THE IRON INDUSTRY IN CLARION COUNTY

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Iron, while being the most useful of all the metals for the various arts, is also one of the most generally diffused of the products of nature. In one form or another it is almost universally present throughout the organic and inorganic world. The history of its use is lost in the remoteness of antiquity, since from its affinity for oxygen and its consequent tendency to rust and thus lose its form, it can hardly be expected that any tangible evidence of its use in ancient times should have been preserved to our day. Modern archaeology, however, divides the periods in the early history of the human race into the stone, the bronze, and the iron eras, thus indicating the gradual advance of mankind toward a methodic knowledge of the natural products of the earth and mastery of them for human purposes. From the very beginning of historic times, therefore, iron has been a precious metal, indeed, to man.

In the early ages man soon found that wooden, bone, stone, and clay weapons or implements did not give him adequate protection against the wild life of that period or against other tribes, nor did they make for successful hunting. Moreover, these materials did not provide him with proper cooking utensils and were not of lasting enough quality for buildings or, in a later period, for adequate transportation. In his search for a better material to answer his many needs, he therefore finally discovered that iron would provide him with all the necessities of life, except food, and would greatly aid him in keeping up his food supplies, both in the hunt and in the tilling of the soil.

There is but little record of ironmaking in Europe during the first

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seven centuries of the Christian era, yet in the sixteenth century the discovery in Sweden and Norway, in France and Silesia, and elsewhere, of slag heaps overgrown with trees, which on examination frequently proved to be six centuries old, showed that the mining and working of iron must have been extensively practiced at an early age.

The manufacture of iron in the United States dates from a period very soon after the settlement of the country. From a tract entitled *A True Declaration of Virginia*, published in 1610, only three years after the successful settlement of a colony at Jamestown by the London Company, we find that in this year Sir Thomas Gates testified before the Council in London that in the country there were diverse minerals, especially "iron oare," some of which having been sent home, had been found to yield as good iron as any in the world. From *A Declaration of the State of Virginia*, published in 1620, we find that among those recently sent out to the colony, there were "out of Sussex about forty, all famed to iron works."*

The first ironworks in what is now the United States of America were erected at Falling Creek, Virginia, near Richmond, in 1619, by the Virginia Company, but the Indian troubles and the revocation of the charter of the company in 1624 caused the foundry to be closed. The first successful ironworks were located on the Saugus River, near Lynn, Massachusetts. These works were built in 1643 by John Winthrop, Jr., and ten other Englishmen, who formed the "Company of Undertakers for the Iron Works."

It is not known to this author when the manufacture of iron first started in the commonwealth of Pennsylvania, but there are records at Harrisburg giving the names of the forges and the amount of iron made in Pennsylvania from the year 1749 to the year 1756, all based on returns made to the Honorable William Denny, lieutenant governor of the commonwealth, by the respective owners of the forges; and the amount of iron manufactured by the different forges during the time above specified amounted to a total of only 3,378 tons. According to a table of furnaces in Clarion County, in Israel D. Rupp's *Early History of Western Pennsylvania* (1846), the annual production of the iron fur-

*The Great Industries of the United States, 354, 355 (Hartford, 1873).*
naces in the county at that time amounted to 60,500 tons, and the statement is made that the amount of iron annually produced there equaled "all the iron manufactured in the different forges in Pennsylvania, ninety-five years ago," or between the years 1749 and 1756. *A Gazetteer of the State of Pennsylvania*, by Thomas F. Gordon, published in 1833, states that the committee on the manufacture of iron, appointed by the tariff convention held in New York in October, 1831, returned for Pennsylvania in that year forty-six furnaces making 32,156 tons of pig iron. Gordon, however, disputes these figures and states that this number of furnaces is too low and that the actual number was, perhaps, not short of sixty, and the quantity of iron produced fully 50,000 tons. Whichever figures are correct, it is apparent that by 1846 Clarion County alone produced more pig iron than was produced in the whole commonwealth of Pennsylvania as late as the year 1831.

The *Gazetteer* further states that of the 50,000 tons of iron manufactured in Pennsylvania, a large proportion descended the Ohio River, and that the 50,000 tons had an average value of $70.00 per ton, bringing a total income of $3,500,000.00.

