From the Ground Up

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another cupola furnace, a foundry, and a coke and charcoal oven. Utilizing scrap iron, Jones painstakingly molded stove and fireplace grates, skillets and irons, horse-shoes, and horseshoe nails. The largest single casting was a 500-pound hammer to drive piles for the dam being constructed on the Virgin River by the St. George and Washington Irrigation Company. Cogwheels, shafts, tracks, wheels, pulleys and rollers were made for sawmills, the molasses mill in Washington County, and mines at Silver Reef and in Lincoln County, Nevada. Mine operators were the best cash customers of John Pidding Jones and Sons Iron Company. Their furnace operated on and off for nearly 20 years.21

With high hopes a second phase of iron mining and manufacturing began in Iron County in July 1868. A company was formed by several of southern Utah’s more successful businessmen: Ebenezer Hanks, Peter Shirts, Chapman Duncan, Seth M. Blair, and Homer Duncan. They called it the Union Iron Works or Pinto Iron Works. Their location was at Little Pinto Creek, some 23 miles southwest of Cedar City, close to ore fields at the south end of Iron Mountain. Dr. T. L. Scheuner, a Swiss metallurgist, was superintendent. A smelting furnace, a beehive charcoal oven, and a number of buildings to support the ironworks were built along the creek at a place now known as Old Irontown but officially named Iron City.22 By 1870 a fair-sized settlement, complete with shops, homes, a post office, and farms, was in place. The 1870 census shows 89 persons in Iron City: 27 males and 24 females over 12 and 38 children in 19 households.

The furnace soon was producing 800 pounds of good-quality iron every eight hours around the clock. The challenge, however, was not iron production but selling the product. Seth Blair wrote to the Deseret News to plead for a foundry somewhere in Utah to buy their cast iron and turn it into steel or wrought iron. Between 1868 and 1871, large supplies of iron ore and needed materials were gathered for continuous furnace use, and the operation produced many machinery parts and household implements. However, because it lacked capital and laborers, when the materials ran out, production ceased, and the furnace shut down. The largest project sent pig iron to Salt Lake City, where it was cast into 12 oxen for the St. George Temple baptismal font.

To infuse more capital into the venture, Union Iron Works was taken over by the Great Western Iron Mining and Manufacturing Company, with Thomas Taylor, a Salt Lake businessman, and his son-in-law, John C. Cutler, as major stockholders.23 Cutler later became governor of Utah. Litigation prevented Taylor from developing his properties for some time. Despite continual legal problems, however, Taylor added the land holdings of Ebenezer Hanks to his own on 8 January 1881.24

A committee of the Zion’s Board of Trade from Salt Lake City organized another company, the Utah Iron Manufacturing Company, in August 1881. It obtained properties at Iron Springs from Thomas Taylor, Henry Lunt, and the LDS Church, which had secured patents on coal and iron reserves in 1880. Utah Iron’s plan to construct a 150-mile railroad from the mines to the Utah Southern Railroad terminus at Juab
was not implemented. Its mining claims were challenged, and it spent the next three years in litigation, trying to document its best claims.\textsuperscript{25}

Meanwhile, the LDS Church’s First Presidency and Board of Trade attempted to develop uncontested claims at Pinto and Iron Springs by forming the Iron Manufacturing Company of Utah (IMCU). Many shares went to Thomas Taylor in return for his properties. IMCU obtained coal claims in Cedar Canyon and purchased Great Western Iron’s plant at Iron City, including the blast furnace, machine shop, engine house, pattern shop, foundry, store, schoolhouse, and residences. Increased capital was essential, and church leaders were determined that it should come from within Utah, rather than lose control by selling stock to eastern or Gentile (non-Mormon) interests. Church members were encouraged to subscribe to IMCU stock, but most of the subscriptions were promises of labor and material rather than cash.

President John Taylor received permission from LDS church members at the April 1884 General Conference to put church funds into the ironworks, which enabled IMCU to buy the Pioche and Bullionville Railroad, a narrow-gauge line with 20 miles of rails, two locomotives, 25 cars, a roundhouse, and other equipment. Tracks were to be laid between the coal mines in Cedar Canyon, iron deposits at Iron Mountain, and the furnaces at Old Irontown. The road was to transport itself by repeatedly extending the rails in front of the engine, moving the engine and cars onto the rails, removing the rails from behind, and again placing them in front. However, the method proved too time consuming, and the railroad equipment was finally transported by oxcart and wagon from Jack Rabbit, Nevada, to Cedar City, a distance of 80 miles. Though some grading for the railroad was done, no tracks were ever laid.

Mormon church leaders, forced into hiding to avoid prosecution for polygamy, were unable to pursue development of the iron company. Thomas Taylor claimed to have opportunities to sell the company’s properties but felt that he was prohibited by the stalling actions of George Cannon, who held the mortgage papers after President John Taylor’s death.\textsuperscript{26} In 1886 a Cedar City “observer” wrote the \textit{Salt Lake Herald}, “Today, as far as the iron industry is concerned, we are quiet as a church yard, and nothing left to remind us of our past hopes and great anticipations, but the roadbed . . . a few pair of railroad car wheels, a portion of a locomotive and tender, and a few hundred feet of rails, all of which seems to be quietly laid away, at least until times brighten up.”\textsuperscript{27}

After 1872, when federal mining law established rules for claim location, annual assessment work, and patenting procedures, hundreds of prospectors covered the Iron County mineral belt. From 23 recorded claims in 1880 in the Pinto and Iron Spring Mining Districts, the number grew to more than 100 in 1900 and more than 1,000 patented and unpatented mining claims in 1922, most of them worthless. Patenting was done by those hoping to interest investment capital to develop the area or by companies, such as Colorado Fuel and Iron Company (CF&I), which purchased and patented many claims for its steel plant near Pueblo, Colorado, the first in the western United States.
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Between 1899 and 1923, people who earnestly believed that Iron County would yet become a great iron-producing area waited for the right combination of demand and capital. Events that augured well for the eventual development of an iron industry included completion of the Los Angeles to Salt Lake City branch of the Union Pacific Railroad, increased demand for iron and steel products on the West Coast as population increased, and the opening of several small-scale steel plants in California.28

