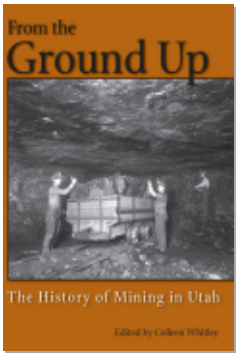
9. Iron County



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Iron County

Janet Seegmiller

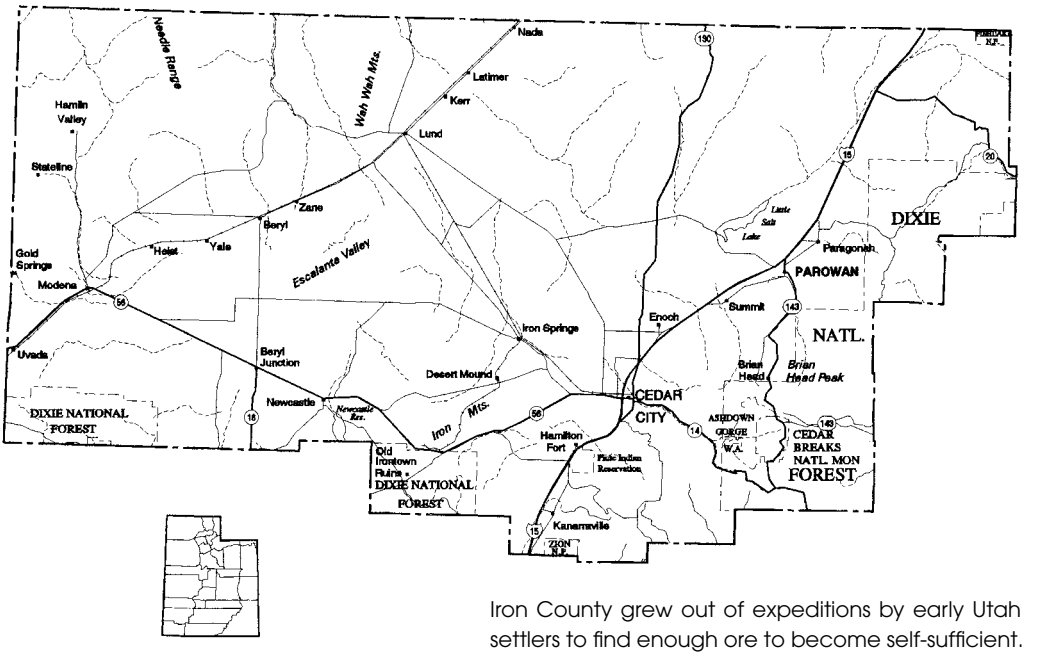
Mining has come full circle in Iron County. Explorers in the early 1850s found vast reserves of iron and coal, leading to the settlement of the area. Deposits of silver, gold, lead, fluorspar, and gypsum were discovered later. These finds produced headlines in local newspapers, but only iron and coal mining prospered, and that occurred almost 100 years after settlement. At the turn of the twenty-first century, little mining remains. Despite the mineral resources available, it is currently easier and cheaper to mine elsewhere.

Iron Mining and Manufacturing

Without question Iron County is accurately named.[1] Within its borders lie the richest and most accessible iron-ore bodies in the western United States.[2] The mining district is 3 miles wide and 23 miles long, occupying only 69 of the county's 3,300 square miles. However, economically and historically, its impact has been greater than any other natural resource.

The iron-ore bodies were created in Tertiary times, when igneous intrusions of molten rock, or magma, pushed up toward the Earth's surface, forming bulges between layers of a blue gray Jurassic limestone called the Homestake formation. The magma hardened into quartz monzonite. Iron-rich emanations, as liquid or gas, followed the perimeter of the igneous rock up, creating deposits of magnetite and hematite, iron ores. Iron ore occurs in cracks and fissures in the quartz, indicating that the iron deposit took place after the intrusive igneous rock had cooled to a solid state. Replacement ore is characteristically a blend of hematite and magnetite iron, whereas the ore in fissure deposits is usually high-grade magnetite.[3]