Christian Myers, a resident of Lancaster, Pennsylvania, in the year 1826 purchased a half interest in a large tract of land in western Pennsylvania and in that same year, desiring to go over these properties, he arranged to make the journey to the western wilderness, which was later to become Clarion County. In some manner Myers had heard that there were indications of large beds of iron ore underlying the land in the new country in which his property was located. He therefore had his agent, Henry Bear, an expert ironmaster, accompany him on the trip, and they made the trip from Lancaster to Venango County on horseback. After their arrival in that part of Venango County which later became a part of Clarion County, the two settled near the junction of Little Toby Creek and the Clarion River. The two pioneers built a log shack and, in 1828, having found iron ore, timber, limestone, and water power in abundance, they erected the first iron furnace in the county. It was known as "Clarion Furnace," named after the Clarion River. The furnace stood on the bank of the river, just west of the mouth of Little Toby Creek. The "stack," as these early furnaces were called, was thirty feet
high by eight feet at the "bosh" or widest part of its interior. It was the pioneer stack in the county.

Christian Myers and Henry Bear were so successful that their venture was quickly followed by others. Shippenville and Lucinda furnaces were built in 1832 and 1833, respectively, and these were followed by the construction of many others as the industry grew rapidly. Every year saw the erection of new stacks, and the climax was reached in 1845 when eight new furnaces were built. A few were added after 1845, but the industry had then begun to decline. The list of furnaces at the end of this article, however, shows a total of thirty-one stacks or furnaces built and in operation in the county by 1860, and John A. Caldwell's atlas of Clarion County mentions two additional furnaces, Callensburg and Perry.

Henry Bear, Christian Myers’ partner, was the designer and builder of the first furnace in Clarion County and all the furnaces that followed his were accurate copies of the original Clarion Furnace. Bear’s furnace, which never was improved upon in all the years of the county’s iron era, was built of rough stone. The great blocks were dressed at the edges and keyed with wooden crossbeams. The furnace was thirty feet high. Its side walls were thick and strong; for, although its barrel-shaped interior was but eight feet in diameter at its widest part, the stack was twenty-four feet square at the base outside. The inside of the stack was lined with fire brick, which had to be renewed every few years, and for that purpose an entrance was left in the front of the furnace. This opening, however, was kept walled up while the furnace was in blast.

Charcoal was the fuel used in early iron manufacture, but in the latter years of the industry it was supplanted by coke in many of the stacks. For the manufacture of charcoal almost every wood in the county could be used, except hemlock, and, of these woods, chestnut produced the most charcoal for the quantity of wood employed, and birch the least. The wood was burnt in small clearings called “coalings” or “hearts,” and, in the woods surrounding Clarion, for a great many years after they were abandoned these coalings or hearths were easily found, as no trees or underbrush would grow on them, and they were favorite playgrounds for the children and young people when visiting the woods.
In Clarion County the ore was mined from drifts or banks, and sometimes when the bed lay near a level surface, open excavations were made which were called "strippings." The ore was hauled to an open space called the "furnace yard" which lay on a level with the top of the stack, and the furnaces were always built at the base of a little bluff or against an abrupt hillside in order to facilitate the conveyance of the ore to the mouth of the furnace or "tunnel head." After a preliminary burning to free it from dross and dirt, the ore was wheeled on a bridge to the tunnel head and dumped in. The process of charging the stack was as follows: A thick bed of charcoal was laid in the bottom of the shaft; upon this was placed a layer of ore, which was followed by a layer of limestone, and upon the limestone rested another layer of charcoal; then layers of ore, limestone, and charcoal were placed in rotation until the stack was charged for its full height. All items of the charge were in lumps so that the general charge would be kept open for the passage of gases; finer material would have prevented this necessary exit of the gases. The iron in the lowest zone was reduced by the terrific heat from the underlying charcoal and trickled to the base of the mass. Impurities, chiefly silicon dioxide, were fluxed with the limestone to form a glassy slag, which also trickled down and covered the molten iron, and at intervals of about six hours (four times a day usually), the iron was drawn off through openings in the sides of the stack at its base. These openings were called "notches" and were kept solidly closed with clay, and when the iron was to be drawn off, the clay was broken in with a bar, and at the end of the run the notch was re-luted, as it was called, with clay. The liquid iron spurted out through the opening made by the bar and ran into a bed of wet sand where it filled the familiar molds known as "sows" and "pigs." The term "pig iron," of course, arises from the plan upon which these molds were laid out. Before the iron could be drawn off, the slag had to be taken out, and this was done through a notch or opening at a slightly higher level than the one intended for the iron and on another side of the stack. The air blast entered the furnace from still another side. The bellows used to supply the air blast were commonly of two patterns. First, and somewhat rare, was the conventional blacksmith's bellows, which
was heavily weighted with boulders for the compression and was lifted by a water wheel. The second type, more generally used, was the double or continuous bellows, which consisted of two large, box-shaped pits solidly lined with wood into which two box-shaped wooden plungers fitted snugly, and these plungers were suspended from either end of a walking beam which was operated by water power. The air blast entered the stack through an underground passage called the tuyère. In furnaces known as “cold-blast,” the air current was driven directly from the bellows to the interior of the furnace, and in “hot-blast” stacks, the air passed through a heated coil of pipe before entering the shaft.

