

BONANZAS & BORRASCAS – A COMSTOCK MINING HISTORY
[C]

**Statistical Profile of Mining Industry:
Prospectors to Investors, Profile Database, Costs versus Profits**

From the beginning the Comstock served the interests of the less than scrupulous. As Smith pointed out the presence of so many “silver-mad investors”, mainly from San Francisco and California, encouraged cheating and lying. His description of how he believed the claiming of the Comstock took place is worth reviewing. He began with the weather. Early November winter storms dumped several feet of snow on the Comstock. Surface mining more or less came to a standstill while lode mining at shallow depths continued. Despite the snow the weather cleared enough to allow local prospectors to stake out more and more claims even without knowing what was under the snow. Californians, especially the incipient financial community of San Francisco, “were in a fever of excitement of the Washoe mines.” Many were willing to buy claims “without knowing anything about the location or the value, and the local prospectors were preparing to supply the demand.” According to Smith’s calculation more 16,000 claims were staked out. Many claims were worthless, but they were often sold, abandoned and then in the wake of further “good news”, even if fabricated, they were resurrected and sold again.¹

The opportunity for fraud did not end as the era of corporate mining replaced the prospecting free-for-all. Since a claim consisted of so many linear feet, it could be divided among one or more shares of stock per foot. Four companies - Ophir, Gould & Curry, Savage and Yellow Jacket – were incorporated between 1860 and 1863 and claimed a total of 4,600 feet along the Lode. Ophir claimed 1,400 feet and issued 16,000 shares or 12 shares per foot. The total value was more than \$5 million so that a share of stock had a nominal cost of \$300. Both Gould & Curry and Yellow Jacket claimed 1,200 feet each, and whereas Gould & Curry issue 4 shares per foot Yellow Jacket issued only 1 share per foot. The nominal value of the capital stock was more than \$2 million or \$500 per share for Gould & Curry and \$1 million or \$1,000 per share for Yellow Jacket. Savage with 800 feet issued 800 shares with a nominal value of \$2,000 per share.² The value of the stock was not so much based on the capacity of the mine as on what the stock might trade for in the marketplace. Since no marketplace *a priori* existed for these stocks, held initially by the incorporators, one had to be created. They created a marketplace by inviting outsiders – persons who were known to speculate in real estate and other assets as well as persons of means – to buy a portion of their shares. Creating this marketplace often entailed “fictitious trades”. Two stockholders might trade the same shares over and over again in order to move the price of the stock and to attract attention. In addition there were “sympathy trades”. As the prices of shares in one company began to move upward, the holders of stocks of other companies would begin to trade their

¹ Smith, *The Comstock Lode*, 20. Smith provided no source for the figure of 16,000, although in all probability it was drawn from studies of the hundreds of lawsuits that were contested in state and federal judiciary.

² Maureen Bloomquist Jung, “The Comstock and the California Mining Economy, 1848-1900: The Stock Market and the Modern Corporation” (PhD dissertation, University of California, Santa Barbara, 1988), 70.

shares in hopes of impressing investors that all stock prices were on the rise. It helped that the dollar value of Comstock production, to the extent that figures existed, jumped from several hundred thousand dollars in 1859 to \$12.5 million in 1863. A 10- to 15-fold increase made it fairly easy to entice legitimate investors as well as market speculators. While the aggregate value of gold and silver mined in the first several years came to nearly \$25 million, the value of mining stocks sold in San Francisco may have been several times that amount. In short, as promising as the Comstock was, brokers and speculators in San Francisco tried to enhance their own financial positions through opportunistic purchases and sales that had little in common with actual Comstock operations.³

It is hardly surprising, though, that mining stocks were a frequent source of financial chicanery. By its very nature mining, especially underground, was a perpetual roller coaster. While past output was measurable, it seldom was a reliable indicator of future output. The Comstock was filled with surprises, even for serious-minded scientists, who year by year gained more knowledge about the character of the Comstock but could not always predict where the next bonanza would occur nor how much longer the Comstock would continue to generate bonanzas. Conversely they were reluctant to be bearers of bad news and seldom said much about the *bonanza-borrasca* cycle that was becoming evident in the early years. One of the most important of the visiting scientists was Baron Ferdinand von Richthofen, a German geographer and geologist. His report in 1865-66 identified correctly many of the geological and chemical features of the Comstock but incorrectly posited that the richest veins would be located in the upper regions with a diminution in the quality and the concentration of the ore as the depths increased. In fact since the mines had only reached depths of several hundred feet he could not have known nor did he anticipate that the richest deposits were found between 1,000 and 1,500 feet beginning in the early 1870s.⁴ The work of the scientific community was important, and their findings could actually move markets. But more often than not the slightest shift up or down in production or just the rumor of a shift had a more pronounced impact that could cause prices of stocks to skyrocket or plummet. And of course company executives like market speculators were not above planting information in order to manipulate stock prices. Even after the establishment of the San Francisco Stock Exchange in 1863 and the enactment of some minimal trading rules, market manipulation in the hands of some bulls and bears achieved the level of an art form. The timely release of information whether truthful or fictional about progress or the lack thereof could serve stockholders who wanted to unload their holdings at the highest possible price or to increase them at the lowest possible price. Newspapers like Virginia City's *Territorial Enterprise* could become unwilling conduits of false information. The

³ Jung, "The Comstock and the California Mining Economy", 76, 88, 114.

