

Chapter 15
The Biggest Bonanza:
Labor Component, C&C Joint Shaft, Squire Dewey & Financial Chicanery

As noted earlier, Eliot Lord, a staunch laissez-faire advocate who disliked iron-clad agreements governing wages and hours and opposed unionization, held the Comstock laborer in high esteem. The reason was that he like so many others had to acknowledge that Comstock workers as a group surpassed all expectations. In short, they were generally productive under the most trying conditions. Machines hoisted the ores, but workers performed the task that made the hoists possible. In an earlier chapter I discussed wages, hours and working conditions in general terms, but in this chapter I want to expand on the role of the worker by examining worker-related documentation from the archives of Consolidated Virginia, California and ancillary companies. In addition to detailed statistics on daily, monthly and quarterly payrolls over several years I can also draw from the records a portrait of how the regimen of work was organized and managed within the mines and mills. Even though The Firm invested heavily in technology, its operations could not function without hundreds and at times thousands of laborers above and below ground. To study the details of work patterns and employment practices over several years even at the largest and richest of the mining companies will help to clarify how the Comstock achieved the performance that it did.

Because The Firm had created its mining and milling behemoth through a series independent corporations wage and salary data must be assembled from several different sets of payrolls and ledgers. And, as is often the case with an array of historical numeric datasets for a given inquiry, finding patterns in numeric data from different sources can be challenging. Despite these challenges very solid information on wages and salaries paid to various occupational categories can be assembled and analyzed. Wage and salary data were not kept from public view. Public documents such as the State Mineralogist's reports and the 1880 Census compiled information on wages and salaries as well as working conditions. Wage and salary data were summarized in the companies' Annual Reports. Since many daily wages were set during contract negotiations with various unions, they became a part of the public record mainly through local newspapers. Company records add more details about compensation profiles and work regimens than was available through published accounts.

Since The Firm controlled the largest combine of businesses ever assembled on the Comstock and had a reputation for efficiency, its labor component is a matter of interest. In 1875, when Consolidated Virginia had its most productive year (in spite of the October fire), the value of its bullion was about \$17 million. The company spent about \$3 million dollars to operate the mine and extract the ore. Of that total \$800,000 or 27 percent was paid out in wages and salaries. (Compare to \$14 million paid out for reduction and dividends.) Three years later in 1878 when bullion yields had fallen in half to \$8 million, mining costs (excluding reduction and dividend expenses) came in at about \$2.5 million with wages and salaries at about \$650,000 or 26 percent. And a year after that, as bullion yields continued to fall to \$2.5 million, operational expenditures (minus dividend and reduction expenses) also fell to \$1.1 million with wages and salaries just

under \$300,000 or 27 percent. The profile at California was only slightly different from Consolidated Virginia. Data from four of five years between 1876 and 1880 (1879 is missing) indicate that wages and salaries comprised from 23 to 31 percent of the mine's operating costs. In short, employee compensation in these mines whether production was rising or falling fell in a range between 25 and 30 percent of total operating costs. Another angle for analyzing compensation is to compute the percentage in wages and salaries not of total operating costs but of total bullion yields. When yields were in the vicinity of \$100 per ton the wage-and-salary bill absorbed 3 to 4 percent of the total value, and when yields began to drop below \$50 per ton and then \$40 per ton that bill absorbed 10 to 20 percent of the total value. While compensation as a percentage of total operating expenses was more or less range-bound, compensation as a percentage of total bullion value rose as yields fell. Even though many more hundreds of workers were needed during the boom years than during the lean years, the total compensation outlay in percentage terms was modest. As the work force dwindled in size, however, employment compensation took on much greater significance.¹

Despite the usefulness of these public disclosures on wages and salaries the payroll ledgers kept by the individual mining companies add many more details to compensation profiles. Although these archives are extensive, they contain far less data prior to 1876 than after. That affects the analysis of Consolidated Virginia more than California because the latter did not officially begin producing ore until 1876. Because of the size of the post-1876 payroll archives I have selected samples rather than trying to incorporate and analyze all of the archival material.² I will begin with a profile of the labor force at Consolidated Virginia based on payroll data from January, 1876. Two factors should be kept in mind with respect to the January data. Rehabilitation of the mine after the fire of the previous October was still underway, and yet the delivery of nearly 20,000 tons of ore to the mills was among the highest of any month in the history of the mine. Based upon the number of vouchers issued to workers, the company had a mine payroll (not including mills or ancillary operations) of 547 employees. On the first day of the month (New Year's Day) 437 workers were on the job aboveground and below. During the month 100 more workers had been added to the payroll. The figure of 547 represented the number employed for one or more days. Some employees were paid off after only a few days, but the majority logged at least 28 days of work. Such counts can be made from the payrolls by day or month over a five-year period.³

The size of Consolidated Virginia's work force in January (and in the two subsequent months) was larger than normal because of the reconstruction on the surface and in the shaft. Reconstruction absorbed about a fifth of the work force. There were, for example, 19 bricklayers and 96 carpenters (including assistants) on the payroll, far more than would ever be needed for strictly underground work. The full list of occupations

¹ Annual Reports for Consolidated Virginia and California Mining Companies are located in NC99/1/5/1 and NC99/1/5/6-7, Bx 2, Special Collections, Library, University of Nevada at Reno.

² The data are so voluminous that one could follow the work regimen on a daily basis over several years. Such an approach would be appropriate for a detailed labor history.

³ Time Book (Duplicate), January-February, 1876, Consolidated Virginia Mining Company, NC99/3/4, Bx 9, Special Collections, Library, University of Nevada at Reno. Original accounts covered one month, and duplicates two months. They contained the same data. I have used the duplicate as a matter of convenience.

along with wages and salaries numbered more than 50. The largest category remained miners (the infamous \$4-day workers) with 45 percent. Next came the carpenters with 18 percent and then laborers with 10 percent. Nine of the occupations paid salaries instead of wages. The highest paid employee was the assayer whose salary was set at \$500 per month or nearly \$17 per day. Few jobs were as important as the assayer's, for it required a mastery of basic chemistry and testing techniques. No job paid less than \$3.50 per day, nearly a fifth of the jobs falling in that category. Some jobs compensated workers at different scales. For example, 16 timbermen had been hired with three receiving \$4.50 per day and the remaining 13 received \$4.00 per day. It could not be determined if skill accounted for the difference. A single diamond driller on the company's payroll earned \$7.00 per day for 13 days and \$5.00 per day for 16 days. Of the four brakemen one was paid \$4.50 per day, one \$4.00 per day and the remaining two \$3.50 per day. In some instances, where varying scales existed, the highest wage was reserved for "bosses" such as the head carpenter and lower wages were paid to his underlings. Those who received salaries instead of wages, besides the assayer, were: assistant assayer (\$250) head carpenter (\$200) cupeller (\$175), foremen (\$200), melters (\$175), melter's assistants (\$150) and mine engineer (\$200). It is worth noting that \$150 per month (for melter's assistant) was only \$5 per day, the equivalent of a machinist, timekeeper or for that matter the clerk to the melter. Perhaps those who were paid monthly salaries had greater flexibility in choosing their hours, but, if so, it could not be discerned from the accounts themselves. Among the wage earners the highest paid at \$7 per day were the head bricklayer, the carter (who apparently provided his own horse) and the diamond driller for at least some days. The vast majority of the workers on this list earned about \$4 per day. Many of the other underground workers such as car-men, bulk-headers, riggers, pick-boys and station-tenders were paid the same wage (\$4.00 per day) as miners because they had essentially underground jobs. On the other hand, at the lowest daily wage (\$3.50) were clerks, woodmen, oilers, lamp-boys and cleaners, whose work were not as skilled and could be above and below ground. If one were to divide January's total payroll by the number of employees and then by a 30-day month, the average remuneration per day would be slightly above \$3 00, a figure that was lower than any of the actual wages or salaries. The reason for this stemmed from the notation above - not all of the 547 employees worked a full month.⁴

Employment levels changed from month to month. Figure 2 was drawn up from both payroll and mill data for January, 1876, through June, 1878. The company's payroll data included the total number of vouchers issued to the work force each month and the total outlay to cover those vouchers; mill data, as a proxy for extracted and hoisted ore, showed how much ore before crushing was delivered to the mills. In the 30 months for which we have figures 10,134 vouchers were issued with a total outlay of \$1,059,368. In the same period 422,147 tons of ore were delivered to the mills. The labor cost to extract that volume of ore was \$2.51 per ton. Each worker (not just miners) roughly produced 42 tons each month or 1.39 tons per day in a 30-day month. It must be stressed that these

⁴ Time Book (Duplicate), January-February, 1876, Consolidated Virginia Mining Company, NC99/3/4, Bx 9, Special Collections, Library, University of Nevada at Reno.

figures are not derived from the dollar value of the bullion but from the volume of extracted ore.⁵

FIGURE 1
LABOR COSTS, CONSOLIDATED VIRGINIA MINING COMPANY,
JANUARY 1876-JUNE 1878

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Jan 1876	547	\$50,026	19,891				\$2.52	1.21
Feb	546	\$58,999	26,061	-0.18%	17.94%	31.02%	\$2.26	1.59
Mar	556	\$60,848	26,984	1.83%	3.13%	3.54%	\$2.25	1.62
Apr	455	\$48,702	17,354	-18.17%	-19.96%	-35.69%	\$2.81	1.27
May	402	\$43,416	12,230	-11.65%	-10.85%	-29.53%	\$3.55	1.01
Jun	359	\$33,422	7,539	-10.70%	-23.02%	-38.36%	\$4.43	0.70
Jul	365	\$36,281	4,597	1.67%	8.55%	-39.02%	\$7.89	0.42
Aug	250	\$25,157	3,545	-31.51%	-30.66%	-22.88%	\$7.10	0.47
Sep	299	\$32,333	6,976	19.60%	28.52%	96.78%	\$4.63	0.78
Oct	394	\$42,921	12,608	31.77%	32.75%	80.73%	\$3.40	1.07
Nov	467	\$21,312	13,505	18.53%	**	7.11%	**	0.96
Dec	367	\$41,436	4,765	-21.41%	**	-64.72%	\$8.70	0.43
Jan 1877	244	\$26,739	6,348	-33.51%	-35.47%	33.22%	\$4.21	0.87
Feb	244	\$25,406	5,908	0.00%	-4.99%	-6.93%	\$4.30	0.81
Mar	243	\$27,808	7,051	-0.41%	9.45%	19.35%	\$3.94	0.97
Apr	217	\$24,703	12,945	-10.70%	-11.17%	83.59%	\$1.91	1.99
May	249	\$28,003	13,979	14.75%	13.36%	7.99%	\$2.00	1.87
Jun	257	\$27,570	14,744	3.21%	-1.55%	5.47%	\$1.87	1.91
Jul	255	\$27,550	13,698	-0.78%	-0.07%	-7.09%	\$2.01	1.79
Aug	283	\$30,830	14,358	10.98%	11.91%	4.82%	\$2.15	1.69
Sep	315	\$34,916	15,032	11.31%	13.25%	4.69%	\$2.32	1.59
Oct	275	\$31,380	18,487	-12.70%	-10.13%	22.98%	\$1.70	2.24
Nov	275	\$31,144	21,248	0.00%	-0.75%	14.93%	\$1.47	2.58
Dec	302	\$34,389	19,467	9.82%	10.42%	-8.38%	\$1.77	2.15
Jan 1878	287	\$33,536	22,066	-4.97%	-2.48%	13.35%	\$1.52	2.56
Feb	281	\$30,758	22,421	-2.09%	-8.28%	1.61%	\$1.37	2.66
Mar	287	\$29,331	19,502	2.14%	-4.64%	-13.02%	\$1.50	2.27
Apr	274	\$31,161	20,245	-4.53%	6.24%	3.81%	\$1.54	2.46
May	448	\$46,295	11,799	63.50%	48.57%	-41.72%	\$3.92	0.88
Jun	391	\$42,996	6,794	-12.72%	-7.13%	-42.42%	\$6.33	0.58
Total	10134	\$1,059,368	422,147				\$2.51	1.39

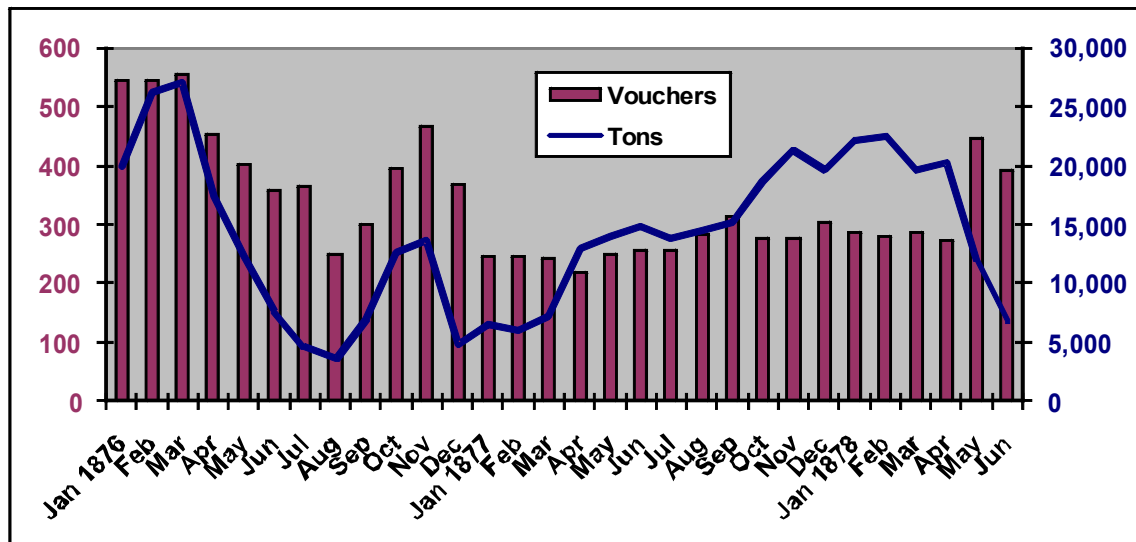
Legend: [1] Month; [2] # of Vouchers; [3] Total Labor Costs; [4] Total Tons; [5] % Change Voucher; [6] % Change Costs; [7] % Change Tons; [8] Cost Per Ton; [9] Worker Output Tons Per Day.

Notes: Data for total compensation in November 1876 are incomplete. Percentages changes for November and December 1876 not calculated. Also cost per ton in November 1876 not calculated. Worker output per day based on assumption that each worked 30 days per month. Output figures would be somewhat higher if based on actual days worked. It is assumed that the number of vouchers issued was generally equal to actual number working.

Sources: See footnote 5.

⁵ Payroll data in Figure 1 and discussed in text assembled from the Time Books (Duplicates), January 1876-June 1878, Consolidated Virginia Mining Company, NC99/3/1-70, Bxs 9, 10 & 11, and ore data from Bullion Records, 1876-1878, Consolidated Virginia Mining Company, MC99/1/3/5, After Bx 1, Special Collections, Library, University of Nevada at Reno.

FIGURE 2
COMPARISON OF PAY VOUCHERS AND ORE TONS, MONTHLY,
CONSOLIDATED VIRGINIA MINING COMPANY



Sources: See footnote 5.

The size of the work force, one would assume, was directly linked to the output of the mine. As underground activity increased, more workers were added to the payroll, and conversely as it contracted, workers were trimmed from the payroll. But the correlation between numbers of employees and tonnage for the 30 months is relatively weak at 33 percent. In Figure 2 graph shows that employment and production generally moved in the same direction, but the association began to fall apart in the spring of 1877. In fact between January 1876 and March 1877 the relationship was nearly perfect at 90 percent. In the final 15 months, however, it came in at a negative reading of -17 percent. By April 1876 the upswing in production and employment had peaked, and for the next five months both indicators dropped sharply. In August production fell below 5,000 tons, the lowest since February 1874, and employment fell to 250. This was followed by an upturn in both production and employment through November, as production tripled and employment doubled. Both fell in December (production once again dropping below 5,000 tons). The shrinkage in employment opportunities at Consolidated Virginia that began during the second quarter provoked James Fair to advise those who wrote the company about employment to avoid the Comstock, for it was “overcrowded with young men out of employment.”⁶ The employment of so many construction workers in the first quarter did not appear to distort the correlation because underground and surface workers were also needed to move out the ore that had piled up during the quarter after the fire. About the same time that the reconstruction was finished and those workers were released, the ore in storage as well as the extractable ore in the galleries themselves was waning with an attendant reduction in the labor force. The association between production and employment levels fit the expected pattern for two years.

⁶ Copy of Letter from James Fair to Arthur W. Scott, 12 July 1876, Letterpress Book, 24 May-17 August 1876, Consolidated Virginia Mining Company, NC99/2/6, Bx 6, Special Collections, Library, University of Nevada at Reno.

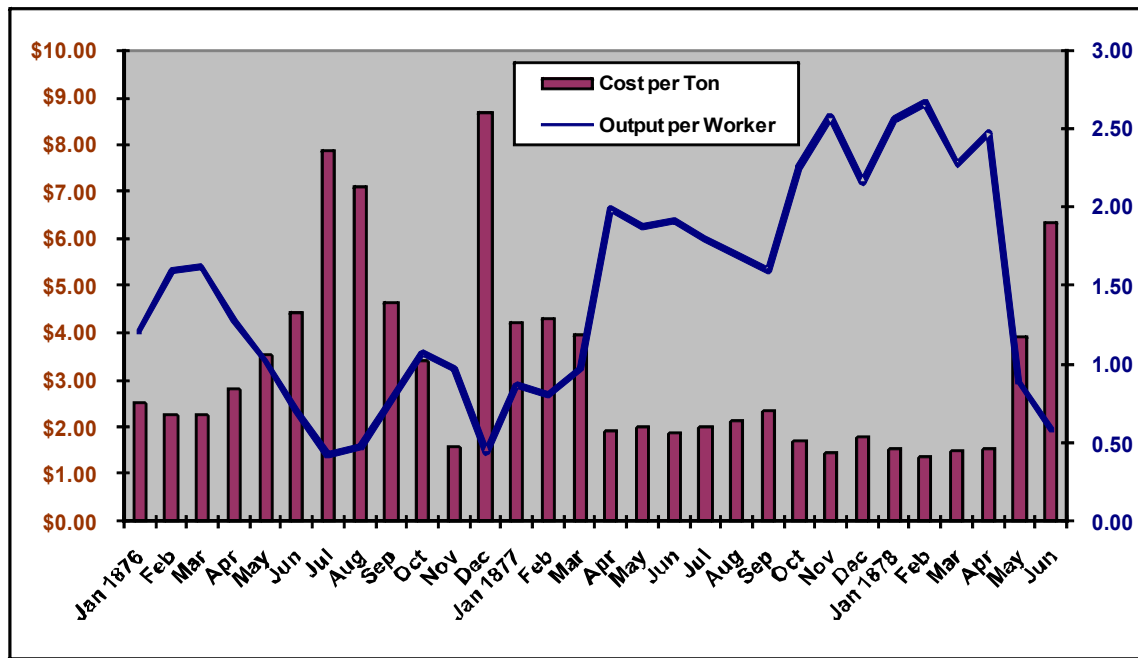
In early 1877 the two variables began a divergence that continued through the first half of 1878. Production will climb gradually until it exceeded 20,000 tons in the spring of 1878, while employment will remain static at between 200 and 300 workers. In the last two months, May and June 1878, before the employment series came to an end, the lack of convergence between the two indicators was at its sharpest point. Employment jumped to between 400 and 500, but production plummeted to just above 5,000 tons. In the absence of any company explanation for the divergence, the most likely reason for maintaining such a large work force inside a mine whose ore reserves were diminishing was repair and exploration, both of which were necessary, even though costly, in times of falling output so long as management did not believe that the bonanza had ended (and that was certainly the case in 1877 and 1878). Despite less than positive indicators explorations below 1,700 feet intensified with the hope of relocating the quartz fissure that held the riches between 1,200 and 1,700 feet. The explorations proved to be fruitless, and eventually the level of employment had to reflect this condition. While payroll records for the second half of 1878 were not found, monthly figures on tons of ore delivered to the mills bounced around between 5,000 and 8,000 before skidding to about 2,000 in December 1878. It would be reasonable to assume a reduction in payrolls, but given the rise in employment the previous months it remains an assumption. Over the next two years, however, payrolls clearly shrunk. In the last 12 months before April 1881, when a fire closed the mine, the average monthly employment was fewer than 150 workers. Miners came to constitute 85 to 90 percent of all the personnel. In addition to miners the payroll included foremen, shifts bosses, assayers and their assistants, a reduction not only in numbers but skills. Miners' daily wages remained at \$4 per day but nearly all the other wages and salaries had been reduced. The assayer formerly paid \$500 per month was now paid \$300, and the foremen who previously earned \$200 per month now received \$125 (just slightly above the miner's per diem wage). The payroll now included other company employees such as accountant at \$250 per month. By this time, the remaining principals (Fair had departed and O'Brien had died) and stockholders must have known that Consolidated Virginia's had reached the end of its long run, although explorations through the C&C Shaft at 3,000 feet and below continued.⁷

Comstock workers, especially those underground, had gained a reputation locally as extraordinarily productive under trying conditions. With data from Consolidated Virginia (and California) it is possible to make some tentative estimates about worker productivity. It cannot be assumed that the findings for The Firm's mines apply across the Comstock. Much depended, of course, on the ore bodies and how the mining companies managed them. By the same token The Firm's mines were among the premier operations, and if productivity could be advanced significantly, these operations should be leading the way. The period under consideration included the 30 months between January 1876 and June 1878. In the period Consolidated Virginia issued 10,134 monthly vouchers for a monthly median of 293. Total monthly tonnage was 422,147 with a median of 13,839. That reduces to 47 tons per voucher holder, although, to repeat an earlier point, some voucher holders did not work a full month. On a daily basis (without taking into account days worked) each voucher holder accounted for approximately a ton

⁷ Weekly Reports, Report of Operations, 14 May 1880-1 April 1882, Consolidated Virginia Mining Company, NC99/1/1/4, Bx 3, Special Collections, Library, University of Nevada at Reno.

and a half of ore. Daily productivity was volatile.⁸ In fact there was a wide range from less than half a ton (for example, July-August 1876) to more than two and a half tons (late 1877, early 1878). Not surprisingly when the output per day per worker fell the cost of labor per ton rose, and conversely when it rose the cost fell. In purely human terms, however, handling from two to three tons of ore per day required an effort that few of us could aspire to, especially when mechanization will still in its infancy. As large as Consolidated Virginia's payroll was relative to other companies, one may reasonably ask, why was it not bigger? Between October 1877 and April 1878 output per day per worker ranged from a low of 2.15 tons to a high of 2.66 with a median of 2.46 tons per day per worker. During the seven months approximately 280 workers handled 20,000 tons month after month. From a statistical standpoint workers were extracting, loading and hoisting more ore during the decline in production than during the expansion.⁹

**FIGURE 3
COMPARISON OF LABOR COSTS PER TON EXTRACTED ORE AND
OUTPUT PER WORKER, JANUARY, 1876-JUNE, 1878**



Sources: See footnote 5.

For the remainder of 1876 as output moved back and forth in a range between 3,500 and 17,000 tons both cost and output per worker suffered materially. Labor costs per ton reached as high as \$8.70 in December, and output fell below one ton per worker. (November's per-ton costs, as shown, are inaccurate because total labor costs were inaccurately reported.) This occurred even as the size of the labor force was shrinking. Starting in January 1877 improvements in both cost per ton and output per worker became readily apparent. And they continued into 1878. But unlike the first quarter, when

⁸ The calculation is not perfect: monthly tonnage divided by monthly voucher holders divided by 30 (assumed days worked each month).

⁹ The average and median figures are very close.

ore production and mine employment were on the rise, the post-January trends embraced rising extractions with stable payrolls. The result of these diverging trends was that the outlay for labor per ton fell as low as \$1.37 and output per worker rose as high as 2.66 tons in February 1879. Most notably, when production was hovering around 20,000 to 22,000 tons from December 1877 through February 1878, volume comparable to the first quarter of 1876, there were a third fewer workers on the payroll than during the first quarter (even if the surface workers are not counted).

Is it possible to check these figures from other sources? Yes, it is possible. Part of the daily operational record kept by Consolidated Virginia was a tally of workers at each location or station (by shift) along with carloads of ore or waste.¹⁰ Again, because these documents were so voluminous, I chose to analyze a few samples: the first day of the month in each new quarter. On the first day (New Year's Day) of January 1876 over all three shifts about 460 workers had reported to work.¹¹ The recorded tonnage was 365 tons. For that day tons per workers came in at .79, not a particularly robust figure. But half of the workers were identified as located on the surface or at 500 feet where a new assay office was being built. Some surface employees were always necessary to operate the cages, unload the cars, etc., but normally the number was more like 20 to 30 rather than in excess of 100. The assay-office project was a special item. To arrive at a productivity figure for those more directly involved in the handling of the ore only employees below 500 feet were counted. That number was about 225 for an output per ton per worker of 1.60 tons. That falls more closely in line with some figures cited above. On the first day of the next quarter (April 1876) the number of construction workers had diminished sharply, and most of the employees were engaged in extracting and moving ore. There were 437 employees with 335 of them working below 500 feet. They handled 749 tons of ore or 1.71 tons per person (all workers) and 2.24 tons per person (underground workers). Of the six first-of-the-month days for all the quarters 1 April 1876 posted the highest output per worker (surface and underground or solely underground). The range over the six data points was from .71 for the total payroll and .93 for the underground payroll to 1.71 for total and 2.24 for underground. The mean and median calculations over these six data points were similar to the mean and median calculation over the 30-month payroll-tonnage productivity data cited above.

The capacity for work was greater than these daily averages for the entire mine indicate. The Daily Reports included the number of workmen assigned at each level during each shift, and from these entries it is possible to examine more discretely worker output. On 1 January 1876 (cited above) over 24 hours 225 workers were assigned, as follows, between 1,000 and 1,550: at 1,000 feet, 3 workers; at 1,200 feet, 2; at 1,300 feet, 4; at 1,400, 3; at 1,500 feet, 144; and at 1,550 feet, 69. Ore extractions were confined to 1,500 feet (252 tons) and 1,550 feet (113 tons) for a total of 365 tons. The extractions per shift were noted for 1,500 feet but not for 1,550 feet. At 1,500 feet 72 workers were assigned to the first shift, but no cars were loaded and no ore was shipped. During the second shift, however, with 44 men on duty 210 cars were loaded with 189 tons of ore.

¹⁰ Daily Reports, 1 January 1876-13 May 1877, Consolidated Virginia Mining Company, NC99/1/1/2, Bx 3, Special Collections, Library, University of Nevada at Reno.

¹¹ The total in the Daily Report was 454, but because of an arithmetic error the total should be 461.

Each worker on average loaded more than 4 tons and 4 cars over eight-hour periods. The third shift at 1,500 feet had lower but nonetheless impressive numbers: 28 workers loaded 70 cars or 2.5 cars and 2.25 tons per worker. Was it possible for a worker to move as much as 18 pounds of ore each minute of the shift? Without mechanical loading equipment it seems unlikely. Indeed the performance of the workers at 1,500 on 1 January 1876 based on what was recorded in the Daily Report should be viewed with skepticism. If the calculations are accurate, then the performance was surely an aberration; if the calculations are in error, then the results can be disregarded (always a risk in analysis of historical data). The output per worker on other levels and on other days was never as high as these figures. For example on 1 January 1877 at 1,550 223 workers were assigned to three shifts, and they loaded 230 cars or slightly more than one car per worker and 207 tons or slightly under one ton per worker. Worker productivity on those levels where ore was being extracted had a wide range for the six data points. At 1,400 feet data on workers (by shift), tonnage and carloads survived for the first day of the third and fourth quarters, 1876, and for the first day of the second quarter, 1877. Each worker on average loaded .78 carloads and .71 tons per day. At 1,500 feet for the first day of the first, second and third quarters, 1876, 416 employees loaded 980 cars or 2.36 cars per worker and 882 tons or 2.12 tons per worker. Obviously the figures at 1,500 were notably higher, and reasons why can only be guessed at. Perhaps less time was spent working the face of the ore walls because previous shifts had accumulated ore that had to be hoisted. And the extractions on 1,400 could have been more difficult and the accumulated ore smaller. From the daily or weekly reports by the superintendents working conditions could vary on a single floor and among several floors. At 1,550 feet with data from these first days of the month in all six quarters 791 workers produced 1,016 tons or 1.28 tons per worker, which might be regarded as a normal day's work. (Carload data were incomplete.)¹² The range in worker productivity level by level and day by bay should not be surprising in light of all the variables from human to managerial that came into play in these underground operations but an explanation remains difficult to pinpoint. The human variable – the sheer ability of a worker to perform at levels suggested by productivity calculations remains the most elusive. But also the state of the interior of the mine and the way in which management organized the workday or the degree to which it supplied the worker with the modern tools would affect productivity levels. Of all the Comstock operations Consolidated Virginia (as well as California) was probably the leader in technological and mechanical applications. A more systematic analysis of the Daily Reports would certainly refine the productivity figures and possibly reveal somewhat different patterns from those in my small sample. The extraordinarily high productivity levels on certain days should not distract attention from the pattern that the various employment records reveal: namely given the recorded levels of employment and output at Consolidated Virginia worker productivity on average (one to two tons) was a noteworthy and remarkable feat.

California's payroll and productivity data conformed to and differed from the findings for Consolidated Virginia. In the fiscal year 1877 California's most productive

¹² Daily Reports, 1 January, 1 April, 1 July, 1 October 1876 and 1 January and 1 March 1877 (substituted for April 1877, which could not be found), Consolidated Virginia Mining Company, NC99/1/1/2, Bx 3, Special Collections, Library, University of Nevada at Reno.

year with nearly \$19 million in bullion, the Annual Report to the company stockholders stated that more than \$788,000 was paid in wages and salaries to operate the mine (mill labor was a separate item). Total mining costs were set at \$4.3 million or 23 percent of the bullion value. The wage and salary bill amounted to 18 percent of the total mining costs and to 4 percent of the total bullion value. In that same Annual Report the company published more details about worker remuneration. A chart showed the hours worked and the wages paid in ten classifications. Daily wage rates for eight classifications ranged from \$3 to \$7. The remaining two classifications were specified as monthly rates at \$250 and \$200. Based on a 30-day month the daily rates of these two classifications would be \$8.33 and \$6.67 respectively for such occupations as foremen, assayers, and other administrative or managerial tasks. The labor force put in a total of 191,554 workdays that resulted in an average daily wages (total wages divided by total days) of \$4.055. Among those paid a daily rate 92 percent earned \$4 per day, the union-mandated compensation for the underground mine workers. The next largest daily remuneration at 5 percent was \$5 per day. Most of the work force - approximately 500 - received daily wages between \$3.50 and \$5.00.¹³ If a worker stayed the full year (365 days) and was paid the average daily wage, as shown in the chart, his annual remuneration would be nearly \$1,500. (Medical benefits, etc., as discussed earlier, were determined on a case-by-case formula with the unions and local charities picking up the bulk of the tab.) Since about 219,000 tons were extracted in 1877 and 192,000 days were worked, the output per worker per day roughly was about 0.9 tons. For those who actually extracted the ores from the stopes the output per worker per day was more like 1.25 tons. The productivity calculations shown on Figure 4 below are not significantly different from those for Consolidated Virginia. The range was from .56 tons per worker to 2.77 tons per worker, but most of the calculations hovered around 1 to 1.5 tons per worker.

California was not a carbon copy of Consolidated Virginia. While California and Consolidated Virginia shared an ore body, the configuration and location of the facing walls required different strategies, and that affected employment assignments and productivity levels. It must be emphasized again that the time-lines are different: in 1876 when California began production Consolidated Virginia had already been operating for three years and was at the peak of its production. Not surprisingly, therefore, as Consolidated Virginia's payroll shrunk in 1876, California's grew. In fact, as noted in a previous section on labor tenure, many Consolidated Virginia workers transferred to California in 1876. During its 29 months (one month less than Consolidated Virginia) from February 1876 through June 1878 California spent \$1.2 million in wages and salaries and delivered 432,185 tons. The monthly mean and (median) for payroll vouchers issued was 373 (384); for compensation \$40,000 (\$42,000) and for tonnage 16,000. Labor costs were \$2.67 (\$2.68) per ton per month, and worker output per day was 1.33 (1.37) tons. In April the labor force grew by more than three fold in April 1876 from 35 in February and 33 in March to 142. In August 535 laborers would be on board at California. Total monthly labor costs had risen from several thousand dollars to tens of thousands of dollars. For the next dozen months the work force averaged about 380 workers, and in the final quarter of 1877 (October-December) the monthly payroll

¹³ Annual Report, 1877, California Mining Company, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno, 32-33.

climbed to 532, 548 and finally 563, the highest for the entire period, before turning down in January, 1878. For the remaining months (until June 1878) the work force stayed below 500 except for the month of May when the payroll had 507 workers. The California data unlike the Consolidated Virginia data concern the rise of the mine to its zenith rather than the decline of the mine from its peak. The correlation between monthly vouchers and monthly tons at 65 percent proved to be strongly positive, an indication that as output rose so too did employment and conversely when output fell employment fell. Any comparison with Consolidated Virginia for analytical purposes would be misleading because each occupied a different point in the production cycle. The proper comparative framework would include Consolidated Virginia data from 1874-1875, but the needed payroll data are still missing.

California's production cycle was somewhat cleaner than Consolidated Virginia's for analytical purposes. The correlation between production and employment is much stronger at California than at Consolidated Virginia. California's employment database covered the full production cycle, and calculations reflect the beginning, the middle and the end whereas Consolidated Virginia's dataset covers the middle and the end. In addition, the fire had no impact on production and employment at California; moreover, large-scale repairs that could swell the labor-force at Consolidated Virginia and distort the calculations were generally avoided at California, certainly during its bonanza period. How Consolidated Virginia's figures would have looked if payroll data existed for the entire production cycle is unknown. Nevertheless output per work at the two mines was similar, but based on calculating from the datasets and nothing more California workers fell slightly behind Consolidated Virginia workers, 1.31 tons versus 1.39. Finding a perfect number is neither the aim nor a possibility. It may be best to think of an average between 1.25 tons per worker and 1.40 tons. At California daily output per worker reached 2.77 tons in December 1876 when the payroll was at one of its lowest levels and total output was just slightly above 15,000 tons. It fell to 0.56 tons per worker in the final month, June, 1878, when the work force was nearly a third above its average but tonnage had dropped to half its average. In the daily records that I consulted the output per worker in some shifts output reached or exceeded 3 tons per workers; but it never matched the highest at Consolidated Virginia.¹⁴

FIGURE 4
LABOR COSTS, CALIFORNIA MINING COMPANY,
FEBRUARY 1876-JUNE 1878

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Feb 1876	35	\$3,748						
Mar	33	\$3,496		-5.71%	-6.72%			
Apr	142	\$15,391	7,594	330.30%	340.24%		\$2.03	1.78
May	148	\$12,426	9,986	4.23%	-19.26%	31.50%	\$1.24	2.25

¹⁴ Payroll data were assembled from the Time Books (Duplicates), January 1876-June 1878, Consolidated Virginia Mining Company, NC99/3/1-70, Bxs 9, 10 & 11, and ore data were assembled from Bullion Records, 1876-1878, Consolidated Virginia Mining Company, MC99/1/3/5, After Bx 1, Special Collections, Library, University of Nevada at Reno. For output per ton per worker per day see Daily Report, 19 June 1877, California Mining Company, 19 March 1876-July 22 1877, NC99/1/1/1, Bx 3., Special Collections, Library, University of Nevada at Reno.

Jun	142	\$15,391	11,541	-4.05%	23.86%	15.57%	\$1.33	2.71
Jul	463	\$49,128	18,723	226.06%	219.20%	62.24%	\$2.62	1.35
Aug	535	\$61,180	19,190	15.55%	24.53%	2.49%	\$3.19	1.20
Sep	474	\$50,109	15,753	-11.40%	-18.10%	-17.91%	\$3.18	1.11
Oct	434	\$50,031	14,028	-8.44%	-0.16%	-10.95%	\$3.57	1.08
Nov	305	\$34,454	15,527	-29.72%	-31.13%	10.68%	\$2.22	1.70
Dec	183	\$21,154	15,200	-40.00%	-38.60%	-2.11%	\$1.39	2.77
Jan 1877	360	\$41,478	15,375	96.72%	96.08%	1.15%	\$2.70	1.42
Feb	361	\$38,897	14,576	0.28%	-6.22%	-5.20%	\$2.67	1.35
Mar	372	\$42,320	15,257	3.05%	8.80%	4.67%	\$2.77	1.37
Apr	384	\$41,563	14,449	3.23%	-1.79%	-5.30%	\$2.88	1.25
May	336	\$26,413	16,568	-12.50%	-36.45%	14.66%	\$1.59	1.64
Jun	384	\$41,619	18,950	14.29%	57.57%	14.38%	\$2.20	1.64
Jul	458	\$49,535	19,456	19.27%	19.02%	2.67%	\$2.55	1.42
Aug	478	\$54,743	18,679	4.37%	10.51%	-3.99%	\$2.93	1.30
Sep	466	\$50,117	20,081	-2.51%	-8.45%	7.51%	\$2.50	1.44
Oct	532	\$58,961	21,421	14.16%	17.65%	6.67%	\$2.75	1.34
Nov	548	\$57,546	19,807	3.01%	-2.40%	-7.54%	\$2.91	1.20
Dec	563	\$52,671	19,097	2.74%	-8.47%	-3.58%	\$2.76	1.13
Jan 1878	541	\$63,661	19,547	-3.91%	20.86%	2.36%	\$3.26	1.20
Feb	401	\$42,277	17,687	-25.88%	-33.59%	-9.52%	\$2.39	1.47
Mar	379	\$42,718	16,096	-5.49%	1.04%	-8.99%	\$2.65	1.42
Apr	355	\$39,862	16,217	-6.33%	-6.69%	0.75%	\$2.46	1.52
May	507	\$52,080	13,200	42.82%	30.65%	-18.61%	\$3.95	0.87
Jun	483	\$46,211	8,181	-4.73%	-11.27%	-38.02%	\$5.65	0.56
Total	10,802	\$1,159,176	432,185				\$2.68	
Mean	373	\$39,972	16,007					1.33

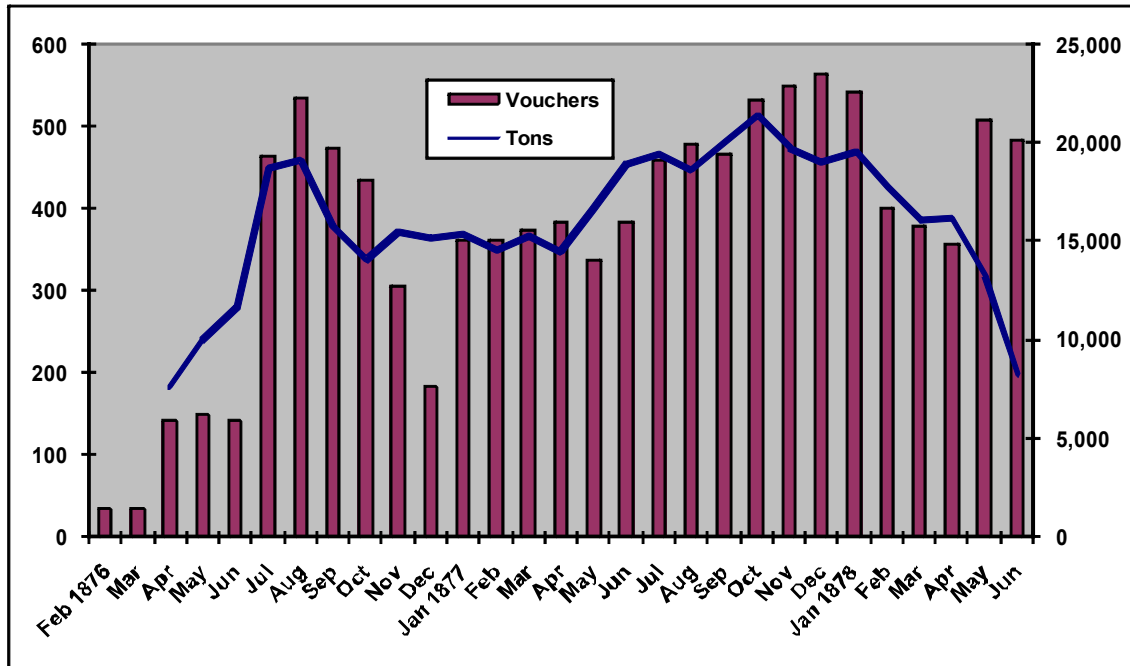
Legend: [1] Month; [2] # of Vouchers; [3] Total Labor Costs; [4] Total Tons; [5] % Change Voucher; [6] % Change Costs; [7] % Change Tons; [8] Cost Per Ton; [9] Worker Output Tons Per Day.

Sources: See footnote 14.

The calculation of the coefficient of variation (measure of volatility in a series) indicates that monthly production levels at Consolidated Virginia were twice as volatile as they were at California (48 percent versus 22 percent). Monthly employment levels, on the other hand, were more volatile at California than at Consolidated Virginia by about a third (41 percent versus 29 percent). It is not immediately clear what accounted for the differences. Labor costs per ton were slightly higher at California (\$2.68 per ton) during its triumphant years compared to Consolidated Virginia (\$2.51 per ton) in its twilight years. What can be observed under the numbers is that when tonnage at Consolidated Virginia dropped off beginning in the middle of 1876 and remained low into the middle of 1877 the level of employment stabilized in the middle to high 200's, and when production began to climb in late 1877 and into early 1878 employment levels did not change significantly. At California the change in the level of production induced (after some delay on the downside) a change in the level of employment. Thus the volatility in monthly labor costs per ton at Consolidated Virginia was almost three times greater (87 percent) than at California (33 percent), even though Consolidated Virginia's employment levels had less variability. In those months during the second half of 1877 when Consolidated Virginia was producing more but not hiring more, the worker productivity reached its highest level of the 30 months and notably outpaced California.

The question arises for which there is no definitive answer: did Consolidated Virginia achieve such notable productivity levels because fewer workers were hired and more work was required? There is of course a dark side to rising productivity levels in an era when the rules and regulations governing the work place were minimal. The fact that workers at both Consolidated Virginia and California and perhaps other mines performed admirably did not mean that the work regimen was admirable.¹⁵

**FIGURE 5
COMPARISON OF PAY VOUCHERS AND ORE TONS, MONTHLY,
CALIFORNIA MINING COMPANY**



Sources: See footnote 14.

Most of the extraction of ore in California came from 1,500 through 1,550 to 1,600. Almost no ore was extracted above 1,400, very little from between 1,400 and 1,500 feet and a modest amount below 1,600. There was considerable activity at depths below 1,600 feet, and the C&C Shaft, one of several hoisting operations, pushed pass 1,600 and as far as 2,150 feet by the end of 1878 with little to show for the expense of opening these new depths. The Superintendent’s Annual Report admitted that the cost of maintaining “dead works” to open and explore these greater depths was high in light of the lack of return in refinable ores. Moreover the costs increased because the closing of the main shaft of Consolidated Virginia for repairs degraded the quality of air in

¹⁵ There was no evidence in the Mackay and Fair archives that managers imposed daily quotas and minimal performance standards on the work force. Let me stress that calculations of productivity figures, in this case dividing tons extracted by workers employed, provide a quantitative gauge of worker performance but not a qualitative standard. The stamina and skill of the Comstock worker seemed almost intuitive if these figures are to be accepted, but other research avenues used by labor and demographic historians need to be pursued to demonstrate their validity. For each worker to have lifted, shoveled, drilled or transferred in some other way a ton or more of ore on a daily basis without modern conveyors and loaders in cramped and dusty spaces should certainly be admired.

California, required the most expensive “dead works” and the employment of more workers since in the poor ventilation individuals could not work full shifts. The rising labor costs that showed up in the California payroll data toward the end probably involved more money committed to dead works than before. Despite the optimism of the Annual Report and the intersection of the C&C Shaft with the Lode at about 2,200 feet, the lower depths lack of profitable ores posed problems that required costly solutions. California like Consolidated Virginia limped along until the fire of 1881, and some limited activity after that. In both mines the declining productivity levels signaled that the future of the operations at 1,400 to 1,700 feet was far from assured.¹⁶

The C&C Shaft – a joint undertaking by Consolidated Virginia and California – had an important role in developing the underground network. The construction of the C&C Shaft and the connecting tunnels to the ore bodies was a joint undertaking of Consolidated Virginia and California Mining Companies. Each company kept separate accounts for expenses including payrolls in the construction of the shaft. The construction costs, as reported in the companies’ Annual Reports, were identical, however, because those costs were split fifty-fifty. In addition, though, the mining companies paid for the operation of the shaft, and those figures could differ on the basis of how much ore each company hoisted through the shaft. Finally, since tunneling had to be built from the shaft to the mining areas, the mining company where the work was being done bore the expense of those projects. While the accounts, as they appeared in the stockholders’ annual reports, may have met prevailing accounting standards, they did not always provide sufficient detail to allow close analysis of the financing behind the construction and the operation of the shaft.¹⁷

C & C construction began in late 1874 when Consolidated Virginia had entered its most productive period and California had recently been incorporated. From the outset this was a high-priority project to be moved along as quickly as possible. By 1 January 1875 the shaft had been sunk 45 feet and the structure on the surface to house hoisting equipment had been completed.¹⁸ Work on the shaft was pursued vigorously and aggressively in order to open an access to the ore bodies at 1,500 feet and below. Work continued for a decade, even after the mines themselves had been shuttered in 1881. By 1883 the shaft had been sunk more than 2,500 feet, and construction and operation costs were paid out of assessments against stockholders of the companies that had taken over the shaft and the mines. Prior to that the financing of the shaft’s construction and operation was derived from direct contributions of about \$2 millions from the Consolidated Virginia and California and from operating revenues of about \$1.2 million earned mainly from hoisting Consolidated Virginia and California ores. Each company treated its contribution as a continuing expense, and even after the shaft began generating

¹⁶ Annual Report, 1877, California Mining Company, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

¹⁷ Compare for example the joint shaft accounts in the Annual Reports, 1878, Consolidated Virginia Mining Company, 43, NC99/1/5/1, Bx 2, and California Mining Company, 29, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

¹⁸ Copy of Letter from James Fair to David Bagley, Secretary, 01/03/75, from Letterpress Book, 11 November 1874-31 August 1875, Consolidated Virginia Mining Company, NC99/2/3, Bx 6, Special Collections, Library, University of Nevada at Reno.

receipts (by charging the companies to hoist their ores) the contributions were required to cover mainly construction expenses. The shaft was not incorporated as a separate company, had no directors or stockholders and reported no profits (or losses). The Firm owned the pot of ground where C&C was built. It lay east of the ore bodies and was not supposed to intersect the Lode until the 2,000-foot level. (The Lode had pinched out at about 1,000 feet but was expected to reappear at 2,000 feet or below under the ground that contained the current bonanzas.) Drifts from 1,000 to 2,000 feet long had to be dug from the shaft to the location of the ore bodies, and under the arrangement the individual company paid for the construction and maintenance of the drifts. If the shaft did intercept the Lode at 2,000, the presumption was that this would provide direct access to new bodies associated with the Lode, as had been the case for the first thousand feet. The Lode was found (actually deeper than 2,000 feet) but not the ore bodies. These great depths, however, required expensive “dead works” for the control of ventilation and water and ultimately proved too costly to be pursued. In the 1878 Stockholders’ Report, when the C&C Shaft had arrived at 2,150 feet, W. H. Patton, Superintendent at Consolidated Virginia, noted that ores, normally used to pay for these explorations and expansions, were simply absent. “The quality of ore extracted being so much less than taken out in the previous year, it was so much the less able to bear the increased burden of expense imposed on it.”¹⁹

Despite ample accounting documentation for the construction and operation of the C&C Shaft, the data are not easy to disentangle. The reason is that part of the expense was covered building the shaft and another part operating, repairing and connecting the shaft. In one set of accounts the expenses covered by the companies’ contributions (as opposed to operating income) appear to be mainly from the purchase of supplies and the employment of labor required for sinking the shaft. The Annual Reports always made a distinction between contributions, which were the same for both companies, and income, which could be different. The Annual Reports, however, may not provide a complete record of the companies’ finances. In the case of California the first annual report was not published until 1876, although it had been under construction since 1874 and had contributed to the C&C project from 1875. A document for the period December 1874 through February 1879, reported that the monthly costs for building the shaft were to be covered by the companies’ contributions. For December 1874 the first month of construction, only Consolidated Virginia made a contribution. From there to the last entry in February 1879 the two companies split the monthly construction costs. Even after February 1879 the shared contributions continued into the early 1880s. Since California technically had no income during 1875, its contribution was probably made from the working capital that the stockholders (mainly Mackay, Fair *et al.*) had raised to incorporate the mine. No operational income from C&C appeared in the Annual Reports until 1877. An income entry coincided with the completion of a drift of nearly 700 feet between the shaft and the ore body at 1,650 feet that allowed hoisting through the shaft to begin. Fair’s comments to his stockholders on 17 January 1877 was: “All the appurtenances to this shaft, such as the main building, an extensive machine shop, the ore house, the hoisting and pumping machinery, the pumps, the pump bobs, water tanks, etc.,

¹⁹ Annual Report, 1878, Consolidated Virginia Mining Company, 35, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

are complete in every respect.” The system was designed to accommodate the expected heavy volume of ore to be extracted from both mines. “The surface station of this shaft and the stations in the shaft have been made double, one immediately above another, and two cages, called a double-decker, are employed for hoisting ore, so attached one above the other as to exactly meet these divisions of the stations; both cages being loaded in the mine and unloaded at the surface at the same time.”²⁰ The cost, according to Fair, was \$820,000, a figure that was slightly below the \$855,000 derived from documents related to C&C financing.²¹

In the first month (December 1874) of construction the costs amounted to a pittance - only \$8,240. Over the next 50 months the companies would pay out more than \$625,000 or on average \$12,500 per month. During the second quarter, 1875, costs jumped from an average of \$9,000 per month (previous four months) to \$46,000 (April 1875). Two of the most costly months were October and November 1875 when the outlays were \$54,000 and \$58,000 respectively. On the basis of the extant records (through February 1879) these were the highest of monthly outlays. In the months surrounding October and November monthly costs were also high in the range of \$45,000 and \$50,000. The fire of October 1875 did not impose new expenditures to repair or rebuild because C&C’s surface structures were not in the fire’s path. Two weeks after the fire James Fair reported that the machine shop (noted above) was almost complete and the engines were running splendidly.²² Other factors explain why monthly expenses were so high between July 1875 and January 1876. In May 1875 the foundation for hoisting and pumping engines was laid, and by the end of June it had been finished. Toward the end of September the new pumps had been installed and started. Other machinery (not specified) had been installed by early October. In a letter to Goddard and Company Fair complained that the joints were so poor that they had to be refitted. The expense for this, he advised, would be charged to the manufacturer, and the manufacturer, he further advised, should send representatives to Virginia City to observe firsthand how much time and money was required to make the repairs.²³ Once the surface facilities were in place, as these letters suggest that they were by the fall of 1875, the remaining work was underground.

²⁰ Even though the 1880 Census reported triple-deckers cages at C&C, the addition of a third cage did appear in the documentation that I read. On-Line at www.census.gov/prod/www/abs/decennial/1880.html, United States Census Bureau. *Statistics and Technology of the Precious Metals*, vol. 13, 136.

²¹ The monthly expenses may be found in the Journal, C&C Shaft, January 1874-February 1879, NC99/5/3, After Bx 13, Special Collections, Library, University of Nevada at Reno, and Fair’s comments appear in the Annual Report, 1876, California Mining Company, 11-12, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

²² Copy of Letter from James Fair to C. H. Fish, Secretary of the Board, 11/07/75, from Letterpress Books, 28 March-15 November 1875, Consolidated Virginia Mining Company, NC99/2/4, Bx 6, Special Collections, Library, University of Nevada at Reno.

²³ Copies of Letters from James Fair to C. H. Fish 05/23/75, 06/27/75 and 09/26/75 from Letterpress Books, 28 March-15 November 1875, Consolidated Virginia Mining Company, NC99/2/4, Bx 6, and Copy of Letter from James Fair to Goddard & Company, 10/11/75, from Letterpress Books, 1 September 1875-27 June 1876, Consolidated Virginia Mining Company, NC99/2/6, Bx 6, Special Collections, Library, University of Nevada at Reno.

The direct contributions (which will not match up with the costs discussed above) by Consolidated Virginia and California Mining Companies to the C&C Shaft from December 1874 through February 1879 totaled \$1.3. The pattern of monthly contributions was sharply upward in 1875 and then irregularly downward over the next several years. The monthly outlays were highest in 1875 at an average of \$36,000 per month, dropped slightly in 1876 to \$35,000 and then sharply in 1877 and 1878 to \$19,000 and \$15,000 per month and finally to in 1879 to \$8,300 per month.²⁴ In 1880 and 1881 the outlays continued at \$100,000 per year, even though Consolidated Virginia shut down in the spring of 1881 and California had very limited operations. The shaft became the vehicle in the search for new ore bodies, but having reached almost 2,500 feet without any discoveries and relying on stockholder assessments rather than bullion yields to cover costs C&C curtailed finally further explorations in 1883. Over the decade direct contributions by the companies as a percentage of total-bullion yields were probably no more than 1.5 percent, a significant amount, perhaps, with respect to an outlay for a single mining project but much less so in terms of what was ultimately mined. For Mackay, Fair *et al.* once the richness of the ore body had been determined, there was never much doubt that a new shaft to expedite the movement of ores, personnel and supplies should be built.

The accounting data in connection with the operation of the C&C Shaft pose some analytical issues. Beginning in the 1877 Annual Reports the section on C&C's accounting became more complex. In addition to itemizing the companies' direct contributions and the property and inventory held in behalf of C&C, it showed charges against Consolidated Virginia and California for hoisting, sales and purchases of supplies and labor costs. While the companies continued their annual combined contributions of one to two hundred thousand dollars the operational side of C&C involved even larger transactions. Not all the C&C figures and entries, as they appear in the annual reports, can be explained or reconciled. The precise financial arrangements between the two mining companies and C&C will remain incomplete unless other documentation will appear. From an analytical standpoint the main problem is that the information, as presented in C&C annual statements, did not divulge enough about the origins of the figures or how they were assigned to various accounting categories. Generally what the statements showed was cash balances at the start and the end of each year, the companies' contributions as well as their hoisting costs, purchase and sale of supplies and expense of labor. In a variation of this general format the supplies would be itemized company-by-company. Finally the C&C annual statement often included an inventory of property, real and mechanical, and supplies on hand.²⁵

By the end of 1876 Consolidated Virginia and California had contributed more than \$850,000 to the construction of the shaft, which had reached 1,600 feet. Drifts were

²⁴ Journal, C&C Shaft, January 1874-February 1879, NC99/5/3, After Bx 13; Annual Report, 1879, Consolidated Virginia Mining Company, 20, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

²⁵ Commentary in text based on analysis of annual reports: Consolidated Virginia Mining Company, 1878 (43-44), and 1879 (18, 20-21) in NC99/1/5/1, Bx 2, and California Mining Company, 1877 (34-36), 1878 (29-30) in NC99/1/5/6, Bx 2, and 1880 (24-26) in NC99/1/5/7, Bx 2, Special Collections, Library, University of Nevada at Reno.

under construction from the shaft to the ore-bearing areas. According to the 1876 inventory the real estate was valued at \$25,000 and the “Hoisting Works, Pumps and Machinery” at \$300,000 for a total of \$325,000. Supplies were valued at nearly \$70,000 boosting the total to \$395,000. More than \$50,000 of the supplies consisted of 2 million feet of timber (at 2.5 cents per linear foot?), and the remainder were sundry items such as coal, oil, powder, iron, sledges, picks and handles.²⁶ By the end of 1877 the inventory had fallen to \$375,000 even though the “Hoisting Works...” etc. had risen to \$320,000. The volume of timber on hand had been reduced to several hundred thousand feet with a value of only \$8,000. The C&C annual statement (called “Balance Sheet”) indicated that the cost to build and operate the shaft in 1877 was nearly \$673,000. About 81 percent (\$547,000) was spent on the consumption of supplies and the remuneration of workers. In fact, though, C&C charged Consolidated Virginia and California \$82,000 and \$21,000 respectively for hoisting and \$269,000 for labor and sales of supplies (supplies not specified) so that the unreimbursed costs were \$301,000 of which \$262,000 consisted of contributions from the companies.²⁷

The first year in which hoisting receipts appeared in the annual statement was 1877. Given that more than 370,000 tons of ore were raised by the companies and their total hoisting bill was in excess of \$400,000, it may be surprising that only a quarter of it was raised through the new shaft. It was not a matter of depth, for the shaft had been dropped below 1,850 feet so that it paralleled all the important ore-bearing regions of both mines. What limited its use was access from the shaft into areas where ore was being mined. C&C had been located where it was in anticipation of intersecting the Lode at 2,000 feet or slightly below, or at least that was how the formation of the Lode was understood to be. In order to tap the anticipated riches at the greater depths hundreds of feet would separate the shaft from the ore body at 1,500 to 1,700 feet. Under receipts C&C received payments for “Labor and Sales of Supplies” from Consolidated Virginia and California. These were payments to build the tunneling from the C&C to the stopes. Other shafts were also in use. At California 105,724 tons were extracted at 1,600 feet and then hoisted by way of the Ophir Shaft. Even the “older” main shaft of Consolidated Virginia was also being extended 100 feet to 1,650 feet because of its proximity to the ore bodies.²⁸ It was possible that cutting the tunnels from the shaft to the ore bodies was time-consuming and expensive than dropping the shaft. It is speculation, but C&C’s role from the outset may have been conditioned by what was assumed to be at the intersection of the Lode and below. That was a mindset shaped in part by experience - rich new ore bodies had been discovered at greater depths – and by local doctrine – the Lode had endless treasure.

In the following year of 1878 as the shaft and its connecting drifts had been extended hoisting revenues rose by almost half to a total of \$148,000. Direct

²⁶ The 1876 C&C documentation only included an inventory. See 1876 Annual Report, California Mining Company, 15 in NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

²⁷ There were two sets of numbers: assets and liabilities equaled \$636,268.48, but receipts and expenses equaled \$672,694.89. The difference was traced to receipts and expenses where \$40,000 more in supplies were consumed than purchased (thus, the decline in inventory) and to cash on hand, which was ignored.

²⁸ Annual Report, 1877, California Mining Company, 11, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

contributions of \$180,000 exceeded hoisting revenues by more than \$30,000, but the sale of supplies (presumably for the underground network) greatly exceeded them by \$230,000. C&C paid out \$576,000 for supplies that included \$136,000 for wood, \$155,000 for timber and \$285,000 for sundries. In addition it paid out \$128,000 in wages and salaries. The total outlays were \$704,000 of which fees and sales covered \$528,000 or 75 percent. The balance was made up through contributions. The two companies had a total hoisting bill of \$241,000 (down 40 percent from the previous year, a sign of the future) of which more than half was paid to C&C. Based on hoisting fees I estimate that nearly 80 percent of Consolidated Virginia's ores moved through C&C and something less than half of California's ores. The reason why so much of Consolidated Virginia's ores were shipped through C&C was that its own main shaft was closed down for repairs on 1 May 1878 and remained closed for most of the year. Such was acknowledged in the annual Superintendent's Report: "The work of hoisting from this level [1650 feet] has not been interfered with by the closing of the main...shaft, as there is a direct communication between this level and the C. and C. Shaft." Consolidated Virginia had in addition to C&C access to Gould & Curry's Shaft through a longtime southern drift and to Ophir's Shaft through a new northern drift. California continued to rely more on the Ophir than C&C with several new non- C&C-connecting drifts being completed to enlarge that network.²⁹

The Annual Statement of the C&C Shaft for 1879 features several significant (but not surprising) changes after 1878. Hoisting fees declined in response to reductions in output of ore, and direct contributions rose to help to cover continuing costs to sink the shaft. Overall the operations at C&C amounted to \$482,000 or a third lower than the year before. The 1879 financial report was more detailed than its predecessor. Supplies charged to mining companies were down substantially: from \$154,000 to \$54,000 (-64 percent) at Consolidated Virginia and \$62,000 from \$147,000 (-58 percent) at California. General sales of supplies (buyers unknown) also fell from \$75,000 to \$19,000 (-75 percent). The purchase of supplies obviously declined as well from \$576,000 to \$316,000 (-45 percent). For the first time the annual statement itemized the supplies purchased and sold. Among the purchases were eight categories: wood, timber, ice, powder, caps and fuses, candles, miscellaneous iron and miscellaneous articles, and among the sales seven categories – the same list as the purchases except for wood. It is presumed that that the sales of supplies to (or the payments for supplies by) the mining companies were related to the construction of the underground network of tunnels and rooms that served the particular needs of the individual mining companies. If the sales of supplies to the companies were subtracted from the purchases of supplies the difference of \$200,000 was virtually identical to the total contributions made by the companies. Wood purchases were the largest at \$138,000 or 44 percent, and since neither company purchased any wood from C&C, this was probably an item that was purchased for the boilers that powered the engines that lifted or dropped the cages. The second largest category was timber: C&C purchased more than \$78,000 worth of timber and sold nearly \$70,000 worth of timber to the two parent companies. Certainly some timber was used in the

²⁹ See the Superintendents' Reports in the Annual Reports, 1878, Consolidated Virginia Mining Company, 28-33, NC99/1/5/1, Bx 2 and California Mining Company, 8-14, NC99/1/5/6, Bx 2, Special Collections, Library, University of Nevada at Reno.

construction of the shaft itself, but how (or why) it was allocated between the C&C and the parent companies remains unclear. The third and fourth largest categories of purchases were iron and general merchandise at \$31,000 and \$24,000 respectively, but only 5 percent (\$1,500) of the iron and 10 percent of the sundries were sold to Consolidated Virginia and California. The bulk (36 percent) of the iron was sold to other (unspecified) companies. Of the \$9,000 spent on ice, an essential article for underground workers, 98 percent of it was sold to the two mining companies. Similarly with powder, capes and fuses and candles more than 90 percent of what was purchased was sold to the mining companies. The 1879 Annual Statement included items not specifically noted in prior annual statements. For example, there were entries for a "Joint Pipe Account" showing purchases of more than \$22,000 and receipts of more than \$16,000, although the origin of the receipts was not given. Other outlays were for freight, water, surveys and taxes, and other receipts were from rebates granted by the Virginia and Truckee Railroad (a common practice) and from fees for "Compressed Air and Pumping" (source unspecified).³⁰

The most detailed Annual Statement of the C&C Shaft was presented as a part of the annual reports to the stockholders of Consolidated Virginia and California in 1880. In providing some context I would note that total output of the two mines had fallen a fifth from 120,000 tons in 1879 to 94,000 tons in 1880. The business of the C&C Shaft, however, fell modestly from \$482,000 to \$442,000 or 8 percent. Both Consolidated Virginia and California made direct contributions totaling \$199,000 (as opposed to \$200,000 in 1879) and paid hoisting fees of \$103,000 (compared to \$115,000 in 1879). Contributions and hoists accounted for 68 percent of C&C's budget. Of the remaining 32 percent (\$141,000) \$101,000 was derived from sales of supplies (timber, ice, iron, etc.) to Consolidated Virginia and California with the former 61 percent of the total. In this statement sales to other mining companies (also owned or controlled by Mackay, Fair *et al.*) were spelled out in greater detail. Supplies and services worth about \$30,000 were sold to nearly a dozen other companies with mines or shafts, most of which were in the vicinity of Consolidated Virginia and California and owned or controlled by Mackay, Fair, *et al.* Supplies constituted the largest transaction of about \$17,000, and the next largest transaction was pumping for which the Sierra Nevada, Mexican and Union Shaft Company paid \$7,200, Ophir Mining Company paid \$1,100 and Sierra Nevada Mining Company paid \$4,400 for a total of \$12,700. Mines and shafts to the north of C&C paid to use of C&C pumping facilities as explorations had shifted from California's claim to the Ophir and Sierra Nevada claims. Without earlier notations of a joint pipe account, its appearance here was unexplained. Not unexpectedly the purchase of supplies in 1880 fell to \$282,000 from \$316,000 in the previous year. As C&C's business declined, the role of the direct contributions by the parent companies assumed greater importance: in 1878 the contributions accounted for 25 percent of the total operating revenue, in 1879 42 percent and in 1880 45 percent. By 1882 so far as I could determine the only income for C&C was from direct contributions, which totaled \$199,000 and were paid for out of assessments of \$400,000 (not all of which was collected) against the stockholders. It was

³⁰ Annual Statement, Consolidated Virginia and California Joint Shaft, in the Annual Report, 1879, Consolidated Virginia Mining Company, 20-21, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

reported that the shaft was being maintained and repaired, as needed; the equipment was in “excellent” operating order; and work on the shaft and the area served by it between 2,500 and 2,700 feet continued. Despite favorable comments such as “strength of the formation” of the Lode at the lower levels and improvements to ventilation through links between C&C and the Joint Union Shaft, the end was at hand. Operating and expanding the shaft through assessment without any visible return could not be justified.³¹

Absent from the preceding discussion of C&C’s finances was the cost of the labor force. In 1876 it was \$133,215, in 1877 it was \$125,278, in 1878 \$128,180, in 1879 \$115,871 and in 1880 \$142,398. C&C Shaft payroll data can be assembled from two sources. The C&C Annual Statements reported yearly payroll outlays from 1877 through 1880.³² It turned out that these payroll data were drawn from the “Time Books”, which both sponsoring companies kept on wages paid and hour worked by the labor force above and below ground at the mines and at the C&C Shaft. Monthly Time Books, as noted earlier, covered the period from February 1876 through June 1878.³³ Even though the C&C Shaft project began in December 1874 and the companies began sharing costs in 1875, no payroll data prior to February 1876 has yet turned up. In that month and for the remainder of 1876 it contained columns of figures for workers at the Consolidated Virginia and California Mines, the C&C Shaft and the Utah Mine and Shaft (several properties north of California).³⁴ Beginning in January 1877 two additional classifications appeared in the Time Book: payrolls for workers at “C&C – Consolidated Virginia” and at “C&C California”. This separation between general C&C payroll expenses and company-specific C&C payroll expenses remained the case through June 1878, at which point the Time Book archives ceased. Lacking a specific description of what C&C-related work the companies paid for, I have assumed that the work involved the chambers that had to be built around the shaft and the tunnels from the shaft to the ore-bearing regions. The strongest implicit evidence for this interpretation is that the payrolls directly charged to the sponsoring did not appear in the Time Books until the shaft had reached 1,550 feet. At this depth the first drift from the C&C Shaft was started. On its own the C&C shaft required a steady, sizable work force of about 105 on average each month between February 1876 and June 1878. Their total wages amounted to more than

³¹ Annual Statement, Consolidated Virginia and California Joint Shaft, in the Annual Report, 1879, California Mining Company, 24-26, NC99/1/5/7, Bx 2, and “Financial Status of C. & C. Shaft” as part of Annual Statement, 1882, California Mining Company, 16, NC99/1/5/7, Bx 2, Special Collections, Library, University of Nevada at Reno. The problem in analyzing the C&C financial statement is how many of the purchases (expenses) and sales (revenues) involved Mackay and Fair companies. Were these transactions legitimately priced, or were they bookkeeping entries with little or no relevance to the market?

³² In 1877 and 1878 payroll appeared on the “Balance Sheet” as both a credit and a debit. In 1879 and 1880, because the “Annual Statement” replaced the “Balance Sheet” the payroll appeared as an expense in several different places.

³³ In the one year 1877 where the figure in the C&C Annual Statement can be compared to the figure in the Time Book the totals are very close but not identical. They are not identical because the C&C totals for one month – May 1877 – are missing from the Time Book. Without May the annual total from the Time Book is \$113,617. The Annual Statement reported wages and salaries of \$125,278. The difference is \$11,661. The average monthly payout in each series was about \$10,500. If the average were used for the missing month in the Time Book series the totals would be within \$1,000 of each other. Malfeasance did not play any role in the recording of figures in two different accounts.

³⁴ No ore was reported from Utah, and since it was connected to California through drifts that passed through the intervening mines, the shaft may have been used for ventilation, transport, etc.

\$321,000 or \$11,075 per month. In 1876 an average of 110 monthly wage vouchers were issued; that figure fell to 94 in 1877; and it rose to 101 in the first six months of 1878. Approximately 10 percent of the more than 30,000 monthly wage vouchers recorded in the Consolidated Virginia and California Time Books between February 1876 and June 1878 were issued for C&C Shaft laborers. During the 18 months from January 1877 through June 1878, when the Time Books have entries for both the C&C Shaft construction and the related C&C-Shaft construction, the latter paid for directly by the sponsoring companies, the payroll for related work was four times greater than the payroll for the shaft work - \$683,000 versus \$178,000. Consolidated Virginia's payroll for C&C-related work totaled \$371,001 and California's \$312,032. More than a fifth of the monthly wage vouchers issued between February 1876 and June 1878 were for shaft-related work. Nearly a third of the monthly wage vouchers between January 1877 and June 1878 were for shaft-related work. The average at Consolidated Virginia was 185 per month and at California 155 per month. In the second half of 1877 Consolidated Virginia's numbers ranged from 257 to 305 per month with the latter number being recorded in September 1877. But California actually registered the highest numbers with 338 in February and 340 in March 1878. It is worth underscoring that in those two months California's work force in C&C-related construction was almost as large as its work force in the mine itself (401 and 379 respectively). Although the wage bill for the shaft and related construction was a small percentage of the more than one hundred million dollars worth of bullion extracted from the mines, it remained a multi-million dollar undertaking that did not in fact achieve its ultimate goal of unleashing another bonanza at even greater depths than the extractions were taking place.³⁵

The daily-wage profile for work on the C&C Shaft and ancillary projects can be assembled from the Time Book data and related sources. In 1877 when the C&C payroll was over \$125,000. The labor force worked 28,887 days so that the average daily wage was \$4.34. In that same year at the California Mine the work force put in almost 192,000 days with an average daily wage of \$4.06. As a group the C&C workers earned on a daily basis slightly more than California workers. The daily pay scale ranged from \$6.50 to \$3 with one employee being paid \$250 per monthly or between \$8.20 and \$8.30. Slightly less than half of the workers earned \$4 per day, the standard underground wage. About a fifth of the workers were paid at \$5 per day (usually artisans such as head carpenters) and nearly another fifth were paid at \$3.50 per day (semi-skilled laborers for example.) A fraction of a percent received the highest daily wage of \$6.50 or the lowest of \$3. This profile in terms of daily wage rates and distribution of workers did not differ significantly from the earlier discussion of profiles of Comstock wages and occupations. A somewhat different profile of the daily average wage emerges if the total number of monthly vouchers issued for work in 1877 at Consolidated Virginia, California, C&C-Consolidated Virginia, C&C-California and C&C (stand-alone) are analyzed and compared. The following calculations are estimates; since I do not know the number of days worked in each wage category, I have simply divided the total number of monthly vouchers into the total annual compensation to arrive at an average monthly

³⁵ Data on the Time Books (actually bimonthly accounts which duplicate of the monthly accounts) are found in the following archives: NC99/3/1, 4, 7, 11, 16, 20, 26, Bx 9, NC99/3/31, 36, 42, 48, 51, Bx 10, NC99/3/57-59, 62-63, 65, 68-70, Bx 11, Special Collections, Library, University of Nevada at Reno.

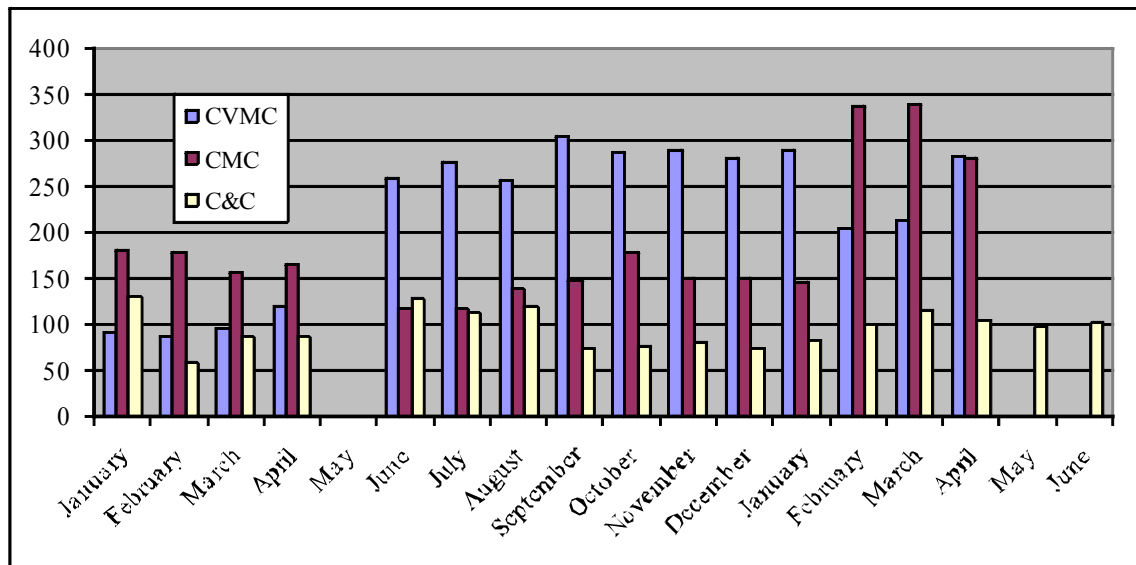
compensation figure, and then I have divided that figure by 30, the approximate number of days worked each month, to arrive at an average daily figure. With 13,868 monthly vouchers and total annual compensation of \$1,515,000 million, the monthly average per worker (voucher) was \$109 or \$3.64 per day. Even though the total vouchers and wages for workers under C&C-Consolidated Virginia and C&C-California differed, the average daily wage rounded out to an identical \$3.73, the highest of the five groups.³⁶ Next came the regular Consolidated Virginia labor force at \$3.70 per day, the regular C&C Shaft labor force at \$3.67 per day and finally regular California labor force at \$3.53. These are gross numbers, and while they all fall within a range of \$3.50 to \$3.75 for an average daily wage, the regular California work crew earned less per day as a group than its peers including those who were building the drifts from the California Mine to the C&C Shaft. This showed up as well with the California wage profiles based on the actual days worked as reported to the stockholders. With the California Mine's labor force three times larger than the C&C-related crew it probably included a greater number of workers, especially on the surface, whose wages fell toward the lower end of the pay scale. In the end, though, pay scales for the various mining operations with separate payrolls were remarkably similar.³⁷

In a curious way C&C's role in hoisting Consolidated Virginia and California ores was smaller than may have been anticipated – the underground network proved to be challenging and diverting – and its other role became larger - especially as the bonanzas began to fade. Thus, C&C could never become financially self-sustaining (through hoisting revenues), if that was ever intended, and it continued to require subsidies. By the time the tunneling from the shaft to the stopes was completed ore hoists in general were rapidly declining. The money that continued to be appropriated was a down payment on discovering new bonanzas rather than servicing existing ones. It was equally curious the way in which the cost was allocated and how revenue was earned. Buying supplies that were sold back to the companies that subsidized C&C arouses suspicion, but without more price data – what they paid and sold the items for – the suspicions cannot be pursued. C&C never was organized to pay dividends. Given the Nevada tax structure, the subsidizing companies by paying more than C&C did for items that were probably being used to expand the underground might have been able to increase reported costs when bullion assessments were calculated. But it was hardly worth the effort. It remains a curiosity, and it may be nothing more than a convenience for C&C to make bulk purchases of supplies needed in both the construction of the shaft and the links and allowing the subsidizing companies to reimburse C&C on the basis of what they used specifically in building the links that passed through their ground. Chicanery, if any, is hard to document.

³⁶ The figures four places to the right of the period were \$3.72905 and \$3.72752 respectively.

³⁷ The 1877 data from Annual Report, California Mining Company, 35, NC99/1/5/6, Bx 2, and Time Books (Duplicates), NC99/3/31, 36, 42, 48, 51, Bx 10, and NC99/3/57-59, Bx 11, Special Collections, Library, University of Nevada at Reno.

FIGURE 6
EMPLOYEE VOUCHERS DISTRIBUTED FOR WORK ON C&C SHAFT AND RELATED FACILITIES, JANUARY 1878-JUNE 1879



Sources: See footnotes 35, 37.

Chicanery, however, was the weapon often employed by outsiders against firms that hit the jackpot. The Firm was not exempt. The fact that it made so much money elevated it as target, not because of manifest evidence of misdeeds but rather because of the insinuation that making that much money required malfeasance. Mackay and Fair had earlier separated mining and milling operations, and they followed the same course with Consolidated Virginia, California and other mines. In 1874 Pacific Mill and Mining Company was incorporated as a California company. The trustees of the new company were Mackay, Fair, O'Brien and Flood and probably included longtime associates and investors Edward Barron and Solomon Heydenfeldt (a lawyer) from San Francisco.³⁸ Pacific was assembled through the purchase of existing mills and the construction of new mills. To separate the finances of mining from milling was a strategy that William Sharon introduced to the Comstock in the 1860s, and it became standard practice for mining companies to divest themselves of milling operations. Before the bonanza at Consolidated Virginia began in the early 1870s Mackay, Fair *et al.* had purchased and operated mills independently of their earlier mines. And some of these mills were then transferred to the new company. The strategy was straightforward in that the milling company charged the mines, which retained the ownership of the ore, a per-ton rate to crush and process the ore. Based on mining records that showed how much ore was sent to each mill month by month from 1874 through 1881 Consolidated Virginia and California contracted with at least 18 mills to refine ore although several also refined tailings, a somewhat different process from the initial refining. Pacific did not own all the mills that processed the bonanza mines' ores, but it owned (or controlled) as many as a dozen of them. From time to time because of the heavy flow of ore other nearby custom mills were enlisted.

³⁸ Smith, *The Comstock Lode*, 117, 148, 237. No documentation directly relating to the incorporation of Pacific has not been found.

Whether or not mining companies themselves should own and operate the mills was a topic of debate among Comstock investors and speculators, and in the case of The Firm became the subject of a lawsuit. Charles Fish, President of Consolidated Virginia in 1878, and later George Wallace, President of California in 1880, in almost identical language (a ghost writer perhaps!) addressed the issue of the divestiture of the milling operations from the mining operations. The rationale could be summarized under two principles. First, since the two mining companies lacked any milling facilities of their own, they would have had to invest heavily in the purchase or construction of mills with a commensurate reduction in dividends for stockholders. By contracting with Pacific Mill and Mining Company (which owned mills but no mines so far as could be determined), the companies could avoid huge capital outlays and maintain high dividend payments. Second, even though the principals of the two mining companies owned Pacific Mill and Mining Company, they had worked to lower milling costs in their own mills, and that had the effect of driving down milling costs across the region. There was nothing unique about this rationale, for Sharon had taken basically the same position a decade earlier.³⁹

Lawsuits against Mackay, Fair *et al.* and their various companies had grown into a cottage industry. In 1878 alone, according to the President's Report, eight new suits over claims, asking for more than \$100,000,000, had been filed and at least six of them had been tried and dismissed. The most troubling suit was inaugurated on 19 January 1878 against the principals of Consolidated Virginia on behalf of several unidentified stockholders who alleged fraud and urged the Board to take action against the principals. After much legal wrangling that consumed several months in which Squire Dewey emerged as the major disgruntled stockholder, a complaint (not yet a suit) with Dewey as plaintiff was delivered on 29 March 1878 to a notary public against the principals, officers and trustees of Consolidated Virginia and against Pacific Mill and Mining, Pacific Wood, Lumber and Flume, Virginia and Gold Hill Water and Nevada Bank of San Francisco, all controlled by Mackay and Fair. It asked for more than \$35 million, and while the milling question was the core of the suit, questions involving other business transactions by Consolidated Virginia and the related companies were also raised. On 9 May 1878 John Burke, a recent buyer of 100 shares of stock and in lieu of Dewey, filed in the 12th District Court of California a suit based upon the foregoing Dewey complaint.⁴⁰ The suit was apparently dismissed in federal court, but the dissidents continued their legal challenges. In August 1880 Dewey alleged misconduct and fraud in an almost identical suit filed in the Superior Court of San Francisco.⁴¹ The Court apparently ruled that while the company and its principals, officers and trustees had not engaged in actual or willful fraud a violation had occurred because of the way in which the company's lawyer and trustee, Heydenfeldt undertook certain transactions. An award of \$1 million was granted to stockholders with claims, but all the parties, tired of years of

³⁹ From the President's Report in the Annual Report, 1878 [9 January 1879], Consolidated Virginia Mining Company, 19-23, NC99/1/5/1, Bx 2, and these pages were repeated verbatim in the President's Report in the Annual Report, 1880 [19 January 1881], California Mining Company, 6-9, NC99/1/5/7, Bx 2, Special Collections, Library, University of Nevada at Reno.

⁴⁰ From the President's Report in the Annual Report, 1878 [9 January 1879], Consolidated Virginia Mining Company, 17-19, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

⁴¹ From the President's Report in the Annual Report, 1880 [19 January 1881], California Mining Company, 6, NC99/1/5/7, Bx 2, Special Collections, Library, University of Nevada at Reno.

litigation, agreed to a private and undisclosed settlement that was probably less than the award.⁴² While the charges originated around the creation and operation of a separate milling company to the detriment of the stockholders, the final decision turned on a questionable transfer of property in the creation of Consolidated Virginia.

The original claim against Consolidated Virginia by Squire Dewey and his associates concerned losses to stockholders because the principals of the company had split mining from milling functions and had pocketed the profits from mills that might have been paid to mining company stockholders. Were their claims legitimate? How much money did the founders of Pacific Mill and Mining Company earn and how much did the stockholders of Consolidated Virginia Mining Company lose? These questions cannot be answered definitively, but sufficient documentation has survived to allow a modest inquiry. The extent to which the Board of Directors of Consolidated Virginia ever discussed the arrangement is not known except that when the officers commented on the arrangement in the annual stockholders' reports they did so favorably. From the standpoint of Dewey *et al.*, however, by assigning ores to Pacific Mill and Mining Consolidated Virginia had "entered into an extravagant and corrupt contract with a Milling Company [Pacific] organized in the State of Nevada, whereby it agreed that said Milling Company should reduce the ores...at a large profit and after reduction should retain the residues or tailings and 'slimes' as its own property."⁴³ In detailing their response to the suit the officers of Consolidated Virginia provided some statistics. Since the founders of Pacific Mill and Mining subscribed the capital necessary to buy or build the mills, the officers calculated that at the very outset they avoided an assessment of \$3 per share against 108,000 outstanding shares (\$324,000) simply to construct Consolidated, a new mill started in 1874. Consolidated Virginia produced about \$5 million worth of bullion that year. Without more detailed cost data the capacity of the company to absorb the expense of the mill cannot be evaluated. In the first quarter 1874 the company reported that costs to expand the mine and extract the ore were running at about 50 percent of the bullion income.⁴⁴ To focus on whether or not Consolidated Virginia could have afforded to build the mill from its own resources may miss the more pressing issue that the mine needed mills to handle the 100,000 tons of ore that it hoisted in 1874. The year began with three to four mills under contract and ended with five to six mills. The founders of Consolidated Virginia at the time of its incorporation owned five (Bacon, French, Mariposa, Occidental and Sacramento) of the six mills with ownership of Kelsey Mill still unverifiable. Had the company directly purchased these mills and also launched the construction of a new mill its immediate capital costs would have grown significantly and may well have necessitated greater assessments than noted above, although the impact of these actions on company finances is difficult in retrospect to determine. In addition to these initial capital costs, however, Consolidated Virginia would still have had to pay milling charges, which under contract with the stand-alone

⁴² See Smith, *The Comstock Lode*, 218-222, for a description of these events. Unfortunately, he was not always clear on which case was being considered.

⁴³ From the President's Report in the Annual Report, 1878 [9 January 1879], Consolidated Virginia Mining Company, 9, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

⁴⁴ One Abstract Statement prepared by Story County's assessor has survived for the first quarter in the Nevada State Archives.

milling company, came in at about \$1.3 million or \$13 per ton. Pacific's per-ton rate was not out of line with what other milling operations charged in 1874.

These responses from Consolidated Virginia's Board did not necessary undermine Dewey's complaint (in hindsight). In his view the company could have begun with a prudent business plan to acquire and build mills in response to need by using the mine's profits. Once the milling capacity was achieved the stockholders could have enjoyed the profits from both mining and milling operations instead of milling profits being siphoned off to the principals. Furthermore company ownership of the mills might have pushed down refining costs even lower and faster than was the case after Sharon had broken the monopoly of the custom millers. After the custom millers' alleged financial stranglehold had ended, the argument for creating and maintaining separate mill facilities no longer carried much weight. The thrust of the complaint was simple: why allow principals of mining companies to set up independent milling companies of which they were the principal owners in order to monopolize milling profits when mining companies could own and operate the milling facilities and mining stockholders would benefit from both mining and milling profits? The financial imperative for separate milling companies had become moot. Consolidated Virginia's officers (and California's too) in the Annual Reports presented a financial defense concerning the divorce of mining from milling. It was a negative defense because it considered not the value-added to the mining companies during goods times but the value-subtracted during bad times. The companies would be strapped with a financial burden because idle mills required continuing investment for maintenance and repair without producing any income, and if the companies tried but failed to sell them, they would more than likely have to abandon them and write off the investment as a loss. "And no property", declared the 1878 Annual Report, "depreciates with such rapidity as an idle quartz mill." Indeed at the time Pacific Mill and Mining and not Consolidated Virginia (or California) was under the gun in the wake of contracting Comstock mining sector. "When the milling facilities...were found inadequate the Pacific Mill and Mining Company erected mills [beginning in 1874] at their own expense to meet the temporary demand. Mark the result! The mills used to crush the ore taken from the mine stand idle to-day [sic]. Even the new Con. Virginia mill, as it was called, and which was built at an expense of \$500,000, is idle, and, therefore, not only profitless but a source of expense." Then the report reinforced this analysis by citing the financial failure of combined mining and milling operations at Gould & Curry and Savage Mining Companies. Not only did these companies lose money on their milling properties as ore production declined, but they also saw their mining properties depreciate as investors refused to cover the milling losses. Finally, Consolidated Virginia and California both gained from their relationship with Pacific because milling rates dropped from \$13 per ton to \$9 per ton and operational proficiencies allowed Pacific to return 73 percent of the mine assay value compared to 65 percent by other millers. Consolidated Virginia's directors had rejected the proposal in 1876 to buy and operate the mills and would not entertain a new motion to that effect at the Board Meeting in January 1879.⁴⁵ The fact that Pacific was carrying the financial burden of unproductive mills even though Pacific and Consolidated Virginia had the

⁴⁵ From the President's Report in the Annual Report, 1878 [9 January 1879], Consolidated Virginia Mining Company, 21-23, NC99/1/5/1, Bx 2, Special Collections, Library, University of Nevada at Reno.

same principal owners mattered less because Pacific's financial losses did not carry over unto Consolidated Virginia's balance sheet. Business was sliding for both companies, but for the stockholders of Consolidated Virginia, a circle that unlike Pacific extended beyond the founders and their closest associates, the mining operations continued to yield dividends, which might have been significantly reduced if the company had milling losses to cover. It was almost irrelevant that the two companies were in fact under the control of the same principals. In essence, this intertwining business relationship drove investors like Squire Dewey to a rage because the above premise may have made sense in the downturn, but it made money – lots of money – for the founders during the upturn.

Both Sharon's Union Mill and Mining Company and Mackay & Fair's Pacific Mill and Mining Company became monopolistic, or perhaps more accurately oligopolistic, offshoots of the major mining companies that they served. Whatever control over rates enjoyed by the early custom millers was bound to be temporary. A few millers had the knowledge needed to refine Comstock ores, and once that knowledge entered the public domain their grip of the milling price structure was loosened. It is doubtful that Sharon, Mackay and Fair or any other milling combine was motivated to create a more competitive milling business. Sharon was certainly correct in his assumption that by combining mills to achieve greater efficiencies and lower costs he could also make more money for himself and his associates so long as the bonanza mines for which they were reducing ores were productive. It is not known from the available evidence how much milling business if any Union or Pacific undertook for other mining companies. The harsh fact was that as ore bodies were exhausted and not replaced the milling business had no future. Independent millers did not completely disappear, but they operated in the shadow of the milling combines, which set the rates, controlled the flow of ore and by their very existence dampened competition. What other millers observed was how Consolidated Virginia and California mines paid increasingly lower rates to its milling partner under the ownership of Mackay, Fair *et al.* Pacific Mill and Mining pushed per-ton rates from \$13 to \$12 in October 1876, to \$11 in February 1877, to \$10 in April of 1877 and to \$9 in January 1878.⁴⁶ In 16 months the per-ton cost fell 31 percent. Whether or not these rates were justified by proficiencies at Pacific's mills, they reduced the costs to the mining companies and raised the profits from which the stockholders were paid their dividends. Dewey's complaints notwithstanding the stockholders of Consolidated Virginia and California distributed more than \$70 million in dividends. Did it much matter how Pacific or any other ancillary Mackay, Fair business performed? The hard reality was that milling was about making money, just as mining was.

FIGURE 7
REFINING COSTS, CONSOLIDATED VIRGINIA (CVMC) AND CALIFORNIA (CMC) MINING COMPANIES, 1874-1878

Year	CVMC			CMC		
	Average Cost	Total Tons	Total Costs	Average Cost	Total Tons	Total Costs
1873	\$13.00	14,864	\$193,232.00			

⁴⁶ Schedules of rates over time can be verified in the Bullion Records kept by both Consolidated Virginia and California Mining Companies, 1873-1881, NC99/1/3/1, NC99/1/3/5, and NC99/1/3/7, After Bx 1, Special Collections, Library, University of Nevada at Reno.

1874	\$13.00	90,134	\$1,171,742.00			
1875	\$13.00	168,694	\$2,193,022.00			
1876	\$12.50	145,466	\$1,818,325.00	\$12.80	127,542	\$1,632,537.60
1877	\$10.20	153,166	\$1,562,293.20	\$10.40	213,715	\$2,222,636.00
1878	\$9.00	123,272	\$1,109,448.00	\$9.60	128,436	\$1,232,985.60
Total		695,596	\$8,048,062		469,693	\$5,088,159

Total Tons **1,165,289**

Total Costs **\$13,136,221.40**

Average Cost **\$11.27**

Sources: See footnote 46.

The Dewey-Burke suit claimed that Pacific Mill and Mining owners had made about \$26 million that would have accrued to the stockholders of the mining companies if the companies had owned and operated the mills. How did they arrive at this figure, and was it legitimate? In the four years before the suit was filed, Consolidated Virginia and California delivered ore totaling 1.25 million tons to the mills, most but not all of which were owned by Pacific Mill and Mining. As noted above, milling rates at Pacific and at mills under contract dropped from \$13 per ton in 1873 to \$9 per ton in 1878. Based on the monthly entries of the milling rates the average for nearly 1.2 million tons of (crushed) ore for all mills was \$11.37 for a total of more than \$13 million. Dewey's reimbursement claim alone was twice what the companies actually paid to Pacific. Dewey's claim made specific reference to the loss of income from tailings because customarily tailings income belonged to the mill and not the mine. Pacific actually owned tailings mills, and the tailings were not entered in the mining companies' monthly ledgers. Where the tailings showed up was in the County's quarterly assessments under the name of the mill that processed them. The bulk of the ore claimed by Consolidated Virginia and California was amalgamated with the costs duly and regularly recorded, but some ore was lost in the milling. As the moisture-laden ores moved from the stamps where they had been crushed to the amalgamation pans, the water was allowed to drain off into troughs that carried the water and any residue into storage areas. The residues contained ores that could be milled again. Very few mining companies (if any) owned tailings mills. Mining companies had little interest in milling their tailings, and they were more inclined to sell their tailings to millers who specialized in such business. County assessments had to be paid on all ores including tailings, and generally the mining companies paid the taxes on the amalgamated ores whether or not they owned the refining mills, and the tailings mills paid the taxes on the ores that they had acquired and processed. Pacific Mill and Mining actually operated two tailings mills - Omega and Mariposa. Omega was strictly for tailings, and its output did not appear in any of the companies' monthly mill accounts. Mariposa, on the other hand, handled both processing functions, and any ores that it amalgamated for Consolidated Virginia and California appeared in the monthly accounts. In fact Mackay & Fair built Omega to process the tailings from Consolidated Virginia and California. They may also have solicited business from other mining companies. From 1877 to 1885 Omega reported for taxes about 200,000 tons worth about \$1.5 million. What amount of the \$1.5 million was derived from Consolidated Virginia and California ores cannot be ascertained from the extant archives. They may have in fact bought tailings from other mills. I could find no

records on the finances of their tailings mills, especially how much they paid for tailings including those from their own reduction mills. Even if one assumes that the two bonanza mines contributed a large part of the tailings receipts that accrued solely to Pacific and its owners and then combines that estimate, say \$1 to \$2 million dollars, with the recorded refining costs on amalgamated ores, one has a total far less than the damages claimed by Dewey *et al.* in their lawsuit. Clearly, as other writers have suggested, Dewey like his ally, *The San Francisco Chronicle*, had more sinister motivations. Dewey had originally sought an amount in excess of \$50,000 to settle what he considered a dishonest transaction by one of The Quartet, James Flood. When Consolidated Virginia refused to pay, the ante was raised by several tens of millions and the reputation of The Quartet was under attack. That The Quartet knew how to make money cannot be doubted. In the minds of their critics the ill-gotten gains were not so much from the ore bodies themselves – all acknowledged the skill of the founders in exploiting them – but from the ancillary businesses that the founders created in support of their mining operations.