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Benevolent Business: Edward G. Stoiber and the Silver Lake Mining Complex
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BENEVOLENT BUSINESS: EDWARD G. STOIBER AND THE SILVER LAKE MINING COMPLEX

By

Jennifer Morandi Benson

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ABSTRACT

BENEVOLENT BUSINESS: EDWARD G. STOIBER AND THE SILVER LAKE MINING COMPLEX

By

Jennifer Morandi Benson

The search for mineral wealth in Colorado led to the exploration of isolated areas like Silver Lake Basin in the San Juan Mountains. As surface ores were exhausted, miners were forced to increase the depth of vertical shafts where they confronted increasingly complex ores that required sophisticated equipment and engineering expertise to extract. Remote communities like Silverton sought Eastern investment to provide the capital necessary for development, creating a class of absentee owners vulnerable to dishonest promotion while lacking practical knowledge. Regardless, the success of deep mining in Colorado relied on the willingness to gamble. Although many Colorado mine owners resided in the state, few lived at the site of their investment. Edward G. Stoiber possessed several qualities that differentiated him from his peers. Not only did he live on his Silver Lake property, but his wife was also his business partner. Stoiber applied both physical and intellectual capital to his mine, which benefitted the region as a whole. He understood the business of mining and how to make a profit through meticulous development. By embracing cutting edge technologies, he proved he could balance his technical education with practical experience. Most striking was his benevolent approach towards his workforce and generous spirit that defined him as an atypical mine owner.

DEDICATION

For Brian
His insight, support, and sacrifice made this thesis possible

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Introduction

Edward G. Stoiber was not a typical mine owner. He lived year-round in Silverton, Colorado and resided on-site at his Silver Lake complex. For over a decade, Stoiber devoted his life to developing his property and implementing his "gigantic scheme" which employed more men than any other mine in the Las Animas District.[1] He applied his education in engineering and metallurgy to advance the mining industry through the implementation of electric power, use of tramways, and innovative ore processing techniques. Through the philosophies of vertical integration and economies of scale, he owned multiple means of production and produced enough ore necessary for profit. By increasing production when it seemed counter intuitive to do so following the Silver Crash of 1893, he was able to save costs and process low-grade ore on an impressive scale. Most unusual was the fact that his wife was also his business partner. Stoiber was a philanthropist and more benevolent than most of his peers, as evidenced by his impressive boarding houses with modern amenities and donations to charities and educational institutions. Edward Stoiber was atypical for Colorado and the surrounding region whose behaviors and success did not reflect most state trends.

Initially, little differentiated him from others interested in Western mining booms. Stoiber was raised in New York in an upper class German family typical of many in his profession and was a learned metallurgist, skilled in research and development. As a graduate of the School of Mines at Freiberg, he was one of "countless Germans" who made the trip West and was representative of the fact that "Germany led the way in technical mining training."[2] He was cosmopolitan, like his colleagues and when he arrived in Leadville, he was in the West to stay.[3] However, until the late 1800's,

legitimate experience like his was difficult to find in mining towns.[4] Once he arrived in Leadville around 1879, he applied his university education as an engineer and metallurgist by working in his field with his brother Gustavus Stoiber also a graduate of Freiberg.[5] This act distinguished him from his peers as members of the stereotypical "lace-boot brigade" that local men shunned for lacking practical experience, especially with complex Colorado ores.[6] After three years of gaining practical experience in a place that was becoming saturated with engineers, he left for the San Juans with his brother on a journey where he continued to set himself apart from his contemporaries.

By 1883, the Stoiber Brothers Sampling Works in Silverton was one of three samplers that assayed ore from surrounding mines.[7] Due to his broad experience with complex ores ranging from the Red Mountain to the Las Animas Mining Districts, Edward Stoiber was in a good position to consider purchasing mines. Employing his engineering skills, he took two years to fully assess the Silver Lake Mine and surrounding claims before deciding to purchase, which was rather uncharacteristic, as absentee owners would typically purchase site-unseen. Also uncharacteristic was his term of ownership, which lasted over ten years. As a bona fide owner, Stoiber distinguished himself through his approach to development. He was meticulous, deliberate, and innovative. Silver Lake, like many surrounding area mines, possessed an abundance of low-grade ore. In 1890, he was among the first to efficiently treat low-grade ores for profit, which enabled him to not only survive the Silver Crash of 1893 but also thrive thereafter.[8] Stoiber embraced the use of tramways, refining technology, waterpower and electricity, hosting only the second Alternating Current power plant in the state.[9] Understanding the perils of high altitude mining, Stoiber prepared for

environmental challenges like snow slides and freezing temperatures by reinforcing tram towers and heating boarding houses. However, he did not work alone: he had the support of his wife, Lena Allen.

Before she met Edward Stoiber, Lena Allen was married to Marshall Webster of Grand Junction.[10] Newly divorced, Ms. Allen met Stoiber in Denver and they were married in 1884. Mrs. Stoiber did not remain in her stereotypical gender role. Defying societal expectations was about the only thing the husband and wife had in common. Stoiber was "modest, retiring and scientific" while Lena "swore, was tough, freely expressed both good and unflattering opinions."[11] History remembers her affinity for erecting fences to block out her neighbors along with her charitable contributions. She may have been the cause of the dissolution of the Stoiber Brothers Sampling Works as well as the cause for Stoiber's perseverance during the crash of 1893. Her behaviors were most paradoxical. Also unusual was her business partnership with her husband. She acted as the human resources director and jointly owned both the estate and the mining operation.[12] Additionally, she was a member of the American Institute of Mining Engineers and was listed amongst "American Millionaires" in the Telluride *Daily Journal.*[13] Most impressively, the odd couple lived on-site in their Waldheim mansion where Edward Stoiber could manage his operation personally.

Stoiber erected his mansion next to his power plant on the Animas River, which sent a strong statement regarding his community investment. He even lived in Silverton year-round, unlike his brother, as evidenced by the attention given to the brothers' travel habits in the "Local Items" and "Purely Personal" sections of the *Silverton Standard* for the decade of the 1890's. Through daily interaction with his employees, Edward Stoiber

provided boardinghouses with modern amenities, which was a rarity for the day. Along with Mrs. Stoiber, he demonstrated concern and care for the health and well being of his employees, who returned the favor with hard work and dedication. He was "always kind and considerate to his employees and was highly esteemed by them."[14] Although unique, he was not alone in his paternalistic tendencies. Thomas Walsh of Camp Bird fame in Ouray and Winfield Scott Stratton in Cripple Creek were also sympathetic to labor. The same cannot be said of anti-union magnates David Moffat and Eben Smith in Cripple Creek along with managers Arthur Collins and his replacement, Bulkeley Wells with the Smuggler-Union in nearby Telluride.[15] Stoiber was a philanthropist as well, passing along scholarship money and making donations to educational institutions.[16] Colorado and the San Juans provided Stoiber with the opportunity to make millions. He did that through smart exploitation of the resources available without exploiting labor.

An Edward G. Stoiber collection does not exist—at least not in the way a researcher expects to find it. Colorado history repositories like those in Silverton, Durango, Denver, and even in surrounding states like Wyoming and California, house their own, sometimes random, primary source material containing insights into the life of Stoiber and his Silver Lake empire. Piecing together a collection based on newspapers, mining journals, certificates of assay, census records, and other manuscript items make it possible to create a skeleton of a life lived, full of accomplishments and invaluable contributions to the mining world in the late 1800's. But I was after his voice. A voice most often revealed through a diary, journal entry, or personal letter. If those exist, they could be in the care of extended family members or under protective custody of a

shoebox. Rare was the discovery of even a business letter, if only handwriting could speak beyond its imprint.

Much of the character of the man who holds so much responsibility for unlocking the plentiful low-grade riches of the San Juans can only be gleaned from obituaries and the physical structures and machinery that contributed to his personal success. As a boy, Louis Wyman, son of a successful Silverton pioneer by the same name, recalled "a litter of paper and trash" at the mouth of a once secure bank vault in Stoiber's Waldheim mansion.[17] It was paper that presumably held enough value for Stoiber to keep behind locked doors and paper that is the new high-grade ore for historians trying to find the voice of their subject. Compounding the challenge for researchers are the facts that he died prematurely leaving a "household not being blessed with children."[18] However, enough primary and secondary documentation exists to construct a compelling argument detailing the factors that made him unique and set him apart from his peers.

Creating a composite of his contemporaries and placing Stoiber within the context of Colorado and the West required the synthesis of both primary and secondary source material. Adjusting the scale of examination was critical in composing a fair study. Investigation of the financing and role of investment in Colorado's mining industry, the nature of engineers and their work, and the varied accomplishments and failures of mine owners allowed for comparative analysis. Joseph King's *A Mine to Make a Mine: Financing the Colorado Mining Industry, 1859-1902* and Clark Spence's *Mining Engineers of the American West: The Lace-Boot Brigade, 1849-1933* provided a valuable foundation for the state and its relationship with the East. Those writing during the later part of the nineteenth century like Henry Clifford and Frank Fossett offered insight into

the pitfalls of the mining industry from both Colorado and the West as a whole. Rodman Paul's *Mining Frontiers of the Far West: 1848-1880* provided overarching context while Eric Twitty's *Basins of Silver: The Story of Silverton, Colorado's Las Animas Mining District* was the impetus for the study in the first place. The numerous works of Duane A. Smith, "The Sage of the Silvery San Juans," were obvious references and sources for both inspiration and information.[19] Tragically for the history of Silverton and the San Juans, the late Allen Nossaman was unable to publish the fourth volume of the monumental series *Many More Mountains,* which would have contained the history of Edward Stoiber and Silver Lake.[20]

A brief geological survey along with ownership trends was necessary to establish just how unusual Edward Stoiber was. Stoiber's uniqueness lies in the fact that he was able to successfully mine and process ores that were just as complex as him. Frederick Ransome's *United States Geological Survey: A report on the economic geology of the Silverton quadrangle, Colorado* illustrated the difficult nature of Silver Lake ores while Clarence King, Samuel Franklin Emmons, and George Ferdinand Becker's, *Statistics and Technology of the Precious Metals* established patterns of absenteeism. Few sources are capable of telling the authentic daily story from the seemingly mundane and ridiculous to the significant people and events that shaped the Las Animas Mining District and the state than a local newspaper. *The Silverton Standard*, from its inception in November of 1889, offered a framework from which Edward Stoiber operated on a daily basis. Through journalistic expression, patterns were determined along with a few nuggets of Stoiber's personal character.

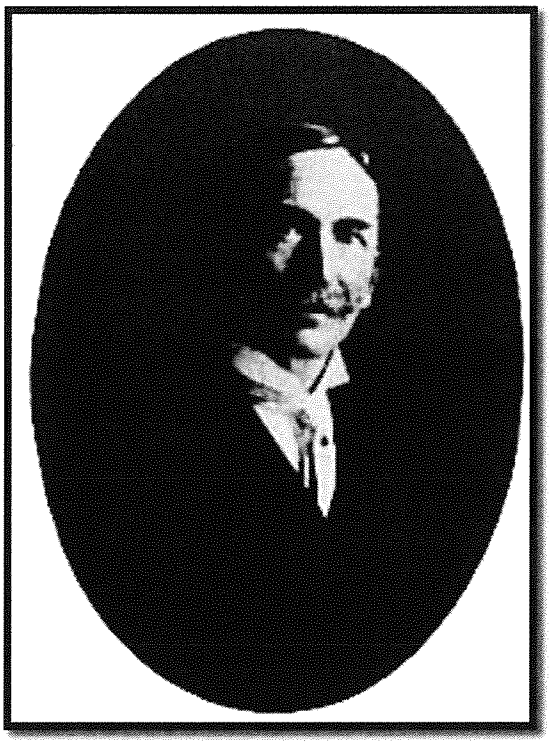

Fig. 1: Edward G. Stoiber
Reprinted from *Engineering and Mining Journal*
May 5, 1906.

Chapter Two: Standard Practices on the Mining Frontier

Depending on the decade, the realities of mine ownership and the roles of the engineer and manager shifted based on several factors. The quality, composition, and location of the ore determined the amount of capital and scientific training required to run a successful mine. The aftermath of the Panic of 1873 and Silver Crash of 1893 demanded that both low-grade gold and silver ore were worked profitably, employing innovative techniques for survival when investors were reluctant to commit. Environmental factors such as acidic water, high altitudes, snow slides, rugged terrain, and remote mining locations in the San Juan Mountains combined to require large labor forces and creative problem solving. The original prospectors, the ones that located the claim, rarely had the means to develop their discovery. Placer mining that characterized the rush to Colorado in 1859 required only the capital of a pan, sluice box, and time. However, Colorado's future depended on lode mining where much more was required to break hard rock and free the gold from its often-complex matrix.[1] Thus, prospectors looked both locally and to the industrialized East to sell their property to investors that could finance development. Inherent in absentee ownership is the fact that those making development possible rarely came into contact with either the property or their employees. In the 1870's, miners most likely knew the owner because the owner was either a working miner or recently held that occupation.[2] By the 1890's, individual ownership gave way to corporate investment. Distance, lack of communication, and fledgling transportation systems often led to misinformation regarding the status, location, and even legitimate existence of their investment.[3]

A deeper investigation of both the label and meaning of "absentee owner" clarifies the significance of the term, one that was well-understood by Stoiber's contemporaries, and finds reflection in both primary and secondary source literature. An absentee owner was usually an individual that resided in the East. Cities like Chicago, Boston, New York, and Philadelphia were more developed, had larger pools of capital available for investment due to industrialization, and were closer to financial markets like the New York Stock Exchange.[4] The owner was interested in the lure of Western mining and the gamble and risk that he, and sometimes she, would have to assume for a chance at instant wealth. The individual typically formed a stock company to become part of a corporation, pooling enough wealth to purchase shares in a particular mine, usually with friends and relatives. The Guggenheim family is a prime example.[5] Often the term "owner" and "investor" are used interchangeably. The reality of an Eastern owner/investor was that they "might never come any closer to a mine than their mailbox" due to transportation obstacles that nevertheless improved as the nineteenth century progressed.[6] Regardless, Eastern absentee ownership provided desperately needed capital to remote areas of Colorado where local residents lacked the means for development.

Surprisingly, Easterners owned a little less than half of the mines in Colorado from the 1860's-1890. In-state ownership was more common according to a census report conducted in 1885 by federal geologists Samuel Franklin Emmons, Clarence King, and George Ferdinand Becker. They reported on 98.80 percent of deep mine ownership in Colorado and their findings revealed that 58.17 percent of the deep mines were "Owned in state or territory where located," 40.63 percent "in other states or territories

than those in which the mines are located," and 1.20 percent by foreigners.[7] Of 251 Colorado mines, Americans owned 248 and the English owned three. Of the 248 mines under American ownership, 146 were owned within the state. Of the 102 mines not under state ownership, New Yorkers owned 68. Conversely, in Nevada, 97 Americans owned mines and local in-state residents owned only 16. Nationally, of the 1,155 deep mines reported from Alabama to Wyoming, 789 were owned within the state and 366, outside the state.[8] However, attention must be given to the fact that the term "local," is used to mean in-state residency, not necessarily living in the same town as the mine or even on-site, which was a rare case.

In-state ownership may have been more prevalent in Colorado by only sixteen percent, but the impact of Eastern capital, both positive and negative, cannot be ignored. Even if Eastern ownership did not typify Colorado in the latter half of the nineteenth century, "Colorado's heavy reliance on distant sources for investment capital and business know-how" certainly did.[9] Lofty expectations from the East led to hastily developed mines and misrepresentations of properties by those under pressure like managers and promoters, to please absentee owners.[10] Mismanagement was often an unfortunate byproduct. Additionally, the environment of speculation driven by promoters did little to slow the desire for rapid wealth. The farther away the investor was from the mine, the easier it was for a promoter to be dishonest.[11] However, the romance of the gamble in Western mines and the myth of instant wealth overtook even the most conservative investor.[12] The frequency of failed absentee investments affected the length of ownership, where five to seven years was considered lengthy.[13] Without a working knowledge of the environmental constraints, types of ore, and effective milling

techniques, absentee owners, both in-state and out, made costly mistakes, which caused many to re-evaluate their investments.