⁴ The Baron's report was widely circulated and cited. It exists in a microform version under the title *The Comstock Lode: its character, and the probable mode of its continuance in depth* [1866] at the University of Nevada, Reno Library. Perhaps the Baron's most serious miscalculation was to conclude that the richest pockets of ore were located toward the top of the Lode, and the quality would diminish as the depths increased. In fact between 1,200 and 1,500 feet the richest strikes ever were made. Below 1,500 feet the quantity and quality of the ore declined to virtual barrenness even though the strikes between 1,200 and 1,500 feet caused some investigators to revise their projections in favor of greater depths would yield richer strikes.

extent to which the activities of the stock exchanges influenced day-to-day decisions in the Comstock operations themselves is not easy to determine with any certainty. Grant Smith organized his *History of the Comstock Lode* in such a way as to accentuate the role of the San Francisco bulls and bears in precipitating the cycles of boom and bust on the Comstock. But historically production cycles were normal phenomena in every mining economy, although heavy speculation in mining stocks may well have exaggerated the movement of the cycle. What is necessary but difficult to do is to separate the legitimate institutional functions of a stock exchange from those that were conceived for other perhaps illegal purposes.⁵

Noted earlier was the fact that the discovery of ores was the occupation of the many, but their exploitation became the occupation of the few. Lode mining, certainly as the depths increased, required not only capital but also organization and management. Mining had always seemed to attract strong personalities and flamboyant characters, and while the Comstock had its fair share, it also confronted them with the challenge of developing their business skills to complement their personal ambitions. A profile of the Comstock mining industry during the two decades, 1865-1885, clearly illustrates and demonstrates how the free wheeling, almost egalitarian spirit of the first locators was fairly quickly supplanted by a more industrial mentality that emphasized control and production. Of the hundreds if not thousands who tried their hand at making a fortune from the wealth of the Comstock became casualties rather than victors in their endeavors. The road was rocky for all with a high percentage of financial failure at every level. But in terms of the sheer volume of ore extracted and refined, only a handful of companies qualified. The structure of the Comstock mining industry was generally oligopolistic and at times came close to being monopolistic. Even among the oligopolists profitability was elusive and bankruptcy was unavoidable. Whatever their ultimate financial fate, major producers were large companies, some of which owned or controlled dozens of mines and mills across the Comstock.

One set of public records through which we can build a profile of Comstock mining is the county assessments rolls. Other documents such as company accounts and state reports can be used to supplement the assessment records. Unfortunately the assessment archive is not complete. Because so many of the early placer miners were from California, where mineral production was not taxed, they successfully opposed any taxation (property or production) during the First Territorial Legislature in 1861.⁶ Such opposition did not obviate the need for revenue, and in subsequent legislative sessions

⁵ Smith, *The Comstock Lode*. Chapter 7, for example, has a section with the intriguing title "Stock Devilment" (p. 62-63). Smith was not alone. Lord wrote in *Comstock Miners and Mining* (p. 318 and Smith cites on p. 62, footnote 3): "A well-managed 'stock deal' was as acceptable to most holders [of mining stocks] as an actual development of ore." Smith also cited Fred MacCrellish, editor of the *Atlas California*, who compared "the stock-jobbing business" to gambling, "the most demoralizing kind: for, unlike card playing it is pursued openly and has been regarded as respectable....It is worse than card gambling, because the players are not upon an equal footing...and it breeds an increasing crop of professional liars whose business it is to entrap honest but credulous people." Smith, p. 63, footnote 3 from *Atlas California*, 16 July 1871.

⁶ Romanzo Adams, *Taxation in Nevada, A History* (Carson City, NV: State Printing Office, [Publication of the Nevada Historical Society] 1918), 71.

both as a territory and a state a tug-of-war ensued between the mining interests and the government over how to tax the output of the mines. Finally in 1871 the Legislature agreed upon a mining tax that remained in effect for decades. I will look more closely at the actual debate over taxation of mining in a later chapter. For now I want to explain how the assessment records once the legislation was approved can be used to create a profile of the industry.

