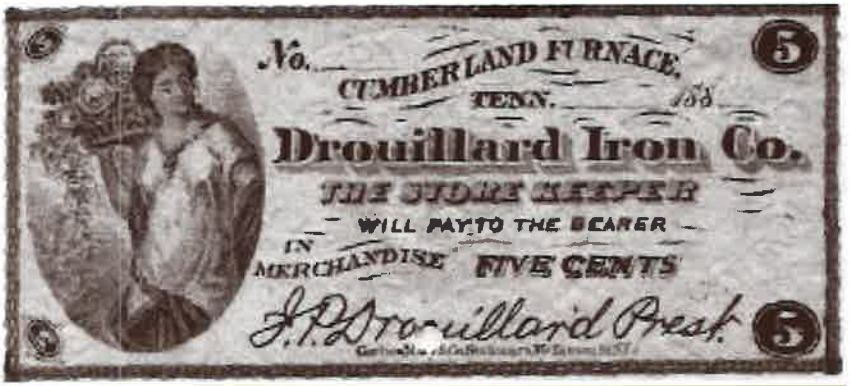
Hopewell Village National Historic Site, Southern Berks County, Pennsylvania
Photo courtesy of National Park Service

Top:
James Robertson

Middle:
Jerry and Mae Jane Robertson Family
(Promise Land) 1880

Bottom:
$0.05 Drouillard Iron Co. scrip (October 5, 1882)





THE PEOPLE

Iron plantations were integrated communities, peopled by different races and cultures. The **ironmaster**, who in modern terms would be termed the Chief Executive Officer and was also often the owner, was at the top of the company pyramid. Early Tennessee ironmasters include Robert Baxter, Montgomery Bell, Wallace Dixon, William Ewing, Rogal Fergusson, Epps Jackson, Richard C. Napier, James Robertson, Samuel Stacker, Robert Steele, and Anthony and Samuel Vanleer.

Many ironmasters were either from, or only one or two generations removed from, Scotland and England where the process and business of making iron was well established. A number of Tennessee ironmasters came from Pennsylvania, the most prolific state for iron production in the nineteenth century. These men and their families early on formed alliances in their businesses as well as their social life. Marriages among members of the wealthy industrial families solidified and benefited this close-knit society. For example, two of James and Charlotte Robertson's daughters married ironmasters. James Napier married Isaac Vanleer's daughter, Hannah. Wallace Dixon was married to Anthony Vanleer's wife's sister, Elizabeth. One of the most famous women connected with the iron industry was Jane Irwin Yeatman Bell, wife of iron industry financier Thomas Yeatman. At his death, she became one of the richest women in the South and later married John Bell, presidential candidate in 1860, who became one of the owners of the Cumberland Iron Works.

Next to the ironmaster in authority and skill was the **founder**, a highly trained man responsible for the production and quality of the iron. The **clerk**, as the name implies, was the business manager for the plantation. The workers were in various classes of descending responsibility including **keepers, fillers, molders, guttermen, colliers, miners, laborers, teamsters,** and **woodcutters.** These men included whites, free and enslaved blacks, and sometimes women and children, who all worked in and around the furnace operations. Other men, women, and children were responsible for growing and preparing food, and providing clothing and housing for the workers. **Carpenters, blacksmiths, stonecutters,** and usually a **doctor** also resided on the plantation.

The African-American contribution was especially significant and striking; well over half of the furnace and forge hands in middle Tennessee during the antebellum period were black, and they performed every type of industrial task. Iron furnaces are known to have existed in both Egypt and West Africa since about 600 BC, so it is likely that some

slaves brought to the New World from West Africa were already acquainted with the process of making iron. From records and oral traditions, it is known that slaves were an esssential part of the iron plantations and worked as both unskilled laborers and at skilled trades including stonemasonry, blacksmithing, and carpentry.

Slaves were hired from their masters to work in various jobs at the furnaces. Some were engaged in "overwork." That is, the slaves were paid directly for extra work at the furnace, usually on Sundays, over and above their required tasks. The ironmaster was required to keep medical help available for the slaves and other workers because many of the jobs were extremely dangerous and almost all were hard labor. Notices in the newspapers about slaves who ran away were not uncommon. After emancipation, many continued to work in occupations learned in and around the industrial plantations. Census records are filled with the names of slaves who worked at furnaces, and their descendants often live the same counties today. For example, the Promise Land community (see page 23) in Dickson County was settled by iron furnace workers after emancipation.

In addition to slaves and free blacks, Irish, Welsh, Scots, English, and Germans are listed in the census records as furnace workers. Some cemeteries associated with the iron plantations have markers noting the country of origin of the deceased. Family and county histories and oral traditions recount stories telling where and how families came to be in the area and their part in the diverse and fascinating history of Tennessee's iron industry.

Black Furnace Workers 1880 Census

This list of the names of black furnace workers in the 1880s is displayed at the historic Promise Land school. The school is part of a community settled by freed slaves just after the Civil War, many of whom worked at nearby iron works.

Black Furnace Workers
1880 Census

Name	Age	Job Title
Abe Vanleer	30	Teamster
Charley Reddan	58	Fireman
Richard Harris	49	Teamster
Richard Bowen	28	Teamster
Alfred Johnson	17	Furnace Worker

George Clemmons	47	Ore bank worker	William Moon	28	Ore digger
Ellis Napier	22	Ore bank worker	Kinch Brown	37	Wood setter
Monroe Thompson	45	Filler in furnace	Thomas Johnson	57	Blacksmith
Benjamin Bell	28	Keeper in furnace	Jessie Thompson	34	Filler of furnace
Ransom Vanleer	43	Keeper in furnace	Randle Woodard	24	Teamster
Charley Vanleer	75	Forgeman	Dillard Bowen	25	Teamster
George Harris	46	Blacksmith	Jacob White	39	Filler of furnace

Lundin Williams	48	Teamster
Arch Nesbitt	40	Wood setter
Prince Kirkman	50	Collier
Aron Thompson	50	Wood setter
John Mills	40	Wood setter

GLOSSARY

Big house—The house in which the ironmaster resided.

Blast—A forced-air current that was used to achieve the high temperature necessary for the smelting process to occur. If a furnace was in production, it was "in blast." If the furnace was not operating it was "out of blast."

Blast furnace—A hollow, elongated egg-shaped chamber, supported by a square stone stack, in which iron ore was smelted to produce pig iron.

Blast machine—A mechanical pump (powered by either water or steam) that created the forced air current.

Bloom—A pasty mass of molten iron, containing liquid slag.

Bloomery (or Bloomary) forge—A place where iron ore was smelted in small quantities to produce blooms. The blooms were then reheated and hammered into a more malleable form known as wrought iron.

Bosh—The widest part of the hollow interior of the furnace where the smelting process took place.

Bridge—A walkway that extended from the hilltop adjacent to the furnace to the top of the stack, across which the materials for the charge were carried and loaded into the furnace.

Bridge house—A wooden structure that protected the bridge and the materials for the charge from the elements.

Blowing tubs—The air-tight barrel-shaped bellows that stored and then released the compressed air for the blast. They were located at either side of the water wheel.

Cast iron—Iron taken directly from the blast furnace that was molded to form various objects, such as pots, pans, kettles, or stove plates.

