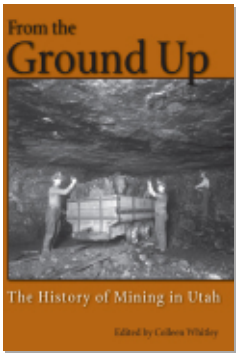
15. San Francisco Mining District



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San Francisco Mining District

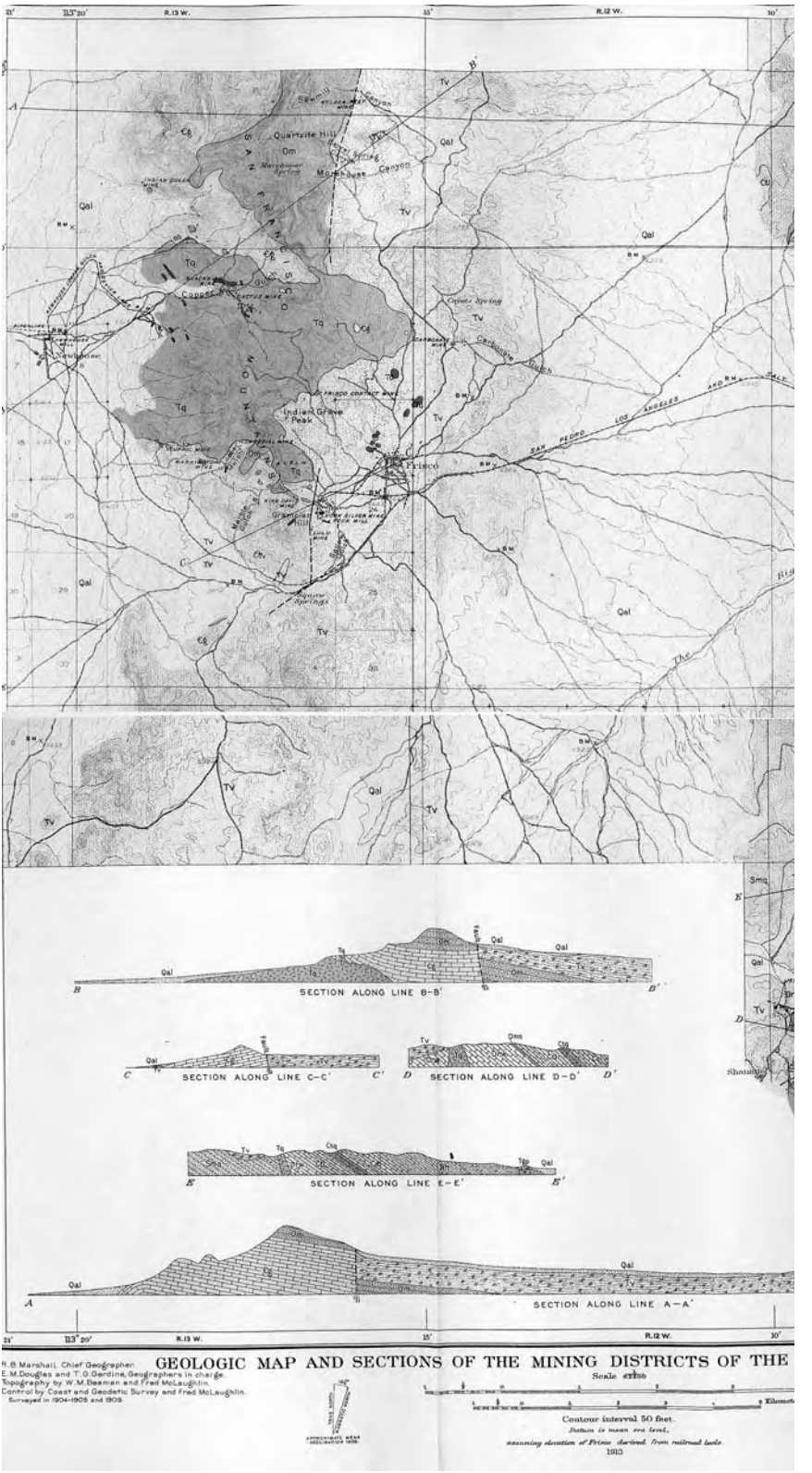
Martha Sonntag Bradley-Evans

Introduction

About 15 miles due west of Milford, the San Francisco mountain range forms a swath down the western half of central Utah. After its organization on 12 August 1871, the San Francisco Mining District ran down both legs of this massive range. Grabbing the attention of even the most casual viewer, and dominating the silhouette against the eastern sky, is Frisco Peak. At 9,660 feet high, it is one of Beaver County's most distinctive visual features. Toward the southern end of the range, Frisco, once a rousing and colorful mining town of the nineteenth century, prospered because of the riches of silver, gold, lead, and zinc extracted from its mines. The district became an important source of silver and lead during the mid-1870s.

In May 1872 the Congress of the United States passed a general mining law called, *An Act to Promote the Development of the Mining Resources of the United States*. The significance of this act was its provision that mineral deposits in lands "belonging to the United States are free and open to exploration and purchase by citizens of the United States, according to provisions detailed in the law, and also according to local customs and to the rules established by miners in various districts."[1] Moreover, the law validated the mining districts established to govern mining activity in various local areas of the United States. And the law gave mining districts the authority to govern the method of locating and recording claims, which provided important jurisdiction over local matters as long as they didn't conflict with the laws of the United States.[2] During the last three decades of the nineteenth century, at least 90 mining districts were organized in Utah Territory, and many of these filed bylaws with the General Land Office in Salt Lake City.

Considering the San Francisco range as a totality, from north to south it is roughly 20 miles long and 4 miles wide. Moving out of Millard County to the north, where it connects with the Cricket Mountains, it stretches into the center of Beaver County.