Columbia Steel Company, a leader in California’s steel industry, became interested in the county’s iron-ore deposits because of the close proximity of large coal deposits in Carbon County. A 1922 feasibility study showed “there exists a body of coal and iron ore in Utah with other raw materials necessary for the production of pig iron and that are available at a comparatively low cost and can be assembled at some point near Salt Lake at as low a figure as any other similar materials are assembled in other parts of the United States.”29 L. F. Rains, president of Carbon Fuel Company, had already purchased or located iron-ore claims on the north side of Granite Mountain that were ultimately sold to the new Columbia Steel, merging the California facilities with the Utah iron and coal properties. Columbia Steel began building a blast furnace south of Provo near Springville, equidistant from coal and iron sources. Limestone was available nearby, as well as an abundance of water at Utah Lake. The site became Ironton.

While the furnace was under construction, the coal mines being readied, and iron mines opening in Iron County, the Union Pacific built a branch railroad from the main line at Lund through Iron Springs Gap to Cedar City. The tracks were brought to Cedar City in less than three months from April to June 1923. The Milner spur was also constructed to the Pioche Mine about a mile south of Iron Springs Gap. By April 1924 coal and iron ore were being shipped to the Ironton plant. On 30 April 1924, the furnace was charged and blown in, and three days later 150 tons of pig iron were on their way to the Pacific Coast. Iron County mines were alive again. The commencement of Columbia Steel Works was celebrated at Utah Steel Day on 13 June 1924, and the old iron bell cast in 1855 in Cedar City was exhibited at the celebration.

Columbia Steel first mined its own Pioche and Vermillion ore bodies using a modified glory hole system. A drift or tunnel was driven under the ore body, and a series of raises or shafts were dug to the surface. At the top of each shaft, a heavy grid or screen was installed, covering the shaft opening. Blasting or jackhammers broke up the ore; then heavy draft-horse teams pulling a scraper conveyed it over the grids. The ore passing the screen fell down the shaft into five-ton pit cars on a narrow-gauge rail system. The cars were hauled outside the mine to a crushing and screening plant, where the sized ore was loaded into railroad cars for shipping. There were enough five-ton cars in the mine to transport 1,000 tons of ore daily. However, the system was slow, inefficient, dangerous, and expensive.

Within a year Columbia determined that the chemistry of the ore was not exactly right for the blast furnace. Investigations showed that the ore at Desert Mound
was better, and in May 1925 Columbia Steel contracted with Archibald Milner and Brothers, principals in the Utah Iron Ore Corporation, for 1.5 million tons of ore from Desert Mound to be furnished to Ironton at a minimum rate of 500 tons per day. Utah Iron built a three-and-one-half-mile branch-railroad line to Desert Mound and its 527 acres of patented ore in the Iron Springs District. Milner’s reserves were estimated at 15 million tons within a depth of 100 feet.

Utah Iron mined by open-pit blasting. The ore was loaded by a single, small steam shovel onto cars on a narrow-gauge rail system and transported to a processing plant, where it was crushed, screened, and shipped to Ironton. Eventually the grade out of the open pit became too steep for the railroad, and dump trucks replaced it. The steam shovel could handle 300 tons per eight-hour shift, and so a second (and sometimes third) shift was added to meet the contract of 500 tons per day. (By comparison in the 1960s, any one of the five crushing plants in the district could produce 500 tons per hour.)

From 1924 to 1936, Utah Iron mined 2.4 million net tons of iron ore with 1.5 million tons supplied to Columbia Steel, 778,350 tons sent to the CF&I furnace in Pueblo, and 134,000 tons sold for flux to various foundries and smelters. Desert Mound went out of production in 1936.

Iron Springs was at its height between 1924 and 1936. A post office was located in the branch store of the Cedar Mercantile Company, and the school board moved a schoolhouse to the town from Yale. The school operated from 1924 to 1930 with Leslie Green, Geneva Heaton, Kate Isom, and Grace Bates as teachers. About 40 men were employed at the Pioche Mine. Community baseball was a favorite pastime, and the team from Iron Springs played other community teams and ones from the CCC camp during the 1930s.

The purchase of Columbia Steel by United States Steel Corporation (U.S. Steel, later USX) in 1929 significantly impacted iron mining in southern Utah. U.S. Steel acquired Columbia’s properties in Utah and California and set up its own mining operations under its subsidiary, Columbia Iron Mining Company, which operated in Iron County from 1935 to 1985. Due to the depletion of suitable grades of ore at Desert Mound, Columbia moved its mining operations to Iron Mountain. Twelve miles of track were laid to extend the railroad from Desert Mound to the south side of Iron Mountain. A new crushing plant started construction in August 1935 and went into operation nine months later.

Open-pit mining began at the Black Hawk outcrop and utilized the first electrically powered shovel brought to Iron County, plus an electric-powered churn drill to make the blast holes and two specially built 24-ton Mack trucks. Unfortunately, the hard, dense magnetite from Black Hawk proved more rugged than the new equipment, causing many breakdowns. However, Black Hawk ore had more iron than other available ores. Since it improved furnace performance, demand increased. Ore shipments to Ironton rose from 175,000 tons per year in 1936 to nearly 300,000 tons in 1941.
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Prior to the Japanese attack on Pearl Harbor, United States defense plans included locating an inland steel mill somewhere in the West as a precaution against possible closure of the Panama Canal. A site at Orem, Utah, was selected because it was safe from possible air attack and was equal distance from the major naval bases. In addition, there were good transportation systems and plentiful sources of coal, iron ore, and water within a reasonable distance. The Geneva mill required four times as much iron ore as the Ironton plant. Between 1940 and Geneva's opening in 1944, the number of mine workers in Iron County increased from 21 to more than 300. Shifts and work hours multiplied to provide iron ore for Geneva, Ironton, and other plants supplying steel for the war effort.