Casting house—The house or shed at the base of the furnace in which the molten iron was formed into pigs or consumer products.

Charcoal pit—A mound of stacked logs placed on flat ground that was slowly burned in almost the complete absence of air in order to produce charcoal.

Charge—Also called the **burden**. A measured combination of the smelting materials (charcoal, ore, and flux) loaded into the top of the furnace stack from a platform known as the **charging deck**.

Clerk—The business assistant to the ironmaster. He kept the books, managed the company store, and paid the employees.

Cold blast—Cold or ambient air used for the smelting process.

Collier—A highly skilled artisan who made charcoal.

Crucible—The lowest area of the furnace stack where molten iron collects.

Cupola—A small iron-walled furnace used to re-melt pig iron for casting purposes.

Filler—A person who loaded the stack from the top with iron ore, charcoal, and limestone. This job was considered to be one of the most dangerous at the furnace.

Finery forge—A place where pig iron was repeatedly heated and hammered to remove excess carbon and silicon in order to make wrought iron.

Flux—This additive, usually limestone, facilitated the smelting process and combined with the impurities in the ore to form slag.

Founder—In charge of day-to-day operations. He was responsible for keeping the furnace at peak efficiency and productivity.

Gutterman—A person who dug channels in the sand floor of the casting house into which the molten iron flowed. He loaded the pigs and disposed of the slag.

Hematite—A reddish ore containing a maximum (in theory) of 69.9 percent elemental iron. Known as **dyestone** in the nineteenth century.

Hot blast—Preheated air used for the smelting process.

Hollow ware—Cast iron objects such as kettles, pots, pans, etc.

Ironmaster—The general manager of the ironworks and the plantation, often the owner.

Ironworks—A collective name that describes a blast furnace, forge, mill, foundry, and/or specialty shop.

Limonite—A collective term describing several varieties of brown ore containing a theoretical maximum of 62.9 percent elemental iron.

Magnetite—A rare, metallic black ore with a potential elemental iron content of 72.4 percent.

Molder—A person who cast molten iron into consumer products. Highly skilled and well-paid.

Oven—A fire-resistant, brick-lined chamber in which the air was pre-heated for a hot blast.

Pig iron—Molten iron that was poured into bar-shaped molds that range from three to ten feet in length, five or more inches in width, four inches or so in thickness, and weighed from thirty-five to one hundred pounds apiece. Commonly referred to as **pigs**.

Plantation—A community which includes the furnace, related shops, farms, and the homes of the furnace workers.

Puddling—A cheaper and faster way of refining pig iron than the finery method. The metal did not come in contact with the fuel and was stirred with a long iron bar. The carbon was burned out by repeated contact with the air and the remaining pasty lump was passed through a pair of rolls and emerged in bar form.

Quarryman—A person that worked in the quarry removing limestone.

Rolling and slitting mill—A place where hot wrought-iron bars were passed through a series of heavy shaping rollers and formed into plates and sheets of flexible iron of various thicknesses. Some of this rolled iron was reheated and passed through cutting discs to form strips to make nails or other products.

Slag—A liquid mixture of non-ferrous impurities and flux produced during the smelting process that becomes rock hard when cooled. It occurs in many different colors. At times the slag was crushed and used for roadbeds.

Smelting—The process of separating iron from iron ore by the application of high, sustained heat in the presence of a fluxing material.

Stack—A large stone chimney lined on the inside with firebrick wherein the smelting process took place.

Teamster—A person that drove a team of horses, oxen, or mules for hauling.

Tenant house—A house that an employee rented from the owner.

Tilt or Trip hammer—A large, heavy tool used for pounding red-hot iron in order to remove impurities or shape it into bars.

Tunnel head—Also called the **throat.** The opening at the top of the furnace stack where the charge was loaded.

Tuyere—An opening where the blast entered the chamber where the ore was smelted.

Tuyere arch—The arched opening at the base of the furnace that admitted the blast pipes into the hearth region.

Wrought iron—Iron that has a low carbon content and easily could be shaped when reheated; often used for fences, gates, and decorative pieces.

Bars of pig iron and a collection of castiron utensils and tools are displayed at the Cumberland Furnace Iron Museum.

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Cross section of an iron furnace.

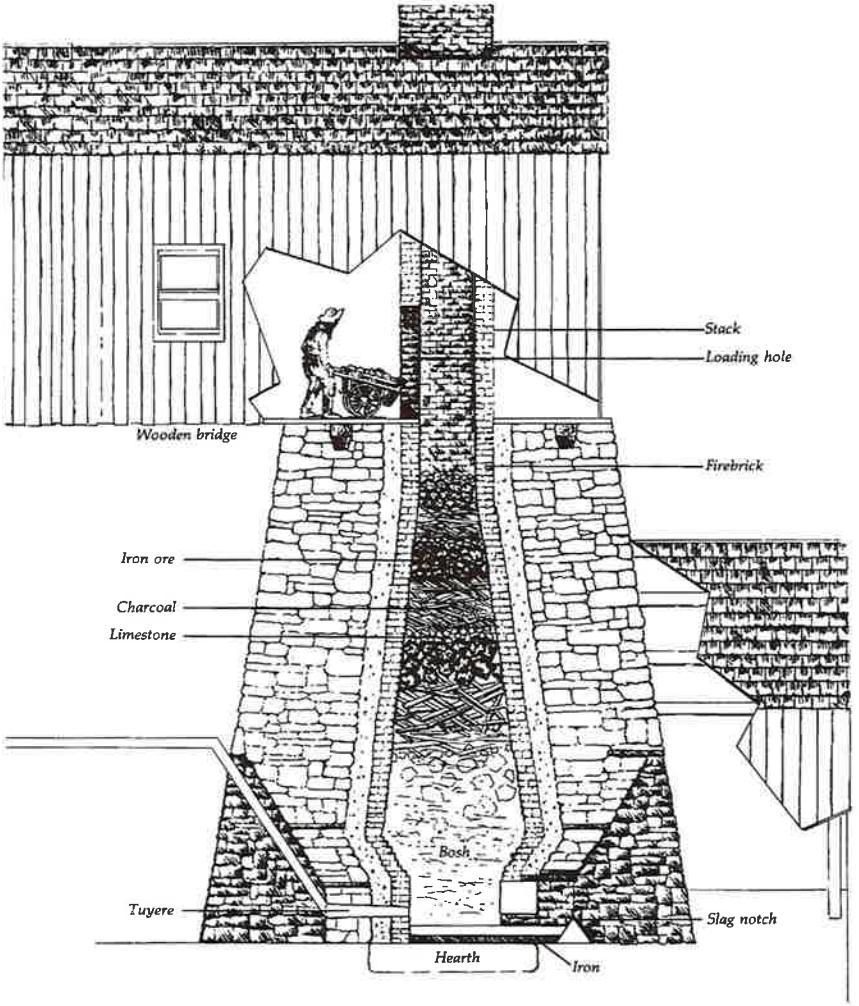

Image is from *Tenneessee's Iron Industry Revisited: The Stewart County Story* and is used with the permission of Land Between the Lakes Association.