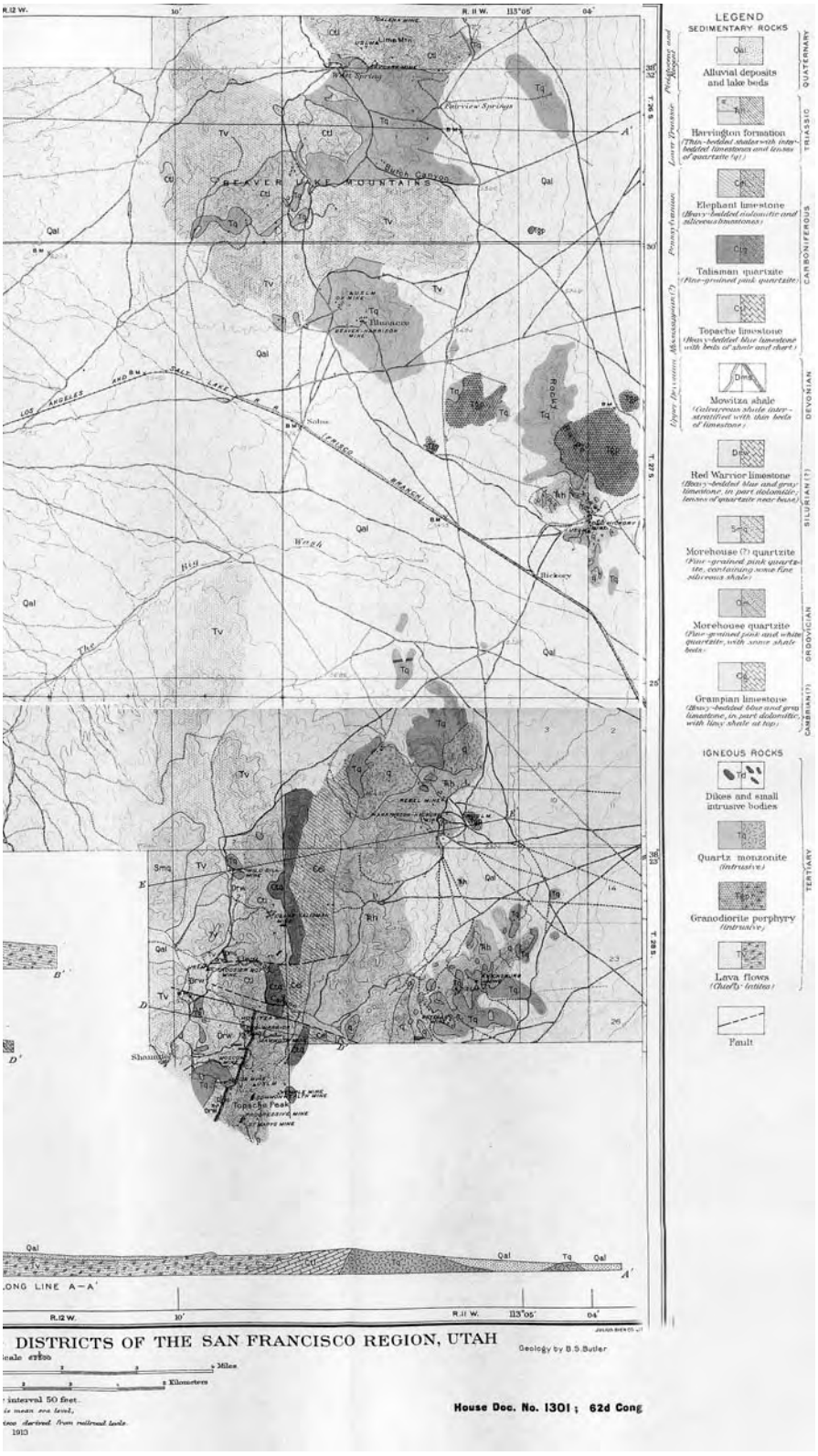
R.B.Marshall, Chief Geographer.
E.M.Douglas and T.G.Gerdine, Geographers in charge.
Topography by W.M.Beaman and Fred McLaughlin.
Control by Coast and Geodetic Survey and Fred McLaughlin.
Surveyed in 1904-1905 and 1909.

GEOLOGIC MAP AND SECTIONS OF THE MINING DISTRICTS OF THE

Scale 62500

Contour interval 50 feet.
Datum is mean sea level.
Bench marks above mean sea level, measuring elevation at Frisco derived from railroad levels.

1913



Courtesy Utah Geological Survey.

The range is primarily Precambrian rock, except for its southern end that includes Ordovician sedimentary stone and Tertiary intrusive rock. The western slope is Cambrian. Frisco Peak itself consists mainly of Precambrian metamorphic and quartzite rock. The peak offers twisting, weathered bristlecone pines and one of the best views of the Great Basin in Utah, stretching to the east and west as far as one can see.

The San Francisco Mountains are a playground for antiquarians and scavengers of memorabilia from the past. Nineteenth-century remnants from the mining heyday still remain at various points along the sides of the range—mines, kilns, and narrow-gauge railroad tracks. Evidence of the powerful lure of the promise of riches beneath the earth's surface, foundations of houses raised by prospectors or miners trace footsteps of their efforts to survey the landscape of the range. The Indian Queen and Imperial Mines lie to the west, and to the east are found the King David, Golden Reef, and Horn Silver Mines. Springs that originate in the San Francisco Mountains carve slices down the slopes—the Pitchfork, the Horse, Crystal, Morehouse, and Tub Springs, as well as small, seasonal creeks that run down into the valley below through Morehouse, Sawmill, and other canyons.

Rich mineral veins ran through the San Francisco Mountains, and discoveries in the region made Beaver one of the most important mining centers in the western United States. Despite Brigham Young's admonition to avoid mining and the enticements of quick riches,[3] Mormon farmers were tempted by mining for the same reasons as outsiders—the promise of quick riches rendered other arguments insignificant. The wide range of valuable and desirable natural resources found extensively through this mountain range included gold, silver, lead, copper, zinc, bismuth, and sulfur, as well as marble, granite, sandstone, potash, and other materials used for building or various commercial ventures.

Beaver County had been settled two decades before mineral deposits were first located in the San Francisco Mountains. Small towns had 20 years of farms and businesses already in place. Nevertheless, not far from the sites where minerals were located, new towns sprang up to support local miners, and older towns rushed to service the population of miners that moved through the region. For many these towns were only temporary homes. But over time they became more stratified. Their principal focus was mining and the incidental industries related to extracting, smelting, and producing various minerals rather than attaining a community ideal or meeting a common political objective. When the mines were exhausted or veins dried up, the towns were abandoned. These towns were as fleeting as the dream of wealth itself. Some boomtowns and ghost towns vanished within a single generation. Others, such as Milford, which benefited from the mining economy, rode the various waves of mining activity and came out on the other side still thriving because their agricultural identity remained intact.

