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In the most recent historiographical essay on the history of western mining, Clark C. Spence, with perception and erudition, observed that historians have long been enraptured by the glory and romance inherent in the drama of the nineteenth–century mining industry, neglecting the seemingly grayer, duller corporate enterprise that is twentieth century mining. As a result enormous cavities appear at random: we have yet, Spence writes, a general, overall interpretative history of the mining industry; almost no attention has been directed to the era between the First and Second World Wars; except for a couple of volumes, there has been total neglect of the technology of mining; the comparative studies of mining between countries, so often commented on as being useful, are absent; finally Spence notes that little analysis of corporate organization or technological transfer is available.[1]

A decade after Spence's insightful article, the topics of neglect that he ticked off with ease remain largely unexplored. This is not to argue that the computer discs have been totally blank, as the history of mining has attracted increasing attention.[2] Nor are computer symbols the only sign of a robust, flourishing, and animated activity in mining history. Afficionadoes of the field have gathered together in recent years to establish organizations devoted to mining history. The Society of Mining Law Antiquarians, an assemblage of mining lawyers who hold annual conventions, much to the envy of their academic colleagues, cavort at such delightful spas and sites as Wales, Hawaii, and the British West Indies. Devoted to the discovery and preservation of the legal history of mining, their Society newsletter, *Dips, Angles and Spurs*, is a veritable treasure trove of fascinating *linqua franca*, basic reference interest, and above all, of pure delight and enjoyment.

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Another group of public historians, academicians and buffs, in "swaddling clothes" stage, is the Mining History Association. Though this organization has had only three annual conventions, at Leadville, Boise, and Lead, the enthusiasm and sophistication of their sessions, plus the soon to be born journal of mining history, bodes well for the future of these devotees. Currently, there is much excitement over the International Mining Congress to be held this summer in Denver. If comparative history is your concern, what better opportunity to visit with international colleagues than in the Mile High city? As a field then, one can only conclude that the history of mining is not only alive and well, but vibrant.

The two books under review, *Goldfield*, by Sally Zanjani, and *Hecla*, by John Fahey, provide the alpha and omega of twentieth century mining. Though chronologically in the twentieth century," Goldfield possessed all the excitement, flash and color of a nineteenth-century gold rush. The Goldfield ore deposits were distinguished by irregularity, closeness to the surface (most within 1,000 feet) and of astonishing richness. Geologists describe the outcropping as "irregular, straggling, branching and apt to disappear suddenly."[3] Obviously, any prophecies as to the estimates of future reserves was an exercise in pure (or impure) fortune telling.

But the quick wealth pouring from the Mohawk, Combination, and other legendary Goldfield mines of Nevada was no soothsaying. In 1906, three years after the discovery of Goldfield, production leaped to $7,040,000, peaked in 1910 at $11,210,000, and plummeted to $6,410,000 in 1912. Then slowly, but ominously, production continued its downward decline. Nineteen eighteen was the last year the Goldfield surpassed $1,000,000 in production. The entire wealth of the Goldfield district to 1960 was $89,700,000, ninety-four percent of which occurred during the boom years of 1904–1919.[4]

In the world of mining Goldfield was a Roman candle, making a spectacular ascent, a brilliant explosion and a muffled descent. The prospectors, promoters, and investors who flocked by the thousands to Goldfield never forgot the experience. Fresh from MIT, almost sixty years after he first saw Goldfield, the mining engineer, Henry C. Morris, described the experience with all of the vividness and color of yesterday.

Morris sat in the roccoco Warne lounge of the Cosmos Club (formerly the home of the diplomat Sumner Welles), remembering the days of his youth. As he recalled the romance of Goldfield, he sighed, and made a comment that has become almost a cliché among "Golfielders." "You know, don't you?" he queried his visitor, "There has never been another Goldfield, nor will there ever be another one!" Then Morris added, "everyone came to Goldfield—at least briefly."[5] Goldfield, like most mining camps, was discovered accidently by two wandering prospectors, Henry Stimler and William Marsh, on 4 December 1902.

