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ROCKY BAR MINES

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Anxious to ascertain just how large a region the Boise mines would cover, and always eager to find something even better than the rich ground already known in Boise Basin an impatient group of hardy prospectors set out to explore the country farther up the river long before the higher ridges and streams were free from snow. Rumors of rich placer possibilities at South Boise reached the Powder River mines of Auburn, Oregon, by April 1863, and in less than two months, by May 7, the placers had been traced up Feather River to some still more promising quartz leads in Bear Creek. Word of the new South Boise lodes, backed up with some "very rich" specimens, set off a stampede of some fifteen hundred Boise Basin miners on May 20.

After a hard trip over rough country to the new Eldorado, most of the fifteen hundred rushed right back again. Although they had found high-yield placers on Red Warrior Creek, where more than one hundred claims were taken up in May, and some good ground on Bear Creek near the quartz outcrops, the new placers were not nearly extensive enough to hold the horde that had joined the rush. Furthermore, the promising quartz prospects could not be developed for a season or two at best. The better Red Warrior claims were good for \$20 to \$25 a day in May. A few sluices actually in operation by the middle of June ranged from \$16 to \$60 per day per man. About one hundred miners were left to work there after the initial excitement had subsided. Those not carried away with the quartz mania were hard at it getting their placers ready for production.

The enthusiastic promotion of the new gold and silver lodes at South Boise started early. The Elmore, thought from the first to be the richest, had a notable publicist in H. T. P. Comstock, who sought to enhance his interest in the property by pronouncing it to be fully as rich as the lode that had been named for him in Nevada. Rich outcrops lent support to Comstock's extravagant prophesy, and when arastra production commenced late that summer. South Boise quartz promoters had some high yields to talk about. Comstock's Elmore turned out seven tons at \$347 a ton, and another property did still better with a total of \$1,480 from only four tons of ore. Shares in the Ophir then sold at \$25 a foot, whereas the Idaho, the original lode discovery, was valued highly enough to be "not for sale at any price." South Boise miners by that time looked forward with confidence to a rush of five to eight thousand newcomers in the spring of 1864, a misfortune from which the district happily was spared.

Placer mining accounted for by far the greatest part of South Boise gold produced in 1863. Before the season ended, several localities had contributed significantly to the region's yield. Besides the early activity of Red Warrior, Happy Camp--located on Elk

Creek below the mouth of Bear Creek--was the scene of considerable effort during the summer. By fall thirty-five companies, ranging from one to five miners each, were hard at work, averaging \$12 to \$25 per man per day in Happy Camp alone. Some additional placering was in progress in Blakes Gulch, as well as on the lower Feather River in the area of the original South Boise discoveries that spring, on parts of Bear Creek which was regarded as rich at the time of original discovery, and perhaps to a limited extent in Hardscrabble Gulch on Elk Creek. Altogether, the South Boise mines had a population of 560 when the 1863 census was taken in September. South Boise was already as large as Pierce and Florence, and only slightly smaller than Warren and Silver City but larger than Elk City, Newsome, and the Salmon River camps. The one region which none of these remotely compared with in size and population was Boise Basin.

Surface prospecting of the South Boise mining region was adequate enough in the first season to disclose most of the better known mines, including the later big producers. Aside from the major properties near the Elmore, the Ophir on Elk Creek, the Bonaparte on Cayuse Creek, and a number of leads at Wide West Gulch on Red Warrior Creek had been discovered.

But the geologic structure of the Rocky Bar Basin was understood quite imperfectly at first. A confusing system of parallel veins, faulting transversely to the left, gave the early prospectors the notion that the mines ran generally north and south, and claims were taken up accordingly. When further examination disclosed that the claims ought to have run more like east and west, major adjustments were required.