The *Beaver County Blade* and statewide publications such as the *Daily Union Vedette* published the news of local mining activity—strikes, busts, and profits were noted like the rising stars of the stock market. More than a local commentary, these

weeklies worked like boosters, drawing a picture of mineral wealth to tease investors into the territory and tempting them with the chance to strike it rich. And their strategy worked. It is clear that Beaver's mining activities were sensational enough to put the county on the map and attract the attention of prospectors throughout the West eager to make their fortune. Whether dream or reality, the story of mining in the San Francisco Mountains was like a magnet. Entrepreneurs from Salt Lake City and throughout the nation invested their money in mines in the San Francisco District, betting on the richness of mineral veins hidden beneath the surface of the mountain slopes. The odds were irresistible.

The San Francisco District lies in the center of Beaver County about 225 miles south/southwest of Salt Lake City and 98 miles northeast of Pioche, Nevada. Although the district was first created in 1871, it was not until five years later that the most significant discovery was made, a year after the Horn Silver Mine had been established and the settlement of Frisco completed.

According to historian Miriam B. Murphy,

> The story of the Horn Silver Mine, one of the great producers in Utah and American mining history, reads like pulp fiction: Two prospectors casually discover a rich ore body, a bankrupt financier promotes the venture, the boomtown of Frisco becomes one of the wildest mining camps in the West with a murder or two every evening, a tough lawman who shoots on sight begins to clean up the town, after producing millions the huge mine collapses, and Frisco becomes another ghost town.[4]

Discovery of Silver and Lead

The discovery of silver and lead ores in Beaver County was the result of a particularly propitious accident. Not long after, Frisco was settled in 1875 at the southern tip of the San Francisco Mountains. Samuel Hawkes and James Ryan first prospected what would become the Horn Silver Mine while they were working the Grampian Mine, a source of galena ore. Each day as they walked to the mine, they passed by a huge outcrop of limestone which they eventually tested. After finding that it was a solid ore body, they staked a claim to it. Discovering that this was a good source of anglesite ore, they developed the mine to the 500-foot level. After that favorable strike, they sank a 25-foot shaft through seemingly solid ore. Fearful that the mine would fail to produce, they sold the claim to A. G. Campbell, Mathew Cullen, Dennis Ryan, and A. Byram on 17 February 1876 for $25,000. They thought they had struck a good deal, but as it turned out, they had not. In fact, what the new owners called the Horn Silver Mine proved to be enormously profitable, a rich vein which produced silver valued at $100 per ton.

Banker Jay Cooke and other Salt Lake moneyed interests bought the Horn Silver Mine in 1879 for $5 million and induced the Utah Southern Railroad to build a line to Milford and Frisco to transport ore to distant markets. That same year the

United States Annual Mining Review and Stock Ledger called the Horn Mine "unquestionably the richest silver mine in the world now being worked."[5] The mine was a good investment; in fact, it revitalized Milford and much of the surrounding area. Frisco became a boomtown almost overnight.

The new owners built a smelting works before they sold any ore or developed the mine any further. In time they sold the mine to investors in the New York Mining Company and the Salt Lake Company for $5 million. The mine's new proprietors dug deeper, extending the mine to the 800-foot level. It produced a healthy profit until 1884, when the mine caved in.

William A. Hooper, a Utah businessman, recorded the mine's significant production figures in 1879:

> The quantity of ore extracted up to February 1, 1879, is given as 22,712 tons. During February about 90 tons daily were raised, making a [monthly] total of 25,000 tons of ore. The extraction of this 90 tons was barely enough to keep the mine in good shape and prevent the breasts of ore from crowding too much upon the timbers. The present expense of mining is low. We have as the cost of taking out 90 tons daily:

Labor	$144.00
Timbering	$73.00
Superintendent	$6.00
Supplies and expenses	$50.00
Total	$273.00
Cost per ton	$3.05[6]

Ryan and Hawkes's first mine, the Grampian, was near the Horn Silver Mine. Gold near the surface and trailing down 80 feet varied from one to eight feet of ore. Originally a vein of ocherous ore assayed at about $50 of silver.[7]

Several large ledges of pyrite and copyrite ore resulted in very high-grade silver in claims called the Comet, Cactus, and Copper Chief in the northern part of the San Francisco District. The South Utah Mines and Smelter Company owned the Cactus Mine, located in Copper Gulch about two and a half miles northeast of Newhouse. The main body of ore originated about 6,450 feet above sea level or 200 feet above Newhouse. Prospectors first identified the Cactus Mine in 1870, so it was one of the earliest in the district. Despite a series of ambitious efforts to reap its wealth, a series of investors and companies failed to capitalize on its potential. Even a small smelting plant, which was built in 1892, proved to be a failure and produced only a small amount of ore.

Because of the difficulty in transporting the raw ore from the site to distant markets, smelting became an important incidental and related industry to the district's mines. Facilities such as the Williams smelter, built after the Horn Silver Mine was discovered, used innovative construction methods in an attempt to improve safety,

be more environmentally responsible, and trap fumes and particles before they ran through the chimney into the air above. Experiments in Frisco centered on smelting techniques, but because of scarce water and difficulty getting sufficient charcoal, success was limited.

Town and Railroad Development

Revenues from the San Francisco District fed small towns in the area with a ready supply of customers and residents. Milford, for one, was an agricultural town settled by families who had moved out of Beaver under the leadership of Arvin Stoddard and his family in 1880, although crops had been planted in the area as early as 1859. Familiar with what it took to start a town, Stoddard, himself a surveyor, platted the town site.[8] Many of the earliest inhabitants were farmers, but from the first, Milford was also important as a supply station that served freighters and soon fed off the mines. In an area of the territory dependent on agriculture rather than commerce, the influx of business customers proved a boon to local enterprise. Trade boomed from the first, and by 1890 Milford had a significant commercial Main Street, which was lined with the typical service establishments of a town colored by association with the mines—saloons, mercantiles, hotels, and a variety of businesses like blacksmith shops and livery stables. What had been a typical Mormon town laid out along the grid structure of the City of Zion became a lively mining town, diversified in its services and people. Alton Smith provided one account that there were six saloons in Milford at the turn of the century: the Atkins Bar, Milford Saloon, Crescent Bar, Oxford Saloon, Long Tom Martin Saloon, and East Side Saloon. There miners found home-cooked meals, easy liquor, and the entertainments offered by a free and easy, male-dominated society—gambling, dancing, and eventually, vaudeville.[9]

A Scotch Canadian company called the Harrington-Hickory Consolidated Mining Company constructed the Milford stamp mill (also known as the A. G. Campbell mill) for $45,000 in 1873. An important processor of ore from the Hickory Mine between 1873 and 1874, it produced from $9,000 to $12,000 in bar bullion although it was only in business for five months.