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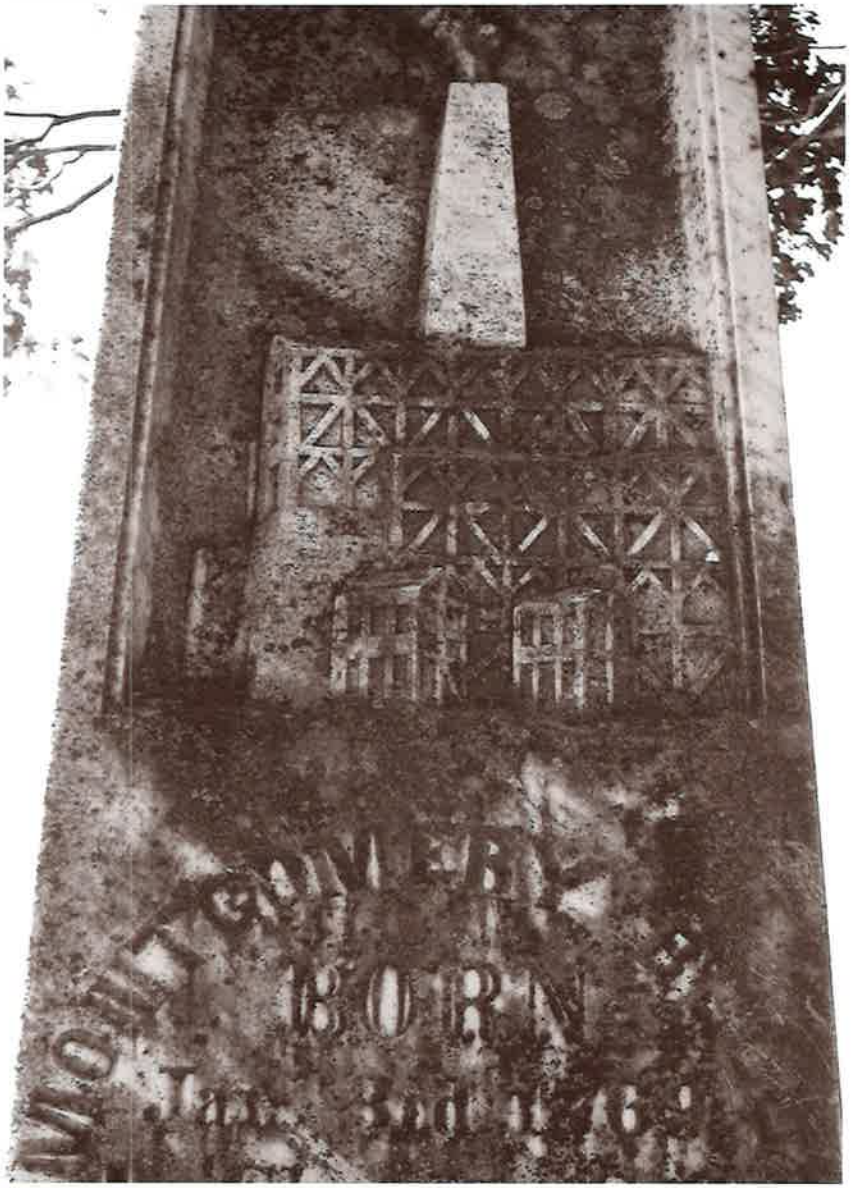
Montgomery Bell, Tennessee's most famous ironmaster, died in 1855. His monument bears a carved iron furnace. The cemetery is on private property and is accessible only with the permission of the owner.

Photos courtesy of Rick Hollis



CHEATHAM COUNTY

Narrows of Harpeth Forge

Photo courtesy of Tennessee State Library and Archives

Montgomery Bell, a native of Pennsylvania and Tennessee industrial pioneer, recognized the enormous potential of a unique geographical site in what is now southern Cheatham County. He imagined that by harnessing water of the Harpeth River as it looped around a high limestone ridge known as the Narrows of Harpeth, he could produce a waterfall that would provide power for an extensive commercial enterprise. Bell was a man of many ideas and, though unprecedented in the United States in 1814, he began the process of building a tunnel fifteen feet wide and six feet high through solid rock. Construction was slow and took nearly four years to complete. Millwrights, carpenters, blacksmiths, masons, and stonecutters were engaged for this work along with other laborers, skilled and unskilled, primarily slaves. July 4, 1818, the final thrust was made and water began to flow. The engineering project was an unparalleled success.

Bell developed the Narrows into an extensive ironworks which he named Pattison Forge after his mother. The harnessed hydroenergy transferred by means of at least eight wooden waterwheels easily powered four large trip hammers to pound the iron. Two nobling fires served each of these heavy, noisy instruments and a skilled crew of sixty-five hands produced 700 tons of iron blooms per year by the mid-1850s. More than half of the work force were slaves who lived in a small village known as Bellville.

James L. Bell, both nephew and son-in-law of Montgomery Bell, as he was married to daughter Evelina, became the owner of the

property after Bell's death in 1855. The younger Bell operated the forge until his death in 1860. After the occupation of middle Tennessee by Union troops two years later the forge never ran again. The tunnel, an engineering marvel of the early 1800s, remains an impressive site today.

The tunnel, forge site, and other resources are located in the Narrows of Harpeth State Park in Cheatham County.

DECATUR COUNTY

Brownsport Furnace

Immense quantities of high-quality iron ore were found on both sides of the Tennessee River in Perry and Decatur counties in the early nineteenth century. Two iron furnaces were established with the name Brownsport in southeastern Decatur County. The first one (which no longer exists) was built by Samuel Vanleer in 1838 on the west bank of the river. The second one was built in the early 1850s by Ewing, Dick, and Company about three miles from the river. In 1854 this operation produced more than twenty-one hundred tons of metal.

Unlike many Western Highland Rim ironworks, Brownsport escaped destruction during the Civil War. Information from the 1870 census identifies the partnership of Walker and Young as running the only furnace in Decatur County. Work was suspended, however, by 1878 and the plant never reopened. Over the years, the machinery, bricks, and lumber were sold and reused elsewhere. Decatur County Parks and Recreation now owns the remains of the furnace stack and some of the surrounding acreage. Brownsport Furnace is listed on the National Register of Historic Places.

Brownsport Furnace is located thirteen miles southeast of Decaturville and is publicly accessible. For additional information on the iron industry in Decatur County, go to http://www.decaturcountytn.org/Iron_Furnace_Trail.asp.

Above: $3 Brownsport Furnace Store scrip (circa 1870s)

Decatur Furnace

Decatur Furnace is located at Bob's Landing in the southeastern section of Decatur County about six miles northwest of Clifton on the west bank of the Tennessee River. This steam-powered hot-blast facility was established on the site of an earlier iron-manufacturing venture (known as the West Point Furnace) in the early 1850s.

At almost ten-feet-across inside and forty-feet-tall when constructed, the furnace was one of the larger stacks in the iron-producing region of the Western Highland Rim. The brown limonite ore smelted there was mined across the river in Perry County. In 1856, pig iron production reached nearly 2,000 tons in less than a year. A number of the workers were slaves as evidenced by an advertisement for the return of a runaway hand in the Nashville newspapers. Once the facility sat on a bluff high above the river, but now it is located only about 50 yards from the impounded waters of Kentucky Lake. Like many of the iron-furnace villages, bricks and building materials were salvaged by people in the area for other uses.