Owners with both practical experience and a formal education in engineering and metallurgy were uncommon in Colorado in the 1860's and 1870's. Especially in the San Juans where so much of the ore was considered "refractory," experience, education, and a willingness to adapt and experiment was critical to success. At both Leadville and Silverton, pyritic ores were uncovered where the presence of sulphides made it difficult to free the gold and was deemed "rebellious" or refractory due to its resistance to traditional milling techniques.[14] Sophisticated smelting was required which demanded the application of both science and financial investment.[15] The support of Eastern industrialists allowed chemist and teacher Nathaniel P. Hill the opportunity to travel to Colorado and Europe to study smelting processes.[16] At Swansea in Wales, he discovered a process that worked with rebellious ores. Hill's Freiburg education along with the decision to hire Richard Pierce, graduate of the Royal School of Mines in London, symbolized Colorado's need for scientific application to treat complex ores and reliance on outside capital to do so.[17]

If the owners were absentee and did not have reliable management or an engineer they could trust on-site, money and capital were wasted in antiquated and ineffective technology. Often capital was invested in a mill without necessarily having ore to process. Many owners would have benefitted from Frank Fossett's advice when he warned owners and managers to not rush to build mills without confirmation that the mine could supply the necessary ore.[18] In his practical and comprehensive guide to Colorado industry published in 1880, he advised that owners should employ only

experienced staff and avoid the employment of "friends or relatives" more likely to be dishonest.[19] Fundamentally, as the *Silverton Standard* proclaimed, "Mining is a business."[20] The need for profit was the number one consideration in an industry founded upon extracting one form of currency in exchange for another. Thus, it is not surprising that many owners viewed labor as another cost to be minimized.

Even when the owners resided in Colorado like David Moffat and Jerome Chaffee, they did not live on-site at any one mine and thus lacked the personal connection with their employees. Benevolence and seeing labor as more than just an area to employ cost saving measures was not a common trait amongst owners, especially those who lacked daily interaction. Additionally, many mine managers "fought unionization publicly and without restraint."[21] A benevolent owner could be identified by his support of an eight-hour workday, the time and money he invested in proper development and safety measures, and the degree to which he accommodated his employees during and after their shifts. Owners in Cripple Creek and Telluride in the early 1900's, with the exception of Winfield Scott Stratton in particular, were forced to deal with labor stoppages due to their reluctance to support labor demands.[22] Miners and mill workers assumed high physical risk inherent in the job, making their care and happiness an important component in maintaining a consistently productive labor force.[23]

The condition of boardinghouses and amenities offered was a highly visible way to gauge the level of care and concern an owner had for his employees. Rugged, isolated, and harsh terrain and climate, especially in the San Juans, made it impossible for most mine employees to live in nearby towns like Silverton.[24] Thus, mining crews were sometimes literally at the mercy of the boarding house, including its location,

construction, security, and food. Quality food, sanitary conditions, heated water, and entertainment often meant the difference between happy productive workers and those who did not hesitate to go '"tramping down the mountain."'[25] In an article titled, "Handling Miners under the Wage System" for *The Engineering and Mining Journal,* W.L. Flemming emphasized that if "the mine is isolated, it is a wise superintendent who provides good living accommodations for his crew."[26] Making a profit at the expense of the comfort of the employees was a sure sign that an owner not only misunderstood the components necessary for success, but also undervalued the human component of the mining equation.[27] Although critically important, hospitable boarding houses were just a piece of a successful mining operation.

Henry B. Clifford, a self proclaimed "Practical Miner of 32 years experience," published a guide in 1908 on "The Unsound Side of Mining." In it he concludes that "Ore in commercial bodies well opened; good local condition; practical management" are the three rules for success.[28] In other words, a mine must obviously have ore, but required the capital often times provided by those who may never see if their investment benefited from "good local condition." A prospector may find the surface ore, but capital in the form of money and equipment, is required to open a mine. The extraction of ore from hard rock required so much more than a pan and patience. Capital, mainly financed by Eastern investors, "made possible the hauling, milling, and treating of tons of ore, as well as a multitude of steps and processes required to produce bullion from the raw material."[29] Practical management was entirely within an investor's control provided that they employed those educated and experienced. Success relied on a capable and versatile on-site manager that in most cases, investors would not know personally. That being the

case, companies preferred to send their own managers to oversee properties that they knew little about.[30] Unfortunately, this sometimes resulted in "Staffs of heavy-salaried and incompetent officials, dishonesty, inattention to business" that often doomed operations.[31]

Frank Fossett would agree with Clifford that with proper development and knowledgeable staff, "there would be no such thing as failure, but success would be inevitable."[32] Although single partnerships and mine owners existed in Colorado mining camps, the demand for capital development was more conducive to corporate control that came to define the region in the 1900's.[33] Once a stock company formed from which the owner was paid through shares, certificates, and advertisements, "subscription lists" were printed to promote the property.[34] Most often, at least in the 1860's, ill-informed absentee companies wasted money on mismanaged properties located within geologically challenging terrain. Again, Fossett assured investors that they "can strike a path to certain fortune if they will organize companies controlling ample ready means to develop mines, entrusting the management to honest and efficient business men and practical miners."[35] Ultimately, mining is a joint venture where every stakeholder plays a pivotal role--investors should be used for their money and miners used for their talents.[36] Even so, all the money and talent in the world could not ensure success if the property was mismanaged.

Absentee ownership contributed to improper management practices. Without an owner on-site, managers were free to become "careless and extravagant."[37] Managers were thus not held immediately accountable for their mistakes, which hurt the Colorado industry especially in the 1860's and 1870's.[38] According to Clifford, investors make

mistakes because they are not a part of the actual industry when in reality, they have invested in the promises of the promoter.[39] Eastern investors often had little understanding of the difficulties associated with hard rock mining, and in their haste to develop an operation hired incompetent help, usually friends or family.[40] Men like Edward Stoiber who employed careful development practices based on a strong engineering background that knew how to use machinery effectively and purchase supplies economically, were the most successful.[41] However, these business practices were rare in an environment saturated with the desire for rapid wealth. Stripping a mine quickly of high-grade ore was common and led to brief life spans for many mines prior to 1900.[42] The fact that Stoiber's Silver Lake Mine along with the Sunnyside in Eureka were worked productively a decade before the turn of the century, was anomalous.

Success was often defined as "recovering the largest possible fortune in the shortest possible time."[43] Keeping high-grade ore in reserve was best practice as evidenced by Winfield Scott Stratton's Independence mine in Cripple Creek.[44] However, as with Silver Lake, the abundance of low-grade ore made keeping high-grade ore in reserve impractical. Instead, Stoiber found a way to profit from the abundance of low-grade material through progressive refining techniques. A life span of five to seven years was typical for mine ownership due to the prevailing attitude of get in and get out and mines frequently changed owners due to the speculative nature of the industry.[45] Thus, "Wasteful practices and high costs typified the Colorado industry in the nineteenth century in part because absentee investors succumbed to the erroneous idea that the mines were so rich that they could easily afford large expenditures."[46] Stoiber, a local, on-site owner, resisted the urge to sell for over a decade. Others like Eben Smith, Jerome

Chaffee and Horace Tabor sold respective properties in Central City and Leadville shorty after extracting rich ore. Winfield S. Stratton held out longer; selling his Independence Mine to British interests for $10 million only a couple of years before Stoiber would sell Silver Lake for around $2.5 million.[47] Short-term ownership was understandable given the instability of the market value of silver that was a constant concern for nearly thirty years.

Fluctuating silver prices for Eastern investors more concerned with a stable gold standard, made for hesitant investors. The Panic of 1873 severely curbed capital investment in the West.[48] However, the rise of California Gulch with its promise for gold along with the establishment of Leadville as a legitimate mining town revived hope by the late 1870's.[49] Additionally, the formation of the Bullion Club in New York in November 1878 was the first step in renewing Eastern interest in Western mines. Its goal was to provide the "intelligent capitalist" with reliable and trustworthy information regarding sound investments in Western mining opportunities.[50] The Club acknowledged that "great frauds in stock manipulation and mining management" were a "disgraceful truth," thus necessitating the formation of an organization to filter out the exaggerations and lies of promoters.[51] Apparently, lessons were learned, in part from experiences in Colorado and the West during the decade of the 1860's. The Club also recognized the renewed opportunity and even responsibility of providing capital investment to otherwise stagnant mines.[52] The lure of the gamble coupled with playing the role of the savior motivated Eastern investors to try again, which was repeated after the Silver Crash of 1893.[53]

Following the Panic of 1873, Western lawmakers desiring to ensure the monetization of silver drafted the Bland-Allison Act. In 1878, the federal government was required to buy silver at $1.20 per ounce, which inspired confidence amongst mining capitalists to invest in silver bearing areas like Leadville and eventually the Las Animas District in the San Juans.[54] However, confidence was short lived as federal policy shifted in favor of paper currency that coincided with Grover Cleveland's opposition to the free coinage of silver.[55] Once again, Western lawmakers were forced to mobilize in an effort to save silver. Passed in 1890, the Sherman Silver Purchase Act required the federal purchase of silver at $1.05 per ounce, which boosted production and employment in regions that depended on the ore.[56] The subsidy was temporary as backlash mounted in Washington from reformers and Republicans.[57] Combined with international pressure from Great Britain who adopted the gold standard in 1893, the price of silver plummeted.[58]

The Silver Crash of 1893 and subsequent depression impacted Denver and silver mining towns to varying degrees both economically and politically. In Denver and across Colorado, banks closed and thousands were unemployed. Western politicians like Colorado's "Silver-Republican" Senator Henry Teller, Populist Governor Davis Waite, lieutenant governor Horace Tabor, and presidential candidate William Jennings Bryan fought for free coinage of silver as the currency of the people. However, President Cleveland's belief in the strength of the gold standard was ultimately victorious. Smaller towns and camps like Georgetown and Aspen never quite recovered while Leadville and the region of the San Juans were heavily impacted but ultimately survived the decade due to the sheer volume of silver production and other metals along with supplemental gold

discoveries.[59] The decline of silver did more than threaten the foundation upon which silver towns were built. It supported consolidation and big business as ores became more difficult to locate and refine, thus demanding increased investment and scientific application from learned engineers.[60]

The "wise investor" was concerned not with how much a mine had already produced, but rather its potential production based on the reports of a reputable engineer.[61] Stoiber was his own engineer. When engineers like himself arrived in Leadville and flooded the market with similar services, the Stoiber brothers moved on to the San Juans, a region in need of reputable engineers. However, even if an absentee owner sent his own engineer to assess the promise of a property it did not always ensure success. Initially, many classically trained engineers failed to properly advise mine owners, which resulted in costly mistakes.[62] The scope of mine engineering was broad, which endowed the student with a general knowledge of the sciences but not enough knowledge in any one subject to be considered an expert.[63] Even if an owner held engineering credentials, he was faced with the stigma and prejudice that theory was not as valuable as practice.[64] Stoiber possessed both the knowledge of engineering theory and the practical experience by the time he decided to purchase the Silver Lake Mine.

The mining engineer of the West was a complex figure, elusive and difficult to define. *He,* for the engineer was almost exclusively male, "did the work normally done by the profession."[65] Anything from development to extraction was included in his duties.[66] He was also white, and migrated permanently from abroad.[67] The "most important school" in relation to the American West was that at Freiberg in Saxony where Stoiber attended. He was in good company as Rossiter W. Raymond, founder of the

American Institute of Mining Engineers, studied there along with James D. Hague, Nathaniel P. Hill, and John H. Hammond.[68] Professors at Freiberg emphasized both theory and practice, described mainly through lecture, as the industry was becoming more scientific in nature.[69] Later, Raymond acknowledged the challenge of converting theory to practical application.[70] Edward Stoiber was a typical European mining engineer but atypical in that he was successful in Western applications as evidenced by his sampling works and later, Silver Lake.

Graduating from an engineering school was only the beginning of a mining engineer's career. Gaining practical experience and practice was the only way to advance, sometimes at great cost to the mine owner.[71] Often graduates went into the fields of assaying and surveying like the Stoiber brothers and their sampling works in both Leadville and Silverton.[72] Frequently, laborers resented engineers for their lack of hands-on experience.[73] Bill Nye of Wyoming fame commented on the ineffectiveness and errant nature of Eastern engineers in the West, especially in Leadville. Supposedly learned men misidentified and even failed to identify all together the carbonites at Leadville, while men like Horace Tabor with no engineering experience, but with practical experience, was able to become a millionaire.[74] A common saying that reflected the sentiment, was '"The tenderfeet are taking the ore out where they find it and the engineers are hunting for it where if ought to be."'[75] Not only did engineers fail to locate rich veins, some also failed to make mining profitable.[76] Although the Stoiber brothers did not discover the Silver Lake and Iowa veins, they did make mining profitable due to their technical education, cooperative mine development, and ore processing techniques.

Technically trained graduates were not expected to make mistakes, so when they failed to locate or follow an unpredictable vein, they were more heavily scrutinized.[77] In fact, Freiburg at one time gained such a reputation for impractical technical education that mine owner George Hearst initially rejected John Hays Hammond for employment because he went to Freiburg and '"learned a lot of damn geological theories and big names for little rocks. That don't go in this country." Hearst admitted that attending '"Freiburg is enough'" to have rendered Hammond unemployable. However, it was not until Hammond confessed '"I *didn't* learn anything of importance'" that he got the job.[78] Whether Hammond, was making a statement on the impracticality of technical education or was just pandering to a difficult employer, is up for interpretation. Some owners refrained from hiring engineers for the role luck played in mining, even in the 1890's.[79] However, the attitude slowly receded in favor of a collaborative relationship.[80] The sheer scope and poor definition of the mining engineer led to imitators that undermined the profession, which led to attempts at greater legislation and licensure.[81] Ultimately, it was the combination of technical knowledge and practical application that made mining in the West a success, which is exemplified in Edward Stoiber.

Engineers played a critical role once the mine owner could no longer profitably process low-grade ores.[82] In 1880, The *Mining and Scientific Press* declared, "Skill follows trained methods and practice."[83] Thirteen years later, in 1903, the journal reinforced the message in a column on the "Advantages of Technical Education." The column stated that, "In no sphere of life is the possession of technical education more advantageous or necessary than in the field of mining and metallurgy." The "practical miner," who "prides himself upon lack of technical knowledge," has reduced education to

the word "theory" heavily laden with the connotation of inexperience. Despite the resentment, the practical miner "has failed to advance." Thus, he must give way to the "technically educated man" able to advance the field. Due to rapid change in the industry, the "new miner" with a technical background is the only one able to introduce "successful innovations" that are cost-effective and conducive to profit. The column acknowledges that the Western United States has in itself "furnished a practical school" where "unusual conditions" were encountered along with problems that needed to be solved by only the most progressive and learned of men. Despite the fact that "All miners cannot attend college," that should not be an excuse for not reading modern texts and journals related to the mining industry in which they are employed.[84]

Eventually, the broad scope of engineering experience gave way to specialization.[85] However, Stoiber continued to be involved in every aspect of his operation from tramways to ore processing. Without Freiberg graduates like Edward Stoiber, Nathaniel P. Hill, Albert Arents, August Wilhelm Raht, and Frederic Anton Eilers, Western ore processing would not have developed as it did.[86] At one time or another, engineers unavoidably became involved with the business side of mining as owners, investors, promoters, and executives. Although several acquired property "cheaply on the side," few acquired or committed to properties like Silver Lake.[87] As mining schools produced more engineers, an increasing number in the field turned to claim development, but "few were successful, " one exception being Stoiber.[88] However, as the profession expanded, so too did the number of engineers involved in the executive side of mining.[89] Stoiber can be considered a leader of the profession along with the likes of Herbert Hoover, John Hays Hammond, and Hennen Jennings.[90]

The typical mining engineer lived a nomadic life.[91] Stoiber certainly exhibited that characteristic in his move from New York to Germany to Leadville and on to Silverton. However, once he left his sampling works to his brother, he committed to Silver Lake. He also exuded the sophistication that came with the profession without being far removed from the day-to-day operations.[92] His success was seen in the Waldheim mansion, for "Successful mining engineers lived well" but not at the expense of his employees.[93] Stoiber was an expert in the field and was elected a member of the Colorado Scientific Society in 1884.[94] He advanced the industry, which was "the most important contribution of the mining engineer in the West."[95] Advancement seen through innovative approaches to processing ore, generating power through electricity, transporting ore and other supplies in rugged terrain, and securing comforts for his men living and working above 12,000 feet. He "took the lead in introducing the latest equipment" as progressive engineers did from the Stoiber-McCartney table to electric drills imported from Germany. True to his profession, Stoiber shared in the "common characteristic" to "initiate and adapt" seen through his attention to tram towers and the Silverton Deep Tunnel.[96]

Along with all of the scientific disciplines he was expected to know, the mining engineer was also a consultant and confidant of the capitalist and mine owner.[97] Especially when there was a change of ownership, the engineer was relied upon for a realistic assessment, placing his reputation on the line.[98] Professional mining engineers were also sent on behalf of investors, like John B. Farish and Eben Olcott to assess potential profitability of properties or even to arrange for sales.[99] A mining engineer himself, Stoiber did not play this role but rather went into business for himself. The

prospectus was critical in mine promotion as a statement of the "facts and figures" involved in the enterprise, most often drafted by a promoter.[100] Stoiber spent a couple of years formulating his own prospectus before investing money in the Silver Lake property. According to Thomas A. Rickard, the costs associated with any mine could only be known '"through actual underground experience and personal participation in the administration of mines,"' which Stoiber had.[101] True to the desire that engineers needed to be thorough and not rushed, Stoiber took two years assessing the Silver Lake property before purchasing it in 1889.[102] Often, an engineer would try his hand at mine management like Eben Olcott.