The law of 1871 spelled out how county assessors were to maintain assessment records and what they were to report the state controller. Each quarter miners, millers and individuals who might have acquired ores were required to pay their taxes. In calculating and collecting these taxes assessors were to organize their records or ledgers in the following way: Name of Owner(s); Description and Location of Mine; Number of Tons Extracted; Gross Yield or Value, in Dollars and Cents; Actual Cost of Extracting; Actual Cost of Transportation to Place of Reduction or Sale; Actual Cost of Reduction or Sale; Net Yield or Value, in dollars and cents; and Total Amount of Tax.⁷ Story County assessors generally maintained their records in accord with the law, although toward the end of the period for this study the entries in the ledgers became more disorganized and less useful. With these records we had access to Comstock production on a quarter-by-quarter and a company-by-company basis for more than a decade. These are rich sources for the study of the Comstock mining industry, although they are not by any means perfect.

There is one important caveat, however. A fire in Virginia City, the county seat, in October 1875 destroyed the courthouse and many of the county's records including assessments and collections of mining-proceeds taxes from the passage of the legislation in early 1871 through half of 1875. From the third quarter of 1875 (mining-proceeds taxes for the third quarter were collected in the fourth quarter) through the fourth quarter of 1885 the documentation is complete. The surviving documents are stored currently in the Story County Assessor's Office, and microfilm copies are available at the Nevada State Library and Archives and in Special Collections at the Library of the University of Nevada at Reno. Some of the missing records have been located in other archives, in particular the archives of the Controller's Office. The State of Nevada received a portion of the taxes on mining proceeds, and each county assessor had to submit quarterly a summary of the taxes collected along with a payment in a document known as the Abstract Statement. Some but not all of the Story County Abstract Statements for quarters prior to the fire survive in the Nevada State Archives, and they do provide a snapshot of mining operations between 1871 and 1875.⁸ Finally the State Mineralogist,

⁷ The text of *An Act providing for the taxation of the net proceeds of mines*, approved 28 February 1871, appears in M. S. Bonnifield and T. W. Healy, comps., *The Compiled Laws of the State of Nevada Embracing Statutes of 1861 to 1873, Inclusive*, 2 vols. (Carson City, NV: Charles A. V. Putman, 1873), 2:225-228. It is located in *Chapter C Of the Taxation of the Net Proceeds of Mines* Sections 3245-3252. Sections 3255-3258 consider the taxation of Borax and Soda, which are not discussed with respect to the Comstock. The Constitutional provision that governs taxes on proceeds is Section 10, Article 1. Taxation of mining proceeds was and remains controversial and will be discussed in greater detail in Chapter 8.

⁸ I have examined the actual surviving ledgers for the last two quarters of 1875 and the full years of 1876 and 1877 in the Assessor's Office located in the Courthouse of Story County, Virginia City. My principal

who issued a biennial report on the status of mining for the Legislature included data from the Abstracts in his section on Story County. While the Mineralogist did not use all the data in the Abstracts, he did use include tonnage and bullion figures for all the operations that were assessed.⁹ It turns out, then, that despite the destruction of the original documents other records have preserved much of the data from the assessments rolls from the inception of the mining-proceeds tax from the first quarter of 1871 until the third quarter of 1875. Except for the fourth quarter of 1872 tonnage and bullion figures for each quarter from the first quarter 1871 through the fourth quarter of 1884 by mine or mill (that is, by owner of the bullion) can be assembled and analyzed.

It is important to examine what the Act actually stipulated. To determine the assessment from which the tax was calculated county assessors “shall demand from the President, Superintendent, Treasurer, or managing agent of each corporation, association, or firm engaged in extracting ores and minerals within his county, and from any person so engaged other than as a corporation, association, or firm, a statement under oath or affirmation” with the appropriate information noted above. He could also “demand” that the company or individual “open” their ledgers to inspection, although the procedures by which such audits would be made was not specified in the law.¹⁰ It is not known how often if ever an assessor inspected a firm’s accounts. It would appear that the government depended mainly on honest affirmations rather than expensive audits. While the firm or individual surely understood the risks in lying to the government and then getting caught, the temptation to misrepresent their finances probably remained strong. Certainly among contemporary observers and later commentators there was considerable suspicion that the mining executives were ever totally honest in reporting their finances to state or county officials and even to their own stockholders. Unfortunately the task of demonstrating that these executives cooked their books to avoid paying taxes or simply to avoid revealing information is a very difficult one. Where company records exist (for example, the financial records of Consolidated Virginia and California Mining Companies are almost complete) the financial summaries extracted from these records tend to be in general agreement with what companies reported to state or county officials and more importantly with what they reported to their stockholders. It is not easy, therefore, to pinpoint the discrepancies, and where discrepancies may appear to exist they do not always appear to be significant. The category, which invited the worse abuse, was reported operating costs – extraction, refining and transportation. These figures could be more easily fudged than the value (in dollars) of the output because the latter was actually determined by the mint. It should also be recognized that business practices like accounting and bookkeeping was evolving in the late nineteenth century and that

source was microfilm copies listed under The County Records Microfilm Project, ST 67 Story County, in Special Collections, Library, University of Nevada at Reno.