Geologists believe the intrusions were formed under a surface cover that was 2,000 to possibly 8,000 feet thick. Subsequent erosion has partially stripped the cover from three prominent laccoliths or domes, namely Iron Mountain, Granite Mountain, and Three Peaks, exposing the monzonite cores. The iron ore exists on the tops



Iron County grew out of expeditions by early Utah settlers to find enough ore to become self-sufficient.

and around the flanks of these laccolithic humps down to the floors of the surrounding valleys. Some of the ore bodies have been exposed, totally or partially eroded, and then reburied with sediment during the intervening thousands of years.[4]

The rich iron deposits of southern Utah attracted the earliest interest as they lay along a section of the Old Spanish Trail, first used in its entirety in about 1830 for commerce, slave transportation, and emigration from Santa Fe to Los Angeles. In July 1847 Mormon pioneers escaping religious persecution in Illinois and Missouri arrived in the Salt Lake Valley under the direction of Brigham Young and immediately began exploring the Great Basin. They were especially eager to establish a corridor of Mormon colonies from Salt Lake to southern California. In October 1849 apostle Charles C. Rich, on his way to select a settlement site in San Bernardino, recorded the discovery of iron ore near Iron Springs, 25 miles southwest of the Little Salt Lake (now Parowan) Valley. Traveling companion Addison Pratt, a missionary bound for the Society Islands, also wrote about the ore, noting its abundance.[5]

In 1849 discovery of gold in California was less important to Brigham Young than Pratt's report of "immense quantities of rich iron ore" near the Little Salt Lake. Self-sufficiency was Young's goal for the pioneers in the Great Basin. Gold and silver mines he could live without because they would attract non-Mormons to the area, but iron was essential for homes, farms, factories, and transportation. Therefore, a colony in what was to be Iron County was a priority.

In November 1849 Young placed apostle Parley P. Pratt at the head of the Southern Exploring Expedition with the commission to explore the area and evaluate

potential locations for settlement. Pratt recommended establishing an outpost on the Little Salt Lake and also spoke highly of Cedar Valley, "a large body of good land on the Southwest borders" with "a hill of the richest Iron ore" rising in the middle of "thousands of acres of cedar contributing an almost inexhaustible supply of fuel." [6]

In 1850, apostle George A. Smith was called to lead a group of iron missionaries—119 men, 30 women, and 18 children in 101 wagons—on an expedition to create a community that would sustain a full-fledged ironworks in the middle of the desert. After building a fort in early 1851, precursor to the city of Parowan, near Center Creek and planting spring crops, the pioneers discovered coal on the banks of the Little Muddy 20 miles to the southwest and renamed it Coal Creek. Exploring farther, the settlers found "several veins" of coal "varying from 3 inches to 3 feet in thickness" five miles up the canyon. [7]

With the discovery of significant coal deposits in Coal Creek Canyon, the iron missionaries decided to build the ironworks on the banks of Coal Creek some 5 miles from the promising new fuel source and 10 miles from the iron-ore deposits. In November 1851 Henry Lunt and two companies of men moved to Coal Creek to establish a settlement, soon named Cedar City, and began preparing to produce iron. In May 1852 Burr Frost successfully smelted iron ore in his blacksmith's forge and produced a small amount of iron that was shaped into nails. To further the venture, Brigham Young organized an iron-manufacturing company with Richard Harrison as superintendent, Henry Lunt, clerk, Thomas Bladen, engineer, and David B. Adams, furnace operator.

One month later Henry Lunt reported "a considerable amount of work has been done," toward making iron:

> The fire bricks for the furnace were ready for laying and have proved to be of the best quality. The timber which was needed for the framing of the machinery was hauled from a canyon five miles south of Coal Creek. . . . an extensive blacksmith's shop was completed. The iron work for the machinery was progressing rapidly. The iron for this purpose was mostly obtained by taking tires from their wagons, expecting to replace them from the Iron Works, as the settlers felt very hopeful that they, in a few weeks, would have iron of their own manufacture. . . . brethren from Parowan and [Cedar City] have been working out their taxes in making a road up Coal Creek Canyon during the past week. The road is made within one mile of the coal.[8]