In common with many discoverers throughout mining history, Stimler and Marsh, as far as Goldfield was concerned, soon faded into the past. Their place was quickly taken by other prospectors, entrepreneurs, and investors. By the winter of 1905, over one hundred mining companies appeared in Goldfield.[6] Consolidation came with incredible speed, particularly with the activities of banker George Nixon and gambler, financier and politico George Wingfield, who as a partnership gobbled up mine company after mine company. First they merged their assets into Goldfield Consolidated Mines; then later on 1 January 1907, they acquired control of the Goldfield Mining Company.

Such was the magnetic attraction of Goldfield, that investors from all over the U. S. soon were swarming to Central Nevada. The park bench statesman and Wall Street guru, Bernard Baruch took a flyer in return for a loan of $1,000,000 to Nixon and Wingfield. The steel magnate of Pittsburgh, Charles Schwab, invested heavily, if not always wisely.

The startlingly rapid transformation of Goldfield from prospectors to entrepreneurs typified the developmental pattern of many mining camps around the world. Except for the Nixon Wingfield partnership, Goldfield never evolved into the capitalistic state common with many mining areas.

While Goldfield never metamorphosed into the last phase of industrial maturity, in many ways it extended the competitive entrepreneurship of the individual miner by promoting the leasing system. With the same legal structure as a mining company, a leasing company's sole asset was the right to operate a mine for a specified time period, commonly six months, with a royalty of fifteen to twenty-five percent of the gross production. With the precipitous fall in production and the corresponding reduction in capital requirements, the leasing system in Goldfield faded. While it prospered, the leasing system nourished the bonanza that was Goldfield.

While the lessor, with wild abandonment spread the tales of wealth that made the legend, life in Goldfield was far less glamorous. One of the many strengths of Zanjani's narrative is her emphasis on Goldfield society, a story that consumes two-thirds of her book. New West historians will be especially pleased to perceive her emphasis on race, class, and gender.

In many ways Goldfield social conditions mirrored mining camps *en genre*, with its uncertain and fluctuating status, absence of a group framework and economic reversals. With the exception of the black community, which was tolerated, Goldfield had an invisible (or sometimes all too visible) "whites only" sign. An Oriental exclusion act was not only adopted, but strictly enforced: orientals were simply run out of town. Domestic violence was rampant, prostitution flourished, and high grading (except by George Wingfield, who viewed the practice as a personal affront) was tolerated. Local government reflected the looseness of society's texture. Divorce, desertion, and suicide undermined the tenuous status of women and promoted an erosion of the family. Though the position of women might be more liberated than the female gender in general, they were also less secure. Intriguingly enough, what social bonding there was focused on state bonding, analogous to contemporary retirement communities in Florida or Arizona, which enjoy "Iowa" or "Ohio" picnics. In Goldfield, Coloradans bonded with Coloradans, Californians with Californians and so forth.

Labor, initially mollified by high wages, remained harmonious, at least on the surface. The melodic air turned revolutionary with the arrival of Vincent St. John and the Industrial Workers of the World. The charismatic St. John quickly stipulated his agenda, the organization of *one* union, the launching of a general strike, the workers control of production and the workers "pie-in-the-sky" commonwealth. St. John's influence crested on 20 January 1907, with a parade to commemorate the St. Petersburg massacre and to support the union leaders on trial in Idaho. A combination of conservative opposition within the union, the hostility of corporations and George Wingfield's "compromise be damned" policy doomed the labor protest. With St. John's rapid retreat to Chicago, for all intents and purposes, union activity ceased—though the heritage of socialism remained behind and actually thrived. In his history of Goldfield, Hugh Shamberger contends that labor strife had little impact on the growth of Goldfield.[7] Zanjani differs, she cites production decline and an increase in violence and vigilantism, as corrosive of union activity.

What was the legacy of Goldfield? In many ways Goldfield was analogous to mining booms the west over, with its hordes of young men, rapidly constructed buildings, social unrest, and democratically fractured society. Yet as Zanjani so perceptively points out, Goldfield, in spite of its enormous affluence had none of the permanence, or one might say, "extended life" of other mining communities. After its initial boom era Goldfield could discover little excuse for its continued existence. When the mines closed, no merchant class gave it stability as a commercial center, no low grade deposits underwrote its future in mining. In time the wind and the sand simply had their way with Goldfield's corpse.