The upper masses of the charge in the stack were always comparatively cool and became progressively hotter as they slowly descended, until they came to the intensely hot bottom zones of reduction and fusion. The process was continuous as the construction of the shaft below the bosh helped to support the cooler charge above and to prevent it from crushing down into the reduced metal. The top of the furnace was closed by an inverted, bell-shaped cap, which was suspended inside the shaft, and this cap could be lowered to receive the ore from the dump.

The furnaces at first produced from fifteen to twenty-five tons of pig iron per week, according to their capacity, but in later years, by improved processes and larger and stronger blasts, the weekly output often reached fifty tons. The pig iron was sent down the river to Pittsburgh in flat-bottomed boats, which were sided to increase their carrying capacity. The usual boats for hauling lumber and other products of that day were 26 feet wide and 170 feet long, but the boats used for the transportation of the pig iron were somewhat smaller. Some of these boats were constructed by the owners of furnaces, while some owners purchased their boats from the lumbermen along the Clarion River. The usual maximum boatload of pig iron was one hundred tons, but the average was less than that, and it is estimated that the river trade in iron in Clarion County required more than four thousand boats. Clarion River shipments of pig iron were carried on for more than a quarter of a century after the year 1845, and the yearly average shipments were about the same as those of 1845, which were estimated to have been about twenty-one thousand tons from the furnaces using only the Clarion River for transportation.
In the year 1856 about five thousand tons of iron were shipped, and in 1871 Sligo and Madison furnaces, together, shipped about five thousand tons, of which Madison shipped more than three thousand. The river shipments ceased for Sligo in 1872 and for Madison in 1873. The following furnaces located in Clarion County did not load on the Clarion River, but loaded on the Allegheny River: Clinton, Hemlock, Black Fox, Catfish, Sarah, and Redbank. While Redbank Furnace made iron up to the nineties, river shipments were discontinued and rail shipments substituted, because of the completion of the Allegheny Valley Railroad to Oil City in the year 1866.

The chief loading points in the region were at Clarion, just where the state highway bridge now spans the river; at Hahn’s Ferry, which was at the mouth of Piney Creek; at Callensburg; and at Redbank. These places were the scenes of much active life and bustle—it frequently happened that several hundred men would be found there at one time, loading barges for the various iron companies.

There was no certainty as to when the rivers would rise sufficiently to make boat transportation safe, but rivermen could at least always count on an early spring rise. Sometimes there was a second rise in June, and there was, of course, always a fall rise. As the fall rise was sometimes late, however, and there was danger of the river at Pittsburgh freezing over before they could dispose of their boat bottoms, the owners very naturally preferred to take advantage of the certain spring rise and the somewhat uncertain June rise. As there were no means of bringing the barges back upstream, they were sold in Pittsburgh, where there was a ready market for them, and they were used for coal barges and other transportation purposes on the Allegheny and Ohio rivers. One of their principal uses was for the transportation of coal to southern points. The men who operated these boats to the Pittsburgh market had very poor means of transportation back; a few would travel by stagecoach, but the majority would make the trip on foot.