However, differences divided the men, and leadership roles were not clear. With so many tasks demanding immediate attention in the new frontier communities, the pioneers clashed over whether to devote limited manpower first to farming chores or iron production. Furthermore, Mormon converts from the British Isles with experience in iron manufacture had understandable difficulty adapting their skills to conditions in southern Utah, and disputes arose over matters of procedure, such as

how to test the iron ore.[9] Erastus Snow and Franklin D. Richards would write later, "[W]e found a Scotch party, a Welch party, an English party, and an American party, and we turned Iron Masters and undertook to put all these parties through the furnace, and run out a party of Saints for building up the Kingdom of God."[10]

The first test of their blast furnace happened on 29–30 September 1852. One hundred loads of coal were hauled and coked, loads of dry pitch pine were brought to mix with the coke, limestone was hauled to charge the furnace, and tons of iron ore were crushed with sledge hammers and brought to the furnace. Men worked all day and night charging the furnace and tending it. At six o'clock in the morning, they crowded in front of the furnace while an ironworker tapped it and a molten stream ran out. Instantly pent-up anxiety broke loose in a spontaneous cry of joy. On the spot five men were chosen to carry samples of the pig iron to Brigham Young in Salt Lake City to display at the October church conference. Although the metal had a peculiar appearance, they had made the first iron west of the Mississippi.[11]

During the conference, Brigham Young called for 100 families to strengthen the Cedar City colony. George A. Smith preached an "iron" sermon, promising that plows and kettles, guns and wagon wheels, sawmill cranks, nails, and door trimmings would all be made from Cedar City iron.[12] Ironworkers, coal miners, blacksmiths, and farmers were recruited, and by November and December, they began arriving at the ironworks, bolstering the spirits of the earlier settlers.

The enterprise desperately needed capital. At Brigham Young's request, apostles Erastus Snow and Franklin D. Richards organized the Deseret Iron Company in England on 28 April 1852. Snow and Richards obtained subscriptions totaling 4,000 British pounds ($19,360) from wealthy church members in the British Empire, and they visited ironworks in England, Wales, Ireland, and Scotland to obtain more information on making iron. Upon their arrival in Cedar City in November 1852, they bought out the pioneer iron company for $2,866, absorbing many of the original workers into the new organization. This was probably the first foreign-owned mining operation in the Intermountain West.[13] With the establishment of the Deseret Iron Company, some ironworkers felt the missionary aspect of the venture was finished and they had no further obligation to stay, even though leaders counseled otherwise. A number of iron missionaries returned to the northern settlements; others went to California.

Between September 1852 and September 1853, through experimenting and great effort, the furnace produced about 20 tons of pig iron from approximately 50 tons of ore, even though iron masters were still not satisfied with the quality. From the pig iron, a variety of skillets, andirons, kettles, wheels, and other goods were successfully cast in sand moldings. Henry Lunt took the iron products to Salt Lake, where President Young displayed them at the April 1853 General Conference as the first cast iron made by the Latter-day Saints.

The infant industry suffered several setbacks. On 3 September 1853, a mountain cloudburst sent a flood down Cedar Canyon which swept away dams, bridges, and the

road to the coal mines. Three feet of water inundated the ironworks, which lay east of the creek, leaving 10 inches of mud inside the furnace and buildings. Hundreds of bushels of charcoal, lumber, and wood were carried away. The flood, coupled with the Walker Indian war, forced Brigham Young to shut down the ironworks temporarily and put its employees to work on the adobe fort encircling Cedar City.

After rebuilding and repairing the dam and other breaches along the creek, the Deseret Iron Company started its first trial on 9 January 1854, but the weather turned bitterly cold, freezing the creek and stopping the waterwheel and air blast, thus shutting down the furnace. Company leaders decided to build a new furnace west of Coal Creek with a larger waterwheel and air cylinder, and they set it on a rock foundation. The impressive new stone-masonry structure, called the Noble Furnace by the pioneers, was completed in September 1854 and had a sandstone lining. Although the furnace seemed to work well, the output was disappointing. Different charges were used to compensate for the minerals that did not combine well to make good pig iron. By April output was improved, and a total of 10 tons of "good iron" was produced, including 1,700 pounds during one 24-hour period. From this run the company made a bell, which is the only known casting of Deseret Iron still in existence.[14]