Eben Olcott was a mining engineer and chemist from New York who brought extensive experience to Colorado and the West. Before he arrived in the San Juans, he was superintendent of the Orinoco Exploring and Mining Company in Venezuela.[103] When he returned to the United States, his main occupation was to examine and report on the status of mines for Eastern capitalists, which took him to most of the major mining districts in the state.[104] In August 1880, he became a superintendent of the North Star Mining and Smelting Company for the Crooke brothers out of Lake City northeast of Silverton. The Crooke's made it clear in correspondence that that he was needed not only in a management capacity but also for his expertise as a '"Mining and Metallurgical Engineer."'[105] Living with the Crookes, he was in a unique position to observe their ownership philosophies. In letters to his sister, he criticizes his employers for their wasteful spending habits and in another, Olcott comments on how well the Crookes "treat their work people."[106] However, true to the transient nature of an engineer and despite his love for the natural beauty of the San Juans, Eben Olcott left the North Star frustrated

with the risky business practices of the Crookes for a management position in Sonora, Mexico in September 1881.[107]

The expectations of a mine manager were just as varied as for the engineer. He had to know all technical aspects of mining along with costs of development. He also supervised labor and was the face of the operation in the eyes of the public.[108] The manager also had to "design, purchase, and install machinery," which Stoiber did in the form of the Stoiber-McCartney table, the purchase of electric drills, and the installation of multiple power plants throughout his complex. Mining managers also incurred the responsibilities of dealing with legal matters, keeping track of leases, inventorying supplies, payroll, overseeing the safety of employees, and running a boarding house.[109] Good living conditions, especially in isolated areas such as Silver Lake above timberline, were "necessary in order to attract and keep good men."[110] The efforts of Edward and Lena Stoiber were reflected in the statement by New York engineer W.L Fleming in 1909, "Miners are as a rule an intelligent class of men and they appreciate comfortable living. Give it to them."[111]

Managers were also directly accountable to their owners, absentee or not.[112] Efficiency above all, was the greatest indicator of a manager's success, something that defined Edward Stoiber, especially when it came to low-grade material.[113] Efficiency was directly linked to a reliable and satisfied workforce.[114] Especially with increasing labor organization, improved living conditions were imperative, exemplified not only by the Stoiber's, but also by the paternalistic Woods brothers in Cripple Creek and their Gold Coin Club House.[115] Reporting for the *Engineering and Mining Journal,* mining expert Louis Janin, Jr. was impressed by "the handsome building well equipped with

gymnastic apparatus, bowling alleys, billiard table, library and reading room, baths and, perhaps what is fully as much appreciated, a bar from which beer and mild drinks are dispensed at reasonable prices."[116] Conversely, when the Yankee Girl on Red Mountain Pass to the north of Silverton, was unable to pay its employees, Thomas A. Rickard convinced the absentee owners in Pittsburgh to send funds and then promptly resigned.[117] Of course, some owners were better to work for than others, both absentee and local.

In *All That Glitters: Class, Conflict, and Community in Cripple Creek,* Elizabeth Jameson provides an extensive analysis regarding cultural identity created by union membership and its relationship with capital. Cripple Creek was "not a poor man's camp" as labeled by the Colorado Springs *Weekly Gazette*, due to the outside investment in mine ownership.[118] Like most mining camps, it depended on outside capital, in this case from nearby Denver and Colorado Springs.[119] Although a majority of owners resided in the state, they did not live within the mining district, which created enough distance between labor and capital to cultivate resentment towards the absentee owners. The physical distance of just eighteen miles between Colorado Springs and Cripple Creek, augmented by mountainous terrain, poor roads, and often impassable winter conditions, was enough to create entirely different realities and understandings between owners and miners, which in turn, fueled class conflict. At the turn of the century, "90 percent of the mines were owned by Colorado Springs and Denver capitalists, or eastern or foreign corporations" and "Almost no owners lived in Cripple Creek."[120]

According to Jameson, mine owners can be categorized by their backgrounds, which influenced their working relationships. Some were older, wealthy, and conservative, others were newer to the industry but affluent, and a few were from

working class backgrounds.[121] Paternalistic mine owners with small business backgrounds, like the Woods family, promoted social welfare and gave back to the immediate community.[122] Those from working class backgrounds tended to identify with and be more sympathetic to labor and were the most rare. Winfield Scott Stratton, Cripple Creek's first millionaire, exemplified this atypical group.[123] Like Stoiber, he was a learned metallurgist, studying at both Colorado College and Colorado School of Mines.[124] Also similar to Stoiber, was his meticulous approach to development. To avoid stripping his mine of gold ore, he conserved as much gold underground as he could afford.[125] In uncharacteristic fashion, he was a champion of labor during tumultuous strikes, supported the silver standard even though he was in the gold business, and voted for William Jennings Bryan against his own personal business interests.[126] Most impressively, Stratton was a philanthropist like Stoiber, and is remembered for the Myron Stratton Home, a refuge for the indigent.[127] Upon his death the *Silverton Standard* newspaper remarked he "was one of the best types of American citizenship; as a rich man he used his immense wealth in a way that leaves no stain on his name."[128] However, more common were owners who were disconnected from the laborer.

Socialite owners, like Spencer Penrose and Charles Tutt in Colorado Springs, were ambivalent to the plights of the worker and came from wealthy Eastern backgrounds. They were inexperienced and relied on their strong family ties to invest in mining properties.[129] More detrimental to labor, were the older, anti-union magnates like David Moffat and Eben Smith who rarely visited the district from Denver.[130] Moffat and Smith were powerhouses when it came to banking, mining, and railroads. Moffat especially was concerned with only what was in his best interest. At Leadville, he cut

wages to offset the declining price of silver and displayed his vehement anti-union sentiment during the Cripple Creek strikes.[131] To avoid dealing directly with the labor side of the business, Moffat and Smith chose only to work with their managers, hiring those from affluent backgrounds sure to sympathize with the capital side of business.[132] Whether an owner, engineer, or manager, all of which could be the same person like Edward Stoiber, benevolence was a personal choice that in the long run paid in labor's loyalty but not always necessary for financial success.

The development of Colorado's mining industry and its financial contributions to the state relied on Eastern capital investment driven by speculation. Purchasing shares in a mine was fraught with risk, especially when the properties were never seen or infrequently visited. Absenteeism often led to mismanagement due to dishonest promotion or unsound mining practices. Reliance on an honest and knowledgeable manager was critical. Engineers slowly introduced scientific based processes to refine increasingly complex ores, but had to overcome their lack of practical experience. Other challenges like the fluctuation and decline of silver, terrain, and ore composition demanded nothing but the right combination of technical acumen, practical experience, and smart investment. Caring for the well being of mine employees was not always imperative for success due to the relative ease in which they could be replaced. However, benevolence was just another factor that distinguished a typical from an atypical mine owner. Edward Stoiber may have realized a dream in his Sliver Lake property, but he was not the first to try.

Chapter Three: Historical and Geological Sketch of San Juan County

Southwestern Colorado including the San Juan Mountains has attracted human settlement for at least 8,000 years.[1] Early hunters and gatherers, the Anasazi, and the Utes have all called the region home, in part due to bio diversity and a wide variety of natural resources. It was not until Spanish exploration that natural resources took on a new significance. Sometime in the early 1700's, physical evidence exists of Spanish miners in the area.[2] However, groups like the Spanish, Hispanics, and New Mexicans were ultimately trespassing on Ute land, which deterred mining activity for sustained periods of time.[3] After Charles Baker's failed attempt to establish permanent mining settlements in the 1860's, the effort to access the riches of the San Juans seemed unattainable.[4] Once the Brunot Treaty expelled the Ute's from the area, prospectors felt safe enough to try again.[5] Although the San Juan Mountains harbored an abundance of gold, silver, and other precious metals, their extraction required more than a prospector could handle. In Silver Lake Basin, named for the glacial deposit and volcanic activity that left the mineral, Edward Stoiber became a millionaire because he knew how to free the silver from its complex matrix.

The Spanish proceeded American exploration in the southwestern portion of Colorado by eighty-three years. Don Juan Mirade Rivera led an expedition to the San Juans in 1765 followed by Escalante and Dominguez in the search for a trade route to California a year later. In 1779, Juan Bautista de Anza was in the region of the San Juans and established routes that would be used by others drawn to the mountains.[6] Fur trader Antoine Robidoux established a fort in modern-day Delta, north of Silverton, in the

1830's. Both John C. Fremont and John W. Gunnision explored the region in the 1840's and 1850's to assess the feasibility rail routes, and both expeditions were confronted with freezing temperatures, starvation, and even death. The Paiutes killed Gunnison in Utah and Fremont lost one-third of his original group of thirty-three men.[7] Yet evidence of placer mining exists.[8] In the 1860's, Hispanics moved north towards the San Juan Mountains for the promise of gold, where many ended up working in future mines and for the railroad in nearby Durango.[9]

In 1859, the Pikes Peak gold rush attracted an estimated fifty thousand prospectors, adventurers, and business people to present-day Colorado. When dreams of instant wealth went unfulfilled, half returned home. Those hearty individuals that remained in the territory extended their search for gold across the Rocky Mountains and a select few ventured into southwest Colorado.[10] Charles Baker led the first white party into the San Juans for the purpose of mineral exploitation in August 1860. He established Baker Park (modern day Silverton), but whatever he may have found there, subsequent parties did not.[11] He returned in 1861 along with hundreds of eager prospectors and found silver, which was difficult to mine, but failed to find gold that was easier to pan.[12] Add climate, altitude, and isolation, the perceived Ute threat, and American Civil War, and the short-lived rush busted.[13]

The second rush ten years later was successful because Colorado was more experienced in load (hard rock) mining, which is where the riches of the San Juans were found, not necessarily in the rivers and streams.[14] As with other rushes to the West, settlers trespassed on Indian land. Despite the cooperative attitudes of the Utes, settlers demanded ownership of the land, which resulted in the Brunot Treaty. The lopsided

agreement led to the foundation of Silverton in 1874 and later Ouray in 1876.[15] For annual compensation of 25,000, the Utes relinquished 4,000,000 acres of land with a request that the settlers not upset the wild game so critical to Ute livelihood.[16] By 1873, the San Juans were recognized for its gold and silver, but extracting it took capital beyond the capacity of the territory and a dependence on Eastern investment emerged.[17] However, without reliable transportation networks, investors were hesitant and the cost of living remained high.[18] Gone were the days a prospector could make a living by digging a hole or dipping a pan, at least in the San Juan region. Instead, the way to make money was through discovery and then sale of the site.[19] Until the region could generate enough interest through promotion, there lacked a captive audience.[20]

The decade of the 1870's witnessed the planning of roads, surface discoveries, and construction of smelters. In general, the miner no longer worked for himself but as an employee of a mine and was an integral part of burgeoning mining camps.[21] The survival of a camp depended on its geographic location, proximity to water and transportation, and the ability of complementary services like timbering and agriculture to support the work of miners.[22] Stoiber's Silver Lake operation took advantage of the Animas River and the Silverton and Northern railroad. The publication of newspapers like the *Silverton Standard* and *Silverton Weekly Miner* served as critical links to local and national news and a way to promote respective towns and mining operations, thus attracting interest and investment.[23] As camps experienced growth in population, business district development, wealth, sophisticated architecture, and attitudes defined by hope and promise, they became towns. The typical San Juaner that contributed to the sense of place was young, white, male, and a miner.[24] Stoiber at one time employed over

250 of them.[25] Although this study is about a single remarkable individual, it was the laborers that were the "unsung heroes" that comprised a town's foundation.[26]

Telluride, Ouray, and Silverton were the frontrunners in production during the 1880's.[27] The arrival of William Palmer's Denver & Rio Grande and his choice to make Durango its terminal made it an economic hub. He was not alone. Otto Mears challenged his Durango to Silverton route by creating a line of his own, the Silverton Railroad, that connected Ouray with Silverton.[28] Anyone living near the tracks stood to benefit from a more reasonable cost of living.[29] If a town did not have ore, transportation connections, proximity to smelters, then investment capital was meaningless. The San Juan Smelting and Mining Company provided a smelter in Durango, which brought transportation costs down.[30] As production of silver ores increased with the aid of concentration mills, the price of silver suffered from overproduction and declining circulation.[31] In response, many owners cut wages, but not hours, rather than allow a mine to remain idle. However, efforts made by the Western Federation of Miners were largely unsuccessful in the face of powerful consolidations and no shortage of willing labor.[32] Early union organization harbored working class tensions that manifested in the 1900's in Telluride and across the state.[33]

The 1890's represented a coming of age for the major producers in the San Juans. Major transportation projects were completed and mining towns matured. The production of both gold and silver allowed the region as a whole to weather the Silver Crash of 1893.[34] However, the crash hastened the end for struggling camps along with ending any lingering support for the Republican Party. The People's Party, sympathetic to the silver interests in the San Juans and the West, gained a stronghold but it was not

enough to elect William Jennings Bryan.[35] Ironically, the decline of silver had a positive affect on the "Silvery San Juans" by encouraging a renewed search for gold, which was found at Silver Lake and other area mines that contributed to the stabilization of the regional economy.[36] For the miner, the shift in production from silver to gold also supported the rise and consolidation of large companies. The Silver Lake Mine illustrates how multiple modes of production were needed to run a mine in a way that a small miner could not.[37] Stoiber's property alone included 116 claims serviced by his own power plant, tramways, and employee housing.[38] New technologies like electricity saved fuel costs and helped the region survive the silver crash.[39] The availability of local coal as fuel also benefitted the mines and was one of many factors that pushed the region over the threshold of the new century.[40] Human history aside, the mountains of the San Juans and their minerals is what attracted environmental interaction and modification in the first place.

The San Juan Mountains occupy one-eighth of Colorado's total surface area and cover twelve thousand square miles in the southwestern portion of the state. They are so rich in minerals that almost half of their territory was incorporated into mining districts. The hundreds of peaks that exceed thirteen and fourteen thousand feet give the region its distinct topographical scenery.[41] Deep cracks created by ancient upheavals left voids that were filled with "superheated groundwater and mineralized steam," that once cooled, left behind the ore veins characteristic of the San Juans.[42] Fracturing led to unpredictable patterns in which ore could be found in vertical columns or horizontal tables that vary in length and width. Depth and direction of the vein are other variables that an engineer must take into consideration and cannot be easily predicted.[43] An additional challenge

for prospectors is the highly acidic nature of the water encountered due to volcanic gases absorbed by softer rock.[44] Volcanic activity may have caused the massive uplift that give the San Juans their height, but glaciers and the forces of erosion are responsible for their roughness and irregularity.[45] Compounding mineral extraction and mining development are the extreme vertical surfaces that accumulate snow for only so long.