A second major steel operation was added when CF&I contracted in 1943 with Utah Construction Company (UCC) to build a loading plant and open a mine on the Duncan claim, about a mile southwest of Columbia Steel's mines. The first six-month contract launched a 40-year operation in Iron County for UCC. It worked the Duncan Mine, then the deep and spectacular Blowout Mine, and finally the large Comstock ore body on the northeast side of Iron Mountain. In 1944 UCC purchased and leased property on both sides of the railroad near Granite Mountain and Three Peaks. A crushing plant and loading facility were constructed on the south side of the tracks in Iron Springs Gap. Iron ore mined by UCC was sold on the open market, primarily to Kaiser Steel Company at Fontana, California.

No labor union represented iron miners in the county until 1943, when United Steelworkers of America representatives met with Columbia Steel miners to organize a local in the mining district. This union was part of the Congress of Industrial Organizations (CIO) labor group. When UCC began its mining activities in the county, its workers were members of the Construction Trade Unions, part of the rival labor organization, the American Federation of Labor (AFL). They earned higher wages than Columbia Steel workers, which resulted in contention over wages and contracts at the Columbia Steel mines for a number of years.

The Geneva mill operated for 21 months as a defense plant and stopped production on 3 September 1945, just weeks after Japan surrendered. When the Geneva plant and its wartime facilities were first offered for sale in 1946, companies were not interested. Political pressure by President Truman and Utah's congressional delegation finally elicited six bids. The one from U.S. Steel was the most favorable. The company spent $47.5 million for the plant, which cost about $200 million to build. U.S. Steel then spent about $17 million converting the plant to a peacetime operation. The purchase of Geneva was of tremendous importance to Iron County. The local newspaper editor commented, "Completion of the sale assures the peace-time operation of this great war developed plant and brings to the west its greatest chance of industrial development. . . . And since the Geneva plant is dependent upon the ore from Iron County mines to feed its blast furnaces, Cedar City immediately takes its place as an important cog in the industrial development of the West, and will benefit tremendously."
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Ore requirements for Geneva’s blast furnaces mandated an increase in mining production as well as a more evenly blended furnace feed. Geneva Steel and Columbia Iron Mining decided to blend low-grade ores of 40 percent iron with higher-grade ones. A blending facility was built at Geneva to allow use of the lower-grade ores, a step in conserving available resources and fully using the iron as it was mined.31

In 1949 Columbia Iron Mining reopened the Desert Mound ore body and the Short Line deposit next to it. Columbia also contracted with UCC to remove some three million cubic yards of overburden from the planned pits. In response to an edict from the local power company that mining equipment could operate only at night because Escalante Valley farmers needed all the daytime power for irrigation, Columbia built its own power plant with three diesel generators at Iron Mountain. Company-owned power lines were strung from the plant to Desert Mound, helping assure Geneva Steel an uninterrupted and adequate supply of iron ore.

During the 1940s more than 17.4 million net tons of ore were mined in Iron County, five times more than during the previous 87 years. The 1950s proved to be the largest production decade in history. Combined shipments from UCC and Columbia Iron Mining exceeded 41.85 million tons. More than 600 people were employed in mining, and the county benefited from high wages and a mine-oriented tax base.

During the 1950s the unions were strong, and strikes every three or four years by the United Steelworkers of America hurt the local economy and threatened the existence of Geneva Steel. In 1949, as part of a national strike, 165 local workers were out for 6 weeks. In 1952, 220 local workers went on strike for 10 weeks, extending their strike past the national settlement to resolve a local pay issue. In 1956, 241 members of the local union struck from July to November. By a domino effect, some UCC and railroad workers also were laid off during these times. On occasion separate railroad-union strikes resulted in curtailed production and layoffs of mine employees. Local businesses felt the consequences, which sometimes persisted for months after the strike settlement as families recovered from the loss of income. Some businessmen resented the high wages paid miners because they caused discontent among their own workers.

Settlements may have appeared worthwhile, but in the end they hastened the downfall of the American steel industry. Hourly wages in the steel industry were the highest in the country in the 1950s and 1960s. However, by the 1960s Japan, operating the most modern steel plants in the world, could ship iron ore from Utah, fabricate steel products, ship them back to San Francisco, and still undersell U.S. Steel.32 Thus, during the decade of greatest demand and production, the seeds of decline were sown.

Two other issues affected U.S. Steel’s long-range plans in Iron County. Development of the 100-million-ton Rex ore body was held up by contested mining claims, requiring years of litigation and demands for extensive royalty payments. The other issue was additional local taxation, deemed unfair by U.S. Steel. Some residents were concerned that ore reserves were being exhausted without sufficient return to the county. In 1949 Iron County attorney Durham Morris drafted legislation, introduced
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by State Senator L. N. Marsden and Representative E. Ray Lyman in the state legislature, that was designed to increase tax revenues from mining. In 1950 the legislature approved the “net-proceeds tax,” to be levied on all iron-ore shipments. Mining companies’ protests resulted in some modification, but the companies still faced a large tax increase after 1951. The value of the iron mines in the state, all located in Iron County, was set at $24,177,127 for 1951 tax purposes, which accounted for 67 percent of the total county tax value. By comparison the tax value of the same properties in 1950 had been $3,737,415, just 23 percent of the county’s total value.