The company still lacked the capital to accomplish its assignment, and workers suffered greatly without suitable clothing, bedding, and other common comforts for themselves and their families. Following his spring visit in May 1855, Brigham Young concluded that "the brethren have done as well as men could possibly do, considering their impoverished circumstances, and the inconveniences they have had to labor under. They have probably progressed better than any other people would upon the face of the earth."[15]

Many problems threatened to close Deseret Iron during 1855 and 1856, including a food shortage which left both humans and animals near starvation. Some workers packed up their families and moved away. During the winter, severe weather cut off the supply of coal and froze the creek and waterwheel. Summer drought stopped the waterwheel again, and there were more mechanical breakdowns. A May 1856 announcement in the *Deseret News* asked for 150 more workers and 50 additional wagon teams to supply the furnace with fuel and ore.

In the spring of 1857, Brigham Young's steam engine from his sugar mill in Salt Lake City was sent to remedy the inconsistent water flow from the creek. By July it was in place and working, but the workforce continued to drop, and the iron company struggled. The men spent their time repairing broken machinery and making improvements to the furnace. They had barely restarted the ironworks in late summer when orders came to suspend all production and turn attention to harvesting grain due to the approach of federal troops under Colonel Albert Sidney Johnston. Amid the turmoil created by the army's approach, men from the area were involved in the tragic attack on a wagon train of Arkansas emigrants at Mountain Meadows in September 1857. The aftermath of this event discouraged and disquieted many in the county. The exodus from Cedar City continued.

Iron making resumed the next spring despite the remaining specter of war. Members of the Iron District Militia were sent to scour the mountains for a refuge site if Johnston's army forced the Saints to flee their homes. In April 16 men and teams went to the mines near Las Vegas to bring back lead ore to make into bullets.[16] A new furnace was finished in April, and new trials began. However, the lining of the furnace gave way in May, September, and October.

During the summer, Johnston's army entered the territory and established Camp Floyd southwest of Salt Lake Valley, bringing with it a large inventory of iron in the form of wagons and weapons. In October 1858 Brigham Young ordered Isaac Haight to close down the ironworks. His letter said, "Put everything in as good a condition for preservation as possible and let it rest. Such fruitless exertions to make Iron seem to be exhausting not only the patience, but the vital energies, and power of the settlement."[17]

Within five months, the population of Cedar City dropped by two-thirds.[18] Those with means left. Those who had given their wagon wheels to the ironworks remained behind. Ironworkers had little to show for their labor. What little pay they received had come in goods from the company store. Two who remained, Joseph Walker and John Pidding Jones, made the last run of the ironworks in 1860 by melting down seven wagonloads of federal cannonballs and then casting flatirons, dog irons, molasses rolls, sawmill and gristmill irons, grates, and other implements. In 1861 Erastus Snow took all the removable assets, including machinery, to the new colony at St. George.[19]

The ironworks failed to live up to expectations for reasons the settlers could neither understand nor control. Location of the works required time-consuming transportation of both coal and iron. Inadequate and erratic flow of Coal Creek did not permit consistent furnace operation. Local clay and sandstone proved to be poor firing material for lining the furnace. Coal mined from Cedar and Right Hand Canyons slacked too quickly, which reduced the efficiency of the furnace, and contained too much sulfur, which produced brittle iron. Lack of adequate financial backing kept the company from paying its workers; they and their families often were barefoot or hungry. Furthermore, the unknown chemical makeup of raw materials caused metallurgical problems in smelting the ore. Experience could not overcome lack of scientific knowledge. Disagreements on technical aspects of iron making had a lasting effect on the morale and efficiency of the Iron Mission.[20]

The reward for most of the ironworkers was knowing they had done what was asked of them by their leaders. They had not come to get rich but to establish an industry to help every community in the Great Basin. Perhaps the most remarkable aspect of the Iron Mission was the perseverance of the people in continually trying to make iron and build their community while living in abject poverty.

In the years after 1860, John P. Jones supplied some badly needed iron implements by building a small cupola furnace along Coal Creek and utilizing a large waterwheel which was shared with a cabinet shop and flour mill. Later at Johnson's Fort (now Enoch), he built a blacksmith shop, where he made tools, and eventually