Milford became a railroad terminus for the Utah Southern Railroad; after the railroad came to town, Milford also became a major loading place for southern Utah cattle. The sweeping arid landscape of central Utah was difficult for farming but ideal for stock raising. Throughout the 1880s and 1890s, grazing lands in this part of Beaver County were exploited fully. Milford scored a major coup in being selected as a railroad terminus; that made success as a community a sure thing. Inevitably, an endless series of hotly contended races by outside companies searching for suitable locations for their rail lines continued.

Beaver County's mining industries had drawn the Utah Southern to the area. Less than a decade after it first arrived, in fact, by January 1879 the company announced

that it would build an extension line to Frisco, home of the Horn Silver Mine, and mine owners pledged to pay a quarter of the construction costs. Before the Utah Southern extension reached Frisco, the roadbed was graded outside of 10 miles of Milford early in 1880.

Equally as hotly contested as the location of rail lines was the competition over the location of the county seat. Yet another way to draw local money or attention to a town was by placing county government there. Frisco's citizens attempted to play this card and petitioned the county court in the late 1870s for a local jail. Beaver selectman James Low met with representatives from Frisco to discuss the possibility of locating both the county seat and a county jail there, as well as to determine what local businessmen could contribute to the building process. The construction of a line through Milford by the Union Pacific with its interests in the Utah Central Railroad also figured prominently in the discussion. Much of this campaigning and politicking was successful. As a result, by the fall of 1879, rail lines had been laid as far south as Deseret in Millard County. The county seat was established in Beaver City, however.

Milford's first settlers laid out homesteads like those in hundreds of other Mormon rural villages. Named for the crossing of the Beaver River by freighters coming and going to mines and mills to the west, Milford was an unpolished frontier town with a marked contrast between those associated with the mines and people who had businesses, farms, or families to raise nearby. The people who arrived with the Union Pacific, which ran north and south through the center of town, reflected the town's importance in transporting goods throughout the region. Also important for shipping coal to Los Angeles for export to Pacific Rim countries, Milford was a place whose identity was diverse and tied to a variety of different industries.

Electrical power was extended from Beaver to Milford to Frisco in 1880. In fact, Frisco was the largest town in Beaver County at that time.[10] Instead of locating the railroad station in the original plat, city builders drained swampland east of the original survey and laid out a second series of streets on a diagonal to the original grid. Frisco drew miners, merchants, and investors by the hundreds. Other mines were soon discovered in the area—the Carbonate, Rattler, Golden Reef, and Gampion. Each of these very successful mines had its own smelter, and five beehive-shaped charcoal ovens were built to serve the smelters, using local wood like cedar, dwarf pine, mountain mahogany, and sagebrush.

The Carbonate Mine rivaled the Horn Silver for success and was located one and three-quarter miles northwest of Frisco at an elevation of 6,750 feet; it consisted of 11 claims and fractions. First discovered in 1878, and sold the next year for $10,000, the mine produced concentrates with an average assay of 43.63 percent of lead and 94.09 ounces of silver to the ton. The tailings yielded significant profit as well because they were also rich with minerals.

Unlike Milford, from the first Frisco was an unabashed mining town complete with rapidly built structures, a largely male and transient population, and a dependence

on a single industry—mining. One historian described Frisco as "as wild and tumultuous a town as any in the Great Basin, . . . and the wildest camp in Utah. Twenty one saloons had so many killings the undertakers wagon made daily rounds."[11] Marshal Pearson of Pioche, Nevada, came to Frisco to clean things up; he had heard that Frisco was so wild that he promised to shoot on sight anyone breaking the law.[12] Frisco had 23 saloons, false-front stores, boardinghouses, and restaurants within only a few years, plenty enough to make happy a population of miners that reached as high as 6,500 between 1880–85. The local newspaper, the *Frisco Times*, tracked successes and failures in the mines and detailed the activities of an increasingly diverse population and the immensely entertaining and colorful nature of local politics. According to Phil Notarianni, an 1879–80 directory listed 33 businesses and different services, but by 1900 the number had dwindled to only 14. Population totals and businesses fluctuated wildly and reflected the relative value of the wealth extracted from the mines.[13]

Fred Hewitt's letters to his wife during his journey to Frisco and his work in a mine there provide a rare and rich contemporary commentary. A mining engineer from California, Hewitt traveled first by railroad and then by stage to Frisco. He began working for the Champion Silver Mining Company but eventually switched to the Horn Silver Mining Company. Hewitt painted a vivid picture of life in a nineteenth-century mining camp in a series of letters, including one describing a strike staged by miners at the Horn Silver Mine when wages were reduced. Dated 1 February 1880, his first letter describes the railroad trip to the end of construction in Juab County and the stagecoach ride on to Frisco:

> The stage left at 1 PM. I wrapped my feet up as well as I could and put the shall [*sic*] around my shoulders and after riding about half an hour found my feet so comfortably warm that I congratulated myself on the nice arrangements. Jerkey stopped, driver looks in and sees my fellow passenger on front seat. I was on the back. "You front." So my companion with some grumbly takes the back seat. Of course this somewhat disarranges our things. Then the driver gets in to handle the bag of corn and walks on our legs in so doing. The corn laid on the seat and the driver back in his place we start again, somewhat colder than before. We are evidently going to have a cold night. The breath freezes to our whiskers. Pretty soon the bag of corn comes off the seat on to our legs and it takes considerable exertion to get it back again. It keeps coming off until some time in the night the driver takes it away. Not very long after the advent of the corn, another stoppage, "gentlemen you will have to get out and help me over the railroad crossing." So the pins come out of my blanket the wraps are laid aside and out we get. The drivers tries to cross the track which is here in an unfinished . . .
>
> Nothing particular happened only the usual stage bumping. First it bucks you up a foot or so, then a quick jerk sideways another from the other direction, then a twisting jerk that seems to go all around you, then a few

minutes of ordinary jolting and then we are bucked up again and the side jerks and twists are repeated. We became colder and colder until it seemed as if I could not bear it much longer. The stage stops we think we will get out at station and warm, but no, no stoppage here only taking on another passenger. This at half past two in the morning. On we go again until about 4 o'clock we hear the drivers hallo to the next station. We are to have breakfast here but the people are not up, and so we stamp about in the snow for some time until the door is opened. The table is set, there is a bed in the room from which the man and his wife have just risen she is buttoning or hooking something as we enter, a child is in the bed. A good wood fire is soon going in the stove but it takes us a long time to thaw out. After about an hour breakfast is ready such as it is. I could hardly eat any, but the warmth and the coffee was worth the 50 cents it cost. After that we did not get so cold and did not stop again until we arrived at Frisco about 9:30.

February 7, 1880

After reaching the [Belcher] mine somewhat behind time, as the mining time is half an hour ahead of town time, I found that I was expected. I was taken into a back room of the office. A flannel shirt was handed to me and a pair of flannel pants fastened with a string round the waist. The whole outfit like a Coney Island bathing suit. I was requested to strip, when I inquired how much I was told everything. After dressing as requested, they made a parcel of my money and took care of it, they gave me socks and opened a long box filled with shoes from which I fitted myself. Then I went out to the shaft house the costume being very airy for winter, and was put in charge of the pump man. Visitors to mines do not generally go down the pump shaft but go in the large cage down the regular hoisting compartment. My object being more to examine the engineering arrangements I went down the pump shaft. There was a little cage if it may be so called, a little shelf or bracket guided only on the back on which we stood. It was about 16" wide one way, just large enough for the two of us to stand on with feet close together and standing up straight. The word was given and we went 900 ft on that, slowly and stopping at different stations to examine pumps, balance bobs etc. At the 900 ft station we got off and walked down an incline of 31 degrees to the 1600 ft station. Walking down stairs, it was all steps for 700 ft is pretty fatiguing work [*sic*]. It was very warm down this incline, the perspiration pouring off of me. A regular Turkish bath arrangement. At this point we drank ice water and rested going to a point where cold air came through for this purpose. Then we took a large car and were lowered down to the 2400 ft station that being the lowest part of the pumps. The mine is 3000 ft deep but we did not go to the bottom. The water that came up from the pumps was too hot to be able to bear the hand in, and in some of the drifts it felt like being in an oven.

February 11, 1880

About the mine is a collection of shanties mostly belonging to the Co. I think. One or two of [*sic*] you could almost call houses. The Co's boarding house and the shanty over the mine shaft. I have had a 9 x 12 shanty allotted to me. It is furnished with a bedstead of pine wood made by the carpenter, a very rough table and sundry boxes, one of which I use for a seat. Like all such shanties this one is full of cracks. There is a fire place at one end made of rocks and mud and so far I have been supplied with fire wood. I had to buy blankets at the store—also bed tick which I filled with hay at Co's stables, also wash basin and tin cup. I moved over here Monday morning, and started a fire in the afternoon, and kept it up all evening. Last night I had to move my bed to get out of the snow. Mud and gravel also blows in.

July 20, 1880

The new superintendent of H. S. Mg. Co. A Mr. Hill made an attempt to cut down the miners wages, resulting in a strike yesterday. The men last evening went in force and compelled them to stop the smelters and declared that no other work should go on and Mr. Hill backed down and sent word for them to go to work at the old wages. The miners are getting slightly higher wages than in some other places $3.50 per day, but it ruins the health of every man that works in this mine, and I think that a man that once gets "leaded" will never be the same again.[14]

Hewitt's letters more importantly create an image of the backdrop of human life. Wages, the quality of housing, and working conditions mattered greatly to individual workers.

Smelting and Beehive Kilns

Far more curious and structurally unique than the mines or smelters were 36 beehive charcoal kilns that fueled the furnaces of the San Francisco District. The kilns cost between $500 to $1,000 to build according to one author. Michigan engineer J. C. Cameron designed them in 1868. The *Utah Mining Gazette* described Cameron's kilns as shaped like a "parabolic dome, with a base of twenty to twenty-four feet in diameter and altitude of nineteen to twenty-two feet," at a cost of about $700.[15] Within 6 to 18 miles of Frisco, six to eight groups of charcoal kilns were separately managed and operated in conjunction with the mining activities. Distinctive because of their unusual cone shape, the kilns were constructed of granite float, which was extracted from nearby areas, and cemented together with lime mortar. These kilns were nearly as high as they were wide and had walls from 12 to 14 inches thick at the top. One entered the kiln through two massive iron doors. The door at ground level was four by six feet, and the side door, which was located two-thirds of the way to the apex, was three feet by four feet in diameter. The kilns had three rows of vent holes located

near the ground. Piñon pine from nearby mountains was the primary wood burned in the kilns. It was cut for $1.25 per cord, brought to the site on wagons or sledges, and valued at $1.50 to $2.50 per cord.

Originally workers produced the fuel for smelting in pits. However, the Frisco cone-shaped ovens were much more efficient at producing a higher-grade of charcoal choppers. Single men included 14 of the group who lived in boardinghouses.

The heyday of peak productivity for the kilns was between 1879 and 1884. Operators fired them from the center of the bottom, which drew the flame to the top through a small space above the door. The vent holes allowed operators to regulate the fire that was typically maintained over a period of three to seven days; then the charcoal cooled for three to six days and was shipped to smelters in racks at a cost of from three to five and a half cents per bushel.[16]

W. S. Godbe and Benjamin Y. Hampton, as superintendent, managed the Frisco Smelting Company and its five distinctive beehive charcoal kilns. M. Atkins was agent for the firm.[17] When the Frisco Mining and Smelting Company reorganized, it published a capital stock of $2 million in 80,000 shares. The property included the smelting plant at Frisco, the Carbonate Mines, the Cave Mine in the Bradshaw District, and an iron-flux mine in the Rocky District.[18] The *Tenth Census of the United States* indicates that in 1880 the Frisco smelter was a "complete one," which consisted of a Blake rock breaker, a Number-5 Baker blower, two horizontal boilers, one 40-horsepower horizontal engine, numerous pumps, a shaft furnace and flue-dust chamber, a reverberatory flue-dust slagging furnace, and five charcoal kilns.[19]

The *Tenth Census* produces a picture of the work environment as well as the workers themselves. It says that there were 21 coal burners, seven stonemasons, one brick mason, two wood contractors, and five wood contractors.

Coke replaced charcoal as the cheaper and more efficient fuel after the railroad came through the county. This shift is easy to recognize because the *Utah Gazetteer* simply stopped mentioning Frisco Mining and Smelting.

Prosperity and Depressions

These mining communities routinely experienced dramatic shifts in fortune. When in 1885 the Horn Silver Mine caved in, both Frisco and Milford suffered. Miners fled the area, and the mills and charcoal kilns shut down and lay dormant periodically, although 10 years later the mines still had produced a total of $54 million. Regardless of the fact that a new shaft was drilled farther down to 900 feet at the Horn Silver, only a few brave families stuck it out in Frisco. Eventually vacant buildings and a proverbial ghost town were all that remained although the mines continued to operate well into the twentieth century. When a fire broke out at the Horn Silver Mine on 5 April 1894, John Franklin Tolton wrote in his diary, "This is a hard blow to Southern Utah and Beaver County in particular, and will be keenly felt as it was a means of circulating a great deal of money in this and other communities."[20]

Prior to that the first railroad engine had stormed into Milford on Saturday, 15 May 1880, it had signaled future prosperity and business. This was without a doubt one of the town's most important days. Governor Eli Murray and other dignitaries traveled to Milford to celebrate and stayed the night in the Stoddard Hotel. Not long after the coming of the railroad, new businesses, hotels, stores, feed yards, and other facilities sprang up. One of the first, the Consolidated Implement Company, supplied materials used by freighters and miners throughout southern Utah. Located near the west side of the tracks on the road south to Beaver, it was proof positive of the importance of the mines to Milford's growth.

As soon as the railroad came to Milford, discussion began about continuing the line even farther south, although that eventually faded away. But clearly, the railroad had a positive impact on Milford, greatly enhancing its importance and key position in the San Francisco District. Because of the bullion that came from Nevada smelters and the continuing healthy mining in the San Francisco District as well as the Star District, even more new supply businesses sprang up which featured tools, wagons, buggies, and other products servicing the freighting industry.

The Horn Silver Mine continued to produce well after the owners installed a new shaft in 1886. In 1911, however, the Salt Lake Company sold its interest in the enterprise to its partner, the New York Mining Company, which sent W. H. Hendrickson to manage the mine and serve as superintendent until 1943, when the Metal Producers Company of Los Angeles assumed control under three men: George W. Clemson, general manager; James H. Wren, superintendent; and W. H. Hendrickson, who remained as mining engineer.[21]

The *Weekly Press* described the Hub's finds in the Star District, which were also surprisingly rich. The article concluded, "Another year will see Beaver County one of the most active mining Sections of Utah, and a goodly tonnage of copper, silver, lead and gold is promised. With men like Samuel Newhouse and the Knights, 'blazing the trail' the results have been assured for sometime past."[22]

Despite the dip during the depression of 1893 that caused minor changes in mineral values, as Beaver County entered the twentieth century, mining continued to be an important part of the local economy. Mining entrepreneur Samuel Newhouse purchased the Cactus Mine in 1900 and absorbed it into the Newhouse Mines and Smelting Corporation. It operated until 1910, when it was reorganized as the South Utah Mines and Smelter Company. The mine began producing in 1905 and continued until 1909, generating 19,419,319 pounds of copper, 7,510 ounces of gold, and 176,365 ounces of silver. The Beaver River Power Company furnished electrical equipment and power, although originally operations at the mine were powered by steam.

Two decades into the twentieth century, after World War I, new mines developed at a slower rate than during the boom times of the late nineteenth century. In the 1920s finds in the vicinity of the Horn Silver Mine indicated that rich veins stretched in several directions. The owners of the King David and Frisco silver-lead mines pumped in fresh revenue to sink shafts and drive drifts.

By the 1920s the Horn Silver Mine consisted of the original claim, 1,440 by 600 feet; two five-acre smelter sites in Frisco; a complete, three-stack smelting plant; a refining works in Chicago, Illinois; iron-flux mines near Frisco; charcoal kilns; a 40-mile telegraph line to Beaver; two large stores in Frisco; and other less-important property.

The King David and Frisco Mines were also prospering. According to the *Richfield Reaper,*

> At the King David, six mineralized veins, striking toward the Horn Silver, have been penetrated by a long crosscut to the north on the 750-foot level of the main working shaft. The most promising leads are being developed through a raise. Further west on the same zone, within less than 300 feet of the surface, the Frisco Silver-Lead has opened shoots of high-grade silver-lead ore from which many shipments have been made to the smelters.[23]

The shear zone led directly into the Horn Silver Mine; it was 4,200 feet long and 500 feet wide and contained many veins and deposits of pay ore in its fractures. A discovery originally called the Beaver Carbonate, located on a fault north and south of the Horn Silver Mine, became the Quadmetals by 1930.

Regardless of changes in market values or less output from the mines, mining companies continued to prospect for new deposits. Joe and Bernett Swindlehurst opened the Gold Basin three miles above the old Rob Roy Mine in the Indian Creek area, where they struck a large body of gold-bearing quartz at a depth of 12 feet.[24] That same week R. J. Finley of Los Angeles began assessing a large body of galena-lead ore, which also had the potential to produce good silver and copper in the West Mountains. Finley, who had been raised in Beaver, had located this site 13 years earlier, about four miles west of the Fortuna Mine. Reportedly, this was one of the largest bodies of ore ever discovered in this section—the outcrop was nearly 1,000 feet long and ran several hundred feet deep. Assays along the vein averaged $40 per ton in lead in addition to containing silver and copper.[25]

By 1931 the Fortuna Mine, first developed in 1914, was producing significant amounts of lead, which renewed interest in mining in the Indian Creek area. "The success at Fortuna this year is giving an impetus to mining on Indian Creek, the west mountains and other mineralized zones, with the result that new discoveries and rock assays are being reported daily," observed the *Beaver Press*.[26] Mine manager John Bestelmeyer stated that the Fortuna area "shows undeniable promise. Both in the igneous rocks or in the sedimentaries remarkable mineralization can be found. Surface indications are splendid, but not enough work has been done at depth."[27] The gold values ran from $.60 to $108 a ton in gold. One boulder yielded $854 a ton in gold. The company stored ore in a 100-ton bin on its property.[28] Thomas and Fay Harris, who were working a claim just west of the Utah Gold Mining Company's property at Fortuna, were so excited about their claim that they built a log cabin at the site and worked continuously through the winter.[29]

In addition to what was happening at the Fortuna Mine, work began during the same decade at the Oak Leaf. A tunnel which produced good quartz that assayed for $20 dollars in gold reached 308 feet and broke into Buckskin limestone with an eight-foot vein of $35 to $40 in gold ore. The manager of the site boasted that nearby miners had also opened a three-foot vein of manganese ore, six feet under the ground, that ran more than $25 in gold to the ton and promised even better results as the vein widened.[30]

Generally, there was enthusiasm in the early 1930s about the potential still lying in the county's mineral-rich mountains. According to the *Beaver Press*, "There is an apparent optimistic trend in the mining situation over the country that is being noticed in Beaver County as well as in other sections. That the price of silver is due to come back to a point where mining of that commodity will again be profitable in not a far distant future is confidently felt by the mining fraternity."[31]

Plans were under way in 1931 to reopen sulfur mines 22 miles north of Beaver.[32] R. E. Ellingsworth, Jim Hemby, Don Workman, and Bert Nichols, all from Milford, installed a gasoline hoist at Big Project in the Bradshaw District, seven miles southeast of Milford. Earlier in 1931, they had found a two-and-a-half-foot ledge of lead-silver-zinc ore which they determined was at least 2,500 feet long and several feet deep.[33] Also in 1931 a new prospect was developed by the Horn Silver Company in an area called the Buckhorn shaft.[34] Sulphurdale's mines opened in June 1932, and 15 families moved back into homes nearby.[35] The principal product manufactured by the company was sulfur dust, used extensively in California for coating melons, lettuce, and other vegetables in fields to prevent mold.

An editorial in the *Beaver Press* on 21 July 1933 expressed the common sentiment: mining was helping to turn the tide of bad times and promised future profits.

> With metal prices again at a profitable level and moving higher, the west is preparing for a genuine old-fashioned mining revival. Talk of reopening old properties is rife and the prospector and promoter is beginning to venture forth again after several years of inactivity in silver, lead, zinc and copper mining. . . . In this transition a mine has been turned from a liability into a profitable venture once more. As yet, however, the margin of profit is small and producers feel that it will be better reopening their mines and placing production again ahead of consumption. By late summer and early fall this condition should be classified and a number of producers will undoubtedly see their way clear to reopen properties and thousands of men will be returned to their normal occupations. Reopening of the mines will be followed by the reopening of the smelters. The railroads will again be moving long trains of ore cars, supplies, etc., and the farmer will begin to find a market for more of his products. The start toward all this has been made, now the conclusion is up to the industries themselves. Men must be put to work now to perpetuate the improvement. This is no time for timidity. If

> consumption is to improve, it must be made to improve [by] placing men back to work.[36]

The mining industry continued to inspire entrepreneurs with ideas for new ventures. Businesses feeding off the revived mining activities also opened in the county. D. W. Jeffs, John M. Bestelmeyer, and John M. Broomcamp, among others, established a rod mill for handling ore in Beaver in September 1932. They created the mill to handle ore from Utah Gold Mining out of Fortuna but milled for other mines as well.[37] The Forrester balanced-rod mill could grind, elevate, and classify ore for immediate amalgamation, flotation, or concentration and did so with four to seven horsepower per 50-ton unit.[38] The first shipment of ore from Utah Gold Mining arrived at the mill in November 1932. It consisted of 42 tons of ore, which yielded $38 per ton.[39]

Several mines were sold outright. Edward Schoo sold 18 mining claims, known as the Prosper group, in 1935 for $250,000 to Harry Murtha, a mining engineer from South Africa.[40] The owners of the Sheep Rock Mining and Milling Company leased their property to E. Bissell of Beaver and Charles A. Sihler of Glendale, California, who anticipated commencing work within the next month.[41] By the next fall, they were shipping high-grade gold and silver ore to smelters in northern Utah for processing.[42]

In April 1935 mining activities stepped up at the Horn Silver Mine as well as the King David.[43] The next month, in May 1935, news of a rich new strike in the Horn Silver Mine became public. Allegedly, the vein was eight feet wide and contained gold, silver, and lead.[44] By 1935 one *Beaver Press* headline described the area as "teeming with mining activity."[45] The heaviest-producing mines were the Lincoln, Moscow, Carbonate, Rob Roy, Shamrock, Beaver Copper, Old Hickory, Montreal, and Horn Silver, which by 1935 had produced more than $50 million. The rising price of silver in part explained the renewed activity—but success in terms of new sites, high yields, and general optimism about future efforts proved contagious and spread through the district.[46]

In 1935 a group of Chicago investors leased the Quadmetals Mine in the San Francisco District after it had been closed for several years. They planned to bring in new equipment, dewater the mine, and commence work as soon as possible. [47]

The *Beaver Press* described the San Francisco District in 1937 as "alive with mining activity." That same year discovery of an extension of the $50 million vein system of the Horn Silver Mine drew the attention of national mining engineers, mine operators, and others who visited the district to examine the find.[48] One visitor, lead smelter owner E. R. Phelps, described the claim as convincingly rich in potential yields: "Conditions south of the Horn Silver are so nearly identical with those in the Horn Silver that I [anticipate] ore deposits for considerable distances."[49] The Bonanza Mining Company drove a tunnel to tap the vein at 110 feet. In 1929 the American Smelting and Refining Company had driven a 900-foot shaft for what was

then called the Lulu. Work on the site had stopped with the stock market crash, and the mine had lain idle until 1937.[50] San Francisco Mines, Inc., also was chartered in 1938 to carry on mining activities near the Horn Silver Mine.[51]