$100 REWARD

RANAWAY from Decatur Furnace, in Decatur county, Tennessee in July last, our Negro, JOHN, for whose recovery and putting in jail in this State we will pay $50— If taken out of the State and secured in jail, we will pay $100. We purchased said boy from James M. Murrell, of Nashville, in May last. Said boy weighs about 165 pounds, is coal black and heavy set, about 5-feet 8-inches high, very bushy hair. The only mark recollected is the first joint of his right or left thumb—not positive which. He talks real African language, and seems a little tongue-tied.

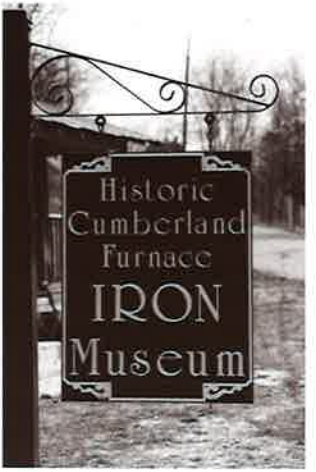
Golladay, Cheatham & Co.,
Clifton Post-office, Wayne county, Tenn.

Daily Nashville Patriot, 19 February 1857

Decatur Furnace is located on private property and inaccessible to the public.

DICKSON COUNTY

Cumberland Furnace



Cumberland Furnace in Dickson County has the distinction of being the only existing iron village remaining in Tennessee. Here is where a visitor can begin to visualize the layout of one of the iron plantations that existed throughout Tennessee. Further, its history parallels that of the entire iron industry in the state from the late 1700s until the mid-twentieth century. The first furnace was put into blast in 1797 by James Robertson, early settler and a founder of Nashville. The associated forge was named in honor of his wife, Charlotte, as was the county seat of Dickson County, formed in 1804.

In 1804 Robertson sold the Cumberland Furnace to Montgomery Bell. During Bell's ownership of more than twenty years, at least two furnaces operated here. With a large work force of slaves and whites, the village became an important industrial site in the state and in the South. One claim to fame is that some of the cannonballs that supplied Andrew Jackson's troops at the battle of New Orleans were manufactured here. In 1825, Bell sold his property to Anthony Vanleer who dismantled the old furnace built by Robertson and rebuilt Bell's second furnace.

Drouillard Mansion

With the fall of Fort Donelson in 1862, Cumberland Furnace closed. It was one of the few in the state to survive the Civil War. Mary Florence Kirkman, granddaughter and heir of Anthony Vanleer, married James Pierre Drouillard, a Union officer who had been stationed in Nashville. Following the war, they moved to Cumberland Furnace to oversee the reopening and running of her family's business. The Drouillard Mansion dates from 1868 when it was completed as the showplace of Cumberland Furnace and as a suitable residence for the owners of the J.P. Drouillard Iron Company.

Throughout the remainder of the nineteenth century and intermittently until the beginning of World War II, Cumberland Furnace continued to produce iron through various operations including the Buffalo Iron Company and Warner Iron Company. The L&N Railroad had a spur to the village and a depot until 1936. The last iron production occurred just before World War II began.

The village of Cumberland Furnace, located on Highway 48, north of Charlotte, is listed on the National Register of Historic Places, and the story of the town and its people is preserved through the buildings, dating from 1829 to the early twentieth century, the sites, and the museum operated by the Cumberland Furnace Historic Village Association. A guide book to the village and other information is available at the museum. Various tours and events are offered by the Association throughout the year by appointment. To visit the museum or arrange for a guided tour of Cumberland Furnace, call (615) 789-4869.

Above: This building is one of the earliest in Cumberland Furnace and is believed to date from the time of Montgomery Bell's ownership of the furnace.

Below: The sadiron, stamped "Cumberland," was made in Cumberland Furnace and is part of the museum's collection.

Bellview Furnace

Bellview Furnace, also called the Mammoth Furnace, was located on Jones Creek, four miles south of Charlotte, in Dickson County. Shortly after selling the Cumberland Furnace in 1825, Montgomery Bell supervised the construction of a substantial stone and earthen dam (much of which survives) across the creek to provide water power to run a new cold-blast furnace. The pig iron produced at Bellview was floated two miles downstream to the Valley Forge where it was converted into bar iron. By the mid-1830s the ore and timber for charcoal were so depleted in the surrounding area that the operation had to be shut down. Although most of the buildings on the site were made of wood, Bell built a brick office building, large stone molding rooms, and a spacious stone warehouse. One of these stone buildings survives today, though research has not been able to determine which purpose it served originally. This building has been used as a church, first called Bellview and then Rock Church, for many years. A cemetery is located on the hill above the site.

Bellview Furnace is located four miles south of Charlotte. The property is privately owned by Rock Church, but the site of the dam and cemetery are accessible.

Above: Stone placed outside the church is engraved "M. Bell A.D. 1826."

Laurel Furnace

Located within the state park named for early settler and industrialist Montgomery Bell is the site of Laurel Furnace. The furnace was built, however, by another pioneer ironmaster, Richard C. Napier. In 1815, Napier used two blowing tubes powered by a waterwheel to provide the air for the blast. By 1820 the operation was producing 560 tons of pig iron and hollow ware worth more than $32,000 annually. Napier, whose workforce consisted of seventy men, four women, and three boys, shipped most of the pig iron to his Turnbull Forge in Cheatham County where it was hammered into high-quality iron.

Napier's nephew, William, rebuilt Laurel in 1854 and converted it to steam power for greater efficiency and production. After a time, Napier, wishing to concentrate his resources at his Carroll Furnace location, offered to sell the furnace and land. Buyer William H. Crutcher attempted to make a success of the operation, but abandoned the furnace after just a few years. Iron was never produced there again, although the rugged limestone stack remained a landmark in the neighborhood until the middle of the twentieth century. Visit Montgomery Bell State Park, near Dickson, to learn more about the Laurel Furnace, Bell, and the iron industry.

The ruins of Laurel Furnace are located within Montgomery Bell State Park, near Burns, Tennessee.

Promise Land Community

Shortly after the Civil War, in the hilly landscape two miles or so north of Charlotte, a group of ex-slaves established the Promise Land community. According to tradition, the name was chosen because the settlers believed the Federal government had promised to set aside land for them. However, the name may also have a Biblical origin.

The earliest African-American settlement in Dickson County, many of the people who came there to live had previously labored at the local ironworks or in the nearby fields that supported the iron workers. After the war was over, Anthony Vanleer's granddaughter, Mary Florence Kirkman, and husband James P. Drouillard, hired many residents of Promise Land as free laborers. These men and women worked as fillers, keepers, forgemen, blacksmiths, miners, teamsters, colliers, farmers, laborers, housekeepers, cooks, and laundresses.

By 1880 at least 175 people called Promise Land home. Eventually it encompassed almost two square miles and consisted of some fifty houses, several stores, two churches, and a school. Religion and education were very important to African Americans and the two have been intertwined for generations at Promise Land. The present school building dates from 1899; its kitchen wing was constructed in the 1940s. The community furnished all building materials and labor. The community began a slow decline during the 1920s, and only St. John Church, the cemetery, and the schoolhouse remain of the historic village. Descendants of the original landowners of the Promise Land settlement continue to keep its history and heritage alive.