A lengthy lawsuit ensued with U.S. Steel arguing that Iron County and the state were wrongly collecting taxes. Fifth District Judge Will L. Hoyt upheld the Utah State Tax Commission’s right to set a value on ore for tax purposes when the ore was sold under contract between two subsidiaries of the same parent company, in this case Columbia Iron Mining and Geneva Steel. The court’s decision was important to the county and impacted taxes collected in 1949 and subsequently. Thereafter, mining companies paid a net-proceeds tax on ore mining, a mine-occupation tax to the state, taxes on patented mining claims, taxes on equipment and fixed assets, and state and federal corporate income tax, as well as large royalty payments to patented claim owners. In response U.S. Steel drastically curtailed mining operations in Iron County in 1962 and opened the Atlantic City Mine in Wyoming. Tonnage shipped was cut in half to 2 million tons each year.

During the 1960s and 1970s, UCC mined and improved ore using a $1.3-million ore-beneficiation mill built in 1961, which concentrated low-grade ores. The mill used a washing-flotation and magnetic-separation system. Beneficiation allowed more complete utilization of ore reserves, saved railroad freight by not shipping waste rock, and furnished better iron ore to the blast furnaces. UCC also developed a 500-ton, mobile, dry-magnetic separation unit to upgrade ore found in the alluvium fans surrounding major ore bodies. UCC shipped concentrate to Geneva Steel and cement plants in Utah, Idaho, and the Pacific Northwest, where the ore was used to give special properties to cement. The mill also concentrated low-grade ores from other companies in the area.

UCC mined its own properties as well as Blowout (1947–68), Comstock (1954–81), Queen of the West (1956–67), and Mountain Lion (1970–81), owned by CF&I. Purchases of new and heavier equipment in 1975 indicated company commitment to improved production, automation, and safety. Four 75-ton trucks, a new rotary drill rig, and a mammoth 10-cubic-yard electric shovel weighing more than 400 tons and costing a million dollars, were major purchases. During the 1970s Utah International (formerly UCC) was the largest mining operator in Iron County, with a workforce numbering 180 in the winter and 230 in the summer. Utah International and its AFL unions somehow handled contract negotiations without major strikes, so they were only idle when the railroad or steelworkers’ unions shut down the industry.

However, seemingly uncontrollable situations, including labor slowdowns, state and federal regulatory-agency demands (EPA and OSHA), and rising freight costs on
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The railroads increased operating costs and eventually took a toll on the iron industry. Even as it became evident in 1971 that the industry could not compete with foreign steel, steelworkers negotiated a settlement promising wage increases of 31 percent over three years. Plant modernization was needed, but instead USX (formerly U.S. Steel) began closing older facilities. Geneva was nearly closed in 1979–80 by the Environmental Protection Agency, then temporarily closed its doors in 1986 during labor-contract negotiations, and permanently shut down a year later when no labor agreement was reached. USX stopped mining and shipping from Iron County in 1980. Beginning in 1984, its mine facilities in Utah and Wyoming were closed and dismantled. The CF&I mill at Pueblo and the Fontana mill in California likewise closed and were dismantled. Some blamed inept management; others censured the unions for the steel industry’s troubles.

In January 1981 Utah International (now known as BHP-Utah International) closed down its mining operations in Iron County but continued shipping from its 1.5-million-ton stockpiles at Iron Springs for four more years. According to operations manager York F. Jones, “We had just priced ourselves out of the market.” The beneficiation mill and alluvium concentrator and the crushing and loading facility stood idle for five years and were then dismantled. BHP-Utah International’s employees were terminated or transferred to other corporation facilities.

During the 1950s and 1960s, iron-mining industries and their associated operations and services (railroad, electric power, and other utilities) paid approximately $923,000 in county taxes, or 60 to 70 percent of the tax bill for Iron County. By 1975 their share had decreased to about 37 percent ($894,000), but iron mining was still the major industry, the major employer, and the major tax payer in the county. The demise of mining came in the 1980s and adversely affected the Union Pacific Railroad and all other county businesses. The blow of losing this major tax payer, plus its related high-paying jobs and increased property values, seemed insurmountable in the early 1980s. The county’s iron empire appeared dead.

A partial resuscitation began in August 1987, when Basic Manufacturing and Technology of Utah purchased the idle Geneva plant from USX and its ore reserves in Iron County. The next year it bought the iron-ore crushing and loading plant at the Comstock Mine from BHP-Utah International, followed by CF&I’s property, including the Comstock pit and other reserves, in 1989. Iron ore from stockpiles and ore reserves at the Comstock and other mines supplied the reopened Geneva Steel mill. Gilbert Development of Cedar City shipped ore from the Comstock, Mountain Lion, Excelsior, Chesapeake, and Burke pits to Geneva, where the blast-furnace burden used about 60 percent iron pellets from Minnesota and 40 percent raw ore from Iron County. More than 800,000 tons were shipped annually in 1989 and 1990, but less than 175,000 tons were shipped in 1994. Taxes paid to the county between 1987 and 1994 ranged from $5,000 to $40,000.

In February 1999, faced with increased competition from imported steel and a slowing domestic economy, Geneva Steel became one of at least 25 American steel
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producers to file for Chapter 11 bankruptcy between 1998 and 2001. Buoyed by a $110 million loan from Citicorp USA, the company emerged from bankruptcy in January 2001 as Geneva Steel LLC, only to refile in January 2002. When additional efforts to reopen the plant as a minimill failed to materialize, the company began planning to remediate the property. On 28 July 2004, a bankruptcy judge approved the sale of 62 acres at the former mill site for the construction of a 534-megawatt, natural-gas-fired power plant, which will be owned and operated by PacifiCorp.40

Remaining iron ore in the Pinto and Iron Springs Districts is estimated at more than 200 million tons. The undeveloped Rex ore body has in excess of 150 million tons and is considered the single richest accessible iron-ore body in the western United States. However, mining these reserves requires the investment of millions of dollars to strip overburden and build facilities to produce a marketable product. Iron County has recovered tax losses by building an economy based on other manufacturing industries and Southern Utah University. Still, vast valuable ore reserves wait for a time when the price is right to mine iron once again.