⁹ Surviving Abstracts of the Story County assessment rolls and the tax collections submitted to the State have been found in the Nevada State Archives. They include 1st Quarter 1871, 1st, 3rd and 4th Quarters 1872, and 4th Quarter 1874. The Biennial Reports of the State Mineralogist of the State of Nevada for the Years 1871, 1872, 1873, 1874 and 1875 appended to the Journal of the Senate 6th Legislative Session (1873) and appended to the Journals of the Senate and the Assembly, 7th (1875) and 8th (1877) Sessions of the Legislature of the State of Nevada.

¹⁰ *An Act providing for the taxation of the net proceeds of mines*, approved 28 February 1871, in Bonnifield and Healy, *The Compiled Laws of the State of Nevada*, 2:226-227 specifically sections 3246-3248.

companies may not have known with the precision of current contemporary auditing standards what their real costs were. Of all the figures that the assessor collected the value of the gold and silver extracted from the ore, which the owner declared in tons, were probably the most accurate. Certainly they were the easiest to trace and verify through the mint records.

The calculation of mining taxes from mining proceeds had a curious proviso. The law clearly stated that the proceeds would be arrived at by deducting the “actual cost” of extracting the ores from the mines or the “actual cost” of processing the tailings from the gross return: “the remainder shall be deemed the net proceeds, and shall be assessed and taxed as provided for in this Act”. The proviso declared “that in no case whatsoever shall the whole amount of deductions allowed” exceed the gross yield. In short if costs matched or exceeded receipts taxes would still be collected on the bullion in accord with a schedule based on per-ton yields. Every producer with bullion to declare paid net-proceeds taxes even if the costs were greater than the receipts. The aim clearly was to make sure that every producer paid some taxes. Producers had to report yields per tons in gold and silver bullion, and the higher the yields the smaller the deductions for costs against value of the bullion. For example, if the yield per ton was \$20, the producer could claim a deduction no greater than 80 percent. Thus a producer with \$1,000 worth of bullion from ores yielding \$20 per ton at a cost of \$900 to extract, reduce and transport per ton would pay taxes on \$200 worth of bullion instead of on \$100, the difference between the bullion value and the mining costs. The value of the bullion that was taxable was called the assessment, and the tax rate could not exceed the millage by which other property holders were taxed. In this example the producer could not count all his costs in the determination of the assessment. In many cases no deduction at all were allowed. To cite again the \$1,000 example, if the total costs had been only \$500 even with a yield of only \$20 per ton the bullion would be taxed at “net”, that is, no deduction. Under this procedure it was certainly possible for the company to falsify the tonnage so that the yield per ton would be lower and the deduction higher as well as to misrepresent the costs. And this may well have occurred, although where the company’s declared tonnage can be compared to the recorded tonnage few discrepancies could be found. Cooking the books on a regular and consistent basis would have been a large undertaking that few companies, it would seem, had either the time or the money to pursue. This is not to argue against producers using various deceptions to evade the tax collector (among others) but rather to argue that such deceptions were sporadic and not continual. The Act also provided that if the ore was processed by the Freiberg method, although if and when that exemption was applied was never indicated in the entries themselves. If we look at one quarter picked at random we find the following results. The quarter chosen is the fourth, October through December 1876. It was not chosen because it is typical; rather it was chosen because the fewer declarations than in other quarters made it less cumbersome to summarize. Seven mines and four mills, mainly tailings mills, declared assessable ores. Two mines were assessed on the basis of the “net” – the balance after costs were deducted from receipts. In both cases the reported costs were between 32 and 38 percent of the receipts and therefore did not qualify the mines for deductions in their assessments. Two mines reported yields and costs that allowed them to shield 60 percent of their bullion from taxation, two mines 80 percent and one mine 90 percent. With

respect to the four mills two were granted deductions and two were assessed at net. The Act provided for various penalties if owners refused to open their books or to supply the data required to determine the assessments and taxes. But these penalties do not appear to apply in the above examples. In the final analysis since cheating was hard to detect and expensive to investigate the most trenchant criticism of the net-proceeds mining taxes was that the formula described above was too generous. By some calculations mining companies paid less per \$1,000 in assessments than did other taxable properties.¹¹