The Promise Land community is located two miles north of Charlotte. A historical marker is just off the road at the school and church. The buildings are private and inaccessible to the public.

Worley Furnace

After selling Cumberland Furnace in 1825, Montgomery Bell began to establish new ironworks. When Bell came to Tennessee in 1802, he was accompanied by his personal slave, James Worley. As the legendary entrepreneur's agent, advisor, and confidant for most of his career, Worley emerged as one of Tennessee's first prominent African Americans.

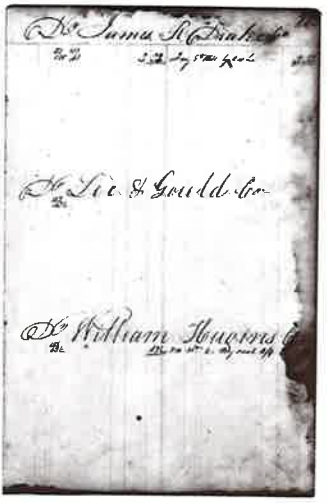
In 1844, Bell completed the construction of the last of his stone blast furnaces, the remains of which still rest against a hillside on Old Furnace Road in southwestern Dickson County. He designated the furnace site as the "Worley Furnace" to honor James Worley. A steam engine provided the power to run this cold-blast furnace which was manned by a workforce of eighty and produced forty tons of pig iron per week. Much of this output wound up at the Pattison Forge on the Harpeth River, now in Cheatham County, where it was converted into bar iron. After a time, Bell transferred the ownership to his nephew and son-in-law, James L. Bell. By 1859, an industry-wide depression had forced the furnace to go out of blast. After the Civil War, Worley Furnace reopened, and it and Cumberland Furnace were the only works making charcoal iron in the county. After operating unsuccessfully under several owners for a twelve-year period, the business shut down in 1880.

A Tennessee historical marker is at the site of Worley Furnace which is located on Furnace Hollow Road, just west of the city of Dickson, and may be viewed from the road.

HICKMAN COUNTY

Sugar Creek Furnace

In 1830 the partnership of Samuel B. Lee and James Gould purchased more than 20,000 acres of timberland in Hickman and Humphreys counties along a tributary of the Duck River. Lee, who had married the niece of ironmaster Richard C. Napier, believed that large quantities of accessible iron ore lay along Sugar Creek, and hired an Irish stonemason by the name of Hill to build a furnace next to a hill containing some of the richer deposits. A few years later, when the miners began to dig the ore, the partners found that they had made a big mistake; there was actually very little suitable ore available at that location. They were forced to send their workers nine miles away to an ore bank near Pretty Creek in order to supply the operation. Although the water-powered facility produced about forty tons of pig iron per week, the expenses of transporting the large quantities of raw material such a long distance proved to be too great, and the furnace had to be abandoned after a short time. Most of this imposing limestone stack still stands.



Above is a photo of a page from the ledger for the Yellow Creek Furnace noting the account of Lee & Gould of Sugar Creek from 1833.
Ledger courtesy of Houston County Historical Society, Photo by MTSU Photographic Services

Sugar Creek Furnace is located off Interstate 40, at the Bucksnort exit, State Route 230 in the northwestern part of Hickman County. The furnace is on private property and may be viewed from the road.

Lime Kiln in Erin, Tennessee.

HOUSTON COUNTY

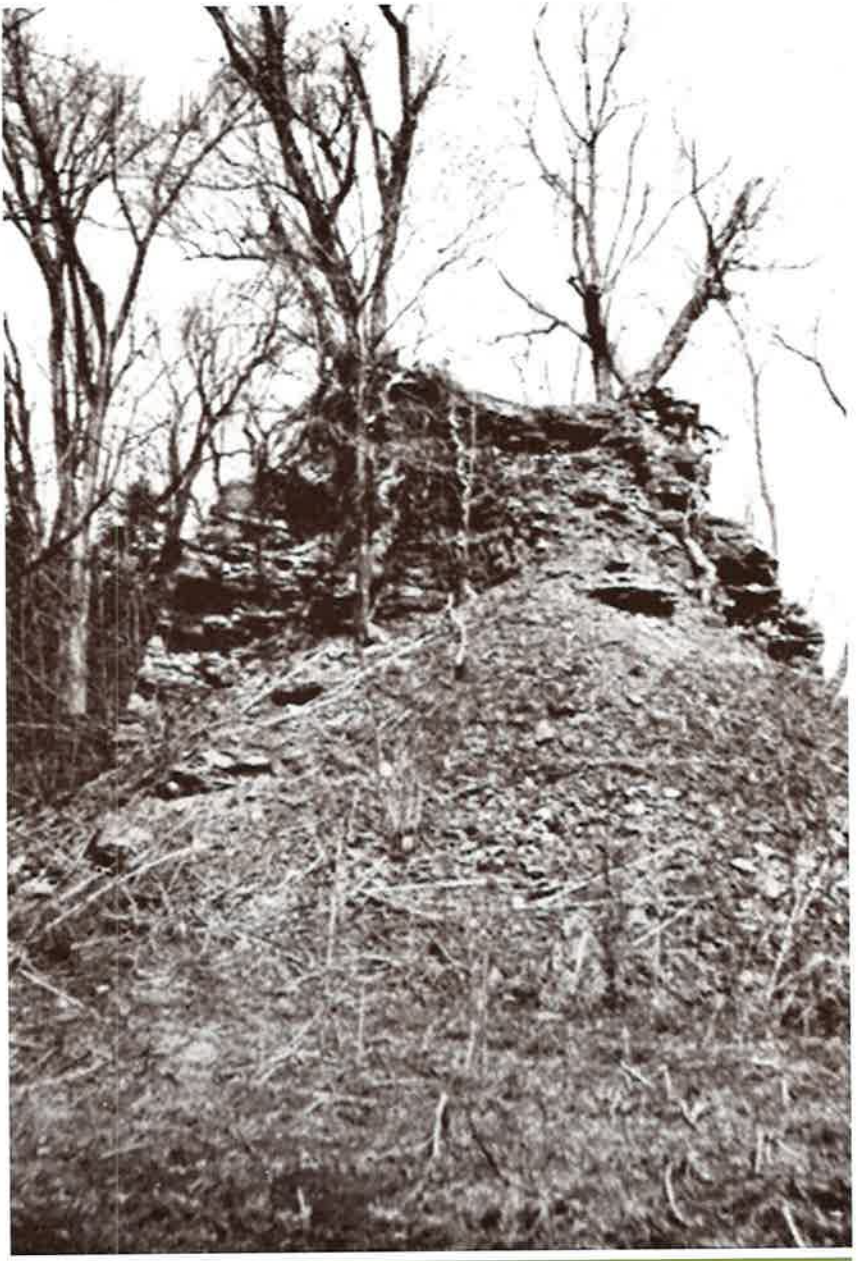
Lime Works

Scattered throughout Tennessee's western Cumberland Valley are a few well-constructed rock configurations which resemble smaller versions of the familiar limestone furnace stacks utilized by the charcoal iron industry to smelt the raw ore during the nineteenth century. These structures are the remains of lime kilns, once used to produce the fine powdered form of limestone that remains a key ingredient in the production of iron, as well as many essential commodities including mortar, plaster, whitewash, soap, and fertilizer. Some of the best-preserved lime kilns are found in Houston County within the city limits of the county seat, Erin. Houston County was formed in 1871 from Dickson, Humphreys, and Stewart Counties.

The preparation of lime provided work for a large number of local laborers and it quickly became the main industry of the county. The high-quality product found numerous buyers within the region and was also shipped by rail to customers in many of the surrounding states. By 1885 seven facilities employing an estimated three hundred hands produced approximately 750 barrels of the substance per day. Two companies headquartered in Erin—Harris & Buquo and the Arlington Lime Company—controlled most of the lime production in the county. In addition, each firm operated a large stave and heading factory in conjunction with their works, in order to handle and ship their product safely at a distance.

The ruins of several lime works are located within the city of Erin. The ones which can be viewed most easily are located on the north edge of town.

This photograph of the remains of the Vanleer Furnace (1832-1839) is from Burchard (see Selected Sources).



LAWRENCE COUNTY

Pinkney Area and Iron City

The iron industry in Lawrence County, formed in 1817 from parts of Hickman and Maury counties, is confined to the southern part that is adjacent to Wayne County. As early as 1818, the County Court of Pleas and Quarter sessions appointed a jury to review the feasibility of establishing iron works in the new county. Colonel David Crockett, a member of the court, recognized the iron-ore deposits and owned land where some of the highest concentrations existed. This area came to be known as Pinkney and from the 1830s until the early-twentieth century, the area's iron-ore mines were in production.

The first iron ore was mined at the Vanleer mine in 1832, located about two miles west of the community of Iron City. Ore was loaded onto wagons and hauled about five miles where it was processed into pig iron at the Vanleer Furnace, which operated off and on until about 1840.

The Pinkney Mines, a large complex that encompassed at least thirteen mines, operated from 1887 until 1912. The ore was shipped by rail to furnaces for processing. During that time, the Pinkney mines employed hundreds of people in the area, and 3,203,638 tons of iron ore were taken from the site.

The Van Leer Hotel was Iron City's grand show place when it opened in the 1880s.
Photo courtesy of Lawrence County Archives

The Pinkney mining area and Iron City are located in the southwestern portion of Lawrence County. The Pinkney mines are privately owned and inaccessible to the public.

Steele's Iron Works sign.

LEWIS COUNTY

Buffalo Iron Works

Iron was discovered along the Natchez Trace in present-day Lewis County in the early 1800s. Columbia businessmen David and Thomas Steele and John Jones purchased land from a Chickasaw chief and erected a bloomery forge along the river near the Trace. It operated under the style of the Steele Iron Works for some years, but was eventually purchased by John Catron. Changing the name to the Buffalo Ironworks, Catron obtained additional land capable of supporting a furnace, forge, blacksmith shop, gristmill, and sawmill.

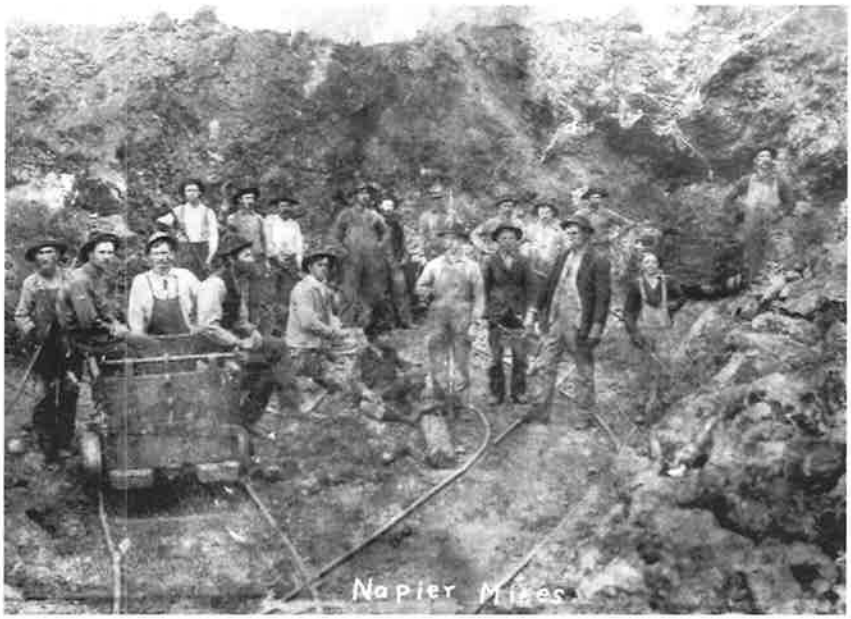
John Catron sold the Buffalo Ironworks to Felix A. Catron and George F. Napier in 1833. The partnership experienced financial difficulties and Napier's wealthy brother, Dr. Elias W. Napier, assumed control. In 1845, Dr. Napier conveyed half of the ironworks to his nephew, William C. Napier. Dr. Napier died three years later, leaving W.C. Napier as the sole proprietor of the operation. From that time, the enterprise was referred to as the Napier Furnace.

After Napier died in 1890, new owners took over and built a much larger furnace stack, had a branch railroad line run to the site, and eventually converted the charcoal operation into one using coke. The operation prospered during World War I, but adverse postwar economic conditions forced the furnace to close in 1923.

The Steele/Buffalo Iron Works is interpreted by the National Park Service at the "Metal Ford" site on the Natchez Trace Parkway.

Napier Mines

The Napier mines are located in the southeastern part of Lewis County. The iron ore is situated in the high ridges above the Buffalo River, parts of which are nine hundred feet above sea level. The hardworking miners produced a high-quality limonite used to manufacture pig iron at the Buffalo Iron Works. The desirable material was dug by hand with pick and shovel and transported to the furnace in wagons until after the Civil War. A railroad spur of the Louisville and Nashville Railroad reached the industrial facility in the early twentieth century, when output was more than one hundred tons of pig iron per day. The World War I years proved to be the last period of prosperity for the Napier Iron Works, and the furnace went out of blast in 1923.



Miners of the Napier Ore Pits.
Photo courtesy of Lawrence County Archives

Today, a large open pit of the Napier Mines can be viewed at that stop on the Natchez Trace Parkway.

MONTGOMERY COUNTY

Louisa Furnace

Ironmaster Robert B. Baxter, a native of New Jersey, built the 33-foot-tall furnace stack on Louise Creek in 1844. Powered by a steam engine, the facility made forty tons of pig iron per week. The neighboring forge utilized a good portion of this production. After Baxter died in 1850, the Louisa and Mount Vernon furnaces plus 20,000 acres of land were offered together for sale. When no one offered to buy the property at an agreeable price, Baxter's four sons-in-law formed a company that operated the ironworks until the Civil War. In 1860, the eighty-one hands working for Jackson, McKiernon & Co. turned out two thousand tons of metal. The mines that supplied the furnace continued to be operated well into the twentieth century. The ore was shipped to the Cumberland Furnace (see page 19) for processing. At present, a careful observer can detect the base of the limestone stack, and bits of blue slag are scattered about in the immediate area.