As this book goes to press, the first mining of iron ore in ten years appears imminent. Palladon Venture Ltd. and Luxor Capital Partners have closed a secured long term loan in the principal amount of $12,750,000 to refinance the acquisition of the Comstock/Mountain Lion Iron Project in Iron County, Utah. Palladon has contracted with Gilbert Construction of Cedar City to begin mining and ore will be shipped before the end of 2006.41

Coal and Coal Mining

Immense coal beds are prominent features of the Cretaceous formations of southwestern Utah. East of the Hurricane cliffs, four major coalfields exist on the Markagunt and Paunsaugunt Plateaus in the Colorado Plateau province. They are the Kolob (which covers southeastern Iron, northeastern Washington, and northwestern Kane Counties), Kanab, Kaiparowits, and Henry Mountains fields. There is also one minor coal-bearing area, the New Harmony field, on the border between Iron and Washington Counties. Mines were opened near New Harmony early in the twentieth century but have been abandoned for many years.

Coal in Iron County occurs in practically inexhaustible quantities, but it has not been commercially mined to the extent of reserves in other Utah counties. On fresh surfaces in the mines, the coal is deep black, moderately glistening, and slick to the touch—qualities soon lost after exposure to air. Analysis shows the coal of the Kolob field burns as hot as that mined in Carbon County, and its moisture and ash content are also about the same. However, the sulfur content is higher at 6 to 7 percent. Iron County coal is suitable for heating and cooking and was used for almost 20 years to generate electric power. Nevertheless, its high sulfur content makes it unsuitable for blacksmithing, iron making, and other metallurgical processes, a fact the early settlers did not understand.42
The fortuitous discovery of stone coal in the stream called Little Muddy or Cottonwood Creek in the spring of 1851 and Peter Shirts's location of two veins of coal up Cedar Canyon in April 1851 led the Iron Mission leaders to locate iron manufacturing on the banks of the stream, now called Coal Creek, 10 miles from the iron-ore deposits and about 5 miles from the coal. The chemical composition of the coal, however, hindered, rather than helped, iron manufacture.

Coal came by pack and wagon to fire the blast furnace in September 1852. It was mined at an outcrop five miles up the canyon at the Walker Mine, near the mouth of Maple Canyon, and at other canyon sites as miners continually sought better coal for the ironworks. The Jones-Bulloch (later Macfarlane, and then Koal Kreek) Mine, eight miles up the canyon south of Coal Creek, was the first one of any size. The Leyson Mine in Right Hand Canyon opened in 1854. Nearby, the first coke ovens in the region were built. When charcoal from cedar trees replaced coke in the blast furnaces, coal mining languished. Typically coal-mining operations lasted a few years, yielded a few hundred hard-won tons of coal, and were then abandoned.

Mining activity spread in the 1880s. Andrew Corry opened a mine on Lone Tree Mountain in 1885. Although this mine had reportedly the “best coal” in southern Utah, it required a long haul in good weather and was totally inaccessible during the winter. A mine above Kanarraville (near the later Graff Kleen Koal Mine) supplied coke to the stamping mills at Silver Reef during the 1880s. Ovens were built nearby, and coke was hauled by team down the front of Kanarra Mountain and on to Silver Reef. A number of small mines south of Graff Point operated by P. Arnold Graff, Jesse Williams, and others supplied domestic coal for Kanarraville.

From 1890 to 1915, coal production was sporadic. Methods were slow and inefficient. No production was recorded for some years, and 524 and 575 tons were reported in 1898 and 1899. Small mines worked by hand tried to meet the needs of local residents, schools, and businesses that burned coal for heat.

William C. Adams, who spent the better part of 30 years working in local mines alongside his father, described mining “done the hard way” with picks and shovels and handmade cars and wheelbarrows. To open a vein, miners hand-drilled a hole three to four feet deep in a vein of coal and then used lime and black powder, or a squid, to create a small explosion and break out a small part. Miners started in the middle of the vein, widening out to each corner to make a square room. At first candlesticks poked into wooden props provided the only light. Carbide lamps replaced candles and provided better illumination, but lighting remained dangerous until the Utah Industrial Commission required air courses in the mines to vent off explosive gases. The clay streaks through a coal vein were separated out by hand, and then the coal was scooped by shovel into a waiting car. The best miners averaged 85 cars a week, each about 1,000 pounds, but one-third of the load was waste, and the small pieces were screened off before loading. Much more tonnage was mined than the wagons ever brought down the canyon.
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Two early but unsuccessful efforts were made at bringing coal to Cedar City by tramway. In 1913 Dr. Earnest F. Green and the Iron County Coal Company reopened the Corry Mine on Lone Tree Mountain above Green’s Lake. The Iron County Record of 28 November 1913 described Green’s mine in enthusiastic detail as a tunnel 45 feet deep into a 10-foot ledge of “fine appearing” coal. Miners at the Corry Mine lived in a two-story frame hotel and boardinghouse. Construction of a tram began in February 1918 but was never finished because the company collapsed in the post-World War I financial depression. Ten years later a tramway a little more than a mile long was built from a mine on the north side of Lone Peak to the mouth of the canyon. It operated for a year or two, but the small amount of good coal obtained did not justify continuing it.

County coal production ranged between 1,000 and 3,000 tons per year in the 1920s. During the 1930s production increased, and during the 1940s 6,000 to 8,000 tons were mined annually. Iron County coal was used in Iron, Washington, and Beaver Counties as fuel for households and businesses. The early pattern of small-scale, pick-and-shovel mining operations improved somewhat because of better equipment, especially after 1945.

An interesting story surrounds the Kleen Koal Mine on the western rim of the Kolob terrace. In 1937 Dr. Arnold L. Graff, son of P. Arnold Graff, was trying to locate a certain section corner on Kanarra Mountain and went to the land surveyor general’s office to look at the field notes of the original survey. The notes mentioned coke ovens near an old coal mine. Since Graff owned the property where the ovens were supposedly located, he sent two miners to search for the coal deposit. After a few days, Graff; Parley Dalley, a chemistry professor at Branch Agricultural College; William C. Adams; and Albert Marsden, an attorney, drove to the site. When they arrived, they were startled to see the miners picking at a huge face of very high-quality coal. Nearby lay coke that was very hard and apparently in as good condition as when it had been made 50 years earlier for the mills at Silver Reef. Graff had discovered a forgotten mine.

Graff hired William C. Adams to open the mine and called it the Kleen Koal Mine. Twenty to 25 men worked from August to October 1937 to activate the mine before winter. The mine was at 8,500 feet elevation, and a three-quarter-mile cable tramway was built to deliver coal quickly and cheaply during all seasons. The tram, anchored to a ledge near the top of the mountain, ran to a tipple or load/storage site above Red Hill. The tipple site was on a newly constructed road, still known as the Graff Tipple Road. From mining to loading, the coal moved by gravity. Twenty buckets, each carrying 450 pounds of coal, moved on 15,000 feet of cable with the plummet of loaded buckets returning the empty buckets to the mine. Storage bins at the bottom of the tram had a 200-ton capacity.

Guy C. Tucker later leased the mine from Graff. During his years of operation, the tramway was extended two and a half miles to flat land, and new buckets were made,
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which carried 1,000 pounds of coal each. The loaded buckets traveled so fast that the brakes wore out, so a generator was worked into the cable to slow the tram to about 250 feet per minute. The tram lines were used all winter long. Men drove to the Red Hill tipple, then walked to the mine in the snow along the tram line, which carried groceries and supplies up to the mine. Graff had cabins and a mess house built near the mine. Tucker and his sons operated the Kleen Koal Mine until 1941, when Tucker closed it because the military draft took all his good men. The Old Kanarraville, Davis, and two Williams’ Mines also operated on a small scale during the 1930s and 1940s. A road went to these mines, but in the winter bobsleds hauled the coal out.

In 1944 Southern Utah Power began constructing a modern, coal-powered, steam-generating electrical plant with a 2,500-kilowatt capacity one mile up Cedar Canyon. Reed Gardner, manager of the power company, contracted with the Tuckers to supply the coal needs of the power plant. Water for the plant came from nearby Coal Creek. Tucker considered a number of mine sites and finally started up the Tucker Coal Mine on property owned by Kenneth Macfarlane in Right Hand Canyon. When the power plant went online in July of 1945, Tucker supplied 3,000 tons of coal per month, increasing to 5,700 tons in 1947, when an additional 10,000-kilowatt plant began operating. The power plant grew to meet escalating demands for electricity prompted by postwar expansion in iron-ore production and the rapid increase in the use of deep wells as a source of water for agriculture in Cedar Valley and the Newcastle area.

By 1952 coal was supplied by the three largest mines in the area: Koal Kreek and Webster in Cedar Canyon and Tucker in Right Hand Canyon. The operators were Grant and Floyd Tucker and Lewis Webster. Their mines became highly mechanized as the demand for coal increased in the late 1940s. The mines were all underground and used the room-and-pillar method, where rooms were filled with rock waste as mining advanced and the pillars were normally not recovered. In each of these mines, the coal was undercut, loaded by machinery, and moved to the surface by endless belts. At the mine mouth, large pieces of waste were handpicked from the coal, and then it was loaded onto trucks for hauling. Coal which went through a water-cleaning plant built by the Tuckers in 1948 was too wet to use at the power plant but was fine for heating homes, schools, and the college. The Tuckers later built an air-cleaning plant in Cedar Canyon to process coal from all three mines. Their investment was just under $100,000, and air cleaning lowered ash content to 8 percent. Four hundred tons of coal per day could be cleaned, with 200 tons coming from Koal Kreek Mine and the other 200 from the Tucker and Webster mines.

With increased mechanization between 1942 and 1958, average output per man per day went from 13.57 to 18.97 tons. During the 1940s and 1950s, an average of 19 men were employed in coal mining. Thirty-five men worked at mining and hauling and in the cleaning plant in the 1960s. However, the three mines closed in 1965 when the power plant shut down because California Pacific Utilities, owner of Southern Utah Power, could buy cheaper electricity from Glen Canyon Dam.
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Estimated coal reserves in the Cedar Mountain quadrangle total nearly 260 million tons. Although 90 percent is in thick beds and reasonably accessible to existing lines of transportation, the coal reserves remain just that in the early twenty-first century. Coal mining is historically important but not economically significant today.57

Silver and other Minerals

Silver, gold, lead, fluor spar, and other useful minerals were also produced by igneous intrusions through limestone formations in the western mountain ranges of the Great Basin and have been mined in Iron County.58 In the early 1870s, an old prospector known simply as “Pike” found placer gold in the low mountains on the Utah/Nevada border, some 20 miles east of Pioche, Nevada.59 He probably panned some nuggets at the lower end of a wash and worked his way up, led by the distinctive color, until he found a deposit worth mining, which was, thereafter, called “Pike’s diggings.” The Stateline and Gold Springs Mining Districts formed on either side of the diggings in the Buck/Paradise Mountains, and mines developed where mother lode veins of silver and gold were associated with quartz, pyrite, adularia, and sometimes lead and fluor spar. These mines were worked off and on between the 1890s and the 1930s as ore values rose and fell with the changing economy.

The Stateline Mining District was organized in 1896 in Stateline Canyon, immediately west of Hamlin Valley, about 18 miles northwest of Modena. A mining camp complete with stores, hotels, a school, a doctor, and a newspaper, The Stateline Oracle, flourished for several years. The largest mines were the Johnny, Ofer, Big Fourteen, Gold Dome, and Creole. Contractors Joseph Dedrichs and James Burke built a mill in 1902 to handle ore from the mining claims of the Ophir Mining and Milling Company. In 1904 the Ophir was sold to satisfy a judgment won by the mill contractors, who had not been paid.60 Ore mined at Stateline was taken by wagon to the railroad station at Modena for shipping. An estimated 13,000 ounces of gold and 173,000 ounces of silver were taken from these mines.61

In 1903 Stateline claimed to be the gateway to gold-bearing camps of the Gold Springs District, although more people lived on the Nevada side of the district than in Utah. The Nevada mining camp was at Fay in Deerlodge Canyon. The census of 1900 shows 232 in Deerlodge precinct and 118 in Stateline precinct, and in 1903 the Stateline Oracle reported 180 miners at Fay and Deerlodge. Stateline probably had more than 200 residents in 1902–3; the town was a mile-long stretch of stone and false-front buildings. Deposits were never mined out, but ore values dropped in 1903–4, and most miners moved to better prospects. Only 35 people were left in the Stateline precinct in 1910.62

Women in Stateline usually worked as merchants or ran boardinghouses or hotels, except for Martha Tilley, who was part owner of the Mammoth lode claim. In 1905 she filed a notice of forfeiture against her partner, Henry Bowen, certifying her expenditures of more than $200 in 1903 and 1904 in labor and improvements; he
had to pay his portion within 90 days, or the claim became hers.63

Other mine operators came from out of state, including J. H. McDonald from New Jersey, George Buel from New York, Joseph Carter from Minnesota, and Zeth Drake from Wisconsin, or from out of Iron County, like William Leamaster, George Rice, and Isaac C. Wolf. However, some Iron County men became involved after 1909, possibly picking up mining properties for delinquent taxes. In the spring of 1909, Samuel A. Higbee, John S. Woodbury, and A. R. Corry of Cedar City were “large owners” in the Big Fourteen Mine, which was reporting assays of 2,650 ounces of silver and $108 per ton of gold. R. J. Bryant, Jr., of Snow and Bryant Company reported progress in building a steam stamp mill during 1911 which would make Stateline a “producer” again, but there is little evidence of great success.64 In the 1980s an operation in Stateline to recover more precious minerals by leaching was closed because of improper environmental procedures.

Gold Springs Mining District,65 organized in 1897 or 1898, straddles the Utah/Nevada border about 17 miles northwest of Modena. Prospectors C. A. Short and H. R. Elliott found rich gold outcrops. Their mine, the Jennie, was the largest gold producer both during the early days from 1898 to 1904 and in later operations during the 1930s with reports of 4,000 ounces of gold and 21,000 ounces of silver.66

H. T. Johnson of Minneapolis was general manager and part owner of mining properties at Gold Springs in 1917–18. The area mines received electricity from Dixie Power Company and had telephone lines strung from the mine to Modena. In January 1918 thieves cut down and removed from 4,000 to 5,000 pounds of heavy copper wire strung in the hills between Modena and Gold Springs. Iron County Sheriff Alfred Froyd apprehended two men trying to sell the wire in Beaver and Salt Lake.67

John Jordan operated the Jennie during the 1930s, when the shaft was extended 300 feet down into the vein. Ore was lifted to the surface for crushing and then moved by gravity into a large mill, where it was further broken down and the precious metals somewhat refined by an oil-flotation process. As a teenager in 1935 and 1936, Blair Maxfield, later professor of geology at Southern Utah University, worked at the Jennie, where his father was superintendent. Total gold production in the district is estimated at 13,000 ounces as a coproduct with silver, with about 9,000 ounces coming from the mines in Iron County (Jennie, Jumbo, and Independence).68

In 1893 Henry D. Holt discovered silver ore on the desert west of Shoal Creek. Holt and three other men held three mining claims in common, but when Holt’s partners would not help with assessment work, he bought them out for eight cows. Known early as the Holt and later as the Escalante Mine, the site is about four miles southwest of Beryl Junction and seven miles directly north of Enterprise. The ore seemed fairly good to the men working the mine in the 1890s, but the shaft filled with water and subsequently closed. It is said that George A. Holt offered the water to anyone who would pump it out, but nearby dry farmers were not interested.69 Decades passed with only occasional attempts at mining. Title to the claims somehow
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passed to Heber J. Grant, president of the Church of Jesus Christ of Latter-day Saints, then to his widow after his death in 1945. She gave the claims to the Enterprise LDS ward, which sold them to help pay for a new meetinghouse. Sam Arentz, a mining engineer and developer from Salt Lake City, bought the claims, and in the late 1970s, sold them to Ranchers Exploration and Development Corporation of Albuquerque, New Mexico. Ranchers Exploration developed the mine in 1980 and operated it until Hecla Mining Company of Wallace, Idaho, bought out the company in 1986.70

An economical system of mining was developed in the 1970s and helped make the Escalante Mine profitable. Dewatering the mine was a major concern for the farmers of the valley, who used underground water for irrigation and feared that mining would affect their supply. Ranchers Exploration agreed to compensate farmers if dewatering caused an excessive drop in the water table. With an investment of approximately $30 million, Ranchers Exploration developed the mine and built a mill which removed approximately 1,999 pounds of waste from every ton of ore mined to recover about eight ounces of silver. The mill handled up to 750 tons of ore per day. Once a week a gas-fired furnace melted the precipitates and fluxes from the gray powder concentrate to a liquid at 2,200 degrees Fahrenheit, and then the furnace tipped, and the molten concentrate poured into cast-iron, cone-shaped molds. Silver, heavier than slag, settled to the bottom, leaving the slag on top. After cooling, silver and slag were removed from the mold, and the slag was chipped away. The 50-pound silver “button” was shipped to a commercial refinery for final processing to 99.9 percent pure silver.71 General Manager Ed Hahne of Cedar City headed the operation that employed 115 workers from the surrounding communities during the mid-1980s.

The mine was dewatered by pumping at an average rate of 19,500 gallons per minute. Ranchers Exploration made adjustments to the system of water disposal in 1981 and 1982 and successfully discharged three-fourths of the mine water onto a farm which it had purchased for recharging the aquifer; one-fourth of the water recharged Shoal Creek.72 Approximately 300,000 tons of ore were milled and 2.3 million ounces of silver produced each year from 1982 to 1990, when the ore body was mined out. The last smelting occurred in 1991. Recovery of approximately 25 million ounces of silver makes the Escalante Mine unquestionably the second most successful one in Iron County.72

Almost all other precious-metal mining occurred sporadically between 1890 and 1940—a period when mining excitement ran high, but results proved disappointing. There are a number of other mining areas in Iron County history, notably in the Indian Peak Range (Arrowhead Mine, Skougard Mine, and Cougar Spar Mine) and on the west side of the Antelope Range (Bullion Canyon and Chloride Canyon Mines). Discovery of ore at the Arrowhead occurred sometime in the 1890s, and the mine was worked off and on. The ore was chiefly lead and zinc, with a little silver and gold. As with most other new mining ventures, developers claimed it would be “one of the very best mines in Utah.”74
Bullion and Chloride Canyons lie on the west side of the Antelope Range between Silver Peak and Antelope Springs. In 1903 and 1904, Bullion Canyon was thoroughly prospected, and ore containing lead, copper, and some silver was assayed. Most of the claims were filed by local men who had formed mining companies that picked away at a variety of claims without finances to develop the mines properly.

In 1910 interest turned to Chloride Canyon, where local businessmen joined with George Ray of Chicago and Ronald B. Rankin of St. Louis to form the Standard Consolidated Mining Company, capitalized at $250,000. The treasury stock was underwritten by Rand and Rankin, representing the Interstate Venture Company, who contracted for $40,000 of the stock. With ample working capital, 10 men with equipment and supplies began mining in 1910 with expectations of finding the rich mother lode of lead and silver at the 200-foot level, but they were disappointed. In October 1918 the Copper Zone Company reported a “phenomenal” strike in the face of a 600-foot tunnel tapping the ore 300 feet below the surface at Bullion Canyon. Expectation for rich silver, lead, copper, and gold production remained unrealized, however.

Fluorspar, a fluoride of calcium, came into commercial production in Utah during World War II to meet demand created by Geneva’s open-hearth steel furnace, where it was used as a fluxing agent. It was mined in the Wah Wah Mountains at the Cougar Spar Mine and near Mountain Springs, where Otto and Lou Fife mined for five or six years. Lead and zinc mines were profitable until President Truman vetoed a bill to extend mineral bonuses. His action shut down 500 lead and zinc mines, and Fife’s mine was one of them. Fluorspar is found in larger quantities in Beaver, Millard, and Juab Counties.

The Cedar Mountain quadrangle contains enormous quantities of gypsum. This useful industrial mineral is well exposed along Utah Highway 14 in Cedar Canyon. In the early days, gypsum was used locally to make small amounts of plaster for homes. Mammoth Plaster and Cement Company quarried gypsum commercially in Cedar Canyon in 1923. At first raw gypsum was quarried, crushed, trucked to the railroad cars, and shipped to Los Angeles to fill a contract with the Blue Diamond Material Company for 400 tons a day. However, the high-grade material specified in the contract was buried under a top layer heavily contaminated with impurities which could only be removed at great expense. Lehi W. Jones, acting for the company’s board of directors, went to Los Angeles and arranged to break the contract, saving even greater financial disaster. Company officers still wanted to build a mill, but investors were unwilling to put more money into the venture. Many people from Cedar City had invested heavily in the company, some putting in thousands of dollars, and dreams of financial wealth ended when the quarrying stopped and the crusher and bins were abandoned. In 1937 Cedar Plaster Company installed a plaster mill in the old gristmill at the mouth of Cedar Canyon. Obtaining gypsum from deposits owned by Samuel F. Leigh and Emil Roundy, the mill shipped a “fairly large amount of high quality plaster” until production ceased at the beginning of World War II.
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Gypsum has many uses in manufacturing cement, plaster, and wallboard. It also serves as a filler in paint and paper, a conditioner for alkaline soil, and a stabilizer for the ammonia present in manure. It is a valuable and versatile raw material, present in quantity in the Cedar City area, but it has never been of great economic benefit to the community.79

During the 1950s several Utah residents began searching for uranium in Iron County. Geiger counters produced readings of varying levels in many areas of the county, but there was no uranium; prospectors were actually picking up readings of nuclear fallout, which covered the county following the Nevada atomic tests. In the 1970s a Colorado firm proposed mining aluminum-producing alunite in the Wah Wah Mountains of Iron and Beaver Counties, but the proposal came to nothing. In the 1980s geologists searched for oil beneath the Escalante Desert, once again sparking headlines but producing no results. Mining and mineral news always made for bold headlines in the local newspapers, and occasionally actual discoveries brought excitement and employment, but no fortunes were made in Iron County's silver, gold, lead, or fluorspar mines.