What can we learn from the assessment rolls even with the less than perfect statistics that they generate? We can begin with the obvious. The initial sentence in the 1871 Law that “All ores, tailings, and mineral-bearing material, of whatever character, shall be assessed for purposes of taxation...”¹² Story County assessments distinguished between ores and tailings, and the first contributed 90 percent and the second 10 percent of the total bullion value. Ores referred to the extracted matter that was crushed and amalgamated to yield the precious minerals. Tailings were residues that escaped during the transportation of the crushed watery ores to the amalgamation pans. They usually ended up in slag piles or holding ponds scattered around the mines and mills. They were also dumped into the Carson River, the bed of which today is still covered with these residues. Often sluices were built to capture the tailings and direct them to their final resting places. Since tailings contained small amounts of gold and silver, they could be reprocessed in mills built specifically for that task. It had always been a matter of concern and speculation as to how much gold or silver was lost in the tailings. Some believed that more minerals were lost in tailings than were actually processed at the mills. It is not an easy to confirm or deny such assertions. Enough could be recaptured, though, to lead some companies to convert or construct mills specifically for the reprocessing of tailings from their amalgamation mills. The 1871 Act also stipulated that assessment rolls should have two columns that read: “Actual cost of transportation to place of reduction or sale” and “Actual cost of reduction or sale”. As the column titles suggest ores could be sold, and when they were sold the buyers paid the net-proceeds taxes. How much ore was sold under the terms indicated in the 1871 law in any given year is not known and cannot be separated out from the figures as they appear in the assessment rolls. Most of the extracted ores were not sold but were processed by the producers, and those that were sold were probably tailings.¹³

Not only did the rolls distinguish between ores and tailings, but they also noted the mining districts where the mines or mills were located. From the earliest years miners organized themselves into districts in order to administer the rules (which the miners

¹¹ *An Act providing for the taxation of the net proceeds of mines*, approved 28 February 1871, in Bonnifield and Healy, *The Compiled Laws of the State of Nevada*, 2:226-227 specifically Section 3245 along with the previously cited sections; quarterly data from assessments on microfilm in The County Records Microfilm Project, ST 67 Story County, Special Collections, Library, University of Nevada, Reno.

¹² *An Act providing for the taxation of the net proceeds of mines*, approved 28 February 1871, in Bonnifield and Healy, *The Compiled Laws of the State of Nevada*, 2:226-227, Section 3245. Certain compounds like borax could yield precious minerals, and the State Controllers’ Annual Reports showed that two Nevada counties – Esmeralda and Churchill – reported assessments on ores, tailings and boraxes.

¹³ *An Act providing for the taxation of the net proceeds of mines*, approved 28 February 1871, in Bonnifield and Healy, *The Compiled Laws of the State of Nevada*, 2:226-227, Sections 3245-46.

themselves generally wrote and approved) and to adjudicate disputes. Nearly all the declare ores came from mines in the districts of Virginia City and Gold Hill. A very small quantity came from a third district, Flowery, a different lode to the east of the Comstock that was being explored more intensively in the 1880s as the Comstock went into decline. The actual boundaries of the districts cannot be precisely delineated. The district boundaries for Virginia City and Gold Hill may have coincided with the municipal boundaries. With few exceptions the mines that declared ores were known to be within the municipal boundaries whereas the mills and particularly the tailings mills with ores to declare were located throughout the county and beyond in adjacent counties. When locations were given for tailings mills, they might be as general as Virginia City or Gold Hill or they might be more specific such as Six Mile Canyon or Geiger Pass. And in some quarters the locations of the mills were not noted at all. Joseph Tingley, notable contemporary scholar of Nevada mining and the Comstock in particular, writes that American Flat, south of Gold Hill, was also designated as a mining district. There was an American Flat mining claim and other claims surrounding that mine, but in the extant assessment rolls no ores were ever declared from those mines or that district (if it continued to exist).¹⁴ At times Virginia City and Gold Hill were referred to as the Comstock District, but that designation was not used in the assessment rolls. The importance of identifying the district within the assessment rolls had tax implications. Tax rates as applied to assessable ores differed from district to district. Even though Gold Hill and Virginia City were adjacent to each other, they did not always share the same tax rates. From the assessor's standpoint it was necessary to know where the ore came from so that the correct rate could be levied and the revenue raised by the tax could be distributed to the appropriate district based on what the county commissioners had legislated.¹⁵

Between 1871 and 1884 production data can be assembled for 55 of the 56 quarters (only the fourth quarter 1874 is missing). In that period the number of bullion owners (mines and mills) totaled at least 71. I stress owners of bullion to be assessed because there were many more mine and mill owners who may have had operations that yielded no useful metal. The actual number may be slightly higher or lower than the number given because in compiling these statistics I have had to deal with entries in the assessment rolls, especially the recording of names, that lacked consistency. It is relatively easy to keep track of the major producers (mines or mills), but it is less easy with small, marginal producers. Where I thought that it was reasonable to assume that operations with slightly different spellings or identifying notations could be grouped under a single name, I have done so. Although the number of such groupings was small and mainly concerned modest operations, it can effect other calculations such as rankings. Of the approximately six-dozen bullion owners that I have identified 56 percent were mining operations and the remaining 44 percent were mills. In terms of ore production and bullion yield the statistics are quite different. The mines accounted for 90 percent of the tonnage and 98 percent of the bullion. As numerous as tailings operations were, they were not a significant factor in overall production. Against claims numbering

¹⁴ See Joseph Tingley, *Mining Districts of Nevada*, Report 47, Nevada Bureau of Mines and Geology, 2nd edition, 1998, for a discussion of the Comstock Mining District.