Climate, weather, and elevation in the San Juans deterred some early prospectors in the 1860's, but eventually were overcome to where year-round mining took place. Snow slides were common occurrences and demanded the reinforcement of aerial tram towers, the construction of snow tunnels, and of course, careful and vigilant travel. The climate of the region is influenced by elevation and sun exposure.[46] Mining engineer Eben Olcott often commented on the fact that he could work comfortably during the day at the North Star mine not far from Silver Lake, in below freezing temperatures through letters to his sister.[47] This reflects the conditions created by rarified air and solar heating, making it feel warmer than the thermometer indicates.[48] Olcott also reflected on the fact that he found "the valley here on the banks of the Animas colder than the tops of the mountains…" due to the weight of colder air and lack of sunlight.[49] Due to above average precipitation within a relatively dry region, initially, winter was a time for development and summer, a time for production and shipment.[50]

The first producing mine in the district, The Little Giant, was financed and owned by Chicago investors, two years after its initial discovery. Two years later, the operation was abandoned for lack of high-grade ore.[51] Following the successes of a few early mines like the Aspen in 1874, the Greene smelter was opened to process the ore. However, without a local railroad shipping costs to Pueblo were high and treatment was

higher, which grew to $60 per ton by 1878.[52] Regardless, rich strikes were made that fostered shameless and dishonest promotion. Instead of a smelter following the establishment of a mine like the Greene, smelters were erroneously erected before hand, leading to wasteful and ineffective investments that delayed development.[53] Once the Denver and Rio Grande railroad extended a branch to Silverton, freighting costs were reduced and lower-grade ore could be finally considered for processing.[54]

Natural wealth and necessary infrastructure lured the Stoiber brothers to the silvery San Juans. By 1883, the Stoiber Brothers, leaving Leadville for greater opportunity in Silverton, added a third sampling works behind E.T. Sweet and T.B. Comstock & Co. Ore from the Silver Lake Mine, not yet owned by Stoiber, went to Sweet's. By 1890, the concentration of low-grade ore was attempted with success due to the efforts of J.H. Terry of the Sunnyside Mine and E.G. Stoiber and his newly acquired Silver Lake Mine. Of the two, it was Edward Stoiber who was able to best demonstrate "how low-grade veins may be worked successfully on a large scale with a modern plant."[55] His success "in the handling of low-grade ores has demonstrated that when wasteful and inadequate methods are replaced by modern appliances and shrewd management, mines carrying abundant low-grade ore may be made profitable" even after the decline of silver.[56] From its inception, the Silverton quadrangle produced $35,000,000 up until 1900.[57]

Although they were discovered early in the history of the region by pioneer John Reed in 1876, the large ore lodes of Silver Lake Basin were not worked profitably until the erection of Stoiber's mill in 1890.[58] However, with partner John W. Collins, Reed was able to work the Silver Lake and Round Mountain claims to produce five tons of ore

per day by 1883.[59] The Silver Lake claims are located above timberline in a glacial valley at an altitude of 12,000 feet. The lack of trees required that lumber be packed in by burro's from nearby Deer Park, a relatively short geographical distance but separated from the basin by a saddle that demands a sure foot. Kendall and Little Giant peaks both rise above 13,000 feet and help to enclose basin's lake left by glacial activity. Silver Lake itself, no longer pristine, acted as a tailings repository for later processing along with providing power to the mill on its banks.[60] The remoteness and isolation of Silver Lake Basin demanded the ingenuity of a man like Stoiber to solve not only the problems of communication, transportation, and power, but also how to access the complex ores within unpredictable fissures.

The cliffs that separate Silver Lake Basin from Arrastra Gulch are attributed to a system of "vertical fissures" compounded by erosion.[61] Fissures, an "extensive fracture in the rock" host ore bodies and characterize Silver Lake Basin.[62] In the Silver Lake Mine, Ransome estimated "about half of the value of the output is from the gold; the remainder being in silver, lead, and copper."[63] Due to the nature of the rugged San Juans, horizontal audit tunnels were preferred over vertical shafts. Tunnels offered the benefits of sheltered entrances at lower elevations, increased natural drainage, and added ventilation when intersected by older vertical workings.[64] Initially, ore was freed by hand, collected in bins and then transported to the mill powered by water pumped from the lake. Later, "the progressive Silver Lake Mine" under Edward G. Stoiber, added electric drills, aerial trams, and innovative concentrating and finishing tables to get the most out of low-grade ore.[65] According to Ransome's geological survey, the Silver Lake

Mine became "the most extensively developed mine within the quadrangle" producing $254,908 in 1891, the first year of full-scale production.[66]

Countless perils awaited the prospector, miner, engineer, owner, and investor in the industry of mining. More failed than succeed due to variables both within and outside of human control. Physically surviving nature's challenges of climate and terrain was only a part, arguably the most important part, of success. Assuming one did not succumb to the all too common illness or accident, the mining industry in the West required investment capital, proper development, honest promotion, education, and experience to emerge unscathed and with more money in the bank after all costs were accounted for. Add fluctuating silver prices and the mining industry became more of a gamble than a sound investment. The cost of doing business was as steep as the cliffs that make up the San Juans. Keeping track of labor, construction, development, and energy costs, to name a few, challenged the most meticulous bookkeepers like Martin Tully and W.T. Voorhees at Silver Lake.[67] Ensuring the job satisfaction of the workforce was an area easy to overlook when both labor and job opportunities were plentiful. This component of success was best attended to when the owner lived on-site and had a personal relationship with the workforce like Edward Stoiber. Absentee owners were unable to fulfill this requirement from afar, whether a hundred or thousands of miles kept them from daily interaction.

Chapter Four: An Illuminating Man

The Silverton quadrangle, wherein Silver Lake Basin resides, occupies "one-sixteenth of a square degree of the earth's surface."[1] Yet within this microcosm the life of Edward G. Stoiber and his Silver Lake operation made an indelible mark on the history of Colorado. At the time of the Ransome survey in 1901, 900 individuals called Silverton their home, where national mining journals and local newspapers followed the actions of an intensely private man. Where his personal voice is absent, his accomplishments speak. The man who was "not at all gregarious" but "endeared himself firmly in a large circle of friends" was successful in an industry defined by risk and high rates of failure.[2] As recognized by the *Engineering and Mining Journal* in 1906, "More than to any other man is due to him the present prosperity in the San Juan Region of the State."[3] However, he was attracted first to Leadville, Colorado.

According to the 1860 census records, Edward Stoiber was born in 1856 in New York City, which runs contrary to several obituaries that state he was born in 1854 in Germany.[4] To complicate matters, the 1870 census records his birthdate as 1859 while the 1880 census agrees with the 1860 census' birthdate as 1856. Regardless, his parents Felix and Hline (later "Annie") were both born in Germany where he would return for engineering school.[5] Presumably, he was raised in New York City, where his father owned a successful dry goods store amongst four other siblings.[6] Stoiber's closest sibling in age was Gustavus, who was two years younger.[7] Little is known of Edward Stoiber's time in Leadville perhaps because he and his brother Gustavus were just a couple of engineers in a saturated market. In 1880, under the heading "The Plague of Experts," the

Mining and Scientific Press reported that to Leadville in particular, "fresh experts appeared and swelled ranks that were already crowded to plethora."[8] Leadville was "an inviting field, and there as nowhere else before the crop of self-made 'professors' and 'mining engineers' and 'experts,' seemed to spring out of the ground or to fall from the clouds."[9]

To this "inviting field," came the Stoiber brothers eager to apply their engineering skills. The "Stoiber Bros came from N.Y." following the pattern of many of their peers, as confirmed in a dictation taken by J.M. Long, an agent of Hubert Howe Bancroft.[10] The 1880 census confirms that Edward Stoiber was a resident of Lake County, Leadville, working as a civil engineer.[11] Despite the plethora of engineers, Edward Stoiber gained crucial experience with difficult gold and silver ores and was considered a successful metallurgist.[12] He was more in line with what the *Mining & Scientific Press* referred to as "Heaven-born experts" that "are seen but seldom" as he would prove in the San Juans.[13] The *Durango Wage Earner* deemed Stoiber an "expert metallurgist" and praised his education as "second to none in the West."[14] At only twenty-one years of age, he was a member of the American Institute of Mining Engineers.[15] Competition not only pushed him to develop his craft, but also physically pushed him to migrate to an area desperate for his expertise.

In 1883, Edward and Gustavus Stoiber opened a sampling works in Silverton. The Stoiber Brothers Sampling Works quickly "came into prominence" along with those of fellow metallurgists E.T. Sweet and T.B. Comstock.[16] These local ore samplers were necessary in a newly booming region where small mines could not afford freighting costs to the New York and San Juan Smelter in Durango.[17] Additionally, many mines with

stubborn ore needed custom treatment, like that offered at Sweet's Sampler. The Stoiber Brothers Sampling Works also accommodated specialty ores within a region filled with mineral complexity.[18] For example, numerous certificates of assay exist from 1884-1887 for the Yankee Girl mine in the nearby Red Mountain Mining District. The gold and silver ores on Red Mountain were particularly tricky to treat due to volcanic activity that left columnar mineral deposits called "chimney's" where lead, silver, and copper ores formed layers.[19] Examining two certificates of assay, one from November 1883 and another from March 1887, shows the comparatively high silver to gold ounces. On November 19, 1883, the Stoiber's assayed 274.8 silver ounces to .04 gold ounces and approximately four years later in March, there was 209.40 silver ounces to .60 gold ounces.[20] Apparently, the Eastern investors that formed the Yankee Girl Mining Company in 1883 trusted the Stoiber's enough to continue to send their ore until the dissolution of the company in 1887.[21]

The Sampling Works itself was built "at a cost of about twenty thousand dollars" according to a dictation conducted by agent J.M. Long on July 24, 1886. The interview also contains production totals for the year 1885. The value of ore sold by them in 1885 equaled $253,776 and the value of ore shipped was $195,009 for a total of $448,776. The "large and prosperous business" handled a total of 5,848 tons, in which Long concludes that the brother's "are doing a much larger business this year. It is by far the best sampling mill in San Juan Co."[22] In 1891, when the sampler was under the sole proprietorship of Gustavus Stoiber, both the North Star and Sunnyside Extension sent their ores there.[23] In an advertisement in the *Silverton Weekly Miner,* Stoiber offered, "The Closest Inspection of the Works is Invited" and guaranteed "The highest Cash Price

Paid for all Classes of Ore."[24] The sampler became the launch pad for the careers of both brothers as mine owners and in Edward Stoiber's case, earned him membership into scientific societies.

Edward Stoiber's success prompted his induction to the Colorado Scientific Society, formed "for the promotion of scientific intercourse, observation and record in the State of Colorado" on December 1, 1884.[25] As a member, he joined the ranks of other Colorado metallurgists, engineers, chemists, assayers, and mine owners who achieved "recognized attainments in some branch of natural science."[26] After four years as an assayer, Edward Stoiber wanted more and investigated the purchase of several mining properties. Subsequently, the brothers dissolved their business by "mutual consent" as reported by the *Silverton Standard.*[27] Gustavus kept the sampler and Edward purchased the Silver Lake group of claims, whose ore was ironically being sent to Sweet's Sampler, taking an educated but calculated risk.[28]

The possibility that Lena Stoiber was the cause for the brothers to periodically go their separate ways is not surprising.[29] Edward Stoiber was Lena's second of five husbands in her lifetime and was known for her crassness and "fiery temper."[30] Officially, her name was Helen Allen but she called herself "Lena."[31] She was from the Midwest, either from Kansas or Minnesota or both, depending on the account.[32] When she was twenty, she married Marshall Webster, a lawyer, in Grand Junction in 1882.[33] Soon she was divorced and remarried to Edward Stoiber in either 1884 or 1888, again, according to the account.[34] If opposites attract, then this was a perfect match. Reportedly, the couple struggled soon after their marriage but once Mrs. Stoiber arrived in Silverton, she seemed to have found both the environment and a working relationship

with her husband that suited her.[35] She was tough, rugged, and fearless. Lena could "handle her team of horses as well as any man," was known to ride the aerial tram buckets, manage the miners, and wield a diamond drill.[36] She quickly acquired the nickname "Captain Jack."[37]

Captain Jack lived up to the name. On Reese Street, the location of the Stoiber's first home, Mrs. Stoiber could not get along with her neighbors on both sides. She went as far as to purchase a vacant lot next to one neighbor in which she built a barn in order to block their view. With the neighbors on the other side, she erected what history has called a "spite fence" to minimize her interaction along with their view.[38] She apparently had an affinity for walls as evidenced by her third residence in Denver that was completed after the death of Edward Stoiber. Known as "Stoiberhof," the Renaissance style architecture was made complete with marble statues, copper cornices, and a swimming pool in the basement.[39] It was of course, surrounded by a stonewall. Add her use of colorful language and her freedom of expression, and Lena Stoiber offended more than a few Silverton residents.[40] Regardless, when Otto Mears extended a rail line up the Animas River, in 1895, it was Lena who was chosen to drive the first ceremonial spike.[41] She may have challenged traditional gender roles, but she also reflected them as seen through her charity.

Fig. 2: Lena Stoiber's "Spite Fence."
Photo taken in 1910 by Dr. Jesse Baily
http://homepages.rootsweb.ancestry.com/~baily/pages/spite.html

Mrs. Stoiber probably endeared as many as she offended. At Christmas she purchased presents for every child in town and delivered them in a horse drawn sleigh.[42] That of Santa Claus instantly replaced her "Captain Jack" persona. For all of her attempts at privacy, she garnered a fair amount of attention. She was serenaded several times by the Silverton Rainbow Band in which they were "royally entertained by that lady to cake, sandwiches, coffee and wine." The *Silverton Standard* continued to report, "This was the kindest reception the boys have ever been tendered."[43] Several months later in May of 1890, she presented the band with "two dozen torches for their hats" in which she was subsequently serenaded.[44] When a snowshoer collided with her dog, Royal, the *Silverton Standard* was sure to report the incident along with the death of her companion three months later.[45] Mrs. Stoiber's passion for entertaining did nothing to keep her out of the press. From tea and breakfast parties to lavish dinners and balls at the

Waldheim mansion, she was the quintessential hostess.[46] The *Mining and Scientific Press* even confirmed "her indomitable spirit and her generosity."[47] Perhaps most importantly, was her care for the labor force at Silver Lake where she ran the boardinghouse, cared for their families, and provided entertainment.

Under the heading "A Woman Interested," the *Silverton Standard* considered the role that Lena Stoiber played in the success of her husband. In 1895, the Silver Lake group yielded a net profit of $800,000, half of which an "authority" on the subject credited to the efforts of Mrs. Stoiber. The expert referred to her as '"a highly educated lady and has been of the greatest possible assistance to her husband in the success he has achieved."' She was '"a woman of remarkable business judgment"' rendering her highly capable of running the personnel side of the business. During the time Edward Stoiber co-managed the sampling works in Silverton, she remained true to her prescribed gender role and "cooked and kept house" in their small residence. Once he embarked upon creating his Silver Lake Empire, she expanded her role to support her husband's business endeavors, making it truly a family affair. The expert recalled a time when Edward Stoiber discussed an offer made on the property with his wife. Her alleged response was, '"You can sell your half if you wish, but my half is not for sale."' Deeds reveal that she literally owned half of the property.[48] The *Mining and Scientific Press* called her "one of the notable women of Colorado."[49] Thus, when it was time to purchase the Silver Lake mine and surrounding claims, Edward Stoiber made the decision jointly with his wife.[50]

Original prospector John Reed previously owned and worked the Round Mountain, Whale, and Silver Lake claims in Silver Lake Basin just beyond Arrastra Gulch. The basin "presented a lacework of veins and dykes," plenty of exposed bedrock,

and a glacial lake at its center, attractive to any knowledgeable miner.[51] Initial production beginning in 1876 was limited due to isolation and terrain.[52] Reed would not be alone in the basin for long. In 1881, more prospectors made the dangerous trek into the basin and staked two claims on Kendall Peak just south of Round Mountain. The Iowa and Stag claims proved to be rich in both gold and silver but short-working seasons slowed development.[53] In the meantime, Reed realized he needed capital for further development and convinced John W. Collins to invest. Soon, they were sending five tons of ore per day to Sweet's Sampler in Silverton.[54] The settlement records of the Silver Lake mine from E.T. Sweet offer valuable insight into production. The net weight of gold, silver, and lead from August to October 1883 and from August through September 1884, totaled 257,483 pounds and was sold in Silverton for $2,900.98. In 1888, Sweet certified that the totals are "a complete and accurate statement of all the ores ever handled by me from the Silver Lake Mine."[55]

By 1885, Silver Lake Basin and all of its claims except for the Royal Tiger Mine grew quiet. Easy to reach surface ores were exhausted and mining at depth required increased capital and ingenuity to treat increasingly complex ores. Add the slow decline of silver, and silver ore became uneconomical to treat.[56] However, once the Sherman Silver Purchase Act passed in 1890 that required the federal government to buy fifty-four million ounces of silver per year, the Las Animas Mining District revived production.[57] At the Iowa Mine, Benjamin W. Thayer and James H. Robin discovered a gold vein in 1889 that effectively counteracted silver's decline and continued to develop the vein through 1890.[58] However, further development required more capital and Robin offered Gustavus Stoiber the opportunity to invest. In 1893, the Iowa Gold Mining & Milling

Company was formed with Gustavus Stoiber as president, which would be advantageous to both brothers.[59] As for Edward Stoiber, once he left the sampling works in 1887, he devoted two full years to investigating, studying, assaying, and surveying the Silver Lake Mine while staking claims with his wife in the basin.[60] By doing so, he heeded the warning that "Those who buy on impulse" are "sure to lose."[61] Instead, he personified the advice, "To be successful, take time-but not too much time."[62]

Stoiber's ability to survive and thrive had as much to do with ore as it did with philosophy. Undoubtedly, Silver Lake and adjoining claims hosted a fair amount of gold ore as documented by Frederick Ransome. Assay records from the 1890's reveal that despite the decline in the price of silver, the quality of ore remained strong along with "moderate gold" which held about a one to ten ration with silver to the ton.[63] In September 1893, the *Silverton Standard* mentioned, "The low price of silver will not stop shipments as we have too many gold bearing veins."[64] Once the Silver Lake property was outfitted with fully operating mills and power plants, the paper noted, "San Juan country deposited in the Denver mint forty five and one-half ounces of gold. It all came from the Silver Lake mine."[65] Rich pockets remained a rarity, to no matter, because Stoiber treated these discoveries as bonuses and never relied on their discovery.[66] Anything too low-grade to be worth the processing fee was relegated to the bottom of the lake, perhaps to be reworked another day.[67] However, sound developmental philosophy and the knowledge to extract and process ore economically is necessary for profit.

Stoiber was an atypical owner in that he not only took an interest in the abundance of low-grade silver ore, he used it to his advantage.[68] By concentrating silver and lead ores in massive quantities using efficient milling techniques, he was able to

reduce the processing cost per ton, enhancing his profit.[69] Stoiber was not only a metallurgist and engineer, but also a businessman who understood economics. By both owning his means of production and cooperating with his brother's company, he was able to benefit from the cost saving benefits of vertical integration.[70] He owned the mill that concentrated the ore, the power plant that provided electricity, the boardinghouses that accommodated both his own and his brothers' workforce and worked closely with Otto Mears to secure a rail connection. When needed, he borrowed compressed air from his brother and collaborated on the Silverton Deep Tunnel out of the basin under Round Mountain.[71] Stoiber was able to make enough to spend more upfront on machinery and construction he knew would save in the long run, remaining true to Clifford's advice, "Only by skill and the expenditure of money are the enormous dividends credited to mining made possible."[72] At least initially, Stoiber believed he needed the help of outside investment.

Like many mine owners, he initially solicited help from the East. In two surviving letters to Committee Chair of Law for the Bullion Club in New York City J. Warren Brown, his intentions for and knowledge of his Silver Lake and Gretchen Mines are revealed. Before he began work on a road up to Silver Lake in May 1890, he sent a letter to Brown detailing the status of his claims.[73] Stoiber invites Brown "to look over it with an eye to business," and to join he and his wife "in the planning of our Silver Lake Group of mines." He provides Brown with the history of the property, and includes the fact that "the Silver Lake proper has been steadily worked for about three years past, and has a record of production during the past two years (under our management) put together of about 3,150 tons of marketed ore." Upon Stoiber's thorough assessment, he is

convinced that "this property should be worked by larger capital than is at our command (my Brother Gus and myself being sold owners); hence our desire to either join with others in the working of the property & giving the control and management if so desired, to our partners, or to sell the whole property outright."[74] As a cautious developer, Edward Stoiber knew enough of the potential of the property to know that to work it properly, he would need help.

Stoiber estimated that the property would need to be capitalized at $200,000 if the first scenario to "join with others" would work. He proposed dividing ownership into quarters-"¼ of the stock to our own credit; another ¼ into the Treasury of the Company for working capital, and to sell the other two ¼'s to one or more men of means who would then join in the management of the property." As "verified by Mill and Smelters Statement" Stoiber relates that their ore is classified as "heavy lead ore," which is "very desirable for Smelters." On average, the ore carried about "53% Lead, 23 ounces Silver, and about 0 20/100 ounces gold." He also emphasizes the promise of gold "from 2 ounces to sometimes even as high as 6 ounces," explaining that the Silver Lake vein was ready to intersect the more notable gold bearing veins of the Black Diamond, Iowa, and Whale-Rochester. The Silver Lake vein itself was "covered by four 1500 foot patented (or Receivers Receipts now held) claims, viz; The Gretchen beginning in a lake, the Silver Lake, the Round Mountain (in this claim we own but a half interest) and the Louisville." He continues to provide specific details about the vein and the advantage of the lake in its ability to provide on-site waterpower to potential mill sites. He describes the vein as "a broad one-some 15 ft between walls," and the pay streak "of variable thickness." Stoiber predicts that a concentrator will be needed in the future for the "only

concentration now done on the mine is handjigging of the fines screened from the coarse or as it comes from the stopes."[75]

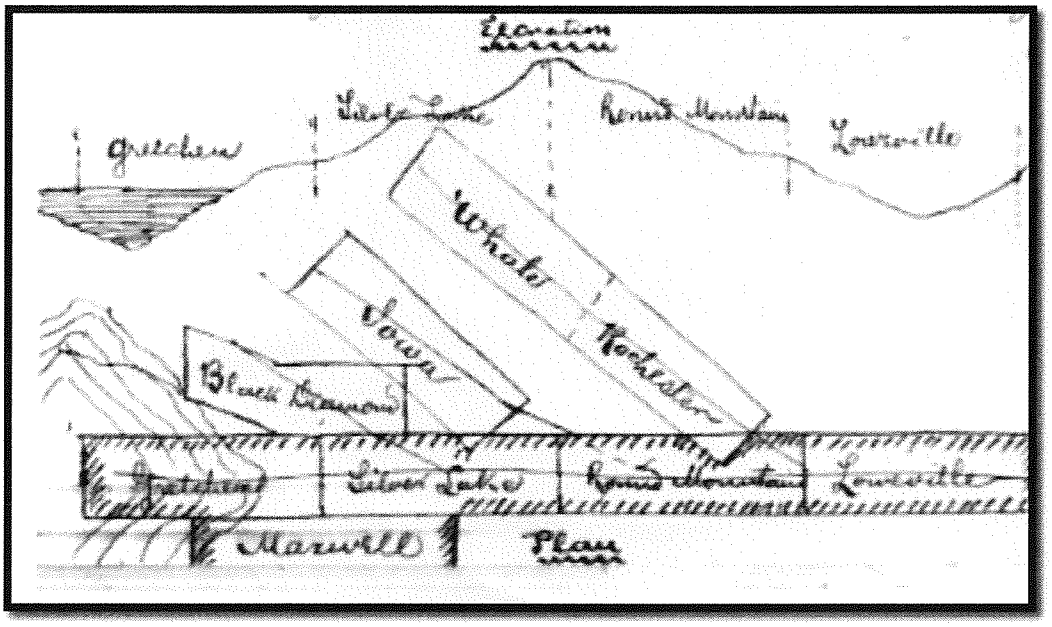

Fig. 3: Hand sketch by Edward Stoiber of Silver Lake properties, 1889
Denver Public Library, J. Warren Brown Papers

It appears that Stoiber did his best to be as honest as possible in his assessment of the property, which not all owners or engineers tended to do. He closes the letter by emphasizing that "All the statements made can be readily verified and enlarged upon." In the post script, he reiterates the need for Brown's visit by stating, "I believe it would pay you to come; I have some other propositions to place before you!"[76] We can only conjecture what other propositions he had in store. Stoiber's urgent tone reinforces his belief in Silver Lake as a profitable venture as well as his belief that he could not do it alone. In a follow up letter to J. Warren Brown seven months later while Stoiber was in New York City at the Gramercy Park Hotel, he expresses disappointment in the fact that "I learned last evg. that you had not yet left for the west." Stoiber reminds Brown that he had written him a reply "in hopes of seeing you before your departure and to talk upon

the matter referred to in your letter." What the "matter" was in his letter can be only guessed, as Warren's responses do not exist in his collection. Stoiber's urgent tone is again evident as he states, "I have given the same choice, to another gentleman/i.e. of designating time and place for a meeting during the next 3 days that you may ___ upon the same hour thus making it impossible to keep both engagements, but I will risk it!"[77] No other correspondence is in the collection, which may mean that Brown lost interest as evidenced in his seeming despondency. In the meantime, Stoiber pushed ahead with the development of Silver Lake as chronicled by the local newspaper.

The *Silverton Standard* began printing and reporting local, regional, and international news in November of 1889. Its first full year of existence was 1890, coinciding with the meaningful development of the Silver Lake Mine and nearby claims. After two decades of hard rock mining in Silverton's towering peaks, it was apparent that year-round mining was necessary to compete and make a profit. To do so meant performing feats of engineering to survive the winter above tree line in terrain prone to avalanches. In January, 1890, the *Silverton Standard* reported that "The Silver Lake has a force of fourteen men working this winter" on the "crosscut tunnel being run from the Silver Lake workings to cut the Black Diamond vein."[78] By April, plans for "A thirty-ton mill will be put upon the Silver Lake mine this spring."[79] However, opening a functional trail to haul up equipment was cause for delay.[80] In May, Stoiber made the trek up to the mine, announced "work will be commenced upon the wagon road" and contracted Con Hanson to build the mill and "push the work as fast as possible."[81] Stoiber had thirty-five employees working the grade in June and by July, it was reported that, "Two cars of brick

and lime for the Silver Lake mill and part of the electric light plant came in Monday last."[82]

Stoiber's ingenuity was truly noteworthy, especially with the early reference for his plans to use electricity. However, before there were grand plans for Alternating Current, there was a design for a simple wagon. He was not known as an inventor, yet he put his engineering skills to good use in order to adapt to the immediate environment.[83] For example, the *Standard* brought to the readers' attention that "One of the curiosities of the San Juan is E.G. Stoiber's wagon for hauling freight to the Silver Lake."[84] Due to steep inclines, wagon roads often required travel over multiple switchbacks to ease the grade and the strain on pack animals. To navigate the switchbacks with greater ease, Stoiber outfitted his wagons with "two king bolts and in going over a switchback all the teamster has to do is to hook the team on the other end of the wagon and go ahead. A pin holds which ever wheels happen to be in the rear, in place."[85] The staff was impressed as they concluded, "We never saw a wagon like it before but it proves to be success and works to perfection."[86]

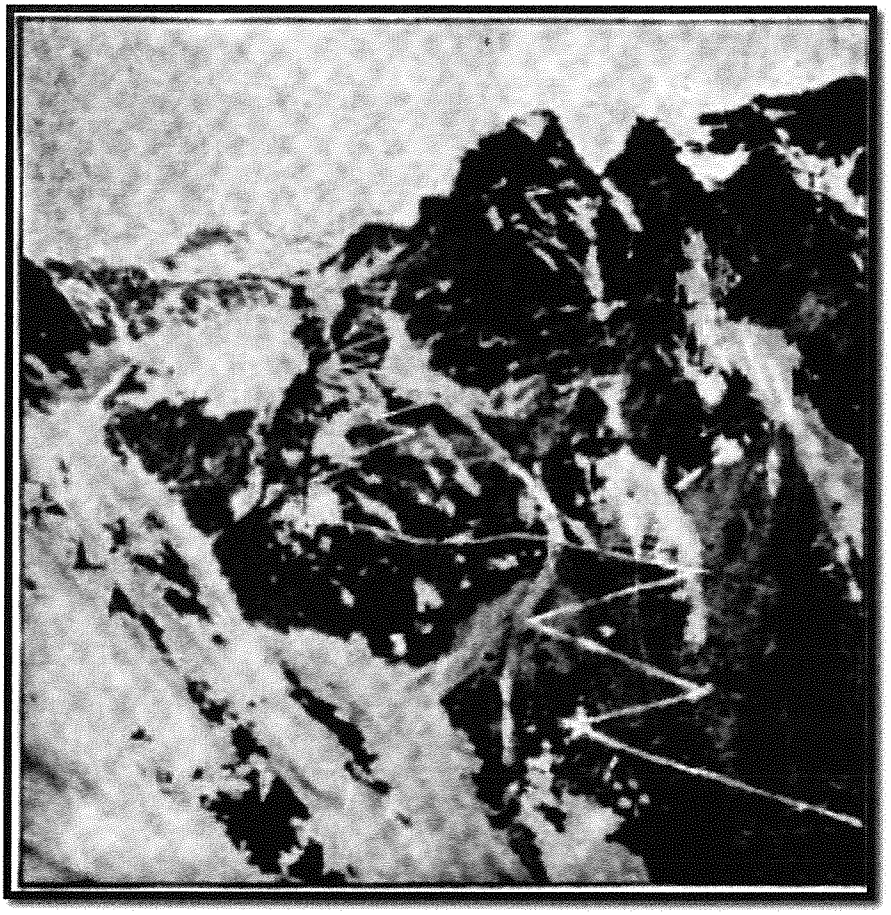

Fig. 4: Switchbacks to Silver Lake
Reprinted from, *Western Electrician,* August 31, 1895

By September 1890, Stoiber was "making good progress with the Silver Lake mill and the building is nearly completed."[87] The road to get to the mill on the west bank of Silver Lake itself was a massive and expensive undertaking. The *Standard* reported that the road "cost a large sum of money, much more than most people imagine."[88] As for the mill, Stoiber demonstrated his progressive spirit by engineering it as "a complete concentrator" at 12,900 feet, "the highest concentrating mill in the world."[89] With the help of contractors Con Hanson and William Frey of Leadville, it housed a "crusher, rolls, jigs, stamps, and tables."[90] The paper was sure to add that, "It is automatic throughout and will be one of the best mills in the country."[91] On Monday, October 27,

the Silver Lake mill "was started up" and "everything is running to perfection."[92] The mill was self-sustaining with enough coal and mineral to operate throughout the winter. Remarkably, it was "lighted by electricity and is the largest concentrator in the country."[93] The *Standard* concluded, "prospects for the Silver Lake becoming the largest producer in the county are very flattering" and "its erection makes the Silver Lake mine one of the most valuable in the country."[94] At the close of 1890, the Silver Lake mill was shipping "eight tons of concentrates a day," which contributed to the overall capacity of San Juan County mills and concentrators of 452 tons per day by January 1, 1891.[95]

Stoiber's mill was one of thirteen in San Juan County in 1890.[96] The North Star Mine on Sultan Mountain to the northeast of Silver Lake was the leading producer at 100 tons per day in January 1891.[97] Whether he gave up the idea of trying to sell the mine or could not find a buyer is unclear. As reported in the *Standard* on May 2, 1891, fellow mine owner Rasmus Hanson sold the Sunnyside mine in Eureka to an English syndicate for $145,000.[98] After a season of production, it seems that Edward Stoiber was the sole investor, at least until 1893 when his brother purchased neighboring claims. Gustavus's decision to leave the sampling works and join his brother in the basin meant that the brothers could share capital and benefit from mutual cooperation. For example, Edward Stoiber provided the Iowa, Royal Tiger, and Silver Lake mines with electricity and housing for the collective workforce while Gustavus provided compressed air for drilling at Silver Lake. His cautious and incremental development could in part be explained by smart reinvestment practices that would allow for the possibility of long-term dividends.[99]

In October 1891, the *Silverton Standard* reported, "Edward G. Stoiber has purchased G.H. Stoiber's interest in the Silver Lake mine and is now sole owner."[100] The report confirms that attempts to sell or involve other investors like J. Warren Brown did not come to fruition. Stoiber finished out the year by overhauling his sampler and installing Woodbury tables in the mill.[101] However, he did have to discontinue operations for the winter, which were resumed in March 1892.[102] In yet another engineering feat, Stoiber contracted Dave Purdy to dig a 150 foot snow tunnel to access the Silver Lake mine that was "well worth going to see" with a roof of solid ice. Photographers were even hired to document the accomplishment.[103] He repeated the feat the following year. The tunnel lasted until "the middle of August" and had "thousands of dollars worth of ore pass through it" with the help of a workforce of just over fifty men.[104] That Edward Stoiber dedicated the decade of the 1890's to the development of Silver Lake meant the opportunity to break records in tramway design, milling techniques, and energy usage.

In nearby Telluride, pioneer Lucien Nunn successfully transmitted electrical current over long distances to the mine and mill from his Ames power plant in 1891.[105] His accomplishment was incredibly significant for the mining industry and the San Juans. Alternating Current was not only cheaper than Direct Current, which could not travel long distances, but could be used to illuminate and provide power to remote mining locations in rugged terrain.[106] Stoiber embraced the new technology of AC electricity and installed "the largest and most complete multiphase plant for mining in the United States."[107] From two miles away on the Animas River, buildings in Silver Lake Basin were lit and small motors powered.[108] Gustavus Stoiber also showed interest in

electricity's potential by becoming one of three directors of locally owned Silverton Electric Light & Power Company in 1890.[109] The *Standard* announced "The capital is all subscribed at home, and all the work will be done by our own citizens" adding, "This is much better than having eastern capital invested, and taking all the profits out of the country."[110] Selling electricity to subscribers seems to be another way that the Stoiber's were able to reinvest in their mining properties.[111]

Edward Stoiber began work on his electric power plant 1894. In June, the *Silverton Standard* reported the erection of two boarding houses to accommodate the workforce along with their task of "framing timbers for the big span across Arastra gulch, which will be 300 feet long and eighty-five feet high in the centre."[112] The power house was located at "Aspen bridge and will be of 300 horse power capacity," and "about 150 men will be employed upon the flume."[113] The *Durango Wage Earner* proclaimed him to be "the first in the San Juan country to utilize electricity for operating mines and mills."[114] In January 1895, local Louis Wyman successfully completed his contract with Stoiber with the arrival of heavy machinery to the Silver Lake mill. The *Standard* remarked, "Few people have any idea of the amount of work required to move heavy machinery up the mountains, and the heavy snow made the task a very difficult one," which required "Great praise."[115] Correspondence between Irving Hale, manager of the Denver office of the General Electric Company and Mr. Theo Stebbins, Superintendent of Construction based in Schenectady, New York, demonstrates the challenges of installing a "three-phase plant" in the San Juans.

Electrical engineer Irving Hale provides details in correspondence to General Electric headquarters regarding the unloading of machinery, including the mill motor,

which arrived by train from Durango at 5am on December 29, 1894. He reports, "Nearly a hundred men had been shovelling snow on the trail" to allow for sleds to transport the materials to the powerhouse in which progress was stopped by a storm at 3pm. Over the next two days, "they succeeded in hauling the machinery by man-power over the trail some two miles and landing it at the Mill." True to the challenges posed by the environment, Hale comments on the "enormous difficulties of the undertaking and the nerve of these people in tackling it." Within nine days, the mill motor and instruments were ready for a test, which appears to have been ahead of schedule. Upon inspection, he reports the power plant to be in "first class shape." Before another test the "exciter shaft" broke but Stoiber had an extra armature, which he sent up to the mill by horseback to be replaced. Stoiber immediately ordered another by express rather than freight, justifying the extra cost, as he did not want to "take any chances on another break." In the subsequent test, great care was taken to rid the motor of condensation in which "Everything worked perfectly smoothly."[116]

However, testing new equipment at high altitudes comes with uncertainty. Unfortunately, Hale decides, "while a description of the trip (down to the power plant from the mill) might be very entertaining, it is hardly of an engineering nature, so we will skip it." We can only imagine what that trip might have been like, a descent on foot of approximately 2,000 feet in January in the San Juans. Shortly after he departed the region, he remarked that their flume was "carried away in a snow-slide" halting operations.[117] Foreman of the Silver Lake mill R.J. McCartney confirms his report for the *Silverton Standard* by stating "By the time the damaged flume is repaired and the motor taken up to the mine it will be time to start up for the season's work."[118]

Curiously, Hale concludes the letter with "Mr. Stoiber is thoroughly satisfied with the operation of the plant, but is very much disgusted with the General Electric Company business methods, -failure to keep promises, -and if he orders anything more from us we may expect to have to give him a guarantee that will mean something to us in dollars if we fail to carry it out."[119] History confirms that Stoiber continued to do business with the General Electric Company evidenced by a receipt for the purchase of wire, cord, plugs, sockets, and lamps for $7,341 on December 17, 1901.[120]

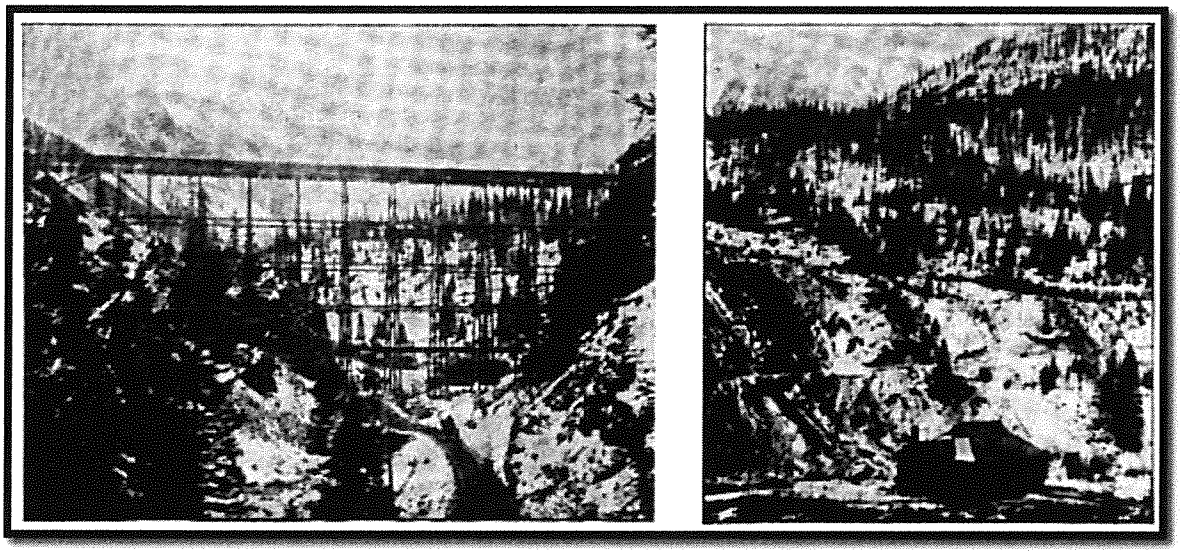

Fig. 5: Flume and Three-Phase Power Plant
Reprinted from, *Western Electrician,* August 31, 1895

Edward Stoiber set a precedent for others to follow in the San Juan region in terms of energy generation and application. A *Rocky Mountain News* headline reinforced the sentiment with "Attention of Mining Men Attracted to the New Plant-Its Success Will Mean That Many Other Similar Plants Will Be Erected in the State."[121] A year later in May 1896, the *Rocky Mountain News* reported on the expansion of the electrical power plant in an article titled "Good Enough to Double."[122] Stoiber did not stop at being able

to transmit electricity long distances, which was ground breaking in itself. He increased the capacity of his plant with the addition of a "steam auxiliary plant of modern type" in order to fully utilize the natural resources available.[123] The geography of many Colorado mining camps suits the exploitation of waterpower, which is demonstrated by interesting statistics. Oddly, of the water powered electric plants in 1896, "Over 65 per cent of the total number in the country utilize water with less than twenty feet fall." In Colorado, "the fall in any stream in a short distance is at least ten times this amount," and yet, "the amount of electrical development is very small." Additionally, water could be recycled for mills and power stations located close together on a river.[124] Stoiber understood his natural environment and manipulated it to his advantage.

However, water power alone failed to meet the increased demand for electricity. In response, Stoiber added a boiler house that supplied power to two steam engines.[125] The plant, "one of the most interesting installations of the kind in the world," was recognized in several technical journals as "one of the best demonstrations of the three-phase system of electrical distribution yet constructed."[126] The *Western Electrician* noted the 275 foot spans of wire between poles in rugged terrain and use of safeguards like rubber tubes to prevent leakage, "barbed iron wire" to protect against lightning damage, and "lighting arrestors" that were fitted at the end of each wire span.[127] The journal also recognized the fact that for the first time, machinery could be operated from within the mines.[128] To offset coal costs, "the latest and most economical types of engines" were used.[129] An additional savings came in the form of rail service courtesy of Otto Mears. A trestle was built over the Animas River where a spur led to the coal shed for the most efficient freight transfer.[130] In total, by converting to electricity powered by water and

steam instead of relying solely on coal, to run the mill in Silver Lake Basin, Stoiber saved $15,000 in coal per year, which, when combined with the periodic occurrence of gold ore, helped Silver Lake remain productive after the Silver Crash.[131]

One of the best demonstrations of Stoiber's innovative spirit was his pursuit and adoption of the electric drill. Although he used rock drills that relied on compressed air supplied by his brother, Stoiber had the infrastructure to support and experiment with electric models.[132] In July 1898, the *Silverton Standard* mentioned the return of Edward Stoiber from Europe and followed up in the next issue with the intent of his trip.[133] He initially purchased two electric drills abroad as the technology did not yet exist in the United States.[134] The Siemens and Hulske drills could bore into solid rock about seven feet an hour with steel drills that measured seven-eighths of an inch.[135] *Modern Machinery* was so impressed that in their November 1898 issue, they acknowledged that the introduction of the drill "has created so much interest among Western mine owners and engineers that we are glad to be able to present in this issue, from a Berlin correspondent, an illustrated description of these drills."[136] Although the electric drill had less power than the compressed air drill, bits could be changed "without changing the position of the machine," drills did not stick when withdrawn, and the cavity is "never otherwise than round and straight."[137] He was praised for taking advantage of "the age of improvement, invention, progression," and for installing "the newest and latest improved labor saving machinery."[138] Mr. Hubert, an electrical engineer, helped Stoiber achieve the distinction of using "the first successful electric drill ever used in America," which kept Stoiber at the leading edge of the mining industry for his ingenuity and foresight.[139]

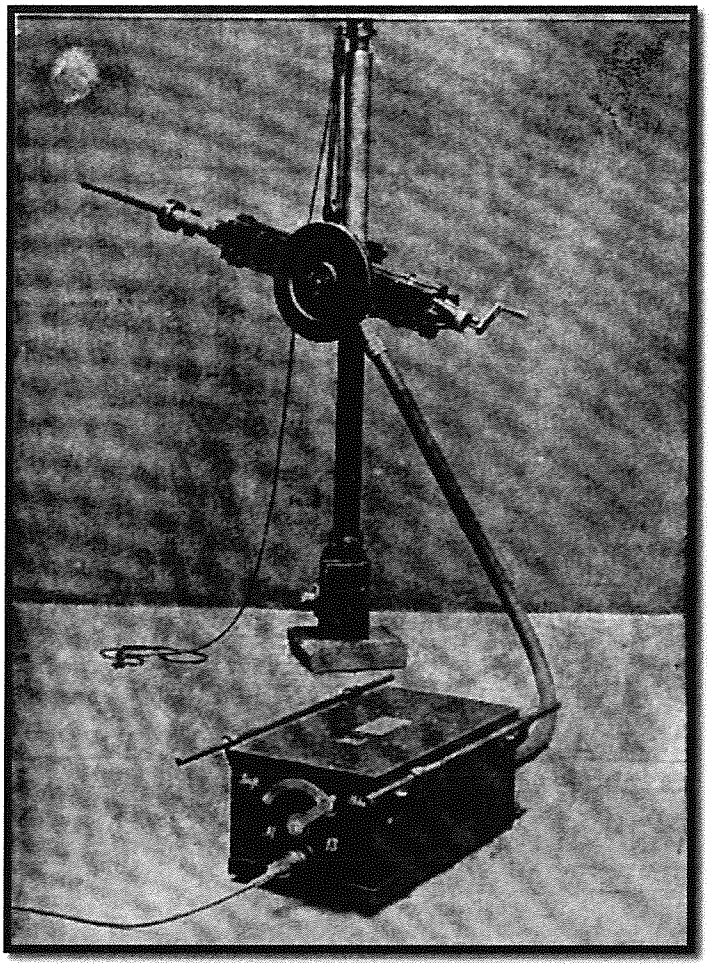

Fig. 6: Electric Drill
Reprinted from *Modern Machinery,* November, 1898

Chapter Five: Progression Personified

Illuminating his empire was just one way that Stoiber displayed his progressive spirit. To advance his plan for Silver Lake, access to reliable and efficient transportation was a critical component to success. Additionally, he needed to implement the best way to not only access Silver Lake's ore, but to extract it. Tunnels solved the problems created by fissures, water, and terrain. With every new advancement, it became more important that he and his wife live as close as possible to the operation in order for his plans to manifest to his specifications. Most importantly, he needed the staff to articulate his vision. To ensure success, Mr. and Mrs. Stoiber made sure their workforce was supplied with above average comforts to satisfy demands in often-extreme conditions. Continual maintenance and upgrades were also necessary for efficiency in a virtually prohibitive environment. Naturally, Stoiber's technological acumen led to his use of tramways.

By bypassing difficult terrain from above, the cost of grading roads could be saved along with the fact that relatively few men were needed in tramway operation, which saved personnel costs.[1] Tramways "do away with costly transportation and make possible the milling of low grade ores," and act as a "labor saving improvement" which was exactly what Stoiber needed to do.[2] In August 1895, the *Silverton Standard* reported on the progress of H.M. Sacket and the erection of the Bleichert tramway "that is to be 8,700 feet in length with a fall of about 2,100 feet."[3] Once set in motion, it was said, "to work like a charm."[4] Remarkably, the "span of 4,300 feet has only two supports" with "a breaking strain of 35 tons; speed of 300 feet per minute; buckets 900 feet apart; capacity 4 tons per hour; capacity of bucket 450 lbs. of concentrate."[5] *Mines and Minerals*

reported in 1903 that the buckets were capable of holding "from 500-1,000 pounds each of ore."[6] Initially, the tramway connected the mill at Silver Lake to Arrastra Gulch, where the concentrates could be hauled to a Silverton Railroad connection for further processing.[7] Once it became necessary to build a mill on the Animas River in 1900, an extension was built. Professor Arthur Lakes marveled at the sight, which he recalled "It is not uncommon to see two men riding in one bucket from mill to mine, suspended over 100 feet in mid air."[8] The use of aerial tramways also served as yet another way in which mutual cooperation with his brother Gustavus worked to his advantage.

Silver Lake did much to contribute to the San Juan distinction as the "tramway capital of the American West."[9] Another tramway known as the Iowa ran parallel to the Silver Lake line to accommodate ore from the Iowa workings. The consolidation of the Royal Tiger and Iowa mines demanded a new extension and the completed line became known as the Iowa-Tiger.[10] Sacket was once again in charge of drawing up plans.[11] Its terminus at a loading station on the Silverton Northern Railroad made it the '"longest straight tramway in the San Juans.'"[12] The complex's multiple tramways incorporated the Iowa and Royal Tiger operations and served purposes beyond just sending ore to the American Smelting and Refining Company in Durango, not surprisingly for a man of such practicality.[13] Upon completion, the *Silverton Standard* provided its readers with the statistic that the Silver Lake tramway was 14,700 feet long, only second to the tramway at the Sunnyside.[14] The buckets hauled all matter of mining material, including staples for both the miners and animals. Stoiber even reinforced the tram towers against the threat of avalanches.[15] The towers are "protected by triangular cribbing of heavy timber filled with rocks to ward off these foes" reported Arthur Lakes for *Mines and*

Minerals.[16] In another effort at reinforcement, "there are being built upon the mountain side mammoth breakers."[17] Stoiber understood his environment well and knew that in order to get massive quantities of ore out of the basin, he would have to continue to design new cost-effective ways to do it.

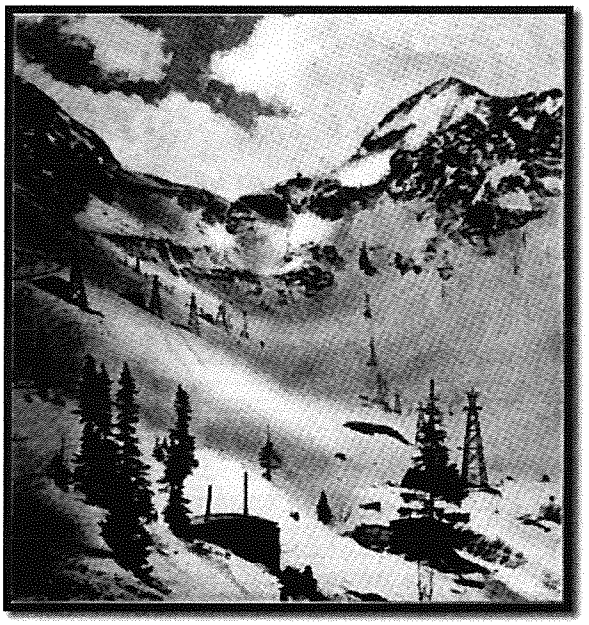

Fig. 7:Bleichert Tramway at Silver Lake
Reprinted from, *Mines and Minerals,*
April, 1903

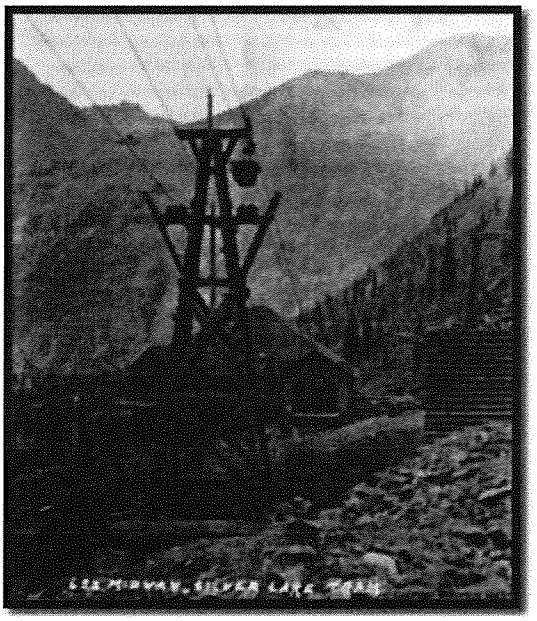

Fig. 8: Turning Station
Reprinted from, Twitty, *Basins of Silver*
Source: Colorado Historical
Society, 84-192.657.

Due to the geological nature of fissures of the San Juans, and the predominantly vertical fissures of Silver Lake Basin, mining at great depths was often necessary but not always possible.[18] In 1895, local mine owners organized The Silverton Deep Mining & Tunnel Company "the success of which will advance the country in a mining way to a greater extent than any move within the decade."[19] The Stoiber brothers, along with Joseph Bordleau, J.H. Robin, John C. Kane, J.S. Courtney, B.F. Kelly, and Frank Brown drafted an ambitious plan to challenge even the most seasoned engineers.[20] The Silverton Deep Tunnel, as it was initially known, served several purposes.[21] The tunnel reportedly

would decrease the amount of packing out of the basin, allow for haulage out of the basin throughout the winter, and provide a stoping platform for which miners could access workings.[22] It was to undercut the mines of Silver Lake Basin at a depth of over 2,000 feet and extend 3,000 feet under Round Mountain.[23] Within the context of Colorado mining, the tunnel would join the ranks of the Nelson tunnel at Creede and the Newhouse tunnel from Idaho Springs to Central City.[24]

During the first couple of years, drilling and blasting progressed at one hundred feet per month boring a hole the width of five by six and one half feet.[25] After approximately five years and 3,000 feet later, the Silver Lake workings were connected to the tunnel and linked to Arrastra Gulch where a railroad spur met its cargo.[26] Eventually, a surface plant handled increased production along with the supplemental services of a blacksmith shop, ore and tram houses, and a crushing room were added "under one roof and occupy a space of 300 feet long by 100 feet wide."[27] Ore treatment was executed with typical Stoiber efficiency, which included sorting stations, classification screens, and crushers in order to fill each tram bucket to capacity.[28] To accommodate the workforce, Stoiber provided a boarding house complete with plumbing, heat, and electricity that was bolted to the cliff above in respect for both the workers and the terrain.[29] Appropriately, the Silverton Deep was renamed the Unity Tunnel, perhaps to reflect the cooperative effort.[30] By 1902, the *Silverton Standard* reported an increase from 300 to 400 tons per day in part due to the Unity Tunnel.[31] The *Standard* honored the work with the statement "the most rugged mountains are rendered as accessible as well traveled thoroughfares."[32] No matter the phase of development of the Silver Lake

operation, Stoiber directed it all and was able to do so by living on-site at the mouth of Arrastra Gulch on the Animas River.

To supervise expanding operations, Edward and Lena Stoiber built their Waldheim mansion close to Silver Lake next to the power plant, instead of managing from afar like so many other mine owners.[33] German for "forest home," the mansion was the largest private residence in San Juan County and boasted impressive amenities.[34] On his travels to in San Juans, T.A. Rickard described the dwelling as a "30-room house with all modern appointments."[35] Those appointments were Victorian in style and included imported exotic hardwoods for trim and furniture.[36] Oak was the wood of choice, at least on the first level, which made up the floors, doors, window trimmings, and staircases.[37] The two story structure also housed a basement, game room, ballroom, plumbing, running hot and cold water, heat, toilets, and of course, electricity.[38] The built-in vault, billiard tables, and office satisfied Stoiber while Lena used the ballroom, banquet hall and theater for entertaining guests.[39] Some parties required the attendance of Denver caterers and servers who arrived by special railcar.[40]

According to his memoirs, Louis Wyman and his boyhood friends recalled that the Waldheim was a "citadel" and would have been viewed the same to those adults who set eyes upon it in the 1890's or were lucky enough to be invited to one of Lena Stoiber's extravagant parties.[41] Years after Stoiber's death, Wyman found his way into the mansion during inattentive moments of the property guard. In the ballroom on the top floor, once the scene vibrant movement sat a lonely pool table in the sprawling space with upholstered chairs fixed to the walls between the windows.[42] One can only imagine the front row seat those chairs offered to the exhausted dancer or passive observer. In

1895, the Stoiber's moved into their "handsome residence," which made a statement beyond their wealth.[43] Edward Stoiber's decision to build on-site sent a powerful message to the community regarding his investment and attitude towards his empire.[44] In 1901, the *Silverton Standard* stated "Mr. and Mrs. Stoiber in their business relations with this community have been the very essence of all that goes to hold together and give life, progress and prosperity to its people."[45] His close proximity enabled he and his wife to better manage not only the property, but also the needs of his employees.

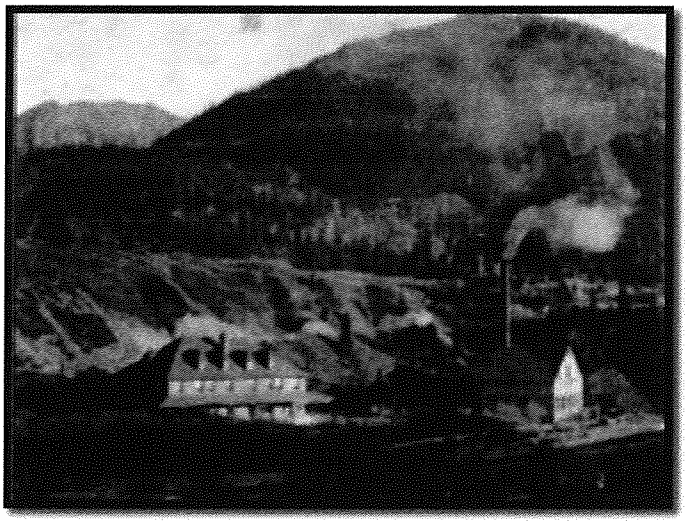

Fig. 9: *From left to right:* The Waldheim Mansion and powerhouse. Reprinted from, Twitty, *Basins of Silver*, Source: Denver Public Library, Western History Collection, X 62272

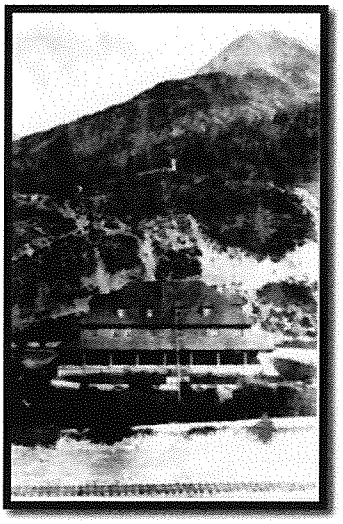

Fig. 10: The Waldheim Mansion Reprinted from, Wyman, *Snowflakes and Silver* Source: Bell/Glanville Collection

With the help of his wife, Stoiber bucked yet another trend characteristic of mine owners; he cared for his employees when many of his contemporaries cared more for the financial bottom line. He was a "benevolent mine owner," as labeled by author Eric Twitty, similar to the few examples of Thomas Walsh and Winfield Scott Stratton.[46] Thomas Walsh in particular supplied housing for his men that reflected his philosophy, '"Money spent for their comfort is well spent, for besides the good results in work, you

get their appreciation and loyalty, which is of incalculable value."'[47] Although Stoiber was not alone in providing comfortable housing for his men, he did go further than most mine owners. Concern for efficiency was not just a cost saving measure; it also reflected concern for his workforce. To support a '"superior class of miners and mill men,"' maintaining and improving accommodations and sufficient food rations was a priority.[48] As a result of heated boarding houses that served well above average food, Stoiber was held in high regard by his men.[49] The additional challenges of altitude, isolation, and the all too common snowslide, made the construction and maintenance of boarding houses all the more remarkable.

Boarding houses served several purposes. They provided shelter in the volatile San Juans, as well as providing social spaces for dining, relaxing, or hosting dances or even weddings.[50] But mostly, they were places where miners and mill men could retire after a rigorous shift where they hoped to find warmth and a good meal. Morale could be nurtured or broken in a boarding house. They were integral to the success of a mine as the home for a workforce who could abide near their workplace in isolated areas like Silver Lake Basin.[51] Boarding houses "ranged from the comfortable (and offering good food) to barely acceptable to the miners."[52] Those that were barely acceptable were cold, dirty, dangerous, and served substandard food. Former miner David Lavender recalled that even at Walsh's Camp Bird Mine, "Because of the problem of heating, the boardinghouse quarters were quarters were piled on top of one another" and that "during the bitterest storms you could not, by any effort, fire the stove hot enough to make the surrounding rooms bearable."[53] Lavender was surprised that there "was not more complaining about living conditions. In some respects they were appalling" and

remembered that "there wasn't a shower or bathtub on the place."[54] At the Yankee Girl on Red Mountain Pass, the kitchen had accumulated such a volume of waste that the floor needed to be torn out to be cleaned. Some owners and managers like Arthur Winslow at the Liberty Bell Mine in Telluride, used boarding houses as profit making ventures, disregarding W.L. Flemming's advice on how to handle miners under the wage system.[55]

In May 1897, the *Silverton Standard* covered the excavation of a five-story boarding house with basement at Silver Lake.[56] The endeavor required the employment of "a large crew of carpenters for months to come," with the tramway serving as the vehicle to deliver lumber.[57] The article boasted the anticipated use of steam heat, "bathrooms, barber shop and reading room," and sleeping rooms for no more than four men. The rooms were to be "large and airy, having perfect ventilation." The structure was to be erected with "perfect sanitation" in mind and when finished "will be the best constructed and with more of the modern conveniences than any other building in America built for the miners to occupy."[58] As usual, Stoiber employed the most experienced to manage the hauling of machinery up to the basin in Ben Harwood who "has had a good deal of experience at this work" and "will put their machinery up to the mill in first-class order."[59] By July, the *Standard* reported the near completion of the project and that "It is the best mine boarding in the state, if not in the United States."[60]

Three hundred men were accommodated in the abode and each floor served a specific purpose. The first floor hosted storage and bathrooms, the second was for the kitchen and dining room and the third, fourth and fifth floors were used for living quarters.[61] Perhaps what made the structure the "finest mine boarding house in Colorado" was Stoiber's insistence on steam heat and electrical lighting.[62] In total,

Stoiber had three boarding houses in which he cared for both his and his brother's employees with near hotel accommodations.[63] Indeed, the *Denver Daily Times* compared them to a "modern hotel" and "beautiful residence."[64] They enjoyed relative safety from fire in the presence of water tanks and fire hose lines close at disposal.[65] Additionally, he acquired fire insurance at a cost of $5,000 per year, which included coverage of the boarding houses from the storerooms to the sleeping quarters, to the dining room.[66] One dining room alone sat 250 persons and the kitchen was a model of efficiency.[67] Stoiber was also aware of the importance of sanitation and understood the factors that created unhealthy living conditions.

Clean water was piped in and kitchen waste was burned before rotting outside.[68] When typhoid fever was found to exist in the Silver Lake itself, it became even more critical to provide clean drinking water and sanitary conditions. Dr. William Robert Winters released a statement praising the Silver Lake Mine and Mill for its attention to cleanliness adding that, '"the conveniences and comforts provided, the quality and variety of the food and perfect arrangements, make the life of workmen at this mine one little short of luxury. Apparently no expense has been spared for the comfort and safety of employees."'[69] The boardinghouses were equipped with sewage systems and septic tanks that kept human generated pollution from the water. The frugal Stoiber even spent an uncharacteristic amount of money on an efficient steam generator that relied on an expensive water-tube boiler.[70] The *Silverton Standard* concluded, "This shows that Mr. and Mrs. Stoiber have the interests of the miner's welfare at heart, and propose to give them accommodation excelled by none."[71]

Fig. 11: *Near center:* The five-story boarding house, Reprinted from, Twitty, *Basins of Silver,* DPL, WHC, X 62272

Fig. 12: Silver Lake Mine kitchen staff Reprinted from, Vendl, *My Home*, San Juan County Historical Society

Just because Stoiber's workforce was provided with comfortable living quarters with modern amenities, does not mean that they were immune to the trend of periodic labor unrest within the larger region. On November 9, 1895, the *Silverton Standard* reported that 150 refused to work for fear "that the sum of $100 will be deducted per month from the wages of each man employed on the Silver Lake mine, as hospital dues to the Durango hospital." The miners "deemed it unfair that an assessment be made against their will, and walked out."[72] Two days later, the *Aspen Tribune* reported their intent to return to work.[73] Curiously, Stoiber's form of health insurance was not well received. More seriously, the closing of the Durango smelter due to labor strikes caused a contagious response amongst miners in the region. The Durango smelter was the first to openly fight against the eight-hour labor law.[74] On June 7, 1899, the *Daily Journal* in Telluride reported that "200 men were out of employment," which shut down the Silver Lake and other area mines "on account of the closing down of the smelter at Durango."[75]

Conservative estimates of 650 miners were effectively out of work due to "that crushing octopus, the Smelter trust."[76] Along with the Silver Lake Mine, the Iowa, Tiger,

Gold King, Silver Ledge, Sunnyside, and Sampson were forced to close.[77] During the labor stoppage, "All mines and mills are making the most of the present closedown by repairing and renovating."[78] In August, under the headline, "Good News!" the *Silverton Standard* was pleased to report the reopening of mines under the eight-hour law as determined by the San Juan Mining Association. Interestingly enough, it appears that Stoiber was not a member, which would represent another anomaly for this mine owner.[79] In contrast to the traditional anti-labor owners like those in Telluride and Cripple Creek, Stoiber adhered to the eight-hour work day, following the nearly three month long strike. He also employed the majority of Italian miners in the district for their strong work ethic, but who were also characteristically pro-union.[80] These are the men who physically brought his plans and visions to fruition.