The larger furnaces, such as Lucinda, Madison, and Shippenville, employed from seventy-five to one hundred hands, and the smaller ones, such as Washington, Wildcat, and Mary Ann, from twenty-five to fifty. The men were in a sense Jacks-of-all-trades—miners, teamsters, wood-
choppers, charcoal burners, and furnace men, and their wages ranged from twenty to twenty-six dollars per month, which was considered good compensation for those days. About one-fourth of a man’s wages was usually paid to him in cash and the balance in orders on the company’s store.

Between 1845 and 1854 more than half of all the iron made in northwestern Pennsylvania was manufactured in Clarion County, and in other sections of the state it was referred to as the “Iron County.” In the year 1842 a newspaper was started in Clarion called The Iron County Democrat, which was owned and edited by B. J. Reid and Samuel Duff. The county’s iron export in those years realized an aggregate annual income of about seven hundred thousand dollars, and of this amount about one hundred thousand dollars went to nonresident operators or owners, while the remaining six hundred thousand dollars remained with the resident owners. While it is true that this figure was an exceedingly large one for that early period, and while it is also true that the thriving industry brought with it an era of booming prosperity, yet the gloomy fact remains that a majority of the individual iron operators, themselves, failed. The profits realized in prosperous times were not sufficient to tide them over the non-prosperous periods in the trade, and, in addition, although they themselves were forced to support heavy pay rolls, they often were obliged to accept promissory paper in return for their finished product.

During its most profitable days the iron industry of Clarion County had the benefit of a high protective tariff. The repeal of the protective tariff by Congress in 1846, however, was the death blow to the industry in the county. One of the Clarion newspapers in printing the announcement of the catastrophe, framed its columns in mourning. Prices of iron dropped from twenty-eight to twenty dollars per ton, which hardly covered the cost of production. Nevertheless, enterprises in which so much money had been invested could not lightly be abandoned, and the industry struggled on for several years longer. The acute effects of the repeal were not fully felt until 1850, when a number of the local iron companies were forced out of business. In the years immediately succeeding, there were a few passing revivals of the trade, but the period of depression following the Civil War brought with it the final decay of the furnaces in
the county. From 1852 to 1854, in consequence of the mania for railroad
construction and the enormous demand for iron, there was a general re-
vival, and in March of 1854 iron brought the extraordinary figure of
forty-two dollars per ton. The panic of 1857 again prostrated the busi-
ness—many stacks were abandoned, and only those having the firmest
financial basis stood the ordeal. A second but transitory revival was
created by the war, and from 1862 to 1865 iron commanded booming
prices. In 1866 and 1867, however, the reaction came. Madison Fur-
nace survived until 1873; Monroe Furnace continued making a little
iron at intervals until 1882; and Redbank went out of blast temporarily
in January, 1883. There were other contributing causes to the decline of
the iron industry, but the primary causes of the decline in Clarion County
were, first, the ill effects of the repeal of the tariff of 1842; second, the decline in the price of iron because of the competition of large coke and
anthracite stacks; third, the depletion of timber; fourth, the increased
cost of ore from long drifts and hauls; and fifth, competition with the
Lake ores.

Of the thirty-one furnaces once flourishing in Clarion and maintaining
an industry that immensely increased the population, prosperity, and
wealth of the county, all are now unused and in ruins. Washington Fur-
nace, which stands in the southwestern corner of Clarion Township on
the road leading from Mechanicsville to Reidsburg, is probably in the
best state of preservation. A few years ago some persons interested in the
old furnaces in the county had the Helen Furnace, which is just a short
distance from the highway leading from Clarion to Cooksburg, cleaned
out and restored to an extent that enables one to get a fairly good idea of
the interior construction of the old stacks. The lower part of the historic
Martha Furnace, located a short distance south of Reidsburg, is still intact
and is used as a spring house.

The iron furnaces were usually named for the locality wherein they
stood, for the wives of their owners, or in honor of various presidents of
the United States. These crude, but historically important furnaces were
troublesome to handle and their product difficult to standardize. A person
interested in their history once asked a descendant of a former prominent
line of foundry men why it was that the old-time ironmasters usually
gave their furnaces a feminine name or named them after one of the presidents of the country, and with a sly wink the old gentleman answered, "I think it was because they never could tell exactly how their furnaces were going to act."

The following is a list of the iron furnaces formerly operating in Clarion County, with data relating to them. The first and earliest list appears in Rupp's *Early History of Western Pennsylvania*, in the chapter devoted to Clarion County. The name of the furnace is given as well as that of its owner and the amount of its annual production in 1846, the year in which the history was published. For the balance of the information contained in this list the author is indebted to the *History of Clarion County* edited by A. J. Davis (Syracuse, 1887), and to old residents of the vicinity.

**LIST OF FURNACES**

Clarion Furnace, built in 1828 on the Clarion River, a little west of the mouth of Little Toby Creek. Cold-blast; thirty feet high by eight feet across the bosh. Owners: Henry Bear and Christian Myers; afterwards Myers alone, who in 1851 assigned ownership to Nelson Hetherington. Produced about 1,300 tons a year. Abandoned in 1852 because of the difficulty of reaching ore and for financial considerations.

Shippenville Furnace, erected in 1832 at the junction of Deer and Paint creeks, one mile southeast of Shippenville. Hot-blast; nine feet across the bosh by thirty-two feet high. Owned by Richard Shippen and Jacob Black; managed by Robert Montgomery and David McKim. Production in 1845, about 1,200 tons; in 1856, 1,500 tons. Abandoned in 1859. In connection with Shippenville Furnace there was a forge—the only one in the county. It stood a mile farther down Deer Creek, and made altogether fifty tons of bar iron.

Lucinda Furnace, built in 1833 on Paint Creek in Knox Township. Hot-blast; eight feet bosh by thirty feet high. Built by James Humes and George B. Hamilton; Humes became sole owner and failed. The furnace was purchased from John F. Steinman, Humes's assignee, in 1843, by the Honorable James Buchanan, afterward president of the United States, and John Reynolds, of Cornwall, Lebanon County. They purchased at the same time 4,351 acres in Knox Township, for $20,500.
Buchanan visited the furnace in June, 1843. It was afterwards leased to Reynolds and Nathan Evans; the latter managed it. The iron made at this furnace had a high reputation with mill and foundrymen. In 1845 it produced 1,200 tons per year; in 1856, about 1,500. Abandoned in 1858 on account of low prices and scarcity of timber.

Beaver Furnace, built in 1835 on Deer Creek, two miles from its mouth. Steam and water; hot- and cold-blast (the last blast hot); nine feet bosh by thirty-three feet high. Owned by Long, Blackstone & Co. In 1845 its output was 1,200 tons and in 1852 it was 1,500. Abandoned in 1854.

Madison Furnace, built in 1836 on Piney Creek, two miles from the Clarion River. Steam cold-blast; nine feet across the bosh by thirty-two feet high. Owned originally by Mathiot, Miller & Co.; bought by Lyon, Shorb & Co. Managed by Thomas McCulloch, Samuel Barr, Calvin Rankin, and M. Conrad. Produced 1,000 tons in 1845; 2,500 tons in 1856, of mill metal, out of argillaceous carbonate ores of the coal measures close by; in 1872, made 3,048 tons. Used chills. Abandoned in 1873, in consequence of the panic of that year.

Jefferson Furnace, built in 1838 on Beaver Creek at Jefferson Station. Eight feet bosh by thirty feet high. Built by Arnold Plumer and S. F. Plumer, who became sole proprietor; managed by John Haslett. It was run very irregularly. It produced 800 tons in 1845; in 1856, about 800 tons of forge metal out of limestone and bog ores. Abandoned in 1858, chiefly on account of lack of timber.

Clinton Furnace, built in 1841 on Hemlock Creek, in the extreme northwest corner of Washington Township. Nine and one-half feet across the bosh by thirty-three feet high. Owned first by Clapp and Seymour, afterward by Samuel F. Plumer; manager, William Hollis. Production, 1,000 tons in 1845; 2,000, in 1856, forge metal, out of fossil buhrstone and fossil limestone, lower coal measure ore, mined two miles south of the furnace.

Elk ("Smearkase") Furnace, built in 1842, on Deer Creek, one mile above Deer Creek Furnace. Seven feet bosh by twenty-two feet high. Production in 1845, about 700 tons; in 1854, 400 tons. Abandoned in the fall of 1855, when its timber was exhausted.
Buchanan Furnace, built in 1844 on the north bank of the Clarion River, opposite Callensburg. Cold-blast; eight feet across bosh by thirty feet high. Owned by Plumer, Crary & Co.: S. F. Plumer, F. G. Crary, of Kittanning, and Arnold Plumer of Franklin. F. G. Crary became sole proprietor about 1857. Averaged 1,200 tons a year. Abandoned in 1858, when its timber was exhausted.

Tippecanoe Furnace (named after the sobriquet of General Harrison), built in 1844, on Canoe Creek, one and one-half miles above Eagle Furnace. Built by Black and Maxwell; run by King and Maxwell. In 1845 it produced 1,000 tons of metal. Abandoned in 1851.

Mary Ann Furnace, built in 1844 on Paint Creek, at the crossing of the Franklin-Brookville turnpike. Cold-blast; eight feet across the bosh. Built by John Black, Daniel Brenneman, David McKee, and John Thom; sold to John and Adam Black. Produced in 1846, 1,100 tons of iron. Abandoned in 1851.

Deer Creek Furnace, built in 1844 on Deer Creek, at the pike crossing immediately west of Shippenville. Cold-blast. First proprietors, Kerr and Hasson; afterwards, Mease & Co. Abandoned in 1851.

St. Charles Furnace (originally Cocheco), built in 1844 on Leatherwood Creek, about three miles from the Low Grade Railroad. Ten feet across the bosh by thirty-three feet high. Hot-blast introduced in 1857. Built by John and Samuel Wilson of Strattonville, Pennsylvania; purchased in the spring of 1846 by J. and P. Kerr of Clarion; leased in 1861 to Michael McCue, who operated it till 1865, when it was dismantled. Production in 1845, 1,000 tons; in 1850, 2,000 tons. This is the only furnace that employed raw coal. The report of the Second Geological Survey of Pennsylvania on The Geology of Clarion County (1880) says: "Though essentially a charcoal stack, this furnace was run for one year on coke made from the Freeport Lower coal, and for nearly a year on raw coal from the Freeport Upper bed, which, in this vicinity, is of a 'block' character. Unnumberable thin layers of mineral charcoal disseminated through the bed, divide the bituminous portion into such thin laminae that any appreciable swelling or melting of the mass is rendered impossible, and each lump preserves its shape until entirely consumed."

Wildcat Furnace (sometimes called Franklin), built in 1843 on Wildcat Run, one mile southeast of Rimersburg. Steam cold-blast; seven and
one-half feet across the bosh by twenty-eight feet high. Built by Flick and Lawson; sold to John L. Miller, of Pittsburgh, and James M. Freeman, of Clarion County. Production in 1845, about 1,000 tons; in 1847, 1,380. Blown out in 1857, but not abandoned till 1863.

Black Fox Furnace, built in 1844 one mile from the Allegheny River on Black Fox Run, Perry Township. Steam hot-blast; nine feet bosh by thirty feet high. Built by Welsh & Co.; subsequently owned by Adams & Varnum (1848), Jones & Co., Joseph M. Thompson, I. M. Boyd, and others. The furnace was bought at sheriff's sale in 1850 by Jacob Painter and others; Samuel Barr, superintendent. Production in 1845, 1,000 tons; in 1856, 2,000 tons. About 1858 the boiler exploded, killing one man and severely injuring several others. The furnace never resumed.

Pike Furnace, built in 1845 near Wildcat Run, three-fourths of a mile north of Lawsonham. Steam hot-blast; nine feet bosh by thirty feet high. Originally built as a cold-blast stack. First owned by Lawson, Duff & Orr; afterward owned and managed by Hunter Orr. Production of 1845 period, 1,700 tons; of 1856, about 1,500 tons. Iron made from limestone ore, soft brown and hard blue, in beds that crop out horizontally among the coal measures around the furnace. Suspended in 1858 for a while; blown out in 1868–69; now entirely dismantled.

Prospect Furnace, built in 1845 on Cherry Run, one mile south of Callensburg. Steam cold-blast; eight feet bosh by thirty feet high. Built by McElroy and H. Alexander; sold to Moore, Painter & Co.; managed by William Moore, one of the company. Manufactured in thirty-nine and a quarter weeks in 1856, 1,450 tons of mill iron out of blue coal measure limestone ore from many banks within three and one-half miles around. Abandoned in 1862.

Sligo Furnace, built in 1845 on Licking Creek near Sligo, in Piney Township. Steam cold- and hot-blast; changed to hot-blast in 1857. Employed chills. Owned by Lyon, Shorb & Co.; William Lyon, of Pittsburgh, J. P. Lyon, of Sligo, Anthony Shorb, and Thomas McCulloch, of Sligo. The furnace received its name from Sligo, near Pittsburgh, where the company's ironworks were situated. Produced in 1845, 1,500 tons; in 1856, 2,400 tons of rolling-mill iron. Abandoned in 1871.

Monroe Furnace, built in 1845 on Piney Creek in eastern Monroe Township, on the road between Reidsburg and Greenville. Cold-blast;
eight feet bosh by thirty feet high (inside). Original operator, Cochran Fulton; afterwards, W. B. Fetzer & Co.; subsequently owned by Cochran & Timblin. Production in 1845, 1,000 tons; in 1855, 1,250. This stack still stands; finally went out of blast in 1882.

Limestone Furnace, built in 1845 on Piney Creek in Limestone Township. Cold-blast; eight feet across the bosh. Owned by Jacob B. Lyon & Co., and J. Painter, and G. B. Smith. Produced about 1,000 tons per year. Abandoned in 1853.

Martha (Polk) Furnace, built in 1845 near Reidsburg, Monroe Township. Steam cold-blast. Built by Christian Myers; Nelson Hetherington owned and managed it most of the time. It was erected as a successor to Clarion Furnace, where ore and timber were growing scarce. Martha Furnace was purchased by Lyon, Shorb & Co., but was never put in blast by them; timber in its vicinity grew scarce, and the stack was dismantled in 1856. Its approximate production at first was 1,000 tons; in 1854 it made 1,260 tons. Judge Myers, the first proprietor, was an enthusiastic supporter of Polk, and called the furnace after him. When the tariff of 1842 was repealed, and the change was sanctioned by President Polk, Myers became disgusted and would not suffer the furnace to bear the name any longer. He therefore rechristened it after his wife, Martha.

Hemlock Furnace, built in 1845 in Washington Township; it was very close to Clinton Furnace, on Hemlock Run. Steam cold-blast; seven and one-half feet across the bosh by thirty feet high (inside). Built by W. B. Fetzer and McGuire; owned later by Horner & Eaton, and finally by F. & W. M. Faber, of Pittsburgh. Production of 1846, 2,000 tons; 1856, 1,200. Abandoned about 1860.

Licking Furnace, built in 1845 on Licking Run, near Lickingville, Washington Township. Cold-blast; seven and one-half feet bosh by thirty feet high. Owned by Ohler & Co.; William Ohler, John G. Seigworth, John Myers, and John Kapp. Produced in 1846, 1,200 tons; later about 400 tons per year. Abandoned in 1856.

Helen Furnace, built in 1845 about eight miles from Clarion on the Scotch Hill road. Cold-blast; eight feet bosh by thirty-two feet high. Built by Robert Barber and Wilson S. Packer. On Barber and Packer's failure, the property for a short time was in the hands of Daniel Richey
and was finally purchased by Samuel Wilson of Strattonville, with whom D. McKim was a partner for a while, and then was for a number of years operated by Samuel Wilson alone. Made in twenty-six weeks of 1856, 756 tons of iron, from ore mined back of tunnel head. Stopped manufacture in 1856 or 1857. This furnace is locally called "Heelen," for the following reason: It was erected on the old McNaughton farm, and the builders named it "Highland" Furnace in honor of Alexander McNaughton who prided himself on being a Highlander. But, as the word was pronounced, according to the north-Scottish dialect, "Heeland," the name was soon corrupted to "Heelen" Furnace, and this fact led to the erroneous supposition that it was christened with a feminine name (Helen). The name of the township has the same origin and is commonly, but incorrectly, pronounced "Heelen" Township.

Catfish Furnace, built in 1846 on the Allegheny, at the mouth of Catfish Run. Steam cold-blast; eight feet across the bosh by thirty feet high. Built by Over, Reichart and Lobaugh, who failed in 1851. The property was purchased by Alexander Miller; leased by J. L. Miller; and managed by J. H. Kahl. It made in thirty-three weeks of 1856, 925½ tons of metal from carbonate and red ores, taken from within a mile to the north.

Washington Furnace, built in 1846 in the southwest corner of Clarion Township, a little north of Monroe. Steam cold-blast; eight and one-half feet bosh by thirty feet high (inside). Owned by D. B. Long and H. Blackstone; subsequently by Lanier & Co., of New York. Production of 1846, 1,000 tons; blew out in the spring of 1855, having made 706 tons that year.

Richland Furnace, built in 1846 on a small branch of Turkey Run, in Richland Township. Steam cold-blast; eight feet bosh by thirty feet high. Built by John Keating, of Philadelphia. J. Vensel had an interest in the business for a while. In 1854–56, produced an average of 550 tons per year.

Eagle Furnace, built in 1846 on Canoe Creek, a mile from the Clarion River. Cold-blast; eight feet bosh by thirty feet high. Built by Kribbs, Reynolds & Curll; operated by George Kribbs and Joseph B. Reynolds. Produced from 700 to 800 tons per year. Abandoned in 1858.

Corsica Furnace (formerly Mt. Pleasant), built in 1849 in Clarion
Township, northwest of Corsica, and a little north of the pike. Built by G. W. Corbet, Solomon Cyphert, and George Reynolds; sold in 1850, to Gates & Co., of Kittanning, who in turn sold it to J. P. Brown. Made about 500 tons yearly out of ore close by.

Redbank Furnace, built in 1859 at the mouth of Redbank by Thomas McCulloch, formerly of Lyon, Shorb & Co. Alexander Reynolds shortly became a partner; McCulloch was replaced by Moorhead, and the firm became Reynolds & Moorhead. This stack was a successor to the old Redbank Furnace across the creek in Armstrong County. The first stack on the present site of Redbank Furnace was thirty-nine feet high, and eleven feet across the bosh; it has since been raised to a height of sixty-four feet, and its equipment has been much improved and modernized. The old furnace used coke made in pits and produced an average of ninety-five tons a week; in 1887 there were forty coke ovens in connection with the plant, and the capacity was 150 tons of metal per week. The ore, coal, and limestone are all found together on the river hillside above the furnace and are carried down an inclined plane tramway to the terrace or yard. The coal is prepared for coking by a machine capable of crushing and washing eighty tons per day. The hearth is of flagstone, and the tunnel mouth has a “bell and hopper” cover; the gases are conducted down a pipe called the “down-comer,” and distributed between the boiler and hot-blast. An upright engine, 225 horse power, sixty feet pressure, and five feet stroke, forces the air into the hot-blast and fan, and thence to the furnace; there are six boilers in a “double-decked battery,” three feet wide, and thirty and forty-four feet in length. From the hands of Reynolds & Moorhead the furnace passed into those of Alexander Reynolds, and finally to Alexander Reynolds’ sons, the present proprietors. It suspended operations in January, 1883, but resumed and continued operations until the early nineties.

Sarah Furnace, completed in 1860. It was built on the Allegheny, at the bottom of the bend, about one mile above Catfish. Erected by S. F. Plumer after his retirement from Prospect. It took its name from the wife of the proprietor. It used coke as fuel. Passed into the hands of Jennings, Morley & Co., and was abandoned about 1867.