¹⁵ More about the tax implications in Chapter 8.

in the hundreds along the Lode or in the region of the Lode no more than a few dozen mines produced the bulk of the ore in a decade and a half.

Total ore tonnage of all the declarations between 1871 and 1884 reached approximately five million with a bullion value of \$204 million. When ranked according to tonnage Crown Point stood at the top of the list with 804,000 tons or 16 percent, but when ranked by bullion it ranked fourth with \$26 million or nearly 13 percent of the total. Close behind Crown Point in tonnage was Consolidated Virginia with 791,000 or 16 percent. In bullion, however, Consolidated Virginia was first with nearly \$64 million or 31 percent of the total. The other major ore producers were well-known mines: Belcher was third in tonnage and bullion with 15 and 16 percent respectively, and California was fourth in tonnage with 12 percent but second in bullion with 23 percent. In fifth place but far behind the aforementioned leaders was Chollar Potosi with 5 percent of the tonnage and 3 percent of the bullion. Further scrutiny of these figures suggests significant differences in per-ton yields, perhaps the most important measure of a mine's productivity. Not surprisingly Consolidated Virginia and California occupied the top two positions with yields of \$81 and \$80 per ton respectively. Behind them in third place was Belcher with \$44 per ton. Further down the list at sixth was Crown Point at \$32 per ton. In fourth and fifth place at \$36 per ton were Ophir and Union Consolidated. Both of these properties were on the northern end of the Comstock Lode and north of the two greatest mines, Consolidated Virginia and California. As high as their per-ton yields were Ophir and Consolidated Union were much farther down on the lists of the rankings by tonnage and bullion: Ophir had no more than 3 to 4 percent of the tonnage and bullion, and Union Consolidated had about 1 percent.

During these 15 years the average yield for all properties was slightly more than \$41 per ton. That figure was directly influenced by the extraordinarily high yields at Consolidated Virginia and California. When a median from all of the computed per-ton yields is calculated, it comes in at an extremely low \$11 per ton. Since this analysis of tonnage and bullion includes output from tailings mills, which often reported per-ton yields in the low teens and below, the median may understate the performance of the Comstock. Another approach is to make these calculations from mines alone. If all the known tailings mills are excluded, then the mean for the mines is \$45 per ton and the median is \$14 per ton. One could, of course, treat Consolidated Virginia and California as outliers, since no other properties came even remotely close to their productivity. Removing them from the calculations would drop the mean to \$26 per ton, but the median remains at \$14 per ton. Clearly without the bonanza mines of Consolidated Virginia, California, Belcher, Crown Point and perhaps one or two others Comstock yields would barely have justified further investment or exploration.

The ultimate test was profitability. The best measure of Comstock performance would include a comparison of yields per ton versus costs per ton. Yield data were fairly reliable because they were determined at the mint. It was harder for the bullion owner to cheat, if he were inclined, about yields than about costs. It is simply unknown how far owners went in overstating their costs in order to reduce the bullion tax. But some comparisons are worth making for the sake of seeing how they stand up against the

conventional wisdom that most mining operations (excluding mills because they did not engage in extracting the ore) lost money. Eliot Lord was especially critical of mine owners and managers for being extravagant and wasteful in the use of capital because they paid little attention to how their unjustified outlays boosted their costs and reduced their profits, which should be used to rebuild their capital.¹⁶ In the previous section I computed per-ton yields over the long term. In this section I examine per-ton yields quarter-by-quarter and compare them to quarterly costs as reported by the companies. Data on yields and costs, when assembled and plotted, cover 43 quarters between 1871 and 1884. (Figures from 1885 assessments are virtually unusable.) In these quarters 3.4 million tons were recorded in the assessment rolls with a bullion value of \$145 million at a cost of \$76 million. The calculation of a mean reveals that the ore yielded \$42 per ton in bullion at a cost \$22 per ton to produce. But, as noted above, these gross totals can be influenced by other factors. If a median figure is computed for each variable over the 43 quarters the result is quite different. Bullion yields came in at \$27 per ton and the costs at \$22 per ton. The spread is obviously much narrower. By far the worse quarter for yields was the third, 1881, when all the ore declared was worth no more than \$8.35 per ton, and the best quarter was the first, 1877, with a figure of \$75.48 per ton. On the cost side the least costly was at \$11.89 per ton was also the third quarter of 1881 and the most costly was \$36.26 per ton two quarters earlier in 1881. Making money from mining was impossible in 1881: first quarter comparisons are \$20.73 yield per ton and \$36.26 cost per ton; second quarter, \$14.97 versus \$24.80; third quarter \$8.35 versus \$11.89; and the fourth \$11.76 versus 14.25. Most of the quarters in the 1880s posted losses rather than gains. This shows up clearly on Figure 10. In contrast all of the quarters in the 1870s (for which data exist) had gains, and during the middle quarters the yields outstripped the costs by two or three to one. The median computations indicate that over the entire period of 1871 through 1884 yields exceeded costs by \$5 per ton. Those figures present a more reasonable appraisal of the finances surrounding Comstock operations. The fact remains, however, that without the bonanza mines Comstock mining would have hard pressed to realize any profits.¹⁷