The site of the Louisa Furnace is located in southern Montgomery County, about twelve miles south of Clarksville. It is on private property and is visible from the road.

Tennessee Furnace

In 1805, Richard C. Napier established the Tennessee Furnace as a major component of an early ironworks on Barton's Creek. Napier, his father-in-law James Robertson, and John Bosley had operated two forges (Family Forge and Charlotte Forge) on tributaries of this creek in conjunction with Robertson's Cumberland Furnace. The sale of this furnace to Montgomery Bell in 1804 opened the way for Napier to build the Tennessee Furnace. In late 1815, Isaac Vanleer and his brother-in-law Joseph Haslip, recent arrivals from Pennsylvania, leased the furnace and the two forges for ten years from Napier. After a family squabble, Anthony and Bernard Vanleer, Isaac's brothers, assumed control of the enterprise. In 1820, the eighty-two workers (including five women) produced 610 tons of iron products worth more than $37,000. At the end of the lease period, the Vanleers moved on and Robert Baxter and Edward Hicks purchased the ironworks outright from Napier. After Hicks' death, Baxter continued to operate the Tennessee Furnace until he died in 1850.

The limestone remains are located in southeastern Montgomery County on Epps Road at the intersection of Watkins Ford Road. The furnace stack and retaining walls are on private property, but are in plain view from the roadway.

PERRY COUNTY

Cedar Grove Furnace

Cedar Grove Furnace, located in Perry County, is the only surviving double-charcoal furnace within the Western Highland Rim region of Middle Tennessee. The furnace stacks were constructed of limestone and then lined on the inside with handmade firebricks. This furnace is a single structure, housing two boshes and two chimneys side-by-side. When one furnace was in blast, the other one was being prepared for use.

The furnace at Cedar Grove was possibly the first in the state to smelt iron with the hot-blast technique. This method of preheating the air used for the blast would eventually revolutionize the iron industry. Teamsters carried the castiron pigs in ox-drawn wagons two miles west to the Tennessee River where they were loaded onto specially fitted boats and shipped to their destination.

The Cedar Grove Furnace site encompassed numerous buildings and at least one hundred people lived in the industrial village. In the early 1850s, William Bradley & Company took over operations at the furnace. It operated until 1862, when Federal gunboats lobbed cannonballs toward the furnace, scattering the workforce. By 1883 nothing remained but the massive stack. The dramatic ruin is listed on the National Historic Register.

Cedar Grove Furnace is located on Cedar Creek Road southwest of Linden. The property, which includes a picnic pavilion, is owned by Perry County.

Bear Spring Furnace is located southeast of Dover on State Route 49.
The property is privately owned but the remains may be viewed from the road.

STEWART COUNTY

Bear Spring Furnace

The Bear Spring Furnace was put into blast in 1832 by Woods, Yeatman & Company. The manufacturing facility here was an integral part of the owner's sprawling Cumberland Iron Works operation and provided pig iron for the rolling mill that was located on the west bank of the Cumberland River, six miles from Dover.

In 1835, the new Woods, Stacker, & Company held over twelve thousand acres of land, several ironworks, and more than one hundred slaves. Destroyed during the Civil War, Bear Spring Furnace was rebuilt after the conflict had ended; the stack that remains today is from the 1870s. Owned by various companies, the enterprise was strapped by financial problems in the postwar years. In 1928 the furnace closed. The limestone stack and a bridge support pillar are all that remain of what was once a busy and integral part of an antebellum industrial complex.

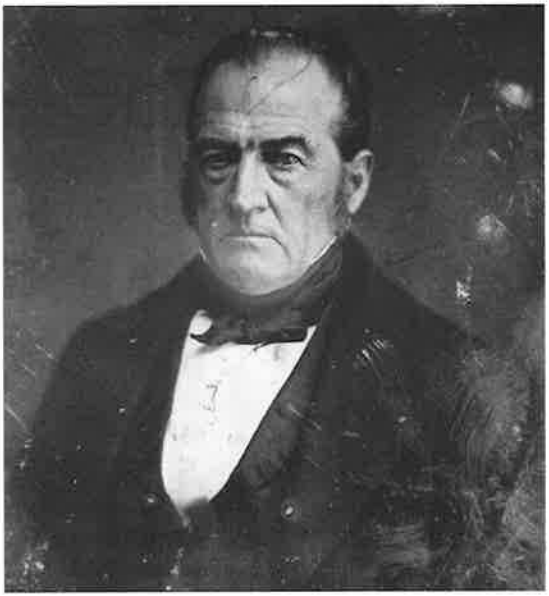
The engraving and inscription naming the architect of the furnace, as well as the engraved date of 1873 on the furnace's base, are unique to Bear Spring, which is listed on the National Register of Historic Places.

Above: This photograph is from Burchard (see Selected Sources).

Bellwood Furnace

Bellwood Furnace was an important part of the Cumberland Iron Works, considered the best charcoal iron property in the United States in the early decades of the 1800s. The company owned more than sixty thousand acres on both sides of the Cumberland River and worked hundreds of people, white and black. Bellwood Furnace, located in Stewart County, obtained its ore from two high ridges lying between Cross and Cub Creeks. Large quantities of timber, limestone, clay, and water were also nearby. Built around 1840, Bellwood, along with Carlisle and Bear Spring furnaces, primarily provided pig iron for Cumberland Iron Works' rolling mill. They also produced castings for domestic purposes, such as sugar kettles.

One of the company's main stakeholders was John Bell, a U.S. senator and presidential candidate in 1860, from whom Bellwood takes its name. Bell married the wealthy widow of Thomas Yeatman, one of the original owners of the Cumberland Iron Works. The Bells lived in Nashville much of the time for his political career. Immediately following the surrender of Fort Donelson in 1862, Federal gunboats destroyed the Cumberland Iron Works including Bellwood Furnace. Although the rolling mill was totally wiped out, the forge, furnace, and sawmill were quickly rebuilt and put back into production before the end of the Civil War. John Bell's large house, though in poor condition, and most of the limestone stack of the furnace still stand today.



John Bell
Courtesy of Library of Congress

Great Western Furnace

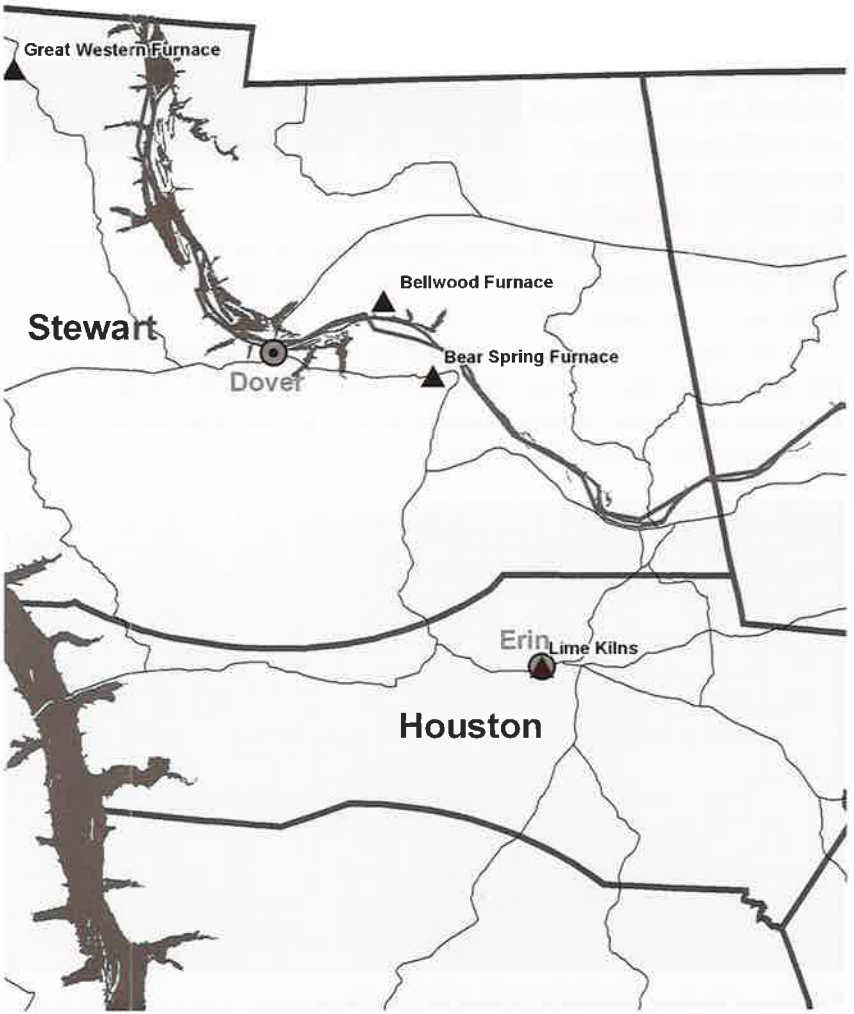
This photo of the Great Western Furnace is from Burchard (see Selected Sources).

In the early 1850s, both the Great Western and the Iron Mountain furnaces in Stewart County were built by Brien, Newell, and Company. The Great Western Furnace was ten feet wide at the bosh and forty feet high. Miners obtained the brown limonite ore locally from shallow pits dug into the banks on the hills that surrounded the small village of Model. A steam engine provided the necessary power to smelt the iron using the cold-blast method. In 1855, the furnace produced 1,350 tons of pig metal.

After the Civil War, the question of the ownership of the furnace was still unresolved. The assessor of Stewart County offered the remaining structures and twelve hundred acres of land to anyone who would pay the taxes owed. The furnace would never operate again.

The Great Western Furnace is located in Land Between the Lakes, a designated National Recreation Area under the management of the USDA Forest Service. The visitors' center at Golden Pond, Kentucky, interprets the iron industry as one topic of the history and culture of the region.

For additional information on the iron industry in Stewart County and the several furnaces, forges, and mills that operated there, visit the W. D. Sykes Historical Museum, located between Church and Cedar Streets, operated by the Stewart County Historical Society. For more information, you may call the Museum at 931-232-9773 or mail your inquiry to P. O Box 297, Dover, TN 37058. Web pages for the Society may be accessed at www.rootsweb.com/~tnstewar/histsoc2.htm.



WAYNE COUNTY

Wayne Furnace

Photo courtesy of Weaver & Associates

The first ironworks on Forty-Eight Creek in central Wayne County was known as the Mount Jasper Furnace. The blast furnace and forge were built in 1835 by the partnership of ironmaster Rogal B. Ferguson and Jasper R. Sutton. After Ferguson's death in 1838, the business was sold to Planters Bank in 1840. John W. Walker purchased the facilities from the bank for $10,300 in 1846, and he and his brother George began operations there as "Walkers Iron Works." By 1854 Walker had added another furnace and was making between ninety and one hundred tons of iron per week. The business, including almost eighteen thousand acres of land, was sold by Walker to his manager, Thomas G. Pointer, and his brothers Samuel and William.

The Pointer brothers used a pair of 27-foot-tall brick furnace stacks alternately to produce iron. Their seventy-one-person workforce produced seventeen hundred tons of metal that they shipped to a rolling mill in Ohio for the manufacture of boiler plate. In the autumn of 1861 they sold a quantity of pig iron to the Tredegar Iron Works for use in Confederate armament manufacture. The area around the furnace was used as a campground by both Union and Confederate forces. In 1865 the Pointers sold the facility to the Gaylord Rolling Mill Company. G.W. Boyd managed the operation for the company under the name of Wayne Furnace. The furnace remained in production until the financial panic of 1873 forced a suspension of operations.

In the spring of 2001, 2002, and 2004 cultural resource management personnel conducted archival and archaeological assessments of the Wayne Furnace Site in preparation for the widening of State Route 15 (US 64). In addition to finding a significant number of industrial artifacts, the archaeologists uncovered the limestone remains of the early charging platform and furnace base, as well as the

brick bases of the later two stacks. The immense amount of historic material that was recovered is still being evaluated, and promises to significantly increase our understanding of the nineteenth-century charcoal iron industry.

Photo courtesy of Weaver & Associates

The site of Wayne Furnace is slated to be taken by State Route 64. Visit the Wayne County Library for more information on the local iron industry.

WILLIAMSON COUNTY

Williamson Furnace

Located near Fernvale, in the northwest corner of Williamson County along the Caney Fork of the South Harpeth River, are the remains of the limestone furnace stack of the Williamson Furnace. Built in 1832 by Moses Speer, the existence of this facility is somewhat of a puzzle due to the fact that there are no significant iron deposits in the immediate vicinity. Two years earlier, Speer had obtained title to some two thousand acres around the furnace, as well as a tract of land on Turnbull Creek which contained an ore bank. He probably planned to transport the raw materials to the facility by water. However, by the following year Speer was in debt and had used the iron operation as collateral in favor of Thomas Douglass.

After the time for Speer's redemption had elapsed, Douglass attempted to sell or rent the furnace. Finally, he put the property up for auction in early 1836. Soon afterward, it passed into the hands of the Perkins family, but there is no evidence that the furnace was ever put into blast again.

Although the presence of a slag pile near the ruins indicates that some iron had been produced at one time or another, by 1849 the furnace was reported to be out of use by a contemporary trade journal. Local tradition holds that in 1857 the fluted columns of the Williamson County Courthouse were cast at Pugh & Company's Franklin Foundry from pig iron manufactured at the Williamson Furnace. No documentation has been found to date to prove this assertion.

Williamson Furnace is located off Caney Fork in the northwestern part of the county. The furnace is located on private property but may be viewed from the road. A historical marker describes the site.

Inside the Cedar Grove Furnace.
Photo courtesy of the National Park Service, Natchez Trace Parkway

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Buffalo Duck River and Five Rivers Resource Conservation and Development Councils

USDA Forest Service

202-205-1389
www.fs.fed/us/spf/

This publication was produced by the Center for Historic Preservation and the Tennessee Civil War National Heritage Area at Middle Tennessee State University in cooperation with the Buffalo Duck River and Five Rivers Resource Conservation and Development Councils, and is funded in part by the USDA Forest Service. Design by MTSU Publications and Graphics Department. 2006