In the 1930s Beaver County mining districts produced $489,155 worth of ore. Despite the devastation to the mining industry caused by the Depression, higher prices and revived production stimulated new activity. By the mid-1930s, and since the inception of mining activity in 1860, Beaver County had produced 453,422,708 pounds of lead and 23,354,296 ounces of silver. Copper, next in line with 53,946,296 pounds, and zinc, with 42,123,360 pounds, were both important sources of revenue. The Horn Silver Mine had its best year in a decade in 1939—producing 10,590 tons at a gross value of $128,000. This total included 1,444,000 pounds of lead, 77,330 ounces of silver, 1,470 ounces of gold, and 139,299 pounds of zinc.[52] By the 1940s the Horn Silver Mine had produced approximately 190,192 tons of lead, 17,104,544 ounces of silver, 33,000 ounces of gold, 9,177,853 pounds of copper, and 19,192 tons of zinc.[53]

The Late Twentieth Century

Rich deposits of scheelite or tungsten, having an estimated value of $10 million, were found at the Old Hickory Mine in 1940.[54] Clarence H. Hall, engineer of the U.S. Vanadium Corporation, headed the work, which included core drilling on the tungsten vein, drifting in the McGarry shaft to crosscut it, and working the surface to try and determine the width, extent, strike, and value of the vein on the leased property.[55] M. M. Ward and Edith Ward, who owned one-half interest in 24 claims known as the Scheelite group, operated a second tungsten claim in the West Mountains. Miner E. A. McCarry worked for them on the project and was sinking a double-compartment shaft to the 200-foot level. They also hired a number of engineers to study the site.[56] Tungsten was of particular benefit to the war effort, which increased interest in the thriving mining climate.[57] Used for filaments in electric-light globes and hardening and toughening steel, tungsten was also a vital element in modern industry.

In an event described by the *Beaver Press* as appearing like an "Arabian Knights Fable; Affects all Beaver County's Future," in 1943 Lew Lessing discovered a rich tungsten deposit in a tunnel dug more than 50 years earlier. The *Press* described the find in glowing language: "It remained for Lewis Lessing, a comparatively young prospector in his late 30's while prospecting the surface ground for indications of tungsten to enter the old abandoned workings with his 'Aladis' [fluorescent] lamp and discover a veritable enchanted chamber, shimmering and scintillating with a billion tungsten crystals."[58]

Beaver County tungsten mines were remarkably productive during the 1940s. On 3 March 1944, Strategic Metals Incorporated shipped three carloads of tungsten from the Granite Mining District to U.S. Vanadium in Salt Lake City.[59] Reportedly, this mining district, which was under intensive prospecting, showed "a tremendous

granite-lime contact, geologically conducive to the existence of tungsten ores." Local miners believed at the time that future development would reveal even larger deposits of shipping and milling grades of this particular strategic metal.[60]

Outside investors attracted by the increased mining success in the West Mountain District were also important to the county. In 1942 a group from Chicago leased the Garnett property owned by E. A. McGarry, and James E. Robinson's claims—the Rattler—were leased to outside investors as well. [61] A group of investors from Pennsylvania joined with others from Utah to form the Penn-Utah Mining Company, purchase mining properties and leases, and begin operations in the Frisco District. At the time of their incorporation, they had 20 promising claims to investigate.[62] The Metal Producers Company acquired a lease on part of the Horn Silver Mine and cleaned out the King David shaft, repaired it to a depth of 800 feet, and extended a lateral from that level of the shaft 2,000 feet along the Horn Silver ore channel. There they discovered new ore and expected a 200-ton output daily. [63]

Despite the war, throughout the 1940s, considerable mining activity continued in the San Francisco Mining District. Seven major mines were under various levels of development—the Horn Silver, the Moscow, the Wah Wah, the O.K., the Harrington Hickory, the Gold Reef, and the Old Hickory. Five other mines were preparing to produce, and 90 local men were employed in mining activities for an average monthly payroll of $30,000. The average daily production was between 175 and 200 tons.[64] Milford became increasingly central to southern Utah's mining activities during these years. [65]

For instance, a new 400-ton processing plant was scheduled to begin operating in the fall of 1947 to process low-grade ores from the Horn Silver Mine. Huge quantities of low-grade copper, lead, and zinc ores adaptable for milling were to be charted and blocked out for processing at the new mill. For the Metal Producers Company headquartered in California, which had run the old Horn Silver Mine in western Beaver County since 1941, the facility represented an accommodation to the amount of ore produced locally.[66] But in 1947 a presidential veto of the metals-subsidy bill broke the mining momentum, and the Horn Silver Mine closed down altogether.[67]

Under the management of Jack Lowe, the mine reopened in September and began plans again to construct a mill to handle the low-grade ores.[68] The mill was nearing completion in February 1948, and it was generally believed that this $300,000 facility would benefit the entire district. A several-thousand-gallon reservoir and a 16-inch well would supply the mill that was powered by two large, diesel-electric motors and would employ 25 local men.[69] By July the mill was grinding out ore at the rate of 500 tons per day and producing concentrates which were then shipped to Salt Lake smelters.[70]

Most recently, the Western Utah Copper Company formed to consolidate the principal copper/gold deposits of southwestern Utah into a single entity and ensure that they were developed. Copper mining has always been important to Utah's economy. The company recognized the continuing potential of the Milford area of the

San Francisco Mining District as a producer of copper, at first supplemental to what was supplied by Bingham Canyon. Western Utah Copper secured ownership of mining rights in the copper-producing mines in the district as well as in the Beaver Lake Mining District and the Rocky Mining District, both also in Beaver County. [71]

The story of the San Francisco Mining District mirrors that of Beaver County generally. Changing national markets and economic conditions dramatically impacted local conditions. Cycles of boom or bust created outrageous fortunes and overwhelming disappointment that made or broke lives. This contrast is represented by the towns of Milford and Frisco—Milford persisted stubbornly through successive mining booms to become a town more diversified in its services and resources, but Frisco's exotic conical kilns are poignant reminders of a time long past and dreams forever dashed by the harsh realities of life.