FIGURE 1
COMPARISON OF YIELDS PER TON AND COSTS PER TON, 1871-1884

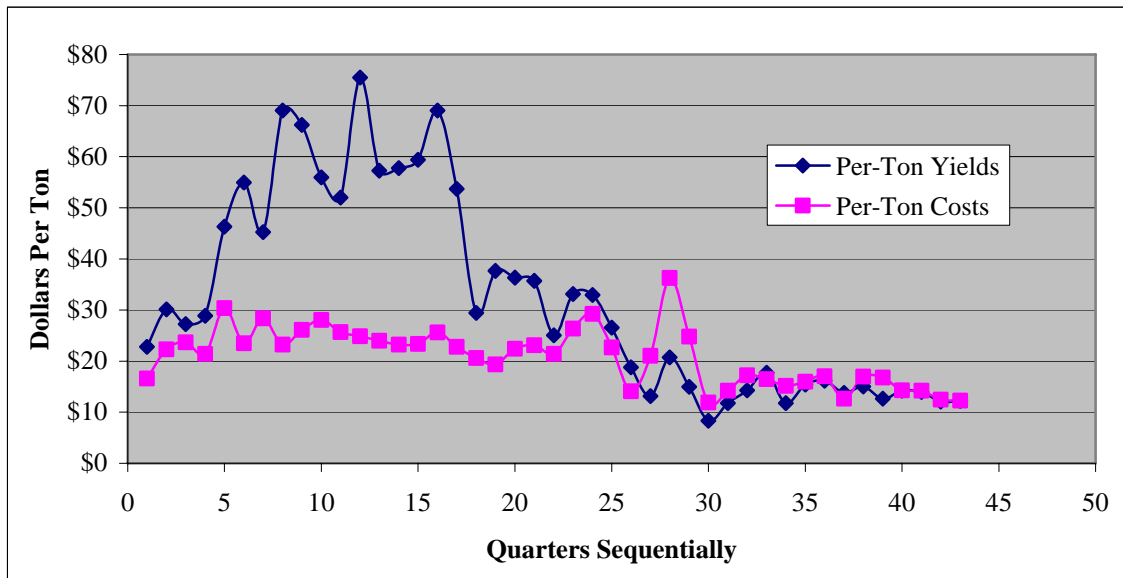
| Quarters | # | Bullion Per Ton | Cost Per Ton |
|----------------|---|-----------------|--------------|
| 1 Quarter 1871 | 1 | \$22.81 | \$16.61 |
| 1 Quarter 1872 | 2 | \$30.12 | \$22.32 |
| 3 Quarter 1872 | 3 | \$27.23 | \$23.70 |
| 4 Quarter 1872 | 4 | \$28.86 | \$21.44 |
| 1 Quarter 1874 | 5 | \$46.31 | \$30.40 |
| 3 Quarter 1875 | 6 | \$54.93 | \$23.48 |

¹⁶ Throughout *Comstock Mining and Miners* Lord depicted managerial behavior that he thought was detrimental to the success of the Comstock. He was probably more critical of that behavior in the first decade than later. The owners who came to the fore in the 1870s were more sober and conscientious in terms of running their companies.

¹⁷ All the calculations were made from assessment (1875-1884) in The County Records Microfilm Project, ST 67 Story County, Special Collections, Library, University of Nevada at Reno, and in the Story County Quarterly Abstracts submitted to the State Controller for 1st Quarter 1871, 1st, 3rd, 4th, Quarters, 1872, and 4th Quarter, 1874, on file in the Nevada State Archives.