Yet Goldfield was different. Aside from the quick wealth, everything about Goldfield appeared magnified. The tone of the camp was played out in a strident, loud, minor key. Violence and rapaciousness pervaded the streets of Goldfield; stimulated by the mania for speculative mining stocks, the mining entrepreneur was a gambler personified. Few of Goldfield's mining elite took the path of a maturing frontier capitalist with economic interests beyond the mine shafts. Further, Goldfield's economic impact on its region was limited and brief.

In one realm, politics, Zanjani agrees with Russell Elliott, the central Nevada mining boom permanently realigned Nevada's voters.[8] The influx of miners transformed Republican dominance into Democratic pluralities. Nor was politics the only inheritance of the Goldfield's mining ethos, Zanjani reminds us that the free wheeling adventurism, the triumph of individualism over communitarianism, and the succumbing of moral values to materialism all created a world not of social restraint, but of license. Perhaps in retrospect Goldfield's greatest good fortune came when Sally Zanjani, amalgamating a delightful style, with intensive research and imagination preserved its history.

With the name of Goldfield flashing then dimming into history, the Hecla Mining Company a thousand miles to the north was slowly evolving into a microcosm of twentieth-century mining. In counterpoint to Zanjani, John Fahey announces at the outset his frame of reference, "This book is about people," writes the author, ". . .I focus on presidents and managers and use Hecla as metonym for its people."[9] Readers are immediately warned that not only will the history of Hecla be an analysis of industrial capitalism, but it will be an entrepreneurial saga. Anyone surveying past centuries of American economic history soon realizes that continuous change has been endemic to that past. Confronted with a technological revolution, Americans have commonly and pragmatically conquered technological challenges either via the market place, government subsidy, or more often a merging of public and private enterprise.

Joseph Schumpeter, whose creativity divined and defined the entrepreneur, insisted that entrepreneurs were not passive, but active agents of economic change. A bobbing, weaving species, Schumpeter's entrepreneurs were in perpetual search of the most opportune moment to exploit the most profitable market advantage. Peter Drucker, though finding much of relevance in Schumpeter, warns that entrepreneurship is hazardous, ". . . because so few of the so called entrepreneurs know what they are doing."[10]

The question then becomes how do Hecla's administrators measure up in the world of entrepreneurship? The query is purified by the criteria on which they are judged. Here we receive help from Plato Malozemoff, one of the most charming and brilliant entrepreneurs of twentieth century mining. The majority of Malozemoff's career was spent at the Newmont Mining Company, where he was successively staff engineer, president and chairman from 1945 to 1985. Interviewed by the Regional Oral History Office of the Bancroft Library in 1987 and again in 1988, Malozemoff outlined his prescription for a successful mining organization. He enumerated five factors that had guided his entrepreneurial career: First, a strong exploration program; Malozemoff noted that this did not necessarily mean a sizeable budget. It did require, however, "a selective exploration effort by an experienced explorationists who have extrasensory perceptions."[11] Above all, for an exploration program to be a success the personal commitment of top management was necessary; Second, a timely acquisition policy, Malozemoff conceded that "meaningful acquisitions are often the result of serendipity." Further, seizing the moment required, "a special blend of entrepreneurship with the ability to appraise a multiplicity of risks, technical business and financial knowledge, judgment, controlled imagination, and a knack for the right timing."[12] Third, Malozemoff emphasized that in both exploration and acquisition, preferences should be given to projects with a projected long life. He observed that it required as much judgement and effort to run a small mine as it did a large one.[13] What was most important was that whatever projects were selected they, " . . . serve as building blocks for a corporate edifice that give a sense of assured continuity."[14] Diversification was the fourth goal of Malozemoff's register. Due to the vagaries of the market, dependence on one metal was frequently fatal. While diversification was essential to the economic health of a mining company, the problem often was that top management was in "too great of a hurry" to make a "meaningful acquisition."

Malozemoff's admitted that his final criterion for a successful mining company was the most elusive of all. Specifically, the goal of mining entrepreneurship should be the attraction and retention of quality top and middle management. Morale was the tricky factor. Malozemoff defined morale as "mutual pride in the company, non-repetitive assignments, accessibility of top management to subordinates, intelligent stubbornness, keeping an open mind, introspection and timing of a decision."[15] Hecla, because of its moderate size, had less problem implementing Malozemoff's precept five than did larger companies.

The Milwaukee, Youngstown, and Chicago investors who organized the Hecla Mining Company on October 14, 1891 gave little thought to entrepreneurial theory or managerial philosophy. Their primary mission focused on attracting and retaining the capital flow from investors to mines. Unlike the Goldfield district, the mines of Coeur d'Alenes never resorted to mineral leasing as a means of amassing capital, a task that became increasingly difficult with the Coeur d'Alene labor wars of the 1890s. Twice, in the summer of 1891 and again in the Spring of 1901, the Coeur d'Alene region fell under martial law. Nevertheless, investor interest was aroused by the booming lead market for paint manufacture, sheeting for the chemical industry and sheathing for cables. Economic stimulus aside, the Coeur d'Alene region in the early mining years was blessed by competent managers.

Though hardly a prototype of a Schumpeter entrepreneur, James F. McCarthy, trained at Cooper Union, became the manager of the Hecla in 1902. Along with Stanly Easton of Bunker Hill Mining Company and Harry Day of the Hercules Mining Company, McCarthy would be a major force in the direction of the Coeur d'Alenes mining for the next four decades.

McCarthy and his colleagues practiced conservative, careful management. Though McCarthy evaded (or perhaps never had the opportunity) of following Malezomoff's program of acquisition and exploration, Hecla's existence was prolonged by the discovery of a major ore body east of the original Hecla shoot in 1912. With the advent of the First World War and rising lead prices, the Coeur d'Alene district achieved its greatest prosperity in thirty years. The market and restricting of smelter costs became McCarthy's managerial preoccupations.

If Schumpeter had been looking for an entrepreneurial spark in the Hecla managerial strata, it came with the introduction of Fred Searls of Newmont (although Fahey seems circumspect about Searls' role in Hecla). For three decades, beginning in 1922, Fred Searls, one of the great mining engineer entrepreneurs of the twentieth century, provided both the vitality and the entreprenurial direction of the Hecla, first as consultant, and later as a member of the Board. When more capital was required, when an assessment of a prospect was needed, when a partner appeared advantageous, Fred Searls and Newmont were there.[16]

Up until Fred Searls became associated with Hecla, silver had away been regarded as secondary to lead in the Coeur d'Alenes. However, in the mid-twenties, the discovery of several silver mines altered the entire region's perception. Searls urged Newmont to join Hecla in the development of the Polaris silver mine. Then Searls enticed Hecla to invest in the Resurrection mine in Leadville, which produced a modest profit for both partners.[17]

James McCarthy died on March 6, 1940, and was succeeded by his sixty-year-old lieutenant, Lewis Hanley, ". . .largely because Fred Searls wanted him to. . ."[18] Fahey informs us that if Hanley and McCarthy ever disagreed, no one knew of it. So the Hanley aegis represented an eleven-year extension of McCarthy's conservative management. Hanley retired in May, 1951 be succeeded as President by Lester Randall. The comptroller of Hecla, Randall's selection represented a political compromise between two contending vice-presidents.

The immediate challenge confronting Randall was enumerated as number three on Malozemoff's list of factors to ensure a successful mining operation—finding a long-life mine. Randall's first entrepreneurial opportunity came not with a long-life prospect, but with a short-lived one, an enormously profitable uranium mine thirty-five miles south of Moab. Though initially skeptical of the uranium fever of the Colorado Plateau, Randall decided that Hecla simply could not afford to scorn an area that had captured the imagination of the entire industry. The Radon mine, Hecla's investment, was only 2,150 feet long and five feet thick. But in it first year of production it paid back all its developmental costs. Anyone scanning the balance sheet of the Radon could easily discern the rationale for the lucrative returns. Hecla estimated that it cost ten dollars a ton to extract the uranium from Radon, which was then sold to a captive market, the U. S. Government, for seventy dollars a ton! Obviously only the greatest mismanagement could have prevented a profit.

While the Radon returns were dramatically being charted on Hecla's dividend graph, Randall made a decision which fulfilled his dream of a long-term mine for Hecla. He purchased the Lucky Friday mine, just a mile east of Mullan and only seven miles (as the crow flies) south of the old Hecla mine.

Again the fine hand of Fred Searls shadowed Randall's move. After touring Lucky Friday, Searls told his Hecla guides, "You tell your board that Newmont will take every share of Lucky Friday that Hecla doesn't buy. You go tell your directors that."[19]

Lucky Friday indeed proved providential for Hecla. Not only did Lucky Friday underwrite the Hecla's long termed future, but it also became a factor on Hecla's balance sheet by producing substantial dividends shortly after it was acquired. Not all of Randall's investments were so propitious as Radon and Lucky Friday. A ten million dollar partnership investment (which Searls' successor at Newmont, Plato Malozemoff, warned Hecla against),[20] turned into disaster when Newmont wrote off the mine after a precipitous drop in copper prices.

The manager of mines for Hecla, W. H. Love, succeeded Randall as President in 1966. Committed to maintaining Randall's momentum, Love emphasized the first plank of the Malozemoff entrepreneurial platform: namely exploration. His first major move proved to be calamitous, entrepreneurially or financially speaking. The Lakeshore, an enormous copper deposit on the Papago Indian reservation south of Tucson, had fascinated the mining crowd for generations. El Paso Natural Gas Company, through a series of deals, ended up owning Lakeshore in 1967.

Immediately, El Paso began hunting for an operating partner, selecting Hecla. For Love, "Lakeshore beamed as a lodestar," presenting Hecla, at one fell swoop, an opportunity to extend its reserves indefinitely, giving the company freedom from its dependence on silver and lead and finally tripling its assets. As additional enticement, Love could point out to his directors that at 1968 copper prices, Lakeshore's estimated worth was $3.7 billion. Schumpeter's entrepreneur might have been intrigued with such a prospect. Malozemoff might have settled back in his chair and observed that it appeared to him an entrepreneurial case of the minnow trying to swallow the whale.

Hecla initiated the development of Lakeshore in 1971; five years later the mine was in commercial production—no small feat. Then copper prices fell to their lowest mark in years. Every time Hecla won the struggle to reduce costs, the copper market fell again. Finally, in the autumn of 1977, after an investment of over two hundred million, Hecla shut down Lakeshore.

For all intents and purposes Lakeshore ended Love's tenure at Hecla (though Love's coup de grace, as Fahey emphasizes, was self inflicted). As Love was exiting the Hecla, the silver market began an upsurge, which ended in the stratosphere with the Hunt brothers manipulation to corner the silver market. All of a sudden the Coeur d'Alenes were awash in profits.

A metallurgist, W. H. Griffith succeeded Love as President in 1979. His goals represented a reordering of the objectives of his two predecessors, but they remained within the Malozemof's schema. Griffith thought his entrepreneurial vision should include acquisition, with emphasis on the Coeur d"Alenes, followed by joint ventures and, last, exploration. Nine years later, Griffith could look back on a financially robust Hecla with the knowledge that his entrepreneurial leadership had been a success.

These two works, *Goldfield* and *Hecla*, serve as book ends to twentieth–century mining history. Everything about Goldfield was painted in the exaggerated hues of a nineteenth—century mining camp. Speculation, not entrepreneurship, dominated the Goldfield scene. Hecla, almost from the first shaft, depended on capital intensive investment and entrepreneurial decision-making. Hecla, in sum, was the twentieth century mining world in miniature.

What strikes this reviewer now and has in the past, is how much remains to be done in the history of mining. When the reader puts down these two volumes, he or she does so with the realization that not only Clark Spence's agenda of a decade ago remain, but both Fahey and Zanjani have provided models for an examination of a plethora of districts of the mining West.

NOTES

1. Clark C. Spence, "Western Mining", in *Historians and the American West*, edited by Michael P. Malone (Lincoln: University of Nebraska Press, 1983), 96-122.

2. Just a sampling of the outpouring over the past decade of mining historical literature includes: Raye C. Ringholz, *Uranium Frenzy: Boom and Bust on the Colorado Plateau* (New York: W.W. Norton, 1989), the evolution of the uranium industry on the Colorado Plateau; Jonathan Helmerich, *Gathering Rare Ores: The Diplomacy of Uranium Acquisition, 1943-1954* (Princeton, New Jersey: Princeton University Press, 1986), the diplomacy, stupidity, and economics in the international uranium world; Clark C. Spence, *The Conrey Placer Mininq Company: A Pioneer God-Dredging Enterprise in Montana, 1897-1922* (Helena: Montana State Historical Society Press, 1989), a "classic" gold dredging operation in Montana with the famed mining engineer, Hennen Jennings, by the Dean of mining historians; James Whiteside, *Regulating Danger: The Struggle for Mine Safety in the Rocky Mountain Coal Industry* (Lincoln: University of Nebraska Press, 1990), one of the few sources to treat the issue of mine safety; John D. Leshy, *The Mining Law: A Study in Perpetual Motion* (Washington, D.C.: Resources for the Future, 1987), one is motivated to say that Leshy's work, a treatise of twentieth century mining law, is an awesome accomplishment; Phyllis B. Dodge, *Tales of the Phelps-Dodge Family* (New York: New York Historical Society, 1987), a delightful tracking of five generations of the family which created the Phelps, Dodge Corporation; Stanley Dempsey and James E. Fell,

Jr., *Mining the Summit: Colorado's Ten Mile District, 1860-1960* (Norman: University of Oklahoma Press, 1986), as the authors in their well researched investigation point out, the Ten Mile District represented "a microcosm of life in the mining west," ; Malcolm J. Rohrbough, *Aspen, The History of a Silver Mining Town, 1879-1893* (New York: Oxford University Press, 1986) urban and economic history at its best; Duane A. Smith, *Mining America: The Industry and the Environment, 1800-1980* (Lawrence: University Press of Kansas, 1987), an insightful history of the interaction of mining and the environment, a subject which is and will evermore be a fatal attraction; Carlos A. Schwantes, ed., *Bisbee: Urban Outpost on the Frontier* (Tucson: University of Arizona Press, 1992), a delightful and sophisticated series of essays plus an outstanding iconographic collection of storied Bisbee; J. Michael Canty and Michael N. Greeley, eds., *History of Mining in Arizona*, Vols. I and II (Tucson: Mining Club of the Southwest Foundation, American Institute of Mining Engineers Tucson Section and Southwestern Minerals Exploration Association, 1987, 1991), the title describes the contents, but does not reveal the extensive photographic collection; and A. Dudley Gardner and Verla R. Flores, *Forgotten Frontier: A History of Wyoming Coal Mining* (Boulder, Colorado: Westview Press, 1989), a history of the Wyoming coal industry and one of the few analyses of the coal industry in the West.

3. Sally Zanjani, *Goldfield: The Last Gold Rush on the Western Frontier* (Athens: Swallow/Ohio University Press, 1992), 30.

4. Ibid., 68-69.

5. Interview with Henry C. Morris, Washington, D. C., October 14, 1963.

6. Henry Curtis Morris, *The Mining West at the Turn of the Century* (Washington, D. C.: Privately Printed, 1962).

7. Hugh Shamberger, *Goldfield* (Carson City: Nevada Historical Press, 1982), 219-228; Michael Crommelin and Andrew R. Thompson, eds., *Mineral Leasing as an Instrument of Public Policy* (Vancouver: University of British Columbia Press, 1977).

8. Russell Elliott, *Nevada's 20th Century Mining Boom* (Reno: University of Nevada Press, 1966).

9. John Fahey, *Hecla: A Century of Western Mining* (Seattle: University of Washington Press, 1990), ix.

10. Peter Drucker, *Innovation and Entrepreneurship: Practice and Principles* (New York: Harper & Row, 1985), 29.

11. Plato Malozemoff, "A Life in Mining: Siberia to Chairman of Newmont Mining Corporation, 1909-1985," (Berkeley: The Regional Oral History Office, the Bancroft Library, University of California, 1990), 269.

12. Malozemoff, "A Life in Mining", 269.

13. Interview with Plato Malozemoff, New York, December 6, 1988.

14. Malozemoff, "A Life in Mining", 270.

15. Ibid.

16. Interview with Fred Searls, New York, December 11, 1967.

17. Robert H. Ramsey, *Men and Mines of Newmont: A Fifty-Year History* (New York: Octagon Books, 1973), 116-118.

18. Fahey, *Hecla*, 102.

19. Ibid., 139.

20. Malozemoff, "A Life in Mining," 244.