By the fall of 1863, a total of "some 200 well-defined lodes" were thought to have been identified in the district. But values of these "well-defined lodes" at depth remained undetermined at the beginning of 1864. Development shafts had not been sunk by more than fifteen to twenty feet, and no one at that time could distinguish rich surface concentrations from veins that would continue to be productive when serious mining got under way. On top of that, arguments developed over the identity of new lodes. Claim disputes often arose when alleged discoveries might have been traceable to veins already taken up. The location of the Confederate Star on February 9, 1864, on a vein and claim thought by G. E. Settle to be the one he had found May 9, 1863, eventually led to a lawsuit won by the Confederate Star people. A number of litigations such as this soon plagued the district.

Complaints naturally were expressed against the indiscriminate promotion of surface pockets that looked for a time as if they might be rich ledges, of spurs of veins already included in known claims, of barren veins whose rich assays came from other mines, and even of known rich ledges. A cautious reporter protested on February 22, 1864, that all too many of the good lodes were located and sold more than once, and

that not one in ten of the ledges in the Recorder's books .
 . . have yet been prospected enough to ascertain whether
 they are ledges at all, much less whether they contain gold.

Hundreds of claims on all these ledges--both real and
 bogus--have been located and recorded, for which the

claimants have not even troubled themselves to look: these are the cheap interests sold in rich ledges and new discoveries.

Even Comstock, whose arastra continued to grind out about \$270 a ton from the Elmore, had to admit that his new lode, while rich, was "spotted" in its values. But interests in the Elmore were still valued at \$50 a foot, and the future seemed bright.

The difficulty in transporting equipment and supplies to the remote South Boise mines retarded development of the district severely. In the summer of 1864, Julius Newburg's South Boise Wagon Road Company began constructing a toll road to Rocky Bar. While the road was being built, the processing of high-grade quartz in primitive arasstras expanded greatly. Arasstras were made inexpensively from local materials and depended upon horse or water power, both of which were readily available in the region. By the end of the summer of 1864, the number of arasstras had grown from ten to eighty, and the larger ones were capable of milling 1 to 1 ½ tons daily. With values ranging from \$75 to \$300 a ton in 1864, something like \$130,000 to \$160,000 came from the South Boise quartz mines that season.

High-grade ore had to be sorted out laboriously to supply the arasstras, and recovery left much to be desired. The season's arastra production from the Elmore (the major South Boise lode, but not quite the main producer in 1864), from which only 100 tons were milled in arasstras in 1864, was \$30,000 instead of the \$50,000 that Dr. S. B. Farnham agent for the Idaho Company, had estimated the ore to contain.

H. T. P. Comstock was disturbed to recover \$10 to the pan (an extremely high rate considering that a few cents to a pan would set off a gold rush) from tailings taken 100 feet below his arastra. The arastra process was so wasteful that operators were better off to ship some of the best ore out for testing and milling. Wilson Waddingham sent ¾ ton of South Boise Comstock ore all the way to San Francisco where \$600 was recovered from the lot showing that he had at least \$800-a-ton ore. He also obtained assays as high as \$7,112 on the same South Boise Comstock, \$5,589 on the Confederate Star, and \$7,434 on the Elmore. These came from extremely high grade specimens that were characteristic of the district but not present in anything remotely like commercial quantities.

The completion of Newburg's road to Rocky Bar on September 5, 1864, was an occasion for great rejoicing. Except for a steam sawmill (rated at fifteen horsepower and capable of turning out 4,500 board feet a day in July) that Cartee and Gates had packed into Rocky Bar in the spring of 1864, heavy equipment had waited for the road to be completed. By the time the road was finished, Cartee and Gates had a five-stamp custom mill set up near Rocky Bar. This small mill could handle five tons a day, compared with 1 or 1 ½ tons for a large arastra. Crushing 150 tons of \$100 Elmore ore the first thing that fall, Cartee and Gates' mill suddenly increased the total production of the Elmore that season to \$45,000.

Six more stamp mills were being brought in or were being erected during the fall of 1864. The most substantial of these, the twelve-stamp mill that the Idaho Company had freighted from St. Joseph, April 20, 1864, across the plains at a transportation cost of 30¢ a pound, or \$8,400, reached Rocky Bar in November. Although complaints were

already voiced against stock market manipulation on such notable properties as the Elmore, where the old Washoe "freezeout game" of letting a tunnel cave in to discourage stockholders so that the management could increase its interests at small expense, great profits were expected from the district as soon as stamp milling could get under way. After all, men had been making \$20 a day just hand mortaring samples while prospecting the Ophir. Once a fast, efficient stamp recovery process could be installed, the mines were expected to prove their worth brilliantly.

To insure that the stamp milling of South Boise gold and silver ores would be efficient, Wilson Waddingham and J. W. McBride took advantage of Newburg's road to haul another seven tons of ore from various mines at Rocky Bar out to Portland for testing. When the ore arrived there on November 27, they were prepared to send some of their large samples all the way to Swansea, Wales, if necessary to determine the best process for gold and silver recovery. Meanwhile, about half of the six hundred men who had been in South Boise that fall were ready to spend the winter preparing for a big season of stamp milling the next spring.

Except for erecting the buildings and doing the other work required for installing stamp mills, the South Boise miners left their properties idle. Development work to block out ore was not regarded as necessary then. Quartz miners simply worked down from the outcrops of the veins and hoped that ore sufficient to keep their mills busy would be available. Because arastras crushed ore slowly so that miners had little trouble in keeping sufficient ore supplies on hand, this process did not induce anyone to get far enough below the rich outcrops to notice whether the veins amounted to anything at depth. Promoters in at least one case "salted and sold a blank ledge" to one South Boise stamp-mill company, and not until the mill had almost reached the district did anyone notice the entire lack of ore. Great care was exercised to make certain that a milling and recovery process proper for South Boise ores was used. If anything like the same care had been devoted to making sure that each of the stamp mills had sufficient ore on hand to work, large-scale production might have been possible much earlier.

With arastra production suspended in 1865, the quartz yield that summer came from two stamp mills that had been brought to the district late in 1864. Cartee and Gates found ready customers even though they charged \$25 a ton, and the Idaho Company's twelve-stamp mill also ran all summer, turning out \$800 to \$1,000 daily. The Pittsburgh and Idaho Gold and Silver Mining Company thought it profitable to invest \$140,000 in purchasing the Idaho mine and mill. Wilson Waddingham, whose company was capitalized at \$600,000, was busy investing recklessly in other mines so to consolidate enough property to justify a large stamp mill. With a paid up capital exceeding \$400,000 in New York investment, Waddingham's New York Gold and Silver Mining Company did not face the problem of having to manage on insufficient resources. (Less adequately funded companies had to try to operate from current proceeds, usually with disastrous results.) Waddingham arranged to bring in an eighty-horsepower, forty-stamp mill at a cost of \$100,000 or more. Freight costs from the Oregon Steam Navigation Company's dock at Wallula overland to Rocky Bar ran to \$40,000 alone.

To haul the mill machinery, Waddingham required forty-five "mammoth

wagons." This great mill, intended for the Elmore, had a capacity for handling seventy-five to one hundred tons of ore a day. While it was on the way to Rocky Bar--a trip requiring all summer and fall--Waddingham purchased for \$27,500 in gold James O'Neal's ten-stamp mill that was capable of processing sixteen tons of ore a day. Used on the Confederate Star, which Waddingham acquired for \$15,000, this smaller mill turned out \$60,000 by March 1866, more than meeting expectations and justifying its cost.

Some of the other stamp-mill companies were less fortunate, however. Not anticipating the time and difficulty that would go into bringing expensive stamp mills from San Francisco or Chicago to this remote district, and not capitalized sufficiently to spend a year or two getting a mine ready to produce, a number of companies began to get into serious financial trouble. Labor costs were high--\$7 a day per man, compared with \$6 in the less remote Owyhee mines and with \$3.50 on the Comstock; in those years of hand drilling, labor costs amounted to the greatest part of the expense of mining, once a mill was procured. Adversities arising from the serious difficulties in getting a quartz mill into production began to plague South Boise as early as the summer of 1865. S. B. Farnham's New York and Idaho ten-stamp mill had barely begun to crush rock on August 13 before insufficient capital reserves and high operating costs were causing trouble. By fall, unpaid teamsters had imprisoned Farnham, and his crew had barricaded the mill pending back wage payments.

An illuminating example of inept mine administration by another New York company active in South Boise was to be found in the misadventures of the Victor concern, whose Red Warrior mill commenced operation shortly after Farnham's failure. The Victor operation may be traced back to the summer of 1863 when Thomas J. Gaffney discovered some Red Warrior quartz lodes. That winter, Gaffney had gone to San Francisco to obtain capital for developing his discovery, and there he met Francis O. Nelson, whose experience was primarily as a ship's captain. Nelson was also one of the very earliest stamp-mill operators in California and was highly regarded by the old Californians. Together they organized the Victor Gold and Silver Mining Company of California, to which Gaffney deeded twelve hundred feet in five of his claims.

Gaffney returned to South Boise in April to manage the property, and Nelson set out for New York in July to raise more capital. Nelson promoted well, although he never had seen the properties which the Victor Company owned. On December 5, 1864, six incorporators, including Nelson, organized another Victor Gold and Silver Mining Company, this one of New York, capitalized at a million dollars. Nelson was appointed manager, January 16, on the assurance that he could bring in a mill and get it running on a self-sustaining basis for not more than a \$40,000 investment. He was not limited to \$40,000, however, and his actual expenses, including \$9,300 for a fifteen-stamp mill in San Francisco, amounted to \$36,500 before the mill finally began operations on August 28, 1865.

Cleanups, in which accumulated gold was retorted from mercury, were held every Sunday for sixteen weeks into that fall and winter. The first three did not amount to much, since granite and low-grade ore was used to get the mill into operating condition. After the mill began to produce, Nelson kept right on drawing upon the credit of his

Victor Company in Portland. Before that source of funds was finally cut off after October 28, he had used an additional \$16,000, presumably for operating expenses, which raised the company's capital investment in the venture to \$52,500.

For what the money was spent, aside from the \$9,300 for the stamp mill or what his production totaled, the company never managed to find out. Captain Nelson seems to have run the enterprise personally, entirely too much as he might have run a ship. He never sent in vouchers to the company to account for more than the cost of the mill at San Francisco, and whether he was drawing upon the company's credit for purposes other than the mine could not be ascertained. None of his employees knew how much was produced. Only the wildest guesses could be made from information that the company had gathered after sending another member from New York on October 7 to investigate. Pending a report, the directors decided on October 19 to bond the mine and mill for \$50,000 and to cut off any more credit to Nelson until his accounts were straightened out. Some of his employees, unable to collect payments on drafts that Nelson had made to them after the crackdown, learned that the company no longer was honoring checks. At last, on December 1, Nelson finally sent \$2,367 (out of one \$5,000 weekly cleanup) overland to New York as the initial return to the company on its investment. He seems to have been unable to continue milling very long. After he could no longer pay operating expenses out of company capital, the mill shut down on December 20, 1865. The reason given in 1866 for the long-continued shutdown was the need for parts which could not be obtained in the winter. That explanation may have been correct, although there was probably more to the story than that. Nelson's method of handling the product of the Victor mill seemed to have been about as skillful as his method of conducting the company's financial affairs.

Isaac Thompson, who worked in the mill while it was running, described the system in some detail in an affidavit. In it, Thompson refers to himself as the "deponent":

. . . the first three cleanings up were not of much account, because a good deal of granite, quartz &c. Was crushed merely for the purpose of wearing down and smoothing the machinery and batteries. That the fourth and fifth cleaning up was good and that the subsequent cleanings up were very inferior, but deponent is unable to state the precise amount of yield. That on one Sunday a cleaning up yielded a wash basin full holding about one gallon and a half and four pint bowls almost full of amalgam and that the weight of this amalgam so obtained must have been between seventy and eighty pounds; that another clean up yielded the same wash basin full and four sized tumblers full of amalgam and that the weight of this amalgam must have been from seventy to eighty pounds; that the deponent on one occasion saw in the bedroom of the house occupied by said Francis O. Nelson and family a wash pan about two-thirds full of amalgam containing by measure about eight quarts of amalgam. That deponent is unable to state what became of the proceeds of the different cleanings up or the precise amount of the yield of the same, as the said Francis O. Nelson kept all

his business to himself.

Nelson's associates in the Victor Company, being unable to find out anything from Nelson or to determine in any other way what the mill had produced, concluded after an extended investigation that the cleanups ought to have averaged \$4,000, and thus to have totaled \$64,000. In assuming such a high average, they were almost certainly overly optimistic. Nelson found some witnesses to allege that the ore generally was poor or worthless, and his witnesses may have been right. In any event, the mine had failed, and Nelson was removed as superintendent on March 16, 1866. Whether he had put company money into his own projects, or whether he had applied the Victor funds in developing an unprofitable mine, cannot be ascertained. If he was an honest superintendent--and most likely he was--he certainly showed his utter incompetence in handling the company's financial accounts. And if he was an authentic swindler, the very least he could have done would have been to supply his company associates with some false accounts. Some such method, at least, is how William M. Tweed, one of the six organizers of the Victor and vice-president of the company, would have handled it, if his accomplishments in defrauding in New York City through the machinations of the notorious Tweed ring are any index at all. But compared with the Tweed scandals (not yet revealed in 1866), Nelson's defalcation in the Victor case is entirely unworthy of mention.

Tweed and his New York Victor associates had been clever or slippery enough to arrange things so that by the end of October 1865, when they had bonded the company's property with a \$50,000 mortgage, their loss would be slight indeed. And after Nelson's one remittance was taken into account, they had salvaged \$52,367 out of the \$52,500 which Nelson had spent before they cut off his credit in Portland. So unless they lost from assuming some of Nelson's later obligations, in the end they were out only the cost of investigating Nelson's incompetence and the mine's failure. Later in 1866, the mortgage holders foreclosed, and the Victor mill and property were auctioned at sheriff's sale. Thus, the Victor creditors and the mortgage holder assumed the main losses in this whole operation.

Understandably, Rocky Bar merchants resented such a method of financing unsuccessful lode operations. A South Boise promoter warned of hazards to local suppliers who might advance credit to distant companies in a letter from New York, March 25, 1867:

The stockholders and directors of the N.Y. & Idaho and the Victor mining companies have resolved to worry out the creditors by protracted litigation. The members of these companies are men of wealth and can easily keep the suits in court for years. Judgement is not very swift or certain in New York, so I learn from attorneys here. From present appearances it seems as though the creditors have but a slim chance of contesting their suits through the courts of New York. A want of concert of action by the creditors in obtaining their judgments and prosecuting their claims has worked to their disadvantage. Let the mining communities of Idaho take warning and not trust these N.Y. companies for one dollar hereafter, for these New York rascals are worse

by far than our own, and they live a long distance from Idaho.

In happy contrast to Farnham's and Nelson's disasters, several more mills began production by the spring of 1866. By then, South Boise had more stamp mill capacity than any other Idaho district. Rasey Biven's Wide West property milled \$1,000 a day, and another company recovered \$5,000 in twelve days of February 1866. Wilson Waddingham did still better, with a \$7,200 run of \$82 ore in thirteen days, and by March, 1866, his Confederate Star, wisely keeping a stabilizing reserve of 150 tons, had ground out about \$60,000 in four months.

When Waddingham put his ten-stamp mill into operation, he learned that he really did not need his \$100,000 large forty-stamp mill at all.

His small mill could handle both the Elmore and the Confederate Star. Mining from the Elmore (the major Rocky Bar lode) proved difficult. As soon as any depth was attained on the lode, his steam power plant had to be used to pump water from Bear Creek out of the Elmore, rather than to run a sawmill, as was planned.

Twenty years went by before the Elmore could be developed profitably.

Meanwhile, Waddingham concealed his massive blunder. With a useless forty-stamp mill at Rocky Bar, he began to invest in the enormous Atlanta lode. Here his \$100,000 mill could be transported over a high ridge "at a trifling cost." That way, he managed to declare a 1 1/2-cent dividend on \$600,000 capitalization on December 1, 1865, and had a number of handsomely profitable (but relatively small) mill runs to report. With the best properties around Rocky Bar Waddingham was recognized as a respectable, legitimate operator. At a Rocky Bar testimonial dinner early in December, "in variety and style never before seen in the territory," Waddingham received a well-deserved tribute: "There is no doubt that to Waddingham's moral worth, strict business habits, and to his representations, the community of these regions are mainly indebted."

Waddingham himself spent the winter in New York with other South Boise agents of capital. But he found the mining market there badly depressed. New York investors had little way of distinguishing the legitimate mining companies in the West from the frauds. Because of failures, even with the serious companies such as Farnham's New York and Idaho, investors were becoming distrustful. Unfortunately for those reliable companies getting into production, the recent failures made investors fearful of putting up enough additional capital to meet the unexpected delays and higher cost involved in starting a mining operation. The series of failures of New York companies in South Boise continued after the announcement of the collapse of the Victor in May 1866.

A legacy of embarrassing debts, litigation, worthless stock, and adverse publicity afflicted the region with each failure. By June 2, 1866, more South Boise companies were in trouble, and even Wilson Waddingham's Confederate Star faced litigation for not paying dividends. Only two companies operated during the summer of 1866. Waddingham ran his mill through much of 1867, but he found it much more profitable to sell out his interest in the Elmore for \$50,000 and to withdraw from the region. The Pittsburgh Company tried to sink a deep shaft to develop the Elmore but failed to figure out how to pump

an abundance of water from Bear Creek out of the shaft; anything like large-scale development of the Elmore had to wait twenty-four years for British capital and more advanced technology.

Confidence in the future of the South Boise mines, as well as in the other Idaho quartz districts plagued by early stamp-milling disasters, survived undiminished by the setbacks to large-scale mining. No one doubted the richness of the mines, even of seemingly unproductive operations. That the mines had great potential was shown in the bitter, and sometimes violent, clashes over claim jumping or alleged claim jumping. Litigation between G. F. Settle's Idaho No. 2 and the Confederate Star had bedeviled the major quartz area around rocky Bar through 1866. No sooner was the case settled on September 29 by a jury in favor of the Confederate Star, than another contest arose when claim jumpers built Fort Emmett on the Idaho lode. The Emmett Company mined the fort with quicksilver flasks of balls and power, which were fused into the Emmett tunnel. Somehow the whole thing blew up on September 29, 1866. Fort Emmett was vacant at the time, and no one was injured when it was demolished. All of this tumult, though, revealed that the properties were not regarded as valueless.

Blame for the stamp-milling failures was usually put on the New York and other outside companies for mismanaging their enterprises and thereby casting aspersions on the integrity of the district. "Idaho has suffered many things from successive crops of knaves and fools who have dabbled in her mines; and the stockholders of the East have reaped a rich harvest of assessments and lawsuits in consequence of sending them here." That, at least, was the opinion of James S. Reynolds of the Idaho Statesman, September 10, 1867.

Naturally, there was more to the story than that. Many of the outside investors objected to having been beset by frauds and swindlers. And some of the other causes of difficulty, already indicated, were appreciated by them. Discussion of stamp-milling failures dwelt at the time around the South Boise disasters. Regardless of the explanations given for stamp-milling collapse, the conclusion was universally the same: the mines were good, and proper development would make them pay. In fairness, perhaps too much was expected of the mines initially, but in the end they did produce.

For many years after 1866 and 1867, unpretentious arastra operations and a few modest stamp-milling enterprises were about all that survived the failure of early, large-scale quartz mining in South Boise. The placers, likewise, seemed by 1867 to be mainly suitable for Chinese operations. A small, cooperative company on Red Warrior was able to work economically and profitably that year. The five-stamp mill at the Bonaparte ran with some success in 1867 and 1868. In 1869, Rocky Bar was described as "dull and looking rather dilapidated very much in need of repair." Many arasstras were still going, and in that respect, times seemed almost like the big days of 1864. But there was an important difference. Early arastra operations were regarded as preliminary to large-scale stamp milling; by 1869, such operations were regarded as a substitute for unsuccessful stamp milling. Exceptions to the stamp-milling failures were few. By superior management and by working better grade ore, John McNally was able to keep his Wide West mine and mill on Red Warrior in operation through 1869. By the end of the year, his was

the only stamp mill going.

Thus the failure of stamp milling in South Boise in 1866 and 1867 had proved to be a serious setback for the quartz mines there, though some compensations came with the failures. Expensive mills and equipment had been brought into the country and were available at rather low costs when auctioned at sheriffs' sales. In the lean years before railroad transportation, additional capital, and improved technology had brought big production to South Boise, some of these abandoned mills did much to tide over the mines which struggled along.

Not until 1886 could the district be developed satisfactorily. In the interval, much that was done was called gouging, whereby miners unable to develop their properties in full took out some of the higher grade ore, which if anything, set back the mine because of the way they went about their work. During those years systematic mining and adequate recovery processes were neglected in favor of getting out what could be handled easily. Although all kinds of efforts, along with gouging, were made during the two decades to get big quartz mining enterprises successfully under way, unquestionably the initial South Boise gold rush and excitement had ended by the summer of 1866.

Many small operators, returning to arastras after stamp milling had failed, managed to maintain a modest level of production around rocky Bar during the decade or more when gouging provided most of the mineral recovery. A revival of large-scale mining seemed possible after 1869, when the transcontinental railroad was completed across Nevada and Utah. The introduction of dynamite at this same time reduced the costs in hard rock drilling. Better hoists, engineers, and pumps became available with technological progress. John McNally's well-managed mine on Wide West Gulch brought a substantial increase in production in 1870. The next year a Pittsburgh company introduced superior hoisting and pumping devices, which made possible the development of the Elmore mine under Bear Creek. Rather than spend excessive sums buying out the interests of the many owners of linear feet along the Elmore vein (because they owned claim footage instead of stock in a company.) F. F. Oram invited anyone who held small segments to join his Pittsburgh Company in putting up development costs. After production got under way, these minor associates continued to participate in whatever profits--or losses--were realized. That way his pumping and hoisting service could handle the entire vein, rather than having several adjacent pumping plants operating on separate properties. A fifty-ton test run in 1872 yielded \$4,000 from selected high-grade ore. This system would have worked still better if the superintendent had not sneaked off with the proceeds, leaving his miners unpaid and his participating associates with no return on their investments.

The next year a new manager of the Elmore mine succeeded in milling another forty-five-ton test run worth \$5,000, after another pump was installed. This success led to considerable development in 1874. Trying to operate during the Panic of 1873 upon milling returns worked out poorly, both for the Pittsburgh Company and for Warren Hussey who employed the same system after taking over the Wide West from John McNally for \$22,000 in 1874. Hussey had no way to continue production when his mill broke down, and he could no longer pay his miners. Trouble with the Pittsburgh's hoist foundation and with its recovery equipment forced the company to shut down in 1875 after

sinking the Elmore shaft to a depth of 225 feet. Gouging failed to work effectively for either of these major South Boise producers. When they contrived to produce gold, they naturally had to start paying returns to outside investors or lessors at a time when they lacked capital sufficient for effective mine development. Superintendents, who were paid a percentage of their production, had more incentive to gouge out a small amount of high-grade ore rather than develop their properties for large-scale mining. Aside from some small arastra operations, little lode production could be accomplished until after 1880.

The construction of the Oregon Short Line across southern Idaho in 1882 and 1883 eventually brought prosperity to lode districts such as Rocky Bar and Silver City, which also had to shut down in 1875. While the railway was being built, True W. Rollins, who had purchased from 1876 to 1879 much of the Elmore and associated properties with New York capital, got equipped to develop his mine up to a depth of fifteen hundred feet by 1882. The settlement of fifteen years of Idaho and Vishnu litigation in 1880 ended a wasteful era of leasing and gouging. In 1883, these companies finally managed serious production with a \$100,000 yield. Then they got back into litigation, and Rollins (after investing \$150,000 in developing the Elmore) found that he could not operate after all.

Finally British capitalists acquired Rollins' property along with other important Rocky Bar mines aside from the Vishnu. By completing a fifty-stamp mill on November 16, 1886, they were equipped to operate the Elmore efficiently. Their initial year returned a profit of \$320,000 out of a \$460,000 yield. They continued a steady production with the best modern equipment until March 5, 1889. After a long, expensive effort at developing more ore, they gave up in May 1892, having sunk their shaft seven hundred feet to prove that Rocky Bar did not have good ore at depth.

By 1892, other companies had also realized most of their production. Limited mining continued for another half century. Yet most of Rocky Bar's mineral yield came in a short period after 1886, following more than two decades of effort to solve problems of mining.

If British investors had known to stop production in the spring of 1889, their mines would have shown an acceptable return. But as their enterprise finally worked out, they learned more than they really wanted to know about the lack of ore in the lower levels of the Elmore.

Production around rocky Bar did not end entirely in 1892. Although a disastrous fire on September 1 left over half of Rocky Bar's 200 to 300 residents homeless, reconstruction provided a new town that lasted for more than another generation. About thirty Elmore and Vishnu miners continued to explore those properties until 1896, when a firm from Scotland undertook a bedrock flume project on Bear Creek to recover amalgam lost from earlier stamp mills. Over \$40,000 (about half enough) was invested in this project, which included 2,200 feet of constructed flume and a steam derrick to remove boulders. Additional funds were needed to bring water from the upper part of Roaring River over a high ridge to Red Warrior. This overly ambitious project could not be completed, and Rocky Bar declined still more. Another scheme to start up a twenty-stamp Bonaparte mill failed to accomplish much in 1904. But Junction Bar placers were tested with

favorable results in 1906, and some unsuccessful efforts at Bonaparte (which claimed a previous \$600,000 production), at Elmore (with a \$3,000,000 record), and at Vishnu followed a year later. Finally, a stationary dredge at Feather River, powered by a 175-foot head of water from Cayuse Creek, was used from 1910 to 1915. Eventually a standard floating dredge commenced production there on August 21, 1922. By 1927, 33,000 ounces of gold came from that operation, which required an initial \$500,000 investment in equipment.

Low operating costs after 1929 encouraged a number of modest efforts to reopen Rocky Bar mines before wartime restrictions forced all gold mining companies to suspend work in 1942. Aside from an Ophir promotion that led to a \$17 sheriff's sale of that old property, which had only an \$80,000 production record from a vein that looked like a major lode, another forty years of inactivity followed, and Rocky Bar almost disappeared. Then in 1982 mining resumed right on the townsite of Rocky Bar. A large backhoe and loader operation, capable of handling a thousand yards a day, was employed to overcome a previously unmanageable problem of moving large boulders (for which Rocky Bar is named) so that the deep placers could be mined.

(This information has not been edited.)

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