By 1900, Stoiber once again expanded his operation by building a mill on the Animas River to accommodate the volume of ore being sent from the basin to the terminal of the tramway.[81] In characteristic fashion, he spent both time and money investigating and "experimenting on new processes before adopting the plans and process by which the ores will be treated in the new mill."[82] In June 1898, a steel tramway cable was ordered from Trenton, New Jersey that was two miles long in anticipation of an extension line that would "connect the new ore house with the terminal of the Silver Lake line." The ore house on the Animas River "is to be a massive structure—the largest in the world." The *Silverton Standard* concluded that "There is no use of wishing Mr. Stoiber success because he has already clove his way to it, through obstacles that would have made many a heart, considered brave, weaken."[83] In August, the newspaper reported on the completion of the ore house and connecting tramway and confirmed that

the ore house was indeed "the largest in the world" with a "capacity of 16,000 tons." The building itself had four floors with eight ore bins. From the mill in the basin to the ore house, the tramway measured 15,000 feet.[84] These were the first installments in what would become a milling complex.

In collaboration with fellow engineer and mill manager McCartney, the milling complex reflected Stoiber's philosophy for efficiency and use of advanced technology "for the treatment of Silver Lake ores to the best advantage."[85] The mill occupied two acres of both vertical, in the form of terraces, and horizontal space. Crude ore delivered by the tramway was crushed and reduced further by Cornish rolls and Chilean mills. Screens classified the material and Hartz jigs separated the material by metal type, using specific gravity, and were sent to vibrating tables in the form of slurry for concentrating. The mill increased production and became a model throughout Colorado and the West, treating 1,000 tons of ore in a 24-hour period. To run such a mill required an equally efficient and advanced infrastructure complete with water power, various motors, electric lighting, and a power plant, which made the mill "one of the most thoroughly equipped for extensive mining operations of any in the state."[86] Construction work was year-round and around the clock evidenced by the employment of a night shift. Of the effort, the *Silverton Standard* commented "It will require more than ordinary storms to put a quietus on that enterprising undertaking and the completion of the largest mill in San Juan County."[87] Once completed in May 1901, Stoiber had a nearly automatic, labor saving operation that became his legacy.[88]

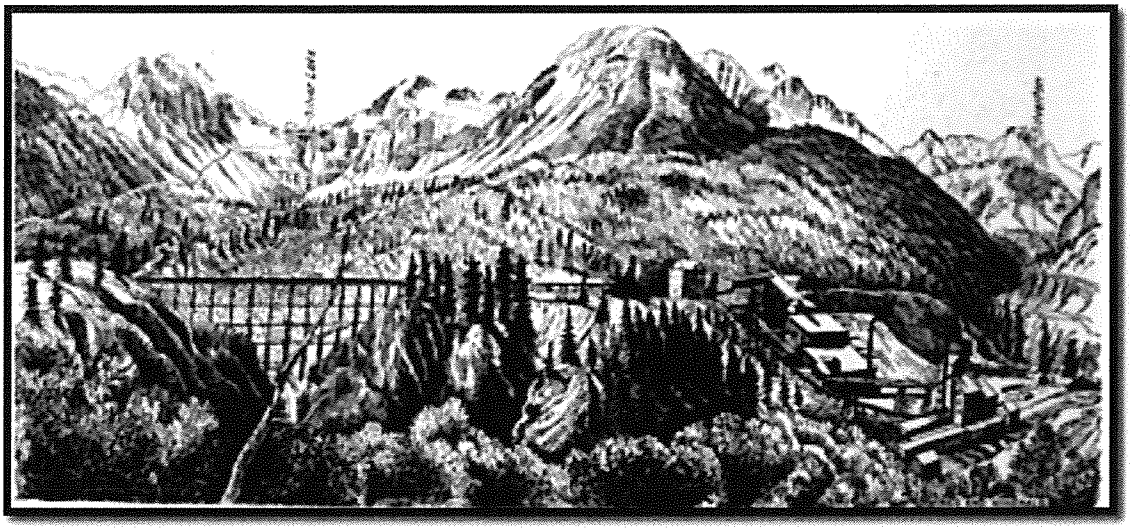

Fig. 13: Silver Lake Basin and Mill, Reprinted from, *Mines and Minerals,* April, 1903

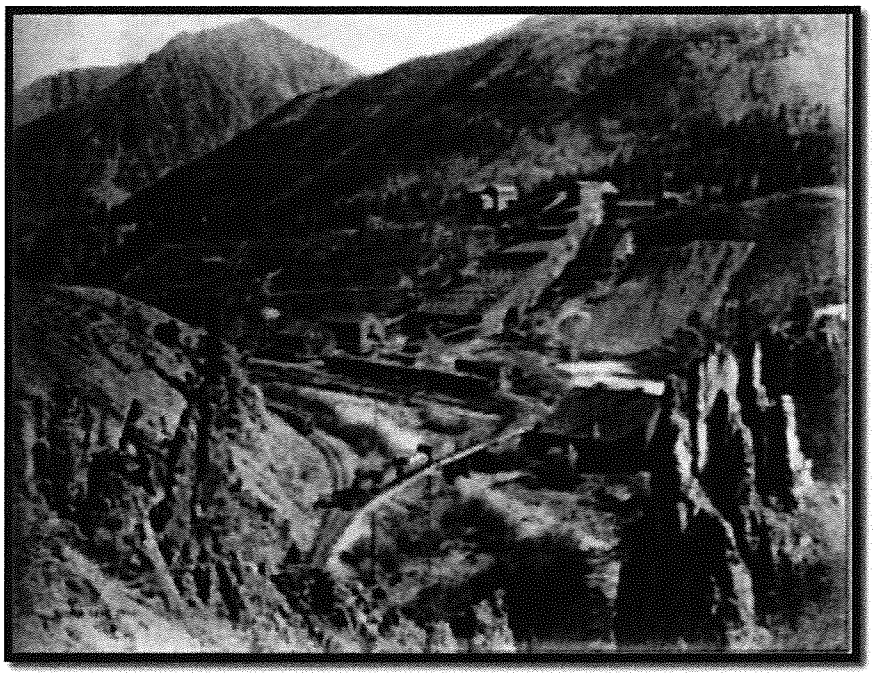

Fig. 14: Silver Lake Mill on the Animas River in 1900
Reprinted from Twitty, *Basins of Silver*
Source: DPL, WHC, X62275

After over a decade of intense development and emotional and physical investment, Edward Stoiber and his wife sold their Silver Lake properties in the largest transaction in the history of San Juan County.[89] After months of negotiations between a

Boston syndicate, New York capitalists, and even the Rockefellers, the Guggenheims purchased the properties for a reported $2.5 million.[90] Stoiber stayed on as manager to complete his mill on the Animas River and to possibly aid in the transition of power.[91] The mine was producing more ore than it ever had, the mill was running smoothly, and the couple was wealthy enough.[92] However, the Guggenheims ultimately failed to make the profit that Stoiber had enjoyed.[93] He and his wife retained ownership longer than many of their contemporaries in an industry fraught with speculation and high turnover rates. For example, the Sunnyside Extension Mine in Eureka Gulch to the east of Silver Lake was first extensively worked in 1886 and sold to English syndicates in May 1891.[94] Gustavus Stoiber and partners acquired the Iowa after being worked for three years by previous owners.[95] Uniquely, Silver Lake represented "the greatest one-man mining system in the nation" due to the passion, ingenuity, and vision of Edward G. Stoiber.[96]

Fig. 15: Edward Stoiber appears to be on the far left
Reprinted from Twitty, *Basins of Silver*
Source: CHS X 7880

Chapter Six: Conclusion

Predictably, new ownership and management changes led to conflict. Newly appointed metallurgist Samuel I. Hallett of Aspen arrived in Silverton with a reputation that preceded him. As the former manager of the Mollie Gibson mines, the *Mancos Times* conjectured that he "has probably raised more pure silver to the surface than any other living individual." The paper also predicted "Silverton and San Juan country gains a grand citizen in Mr. Hallett."[1] He retained the Silver Lake workforce but replaced longtime manager and Stoiber partner, McCartney, who was transferred to the mill. Merging with American Smelting and Refining Company, the Guggenheims consolidated their monopoly.[2] In December 1902, the *Daily Journal* reported that Manager Hallett denied that he "received any note warning him to leave or share the fate of Collins" suggesting that there was labor unrest.[3] At the Silver Lake Mill, McCartney's conflict with a co-manager led to a tension filled environment that caused workers to walk out. McCartney's death of natural causes four months later caused a second shutdown from mass mourning.[4] Under the anti-labor management of ASARCo, workers became disgruntled. So much so that "the work of some dastardly incendiary" burned the Silver Lake mill to the ground, taking with it the tramway, which initiated a third work stoppage as reported in the *Durango Wage Earner.*[5]

In the same issue, a headline on the front-page read, "Edward G. Stoiber is Dead in Paris."[6] Retirement offered Stoiber and his wife the opportunity to pursue their passion for travel, especially in Europe, in which the couple eventually took up residence in Paris.[7] He surrendered to typhoid fever one day after his mill was destroyed, on April 21, 1906, at the age of 50.[8] Friends in Silverton and throughout the mining industry

hoped "that his reported death was a canard," which may be a reason that the *Silverton Standard* waited to report his death longer than others, by about three weeks.[9] In the midst of the San Francisco earthquake on April 28, 1906, the *Mining and Scientific Press* of that city, broke their coverage of the natural disaster with the news that "The death of Edward G. Stoiber has cast a gloom over mining circles in Denver."[10] On the same day, the *Standard* devoted front-page coverage to the earthquake, but no mention of Stoiber's death.[11] He was laid to rest in a mausoleum, where he would eventually be joined by his wife, "in the presence of a large number of friends" in Fairmount cemetery in Denver.[12] As for his brother Gustavus, he died suddenly of a "cerebral hemorrhage" on a train back to Silverton from Red Mountain after visiting the Robert Bonner mine under a year earlier, on August 1, 1905.[13] Upon his departure, he was reportedly "in his usual apparent robust health."[14] A family member, as relayed through a second-hand source that currently lives in Gustavus's prior residence, insists that he shot himself in the head, which would explain the tragic hemorrhage.[15] He is buried in Silverton at the Hillside cemetery.[16]

The burning of the Silver Lake mill and the death of Edward Stoiber were two unrelated incidents; separated by thousands of miles on two separate continents. The odd coincidence is a tragic irony difficult to quantify. His obituaries remember him for his quantifiable contributions to the mining industry but also for his philanthropy. In his book, *Rocks in the Road to Fortune,* Henry Clifford reminds his readers "in the broad deep field of mining, there are few, if any, extreme philanthropists."[17] What constitutes *extreme* is up for interpretation. The *Engineering and Mining Journal* labeled him a "philanthropist" for his willingness to contribute to any "worthy cause." His benevolence

gained recognition by the "charity workers in Denver" and made several donations to educational institutions. To the University Club library, "he contributed the scientific section" and "made the gift of an elaborate set of instruments to the State School of Mines."[18] *Mining and Metallurgy* noted his generosity when it came to "helping of the unfortunate and in his contributions to worthy public movements-among others."[19] For his donations, the Colorado School of Mines offered the "Edward G. Stoiber Prize Fund" in which Lena Stoiber donated two hundred dollars annually for the "best Senior thesis or theses involving the concentration of ores and the separation of metals."[20] Stoiber may not have been extreme, but he was unique for a mine owner during an age characterized by industrialization and labor unrest.

Edward Stoiber experienced first-hand that satisfied workers were more productive, especially when performing tasks they excelled at.[21] If the condition of boardinghouses and quality of food reflected the concern of the owners for his employees, then Edward Stoiber cared. However, he was ultimately a business owner that needed to make a profit to survive. As evidenced by Stoiber's production volume, use of innovative technology, durable tramways, and facility expansion, he planned not only to weather the depression but for future longevity. His education, careful bookkeeping and spending, collaboration with his brother, cooperation with his wife, and continual physical presence went against the practices of many mine owners just as his success during the decade of the depression ridden nineties went against the trend in Colorado. In 1898, the Colorado State Mining Directory listed Edward G. Stoiber and Lena Allen Stoiber as the sole owners of the Silver Lake Mines.[22] Living on-site rather than back East or elsewhere in the region, allowed he and his wife to meticulously

manage their properties and production, which saved money. Although workers struck twice, one regarded Stoiber's attempt to safeguard the miners, much like a fraternal organization might do. The stoppages were relatively brief and hardly reflected other strikes experienced in nearby Telluride or Cripple Creek.

Silver Lake Basin inhabitants were both shaped by and shaped the environment in which they toiled. Avalanches, wind, and elevation limited and literally shaped construction. Structures like boarding houses were tucked away and anchored to precipices. Initially the climate and season dictated working hours. The geologic phenomenon of fissures demanded the use of tunnels, which the Stoiber's understood with their Silverton Deep collaboration. Stoiber came to Silverton with a passion for engineering and knowledge of unique ores. Ultimately, human ingenuity, mainly that of Edward Stoiber and his partners, adapted to environmental challenges to increase his wealth. In the context of the Gilded Age, he was a complex figure that paired profit with paternalism. He continually set precedents to follow both in mining technology and labor relations. He was not the only one to succeed in these categories nor was he the last. Charles Chase of the consolidated Mayflower Mine built upon his predecessors like Stoiber in Arrastra Gulch in 1929. Chase was popular amongst his workers by providing modern amenities and built tramways that still exist today.[23] Edward G. Stoiber serves as an important example of what is possible when benevolence is balanced with business.

NOTES

Introduction

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[9] "Mr. Stoiber's Death," *Silverton Standard,* May 12, 1906.

[10] *Mining and Scientific Press* (April 28, 1906).

[11] *Silverton Standard,* April 28, 1906.

[12] *Engineering and Mining Journal,* (June 2, 1906), 1064.

[13] "Death of Gustaf H. Stoiber," *Silverton Standard,* August 5, 1905.

[14] "Sudden Death of Prominent Silverton Man," *Daily Journal,* August 1, 1905.

[15] Fritz Klinke, interviewed by Jennifer Morandi Benson, Silverton, CO, January 28, 2015.

[16] "Death of Gustaf H. Stoiber."

[17] Clifford, *Rocks in the Road to Fortune,* 19.

[18] "Edward G. Stoiber," 865.

[19] *Mining and Metallurgy* (July 1907): 686-7.

[20] *Quarterly of the Colorado School of Mines: Catalog Edition,* Vol. I No. 2 p. 111 Golden, Colorado, (1906-1908), https://archive.org.

[21] Twitty, *Basins of Silver,* 255.

[22] A.R. Dunbar, Arthur Lakes, *Colorado State Mining Directory*: *Buyer's Guide to Representative Mining Machinery and Supply Houses of America, 1898* (Library of Princeton University) 297.

[23] Scott Fetchenhier, "Mayflower Mine: History Suspended in Time," *Silverton Magazine*, accessed May 15, 2015, http://www.silvertonmagazine.com/history/Mayflower_Mine.html.

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