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|----------------|----|---------|---------|
| 4 Quarter 1875 | 7 | \$45.25 | \$28.41 |
| 1 Quarter 1876 | 8 | \$69.03 | \$23.23 |
| 2 Quarter 1876 | 9 | \$66.22 | \$26.10 |
| 3 Quarter 1876 | 10 | \$55.97 | \$28.07 |
| 4 Quarter 1876 | 11 | \$52.02 | \$25.71 |
| 1 Quarter 1877 | 12 | \$75.48 | \$24.86 |
| 2 Quarter 1877 | 13 | \$57.24 | \$23.97 |
| 3 Quarter 1877 | 14 | \$57.79 | \$23.26 |
| 4 Quarter 1877 | 15 | \$59.40 | \$23.34 |
| 1 Quarter 1878 | 16 | \$69.01 | \$25.65 |
| 2 Quarter 1878 | 17 | \$53.70 | \$22.82 |
| 3 Quarter 1878 | 18 | \$29.44 | \$20.63 |
| 4 Quarter 1878 | 19 | \$37.65 | \$19.38 |
| 1 Quarter 1879 | 20 | \$36.34 | \$22.43 |
| 2 Quarter 1879 | 21 | \$35.74 | \$23.10 |
| 3 Quarter 1879 | 22 | \$25.03 | \$21.42 |
| 4 Quarter 1879 | 23 | \$33.17 | \$26.38 |
| 1 Quarter 1880 | 24 | \$32.96 | \$29.28 |
| 2 Quarter 1880 | 25 | \$26.55 | \$22.68 |
| 3 Quarter 1880 | 26 | \$18.82 | \$14.07 |
| 4 Quarter 1880 | 27 | \$13.18 | \$21.02 |
| 1 Quarter 1881 | 28 | \$20.73 | \$36.26 |
| 2 Quarter 1881 | 29 | \$14.97 | \$24.80 |
| 3 Quarter 1881 | 30 | \$8.35 | \$11.89 |
| 4 Quarter 1881 | 31 | \$11.76 | \$14.25 |
| 1 Quarter 1882 | 32 | \$14.26 | \$17.23 |
| 2 Quarter 1882 | 33 | \$17.76 | \$16.46 |
| 3 Quarter 1882 | 34 | \$11.79 | \$15.14 |
| 4 Quarter 1882 | 35 | \$15.39 | \$15.95 |
| 1 Quarter 1883 | 36 | \$16.18 | \$17.04 |
| 2 Quarter 1883 | 37 | \$13.76 | \$12.68 |
| 3 Quarter 1883 | 38 | \$15.04 | \$16.99 |
| 4 Quarter 1883 | 39 | \$12.68 | \$16.82 |
| 1 Quarter 1884 | 40 | \$14.19 | \$14.31 |
| 2 Quarter 1884 | 41 | \$13.95 | \$14.24 |
| 3 Quarter 1884 | 42 | \$12.07 | \$12.49 |
| 4 Quarter 1884 | 43 | \$12.21 | \$12.29 |
| Median | | \$27.23 | \$22.32 |

FIGURE 2
COMPARISON OF YIELDS AND COSTS PER TON 1871-1884



Another gauge of performance could be the so-called assessments, which mining companies (not mills) authorized against their stockholders in order to raise capital. If companies were paying dividends, theoretically they had profits and surpluses that could be invested in continuing explorations and operations. Companies were known to fritter away their profits and surpluses in unproductive ventures including paying excessive dividends (in some cases while they were collecting assessments) instead of intelligently recycling their capital to improve operations. Eliot Lord compiled a table of assessments and dividends for all stocks trading on the San Francisco Exchange as of 1880. One caveat: his data cannot be readily verified although his research was generally viewed favorably. In any event he found that the Exchange listed 103 mining stocks for Washoe Mines (mines along the Comstock Lode and beyond). Fourteen mines paid dividends totaling \$116 million. The four largest bonanza mines – Consolidated Virginia, California, Belcher and Crown Point paid out \$102 million. The balance of \$10 million was spread among the other ten mines. That group included well-established operations such as Gould & Curry, Hale & Norcross, Kentuck, Ophir, Savage and Yellow Jacket, which combined paid out \$13 million. Four smaller operations split up the remaining million dollars. Only 14 percent of the mining companies whose stocks traded generated profits from which to pay dividends. By contrast 102 of the 103 companies (California was the sole exception) approved assessment that totaled \$62 million. Only five of the companies – Belcher, Consolidated Virginia, Crown Point, Gould & Curry and Kentuck – had profits after deducting assessments. (California had profits as well but no assessments.) Thus, while 14 percent paid dividends, only 5 percent had profits that exceeded their assessments. If California is added to the list (profits but no assessments) 6 percent had free and clear profits. Of the \$62 million in assessment \$44 million (63 percent) in assessment was never repaid.¹⁸ Although Lord's data do not resolve the basic

¹⁸ Lord, *Comstock Mining and Miners*, 419-421.

issue of yields versus costs, they do reinforce the idea that except for a handful of operations over a quarter of a century could be said to make any money for their owners and investors. Other operations might have been profitable from time to time but over the long term they were not moneymaking investments. Whatever the actual spread between yields and costs quarter by quarter and company by company may be, these computations nonetheless suggest that the color red was as prominent in the Comstock's financial world as gold and silver were in its mineral world.

LINKS: