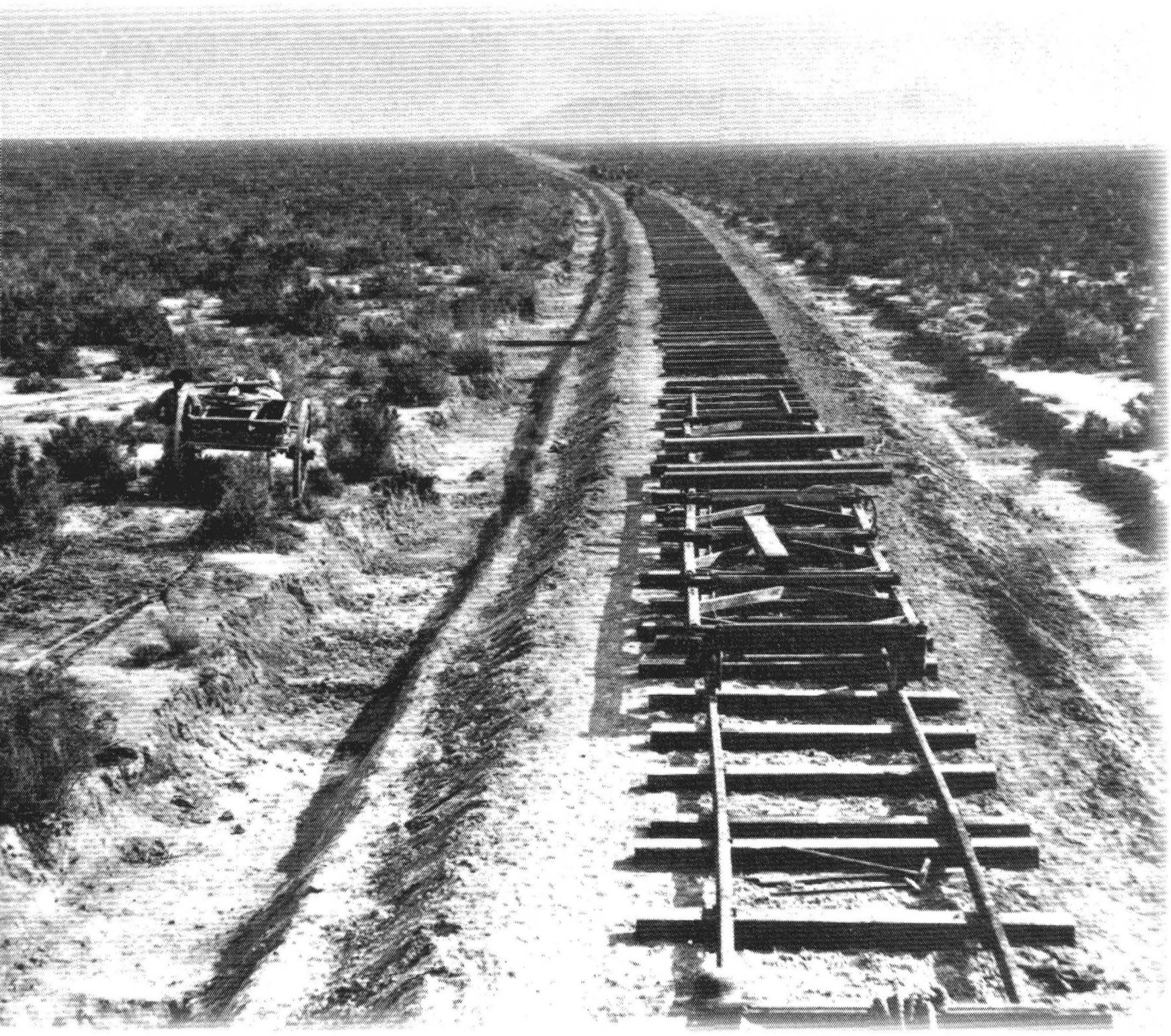
Nevada

Historical Society Quarterly



Spring 2007

Nevada Historical Society Quarterly

The *Nevada Historical Society Quarterly* solicits contributions of scholarly or popular interest dealing with the following subjects: the general (e.g., the political, social, economic, constitutional) or the natural history of Nevada and the Great Basin; the literature, languages, anthropology, and archaeology of these areas; reprints of historic documents; reviews and essays concerning the historical literature of Nevada, the Great Basin, and the West.

Prospective authors should send their work to The Editor, *Nevada Historical Society Quarterly,* 1650 N. Virginia St., Reno, Nevada 89503. Papers should be typed double-spaced and sent in duplicate, along with a copy on disk (in MAC© or IBM© compatible form-WordPerfect© 5.1, 6.0, or Microsoft Word©). All manuscripts, whether articles, edited documents, or essays, should conform to the most recent edition of the University of Chicago Press *Manual of Style.* Footnotes should be typed double-spaced on separate pages and numbered consecutively. Submission guidelines are available on request. Correspondence concerning articles and essays is welcomed, and should be addressed to The Editor.

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Book Reviews

Front Cover: The end of the track in the summer of 1868 as the Central Pacific was pushed eastward across the Nevada desert. (*Nevada Historical Society)*

Silver and Iron

How the Comstock Determined the Course of the Central Pacific Railroad

WENDELL W. HUFFMAN

The builders of the Pacific Railroad broke ground at Saint Louis, Missouri on July 4, 1851, with only the vaguest idea of how it would reach San Francisco.[1] Financing aside, three obstacles lay ahead: the Rockies, the desert, and the Sierra Nevada. By the time construction on the western end of the railroad began near Folsom, California, four years later, a course through the Rockies and across the desert had been identified, but there still remained the question of whether the Sierra would be skirted or breached. That question was resolved in early 1860 as the magnitude of the Comstock Lode became apparent, and the Central Pacific was chartered to tap that market. The completed Pacific railroad still runs past the Comstock and over the desert and the Rockies along the course identified in the early 1850s, but it never directly connected Saint Louis or Folsom. Those optimistic groundbreakings proved to be false starts; but they illustrate that concrete efforts were made to create a transcontinental railroad long before Abraham Lincoln signed the Pacific Railroad Act into law in 1862 or the Central Pacific itself broke ground in Sacramento in 1863. This essay is an account of those unfulfilled efforts of the 1850s, and its purpose is to trace the thread that connected those fledgling efforts with the Pacific railroad that eventually was built a decade later. It is also my purpose to draw attention to the role played by the discovery of the Comstock Lode in determining the course of the Central Pacific Railroad.

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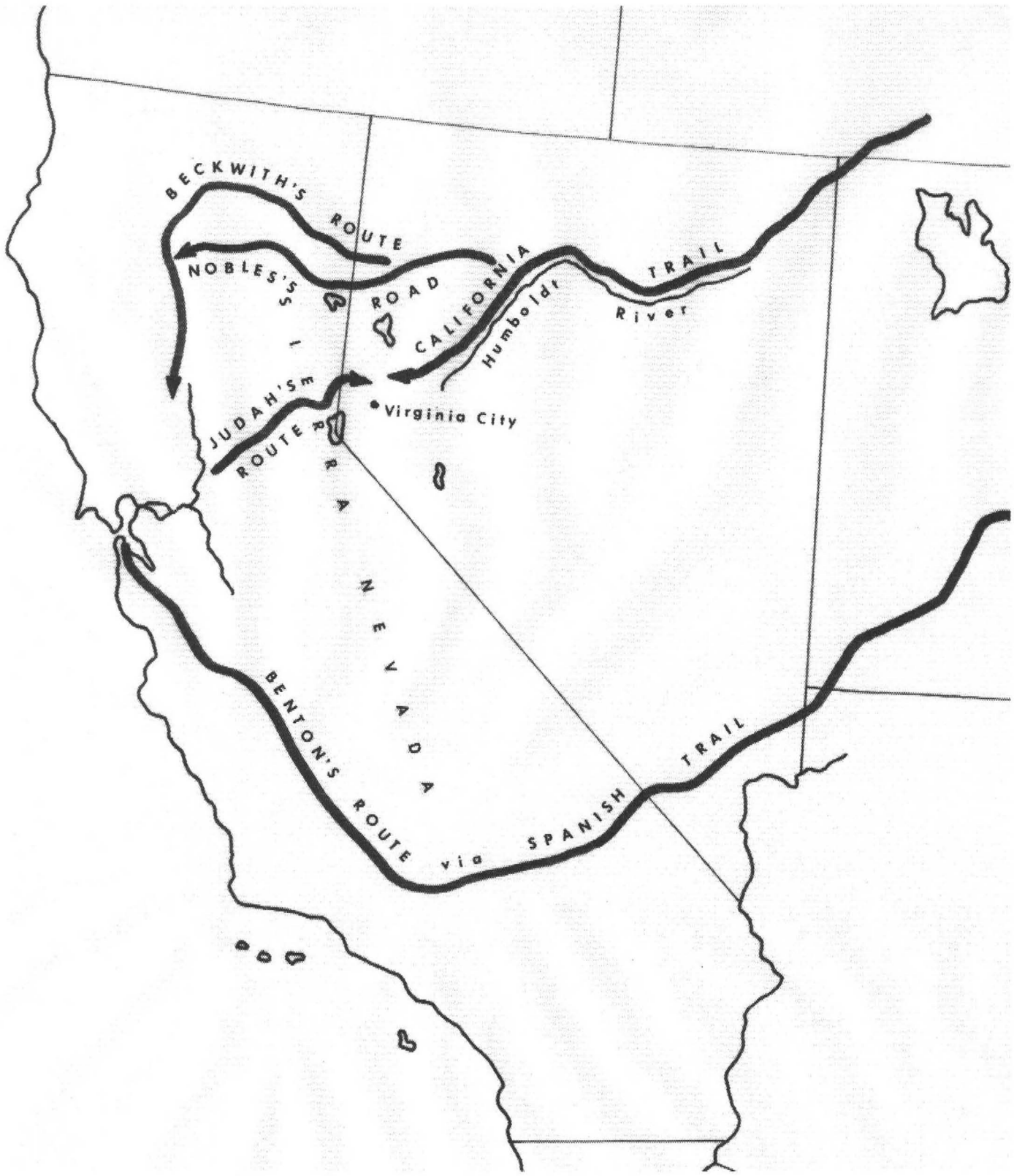


The evolution of the central route for a Pacific railroad. *(Drawn by the author)*

By 1845, railroad technology had advanced to the point that a transcontinental railroad was possible. In that year, forty-five hundred miles of railroad already were in operation in the United States. Moreover, desire and expectation for a railroad to the Pacific was already prevalent. Indeed, the whole manifest destiny fantasy of a single nation stretching from sea to sea was predicated on the expectation that steam railroads one day would overcome the distances and make viable a nation of such expanse. Andrew Jackson said as much in 1831, when there were fewer than a hundred miles of railroad in the whole country.[2]

Missing before 1845 was a program to organize the capital to build the railroad. That came in January 1845 from Asa Whitney, who recognized that the railroad would appreciate the value of adjacent land, which could be sold at a profit to finance construction of advancing segments of the railroad itself. Because the federal government held the title to the land within the territories over which the railroad had to run, Whitney had to take his plan to the United States Congress. By presenting his plan there, Whitney put the matter of the Pacific railroad on the national agenda, but because the plan was so good, others submitted rival plans, and the consequent political contest kept anything from happening.

Whitney's proposal dealt more with how the railroad was to be financed than with its expected route. In January 1845, when Whitney's proposal became public, there was very little to choose from in the way of either a route for the railroad or its destination on the Pacific shore. At the time, the mouth of the Columbia River, with its foul weather and treacherous bar, was the closest thing to a harbor anywhere on the Pacific coast to which the United States had any claim whatsoever. And that claim, along with title to Oregon, was still disputed with Great Britain. In terms of the route, South Pass in present-day Wyoming was the only known, practical course through the Rocky Mountains. The Rockies to the north were believed to be too rugged for a railroad, and only a few miles to the south lay the forty-second parallel, beyond which everything from the eastern margin of the Great Plains to the Pacific was Mexico.

This limited range of opportunity changed rapidly over the course of the following months. In 1845, Texas was annexed to the United States, and eleven months later Britain relinquished all claim on the Pacific Coast south of the forty-ninth parallel. But the major event of the period was the Mexican War, which began in April 1846 and which directly brought California and New Mexico into the United States.[3] The Mexican cession, confirmed with the Treaty of Guadalupe Hidalgo in 1848, included all of present-day California, Nevada, and Utah, and parts of Wyoming, Colorado, New Mexico, and Arizona, and it cleared up disputed title to lands as far east as Oklahoma and Kansas. Taken together, these events of a mere four years completely redrew the map of western North America. While Congress was still arguing over Whitney's plan, the United States had suddenly expanded to include several possible routes for railroads from the western fringe of American settlement along the Mississippi and Great Lakes to several points on the Pacific.

The primary routes across what had recently been Mexico were known even before the Mexican War. In the late 1820s and early 1830s, several explorers had extended the Old Spanish Trail, which ran northwest from Santa Fe into Utah, all the way to southern California. In time, the entire route became known as the Spanish Trail. The Spanish Trail avoided the Sierra Nevada and was passable year round, powerful factors when the route was eventually considered for the railroad. Various parties used the Spanish Trail in subsequent years, driving livestock between New Mexico and California.[4]

In 1833-34, Joseph Rutherford Walker opened another trail across the vast Mexican territory along the Humboldt River. The Humboldt cuts through the Great Basin's succession of north-south-trending mountain ranges, and it provided water for the stock; but it led to an inhospitable desert and then to the abrupt, high wall of the Sierra Nevada. Walker forced a crossing of the Sierra Nevada near Yosemite, but on his return east he was directed by Indians to the pass that now bears his name. He connected Walker Pass with the Humboldt with a trail northward through the Owens Valley and past Walker Lake. However, the Humboldt route was not particularly promising; there is no record of anyone using it again for several years.[5]

With the outbreak of the Mexican War, the United States Army advanced into Mexican territory accompanied by engineers and topographers assigned to scout the country and map routes for roads and railroads. They conducted most of their work in the far Southwest and along the line of the new boundary. As a consequence, the Army's leadership developed a strong preference for that area as the course of the eventual Pacific railroad.[6] Following on the heels of Army topographers were the thousands of gold seekers who rushed off to California upon word of the discovery of gold. These prospectors turned the old trappers' trails and army roads into well-established arteries.

Unquestionably, the acquisition of the whole Southwest, as well as California's new American population, greatly increased the pressure for a railroad. However, the plethora of new routes made available by the cessions of the late 1840s actually complicated efforts to develop the railroad. From the Mexican War forward, the problem was not the mere technological one of *finding* a route for the railroad, but the political one of *selecting* a route. Unfortunately, the political arena of the mid nineteenth century was not a place to make decisions.

Even with Whitney's plan for a Pacific railroad, when only a single route was available, politicians had been unable to agree on a course of action. Everyone seems to have expected the Pacific railroad to possess a Midas touch that would turn worthless land into gold. Another expectation was that, because of the anticipated cost of a Pacific railroad, there would be only one. Thus, politicians and speculators alike fought to locate the railroad to their advantage, and towns and cities scattered along the western Great Lakes and the Mississippi River vied to become the eastern terminus of the Pacific railroad. This local rivalry for control of the railroad was played out against the background of deeper divides: Congressmen wrangled over the question of the constitutionality of the federal government aiding in the construction of railroads, while advocates and opponents of slavery sought ways to incorporate the Pacific railroad into their schemes. The subject of the railroad dominated the presidential election of 1852 and the subsequent Thirty-second Congress. Unfortunately, there was no way to solve the problem. The jealous factions united only to oppose whichever plan appeared to be making legislative headway.

Eventually Congress gave up and in the spring of 1853 turned the problem over to the Army's topographical corps. Beginning in the summer of 1853, the Army sent out special expeditions to examine several routes for which there was political support: A northern route between the forty-seventh and forty-ninth parallels connecting Lake Superior with Puget Sound, a central route along the thirty-seventh and thirty-ninth parallels, and a southern route running from Fort Smith, Arkansas to Albuquerque and the Colorado River along the thirty-fifth parallel. The Army's favorite route lay far to the south along the thirty-second parallel from Vicksburg, across Texas, down the Gila River, and on to San Diego, with which they were most familiar from their Mexican War experience.

Of the routes examined, the one that commands our attention is the so-called central route. Generally, scholars write off the Army survey of the central route as having little if any relationship with the subsequent railroad.[7] Indeed, the path of the central-route survey and the route eventually followed by the Pacific railroad are so different from each other that it seems impossible for the one to have had any effect on the other. But, there was more to the survey than merely an examination of the route, and the course of events that befell the expedition profoundly affected the railroad's eventual adoption of the Wyoming-Humboldt River route.

Given that the bulk of the gold-rush migration crossed South Pass and followed the Humboldt River, it is something of a surprise that the central route slated for examination by the Pacific Railroad Survey in 1853 was so different from that well-worn California Trail. In fact, the central route the Army examined was the creation of a politician: Missouri's Thomas Hart Benton, a member of Congress and a former senator. It is a testimony to Benton's power and influence in Washington that the Army even bothered with it. It is further testimony of his influence that two additional expeditions examined the route within a few months of the Army's expedition.[8] Benton described the route (which he had never seen) as "straight and smooth [with] not a mountain to be climbed, a river or swamp to be crossed, a hill to be tunneled"; a direct connection between San Francisco and Saint Louis. The geographical feature that made this course practical was Cochetopa Pass. Benton pronounced Cochetopa as a continuation of the San Luis Valley [of the Rio Grande], eight miles wide, "level, and [with] no obstruction but a dense forest of large pines." A broad and level connection between the Rio Grande and the Colorado, the pass stood, in Benton's prose, "worthy to open the door from the East to the great western slope of the North American continent, and in the right place, and accompanied by all advantages."[9]

The real attraction of Cochetopa Pass—lying as it does well south of South Pass—was that Benton's entire plan was oriented to avoid the Sierra Nevada. Believing that the Sierra Nevada was impassable by a railroad, Benton and others concluded that the only way for a railroad to reach San Francisco was to skirt around the southern end of the Sierra at Tehachapi Pass. Thus, Cochetopa

Thomas Hart Benton (1782-1858), prominent Missouri politician, advocated a "central route" for the Pacific Railroad stretching from St. Louis to San Francisco.
(Missouri State Archives)

Pass connected the Great Plains with the Spanish Trail. Undoubtedly, Benton, already an ardent expansionist, conceived this course under the influence of his son-in-law, John C. Frémont. Frémont did much to create the impression of the Sierra Nevada as a barrier through his account of his dreadful winter crossing in early 1844. The Donner Party's experience in the winter of 1846-47 reinforced this impression. While the bulk of the gold-rush traffic subsequently followed the California Trail down the Humboldt River and across the Sierra, nothing in the collective experience dispelled the impression of the Sierra Nevada as a fearful place. Rather, for farmers reared in the rolling and generally open Midwest, the steep, rocky grades and dark, confining canyons of the Sierra confirmed what they expected: These mountains were dreadful and difficult. Building upon that impression, it was a nearly universal opinion by the early 1850s that the Sierra could not be breached with a railroad, and the best—if

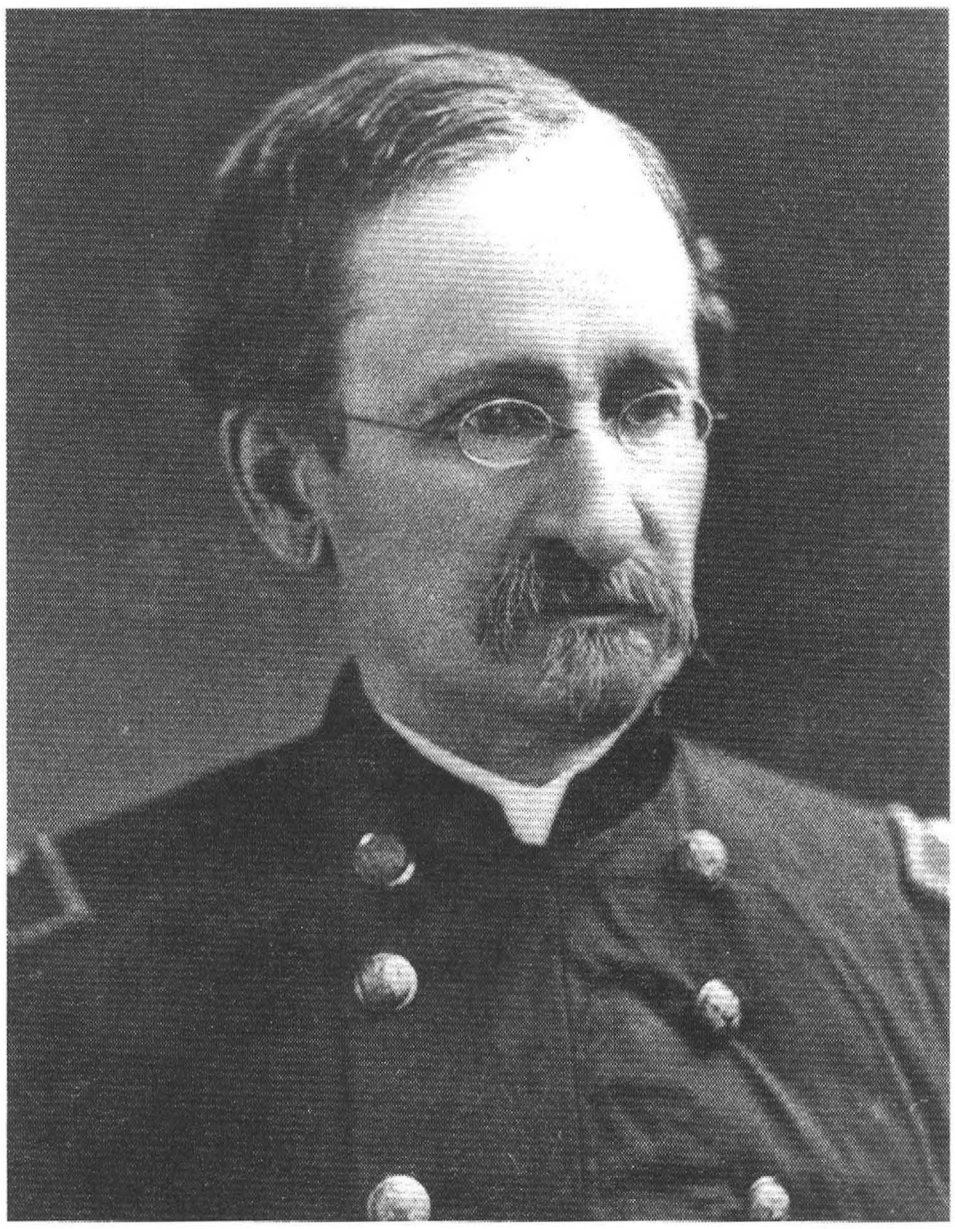
not only—approach for a railroad to San Francisco was by way of Tehachapi Pass.[10] Because others had explored and mapped that route, the central route Pacific Railroad Survey expedition was not supposed to extend west of the Mormon settlements.

The Pacific Railroad Survey's examination of Benton's central route was dispatched under the command of Lieutenant John W. Gunnison in the summer of 1853. Gunnison was a good choice, having just spent two summers surveying around the Great Salt Lake with Captain Howard Stansbury. As it happened, Gunnison also believed that the best course for the Pacific railroad from the Mormon settlements to the coast was via the Spanish Trail and Tehachapi.[11] Since he had never traveled that way, he probably acquired that conviction from the Mormons, who were generally familiar with that route. Most of the Mormon Battalion had traveled that way from southern California to Salt Lake City upon the conclusion of the Mexican War, and they were even then establishing settlements along its course all the way to San Bernardino. Mormons were familiar with the Humboldt River route to California as well, but they preferred the Spanish Trail, which was passable year-round.[12]

In May of 1853, Gunnison and his assistant, Lieutenant Edward G. Beckwith, made their way to Fort Leavenworth, the jumping-off point for their survey. Fittingly, when they paused at Saint Louis to order supplies for the expedition, they could hear the trains of the Pacific Railroad whistling and chugging out of town. "Pacific Railroad" really was the name of this ambitious little railroad—the first steam railroad west of the Mississippi. In the nearly two years since its groundbreaking in 1851, the Pacific Railroad had put thirteen miles into operation, with trains running all the way to Kirkwood.[13] While there is something satisfying about Gunnison and Beckwith planning their expedition within earshot of the Pacific Railroad, the directors of the Pacific Railroad had only the vaguest idea of the course they would follow to the Coast.

Following Benton's promoted route, the course of the Army's expedition led off across the flatness of Kansas to the Sangre de Cristo Mountains, passing thence to the head of the San Luis Valley and Cochetopa Pass. To that point, the expedition encountered no significant obstacle, but Cochetopa Pass turned out to be far more difficult than Benton had proclaimed. The pass rose to ten thousand feet, and its approaches were far too steep for a railroad. Furthermore, the succession of ranges to the west would cause unacceptable operating problems. Having seen a better route across southern Wyoming three years before with Stansbury, Gunnison was quick to dismiss Benton's route as impracticable.[14] As far as he was concerned, Benton's Cochetopa route was inferior by every measure.

Though dissatisfied with Cochetopa Pass, Gunnison pressed eagerly on toward the end of his survey at the Spanish Trail, following the river that now bears his name. Believing as he did that the Pacific railroad would make its way on to the Coast along the Spanish Trail, Gunnison no doubt felt he was accomplishing an important work in mapping the connections between that



Edward Griffin Beckwith (1818-1881) succeeded John W. Gunnison as leader of the Army's Pacific Railroad Expedition to survey a portion of Benton's central route. Beckwith redefined the central route to follow the Humboldt River across Nevada. *(National Archives)*

trail and Great Salt Lake. Then, in late October 1853, as his survey was drawing to a close, Indians killed Gunnison and several members of an advance party near Sevier Lake in Utah. Beckwith at once assumed command, leading the survivors off to winter quarters in Salt Lake City.

With Gunnison dead, leading the expedition back to Fort Leavenworth was all that was expected of Beckwith. Indeed, initially he reported that was his intent, but then, for reasons he never attempted to explain, Beckwith became inspired to lead the Pacific Railroad Survey expedition directly out across the Great Basin and on to California. Within a month of arriving at Salt Lake City, perhaps in the last eastbound mail before winter closed the passes, Beckwith fired off a letter to Secretary of War Jefferson Davis requesting permission to pursue the new venture. The request represents a radical departure from the official goal of the expedition, which was not supposed to have gone west of the Mormon settlements at all.

The only hint Beckwith left of his reason for suggesting such a radical idea is buried in Davis's response, which Beckwith published in his final report. In it, Davis referred to Beckwith's request to examine a new pass through the Sierra Nevada near the headwaters of the Feather River.[15] Given what was then believed about the Sierra, only word of a new and remarkable pass would justify looking in that direction. Just what caught Beckwith's attention is unknown. But having just spent six months isolated from civilization while exploring the wilderness, Beckwith probably turned to recent newspapers to catch up on events once he was settled in Salt Lake City. As it happened, the most recent papers from California that Beckwith would have found in Salt Lake City in November 1853 contained reports about a pass through the Sierra Nevada near the headwaters of the Feather River.

What would have happened had Gunnison lived cannot be known. His writings reveal that he preferred the route across Wyoming to Benton's Cochetopa Pass route and that he believed the Pacific railroad should run from the Mormon settlements to the Coast by way of Tehachapi Pass. Perhaps Gunnison would have responded as Beckwith did to the report of a new pass through the Sierra. Perhaps his conviction that the Spanish Trail was the preferred route and his fatigue from months of survey work would have led him to dismiss the new pass and return home. To have done so would have fulfilled his orders. Yet, had he done that, his report would have officially defined the central route as a roundabout affair running up the Platte, across Wyoming, southwest across the desert to Tehachapi, and then north again to San Francisco. It would have been among the longest of the various routes examined. Whatever Gunnison would have done, though, we do know that Beckwith seized upon word of a newly discovered pass as an irresistible invitation to press onward.

Beckwith was an unlikely character to be poised to redefine the course of the Pacific railroad. He had been assigned to the artillery upon graduation from West Point in 1842, and nearly died of yellow fever at Tampico during the Mexican War. Though he survived, he was plagued by bad health for the rest of his life, and he appears as anything but a robust explorer in his one known photograph. Prior to the Pacific Railroad Survey, Beckwith had made one trip to California that took him across the desert Southwest. Perhaps that experience predisposed him to want to look for something better. How this sickly artillery officer ended up in the Pacific Railroad Survey is itself something of a mystery, since its ranks were made up almost exclusively of engineers and topographical officers. In any event, Beckwith was eager to press on. Confident that he would receive permission to continue to California in the spring, Beckwith spent some of the winter exploring the Wasatch Mountains for a route connecting the Salt Lake Valley with the route Gunnison favored across southern Wyoming, an effort that could have been more conveniently accomplished on his return east in the spring were he denied permission to proceed to California.

The Sierra pass that Beckwith wanted permission to explore was itself the focus of several years of searching. Throughout the late 1840s, it was generally

believed that the Sierra Nevada extended northward well into Oregon. That "sagebrush corner" where Nevada, California, and Oregon now join was then a vacant space on the map. In 1843, Joseph Chiles skirted the area with a small company of emigrants bound to northern California by way of the Oregon Trail. They crossed from Fort Boise to the Sacramento River following—at least part of the way—an old trapper's trail down the Pit River and Cow Creek. Just a few months later, Frémont crossed Chiles's trail, entering the Great Basin from Oregon. In early 1844, the two—who had met the year before—compared notes at Sutter's Fort. In early 1846, Frémont retraced at least part of Chiles's route through the Pit River country as he traveled from Peter Lassen's ranch in the northern Sacramento Valley to Klamath Lake. Almost immediately, he returned by way of Hat Creek amid rumors of the expected war with Mexico. Also in 1846, trying to create an Oregon branch of the California trail, Lindsay and Jesse Applegate opened an emigrant road from Oregon's Willamette Valley to the "big bend" of the Humboldt River (near the site of modern Winnemucca). The Applegate road crossed what was believed to be the spine of the Sierra Nevada just east of Goose Lake.

Frémont, who made observations with a sextant on his explorations, realized that the big bend of the Humboldt River was at the same latitude as the northern reaches of the Sacramento Valley to the west. He no doubt shared this information with Lassen while staying at his ranch, at the confluence of Deer Creek and the Sacramento River, in 1846. Lassen subsequently followed Frémont's trail up Cow Creek and the Pit River to Klamath Lake, and returned with Frémont along Hat Creek a few days later. In 1847, Lassen journeyed to his old home in Missouri to recruit settlers for the town of Benton City, which he was trying to establish on his ranch. Lassen traveled east in Captain Robert Stockton's party, in company with Joseph Chiles and John J. Myers, the latter of whom had been with Chiles in 1843 and reputedly with the Applegates in 1846. Stockton's party crossed the Sierra by way of the Truckee River and was only the second group to visit the scene of the Donners' starvation camps of the previous winter. Indians subsequently attacked Stockton's party along the lower course of the Truckee. The consequence of their experience was to impress upon the members of Stockton's party a distaste for the Truckee route (an opinion they doubtless shared as they traveled east). Among themselves, they concluded that the best route into California was a combination of Applegate's road from the Humboldt River to Goose Lake, and Chiles's route of 1843 down the Pit River and Cow Creek to the Sacramento.[16]

Upon returning with a party of settlers from Missouri the following summer, Peter Lassen became the first actually to attempt that route. Nearly a third of the gold-rush migrants followed Lassen's roundabout route in 1849. Like Lassen, the forty-niners believed they were avoiding the northern Sierra Nevada. The Army even investigated Lassen's route to see whether it was suitable for a railroad between the Sacramento and the Humboldt, sending out an expedition under Captain William H. Warner in late 1849.[17] The following summer, Lassen and others explored that country further in the madcap search for the rumored Gold Lake.

William H. Nobles (1816-17876), explorer from Minnesota who discovered a wagon road route from the Humboldt River to the Sacramento River. Word of the Nobles route published in the Salt Lake City newspaper prompted Beckwith to exend his survey beyond Utah all the way to California. *(Minnesota Historical Society)*

Meanwhile, a solitary explorer named William H. Nobles was systematically exploring the entire chain of mountains from nearly the Columbia River all the way south to Walker Pass. Although Nobles apparently had no interest in gold, he followed the gold rush from Minnesota specifically to find a route through the mountains.[18] What Nobles discovered was that the northern Sierra—which everyone else was trying to avoid—did not exist. By the time Nobles reached the area around Honey Lake in late 1850 or early 1851, the "Gold Lakers" had already found Honey Lake and the easy passages from there to the Sacramento Valley through either Big Meadow or Mountain Meadow. Lassen himself may have shown Nobles that much of the way. Apparently on his own, Nobles discovered that there was no mountain barrier at all between Honey Lake and the Humboldt River. The route merely followed along the southern margin of the Smoke Creek and Black Rock deserts. While water was limited, there was

no single stretch longer than twenty-five miles between springs (unlike the forty-mile stretch of waterless desert on the Truckee and Carson routes). By late 1851, Nobles was back at Lassen's ranch promoting the new route, and in February 1852 he showed it to Lassen, who was understandably chagrined that someone else had found the long-sought shortcut. A few months later, Nobles showed the route to residents of Shasta City, who developed a road along the route by the end of the year.[19]

But Nobles's route was more than just an easy way for wagons from the Humboldt to the northern Sacramento Valley. It quickly caught the attention of railroad developers at a time when nearly everyone in California was agitating for a transcontinental railroad. As it happened, word of Nobles's discovery reached Sacramento in the summer of 1852, just as citizens were meeting to organize a railroad to Marysville. The initial impetus for this railroad was to bypass the fickle Feather River, which, because it was filling with mining debris, was threatening to leave Marysville's commercial future high and dry beyond the reach of riverboats. However, the mere possibility of a route around the northern Sierra Nevada suitable for a railroad prompted those developers to look beyond Marysville. Though it cost them Marysville's support, they quickly organized themselves as the Sacramento Valley Railroad in August 1852 to build a railroad to the head of the Sacramento Valley and to a connection with Nobles's route.

That a pass that had been discovered some two years before was even in the newspapers in late 1853 was itself a consequence of the Pacific Railroad Survey. Word of the Army's Pacific Railroad Survey reached California just about the time the first expeditions were setting out. Soon editors up and down the state were publishing editorials and promoting one route or another for the Pacific railroad. The excitement ultimately led to a Pacific railroad convention in San Francisco later that summer. Beckwith undoubtedly found some of these newspapers in Salt Lake City in November 1853 and learned of a pass of which he was previously unaware.

The San Francisco Pacific railroad convention of 1853 was more than a matter of enthusiasm for the railroad. Rather, the particular route that a railroad might someday take into California was locally a topic of vital concern. During the gold-rush era, San Francisco played the role of break-in-bulk port for California, where cargoes were "broken" from sea-going vessels and transferred in smaller lots to riverboats that carried the goods and passengers on to various "heads of navigation," such as Marysville, Sacramento, or Stockton. Although San Francisco's location on a peninsula between the sea and the bay made it a natural for waterborne commerce, its location was problematic when it came to a railroad. The issue for San Francisco was not only to encourage construction of a Pacific railroad, but to do what it could to assure that the railroad approached the bay from the south, from which it could be extended up the peninsula to San Francisco itself.

San Franciscans had been content with the vision of a Pacific railroad crossing the south end of the Sierra Nevada at Tehachapi Pass. Such a line would likely pass up the valley and across Pacheco Pass to San Francisco Bay from the south. But using Nobles Pass at the far north would threaten San Francisco's existence since it introduced the possibility of a railroad approaching the north shore of the bay—opposite San Francisco itself. Making the challenge all the more serious the Marysville citizens who had parted ways with Sacramento over the destination of the Sacramento Valley Railroad had subsequently joined with Benicia in organizing a railroad of their own to link Marysville with the north shore of Carquinez Strait. The idea of a railroad touching tidewater at Benicia drove San Franciscans to apoplexy, since such a railroad would invite ships to sail right past San Francisco without dropping anchor or money. It was also anathema to the riverboat interests, who would be bypassed in the transportation of goods to the interior, and to Sacramento, where the riverboats stopped.

The issue rose to a new level of urgency when word of the Pacific Railroad Survey reached San Francisco in the summer of 1853. Suddenly, it appeared that San Franciscans needed to do something more than talk if they were to save themselves from economic doom. Besides organizing and attending the convention (which in the event accomplished nothing), San Franciscans did three things. First, they pledged to support the then-dormant Pacific and Atlantic Railroad, which had been organized the year before to build a railroad down the peninsula to San Jose. Second, they funded and dispatched two expeditions to delineate direct railroad approaches to the south side of the bay (one survey ran directly across the Sierra with the intention of meeting Gunnison's expedition somewhere in Utah; the other ran south over Pacheco Pass).[20] Finally, a few of them invested capital in the Sacramento Valley Railroad, which had previously been an all-Sacramento outfit.

What appealed to San Francisco's interest was that the Sacramento Valley Railroad was projected to run on the left bank of the Sacramento River, which meant that if it ever was extended to San Francisco Bay it would connect on the south side of the bay, not at Benicia. The Sacramento Valley Railroad literally promised to out-flank the dreaded Marysville and Benicia. If the Pacific railroad some day did enter California at the north, the Sacramento Valley line might just lead the Pacific railroad to San Francisco itself. But even if that never happened, the Sacramento Valley Railroad's immediate design was for a tidewater connection at Sacramento, which would preserve the status quo of riverboat transport between San Francisco and the interior.

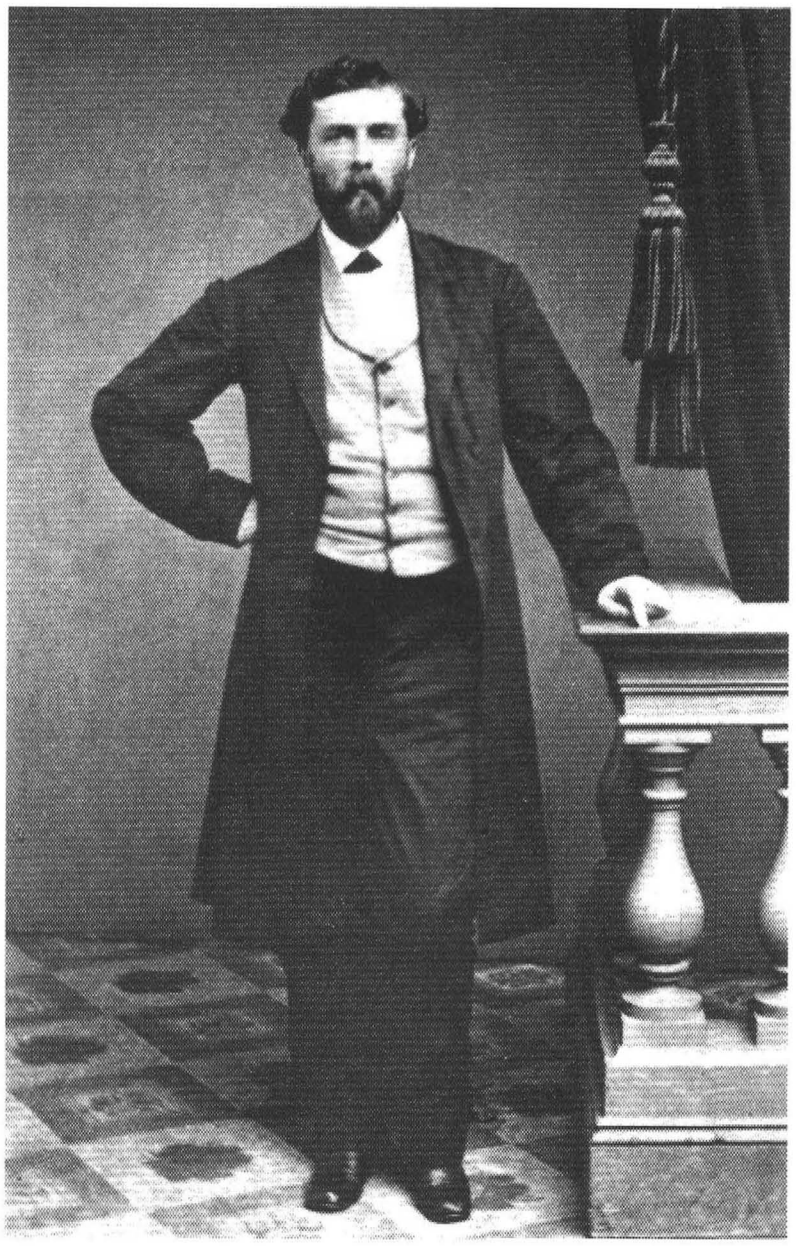
The infusion of San Francisco's interest and money into the Sacramento Valley Railroad in response to the Pacific Railroad Survey (and the Marysville and Benicia) had the effect of revitalizing the company, which had been demoralized during the months following its incorporation by the floods and fires in Sacramento. At the same time, the company fell under the influence of Charles Lincoln Wilson, who since 1850 had been Lassen's partner in devel-

oping Benton City. Wilson had tried unsuccessfully to bolster Benton City's fortunes by developing riverboat navigation to that point. Very much aware of the prospects offered by Nobles's route to the Humboldt, Wilson seized upon the railroad as the key to Benton City's future. In November 1853, just about the time Beckwith was settling in for the winter in Salt Lake City, Wilson was elected president of the Sacramento Valley Railroad. He immediately traveled to New York City to buy equipment and hire workers to build the railroad. At nearly the same time, the Marysville and Benicia's chief engineer and agent was on his way to London.

In retrospect, Wilson's most significant accomplishment in New York was the hiring of Theodore D. Judah to be the Sacramento Valley company's chief engineer. Silas Seymour, with whom Wilson contracted to build the railroad, introduced the two men. Seymour, who had been the chief engineer of the Erie Railroad and had driven its "last" spike, was then superintendent of the Buffalo and New York City Railroad. He also had a penchant for organizing side jobs building railroads all over the country, from Maine to Tennessee, always with sub-contractors to do the actual work. When Wilson arrived in New York, Seymour's Louisville and Nashville project was failing, and the Buffalo and New York City was teetering on the brink of bankruptcy; therefore Seymour was probably anxious for a new source of cash. Having no intention of actually going to California himself, Seymour presented Judah, one of the Buffalo and New York City's young civil engineers, as a handy candidate to be the company's chief engineer.

Judah embraced the Sacramento Valley Railroad with enthusiasm. Years later, his widow related that Judah was passionate about the Pacific railroad even before he met Wilson. With his investment in the north valley and his knowledge of Nobles Pass and the general mania in California for the Pacific railroad, Wilson undoubtedly told Judah exactly what he wanted to hear: that the Sacramento Valley Railroad would be the first link in the chain of railroads that would one day stretch all the way to the Mississippi River. In New York, where he had been summoned to meet Wilson, Judah accepted the job without even considering what his devoted wife back in Buffalo would think about it. Judah, his wife, mother, sister-in-law, nephew, and two (or three) assistants, arrived in California by steamer via Nicaragua on May 4, 1854.[21] As it happened, Beckwith, who by then had received permission from Davis, led his survey expedition out of Salt Lake City, across the Jordan River, and into the desert on their way to California the very next day.

Recognizing that the Humboldt River route was already well known, Beckwith followed a parallel course somewhat to the south. By crossing the numerous mountain ranges, he demonstrated the superiority, for a railroad, of the Humboldt's water-level course across the Great Basin. The expedition crossed the Humboldt itself at Lassen's Meadow (where the Applegate-Lassen road departed the conventional California Trail) and then paralleled the Nobles



Theodore Dehone Judah (1826-1863), railroad civil engineer and promoter, designed the Sacramento Valley Railroad to connect with Beckwith's route around the northern Sierra Nevada. Following the discovery of the Comstock Lode, Judah successfully promoted a route for the Central Pacific Railroad that cut directly through the central Sierra, making a rail connection between California tidewater and Washoe. *(California State Railroad Museum)*

road across the Black Rock and Smoke Creek deserts to Honey Lake. Beyond that, Beckwith surveyed Nobles's road down to the Sacramento River at Fort Reading, then doubled back to survey another route he liked even better. It ran up the Pit River and across Madelin Plains.

Beckwith concluded that a railroad could easily be built from the Great Plains to California by way of the Humboldt River and a pass around the north end of the Sierra in the Honey Lake area. Contrary to the generally held opinion that the Pacific Railroad Survey had nothing to do with the course of the Pacific railroad, Beckwith's report actually redefined the central route. Never again would anyone propose that the central route follow the Spanish Trail to Tehachapi Pass. For the remainder of the decade after the appearance of

Beckwith's report, all efforts to develop the Pacific railroad on the central route assumed the Stansbury-Gunnison route across southern Wyoming, down the Humboldt River to its "big bend," and around the north end of the Sierra to the Sacramento River via either Nobles's route or Madelin Plains. Judah soon became devoted to this route.

By the time Beckwith arrived in California in August 1854, Judah had long finished his initial survey of the Sacramento Valley Railroad. Precisely what he had been doing since the publication of his report late in May is unknown. Wilson had gone yet again to New York, and Judah was no doubt following the newspaper discussions of Nobles Pass and the Pacific railroad. Judah may even have attended a Pacific railroad convention that was held in Red Bluff that June. However, other than the sketchy news of Gunnison's death, there had been no news in California of the progress of the central-route survey expedition. Word of Beckwith's arrival at Fort Reading came as a complete surprise.

Whether Judah and Beckwith actually met in California is unknown, but it seems likely that Judah would have gone out of his way to meet Beckwith once news of his arrival in California made it into the press. Should introductions have been necessary, Judah had two usable connections. One was his brother Henry, who had been a year behind Beckwith at West Point, although in 1854 Henry Judah was off fighting Indians in northern California. The more likely source of introduction between Judah and Beckwith was the railroad's banker, William Tecumseh Sherman—a classmate of Beckwith's at West Point. As it happened, all the vouchers for the expedition had been made out in Gunnison's name. With Gunnison dead, Beckwith was unable to pay off the expedition's employees. It is known that Beckwith arranged a loan from Sherman to cover the expedition's debt. Perhaps through Sherman, Beckwith and Judah met.

Whether or not this meeting happened, there was a figurative passing of the mantle that summer in California as Beckwith, who defined the route, crossed paths with Judah, who soon devoted the remainder of his life to developing the route. Relying in large measure on Beckwith's report, Judah believed that a railroad could indeed connect California with Missouri via the Great Basin. Until events forced a change in plans six years later, Judah remained a staunch advocate of the route by way of Honey Lake for the Pacific railroad's entry into California.

Within days of Beckwith's departure via steamer for the East, word reached California that the Pacific Railroad (that one in Missouri) had contracted for the construction of its second section, from Jefferson City to the Kansas boundary. The following February, construction of the Sacramento Valley Railroad began. While the first contract for the Sacramento Valley line reached only to the crossing of the Bear River, there was every expectation that it would one day become a link in the great Pacific railroad. As the newspaper editorialized, "It is but the beginning, but they talk glowingly of its extending to Nevada [City], to Shasta, to Noble's [sic] Pass, and thence to the Mississippi!"[22]

Ironically, the completion of the Army's Pacific Railroad Surveys failed to generate any immediate development of the Pacific railroad itself. Army topographers discerned that most of the routes examined were practicable. Without any clearly superior route, the matter reverted to the political arena. Unfortunately, by 1854, politicians were even less able to address the Pacific railroad than they had been the year before, as they were then deeply divided over the matter of slavery.[23]

The balance between slave states and free states had been contentious since the days of the Constitutional Convention in 1787, and every acquisition of new territory or creation of new states threatened to upset the balance. The same cessions of territory in the late 1840s that had so confused the issue of the Pacific railroad by offering a plurality of routes to the Pacific exacerbated the old problem: Were the states created in the new territories to be slave or free? In the solution worked out in the Compromise of 1850, and later formalized in the Kansas-Nebraska Act of 1854, the residents of a territory would decide. Seen in the light of the growing controversy over slavery, the Pacific railroad was not merely a way to connect the Pacific states and the East, but also a tool for extending westward the political and economic system of whichever section of the country it touched. Thus, the location of the Pacific railroad was as hotly debated as ever, and any development of a Pacific railroad was impossible until this larger controversy was resolved.

Meanwhile, the Sacramento Valley Railroad company was having problems paying its bills. In part, this was due to depressed economic conditions. But by 1855, the issues that had vitalized the company two years before were of less immediate concern. With the Pacific railroad derailed by slavery, San Franciscans no longer had to worry much about where it would touch San Francisco Bay; and the much-dreaded Marysville and Benicia scheme, which had excited Sacramento as much as San Francisco, had apparently succumbed when its agent and chief engineer went down with the *Arctic* in the North Atlantic in late 1854.[24]

Judah severed his ties with the Sacramento Valley Railroad in the fall of 1855, not long before the railroad itself stopped construction at Folsom. Judah soon signed on as the chief engineer of a San Francisco and Sacramento Railroad, a would-be successor to the Marysville and Benicia. Initially, that company only intended to connect Vallejo with Sacramento, but Judah was soon advocating an extension to the head of the valley and Nobles Pass.[25] The Pacific railroad really was Judah's passion; as of 1856 Beckwith's route was the only way he could imagine it being built.

Early in 1856, the San Francisco and Sacramento sent Judah to Washington as their lobbyist, in hopes of securing a grant to various valley tracts. Judah had not lobbied in Washington before, but his wife's distant cousin Franklin Pierce was the president of the United States. In Washington, Judah joined forces with Congressman James W. Denver of Trinity County, California, in working for a Pacific railroad via Nobles Pass. Whether they had met before is unknown,

but Judah was in Sacramento in 1854 when Denver was California's secretary of state. Denver had been a delegate to that Pacific railroad convention of June 1854 in Red Bluff that Judah may have attended. Judah and Denver apparently worked well together, and Denver wrote Judah's expanded San Francisco and Sacramento project into his bill for a Pacific railroad built along Beckwith's central route.[26]

Election cycles delineate much of this early history of the Pacific railroad. Each campaign stirred interest and expectations, and each election defined the policies for the following administration. The election of 1852 put Congress in a quagmire over the railroad and eventually led to the Pacific Railroad Survey. Four years later, the election of 1856 set off a new round of anticipation. The surveys were complete and the results published, and now the public wanted action—though, this time the debates were coupled with sectionalism and slavery.

In the first national election for the Republican Party, John C. Frémont was the party's presidential candidate, and support for the Pacific railroad a plank in its platform. By contrast, the Democrats championed a national wagon road—a far less expensive program of improvements to the existing California Trail. However, with Democrat James Buchanan's victory over Frémont in November, and slavery still the defining issue of the time, the Pacific railroad was shelved for another four years. Nevertheless, many saw the wagon road not as a substitute for the railroad but as a precursor. In this context, Judah published his *Practical Plan for Building the Pacific Railroad*, the crux of which was to build "a wagon or stage road upon the route of [the] Railroad" first, and the railroad would necessarily follow.[27] Suddenly, the prospective route of the wagon road became as contentious as that of the Pacific railroad, though on a local level. At least the wagon road debate was free from the constraints imposed by the slavery issue.

While the general line of the California Trail was not debated, a heated rivalry developed over the national wagon road's western terminus. In those days, the federal government would not spend money on improvements outside of territory it administered. Thus, with federal involvement stopping at the California state line, it would be up to the state itself to improve any road west of that point. Sacramento and Placerville wanted the road to end in adjacent Carson Valley, reducing the amount of road they would have to build, and better serving those population centers. But those who wanted the national road to mark the course for the Pacific railroad insisted that the road lead to Honey Lake, which marked the Nobles route's entry into California. Three of those advocating this plan were Congressman Denver and lobbyists Judah and William Nobles—the same William Nobles who had found Nobles Pass six years before, and who was now in Washington lobbying for Minnesota Territory's interests.

As originally introduced, the wagon-road bill called for a road from Missouri to Carson Valley—essentially the California Trail. However, by the time lame-duck president Franklin Pierce signed the bill into law in February 1857, the

route had been changed to run from Fort Ridgely, Minnesota to Honey Lake. Obviously, a compromise had been worked out behind the scenes. It appears that Denver, Nobles, and Judah got the location they wanted (Fort Ridgely having been advocated by Nobles), but Placerville contractor John Kirk and engineer Francis A. Bishop received the contracts for the South Pass and Honey Lake Wagon Road portion of the national road.[28]

In anticipation of the development of the wagon road via Honey Lake, the California Stage Company relocated its headquarters from Sacramento to Marysville. A road across the mountains via Oroville, Humbug Valley, and Big Meadow (site of modern Lake Almanor) was already planned, and a stagecoach excursion was run in late May-early June 1857—the first stagecoach ever taken across the Sierra Nevada.

Another immediate response to the selection of Honey Lake as the terminus of the wagon road was the revival of the original plan of the Sacramento Valley Railroad—as a railroad to the head of the valley. Unsurprisingly, Charles Lincoln Wilson was the man behind the scheme. He had lost his influence with the Sacramento Valley Railroad when it ran out of money in 1855, but he was still trying to develop his real estate at Deer Creek. The new company, the California Central Railroad, was organized in the spring of 1857. Its chief engineer, William S. Watson, had been one of Judah's assistants on the Sacramento Valley road. At about the same time, the old Marysville and Benicia project was revived as the San Francisco and Marysville. It eventually was reorganized as the California Pacific, which finally completed its railroad into Marysville in 1868. After nearly two years in the east, Judah returned to California in the spring of 1858, and replaced Watson as chief engineer of the California Central. Watson immediately went to work for the California Northern, which was intended to extend the line of railroads on from Marysville to Oroville and Red Bluff.

All of this illustrates that, following Beckwith's survey and report, there was widespread expectation that the Pacific railroad would one day enter the state at the north end of the Sierra. With Honey Lake selected as the terminus of the wagon road and the further development of Beckwith's route assured, wagon roads and railroads oriented toward Nobles Pass were organized and built. Judah himself committed to that ideal as the direction for the Pacific railroad. While working for Wilson and the California Central between April 1858 and the fall of 1859, he located the railroad's right-of-way, designed its American River bridge, and wrote reports to help Wilson attract investors. Judah also took on an odd little project that shows that, at the time, he had no expectation of a railroad ever crossing the central Sierra Nevada.

In late 1858, the town of Auburn hired Judah to locate a railroad connection. Accordingly, Judah surveyed three routes from various points on the yet-to-be-built California Central to Auburn. Two were relatively practical, but one up Auburn Ravine from the projected location of the town of Lincoln definitely was not. A little investigation convinced Judah that a railroad on this route could

not reach Auburn at all because of the increasing steepness of the terrain east of Gold Hill—about halfway to Auburn. Judah seized upon this as an opportunity to engage in real estate speculation. Precisely because the railroad could not be extended into the mountains, its eastern terminus would, if the railroad actually were built, become the commercial hub of Placer County. Keeping the project secret as long as possible, Judah bought four hundred and eighty acres at the terminus and organized the California Eastern Extension Railroad to connect it with the California Central, seven and one-half miles away. Judah named the proposed railhead Centralia and intended to make his fortune subdividing his property and selling lots. By the end of the year, a turnpike was under construction from the Centralia site to the Auburn-Nevada City road, and by the spring of 1860 most of the railroad was graded. It seems unlikely that Judah had considered a railroad running across the Sierra when his attention was devoted to a railroad project that could not even reach Auburn.

After the Democratic victory in the election of 1856 and the attention to the national wagon road, the issue of the Pacific railroad remained relatively dormant until 1859, when the candidates began warming up for the following year's election. Horace Greeley, editor of the influential *New York Tribune*, made a much-publicized overland trip to California that summer, promoting himself and the Pacific railroad. On cue, the excitement generated another Pacific railroad convention, which convened in San Francisco in September. Judah, who was a delegate, soon was appointed to be the convention's agent in Washington, where by now he had contacts and experience. He sailed east in October. The convention itself carefully avoided the issue of the Pacific railroad's route—at least in its public pronouncements. Judah, however, had his own opinions: He was still devoted to the idea of a Pacific railroad entering the state at the north. This became clear in his subsequent report of his activities in Washington during the winter of 1859-60. In it, Judah revealed that he had designated Red Bluff as the official terminus of his Pacific railroad because it made his route the shortest of those then being considered by Congress.[29] Red Bluff—in the far northern Sacramento Valley—makes sense only for a railroad entering the state via the Nobles-Beckwith route.

While Judah was still committed to a northern route, the perception of the Sierra Nevada as a barrier had begun to change over time under the weight of reports published by various civil engineers. David B. Scott, engineer for the San Francisco and Marysville, pronounced Henness Pass suitable for a railroad in 1855. Sherman Day, William J. Lewis (of the Marysville and Benicia and also of the San Francisco and San Jose), and Francis Bishop (of the South Pass and Honey Lake Wagon Road) all had identified the Johnson Pass route (essentially that of modern Highway 50) as suitable. Isaac E. James, later engineer of the Virginia and Truckee, proposed a railroad across the Sierra from Downieville by way of Yuba Pass, Sierra Valley, and Beckwourth Pass (discovered by James Beckwourth in 1851). Even Judah's former assistant, Watson (then connected

with the California Northern), explored and reported favorably on a railroad route between the northern Sacramento Valley and Susanville via Big Meadow and Fredonyer Pass—the route taken by the first stage coach across the Sierra, in 1858. What these engineers had discovered was that the Sierra Nevada did not pose the insurmountable technological barrier that had been supposed only a few years before. However, the mountains still posed a significant financial obstacle to railroad construction.

The solution to that financial challenge turned out to be the Comstock Lode, word of which was carried back across the Sierra to Sacramento and San Francisco in the early days of 1860. As the rush to Washoe intensified with the spring and the opening of the mountain passes, it became apparent that there would be big money in establishing and controlling the transportation routes directly across the Sierra. With the passing of the season, the orientation of California transportation changed: Honey Lake was now the wrong direction.

Even before the discovery of the Comstock, the Sacramento, Placer and Nevada Railroad was making the effort to build into the Sierra foothills. By the spring of 1860, the company had run three full surveys from Folsom to Auburn and had run a preliminary survey on to Nevada City. As yet, they had no rails to lay anywhere. But Henness Pass, a relatively low pass that led to the Little Truckee River, and had been pronounced suitable for a railroad, was directly east of Nevada City. With the rush to Washoe, the company announced that they would build to Nevada City. Clearly the company's eyes were on Henness Pass. The Nevada City newspaper carried the enthusiasm a little further, predicting that in time the Sacramento, Placer and Nevada would "form a portion of the great railway that must sooner or later unite . . . the Mississippi and the Pacific Ocean."[30]

At the time, though, the Johnson Pass road was the principal trans-Sierra wagon road. Stagecoaches had been running regularly between Placerville and Carson Valley on that route since the days when Kirk and Bishop had quietly tried to divert the national wagon road toward Carson Valley. The Johnson Pass road was the most direct route between the railhead at Folsom and Virginia City. While there had been talk of a railroad to Placerville for years, Placerville was doing just fine from the lucrative trade of the existing wagon and stage road, but the projected Sacramento, Placer and Nevada caused concern. If a railroad extended to Auburn, Placerville's windfall from the Comstock might just dry up. Accordingly, Placerville sent engineers into the field to locate its own rail connection with the Sacramento Valley Railroad at Folsom. In time, this work fell to Francis A. Bishop, formerly of the South Pass and Honey Lake Wagon Road. But the Johnson Pass road was not the only way to Virginia City. Downieville had a road across Yuba and Beckwourth Passes, Nevada City connected over Henness Pass, Auburn's Placer County Emigrant Road ran via Forest Hill and Squaw Valley, Georgetown was connected to the Johnson Pass road, and Jackson had a road over Carson Pass. These were all old emigrant

roads, but now they were advertised as routes to Washoe. Meanwhile, the very first trans-Sierra wagon road, the old road over Donner Pass, was hardly being used at all. Donner was a difficult pass, steep and rocky, and never recovered from the reputation given it by the luckless Donner Party.

The businessmen of Dutch Flat, high on the Auburn divide, found this intolerable. As early as March 1860, they began casting about for a way to develop the old Donner road above Dutch Flat into a highway to Washoe that would bring them some of the lucrative Comstock business. Soon a collection was taken and they contracted with Placer County Surveyor Simon G. Elliott to see whether the route from Dutch Flat to the Truckee River was suitable for development. While he was at it, they instructed him to consider the route's practicality for a railroad.[31] Elliott made his examination in July 1860, and he reported it was favorable for either a wagon road or a railroad. But he did not tell this to anyone for a while; in August he was trying to sell his services in North San Juan to survey the divide above their town for a connection with Henness Pass.

Ironically, Judah was missing all of this as he was still in Washington lobbying for the Pacific railroad on behalf of the previous year's San Francisco convention. Finally, in July, while Elliott was surveying Donner Pass, Judah returned to California. The changes he saw must have been flabbergasting. Flushed with the Washoe excitement, the Sacramento, Placer and Nevada was selling stock. Engineers were in high demand developing rival road and railroad projects toward Virginia City. In the East, all of Judah's activities had been predicated on the belief that no railroad would cross the central Sierra. Not only had he designated Red Bluff as the end of the Pacific railroad, he had also ordered 550 tons of rail for his dead-end California Eastern. Once back in California, however, and confronted with the new reality, Judah abandoned his railroad project, and left the rail rusting on the dock in San Francisco. Soon enough, those rails were laid on the Sacramento, Placer and Nevada.

Another irony is that the Sacramento Valley Railroad happened to be right in the middle of all this excitement. Its tracks between Sacramento and Folsom, the bare trunk of the line they had once hoped to build to the head of the valley, fortuitously turned out to be on the busiest route between San Francisco and Virginia City, the convenient connection between the riverboats and the Johnson Pass wagon road. Unfortunately, its mere twenty-two miles of track saved barely enough time to justify the cost of transferring freight between wagons and railroad cars at Folsom. The Sacramento Valley was making money, but watching a lot of it pass it by. The company's officers knew that the situation would improve as the connecting Sacramento, Placer and Nevada extended into the mountains, but recognized that they could skim even more revenue from the traffic with a toll road of their own across the Sierra. Toward this end, they rehired Judah, who was then back in town and, having recognized the futility of his California Eastern, happened to be out of work.[32]

By late 1860, the central Sierra were sufficiently well known that Judah did not have to go exploring to find a route for the railroad's projected wagon road. Rather, he merely visited various foothill towns seeking information about old roads, looking for one that could be improved and licensed as a toll road. He visited local editors, who reported his mission in their papers, and he found advocates of local roads to guide his search. In early October 1860, he was given a buggy tour of the Henness Pass road all the way to the Truckee River. Although it was a good road, other turnpike companies had already laid claim to it. Later that month, Judah explored the old Placer Emigrant Road above Georgetown, but it merely led back to the Johnson Pass road. Meanwhile, at Dutch Flat, promoters of the local route were growing impatient with Elliott, who had failed to publish his report. Druggist Daniel Strong read in the papers of Judah's explorations and invited him to Dutch Flat for a visit.

In late October, Judah took the stagecoach from Folsom to Dutch Flat, whence he was conducted on a horseback investigation of the old emigrant trail to the summit. From there they looked down upon Truckee Lake (as Donner Lake was then called) and the country beyond. All the while, storm clouds gathered. They awoke in the middle of the night to a blanket of snow, and, recalling the fate of the Donners at that very pass a mere fourteen years before, they packed up and trotted back to Dutch Flat in snow and rain. That was the extent of Judah's "discovery" of Donner Pass. Though undoubtedly cold and wet, Judah nevertheless was excited beyond measure. The morning after his return to Dutch Flat, he drew up articles of incorporation for the Central Pacific Railroad, though only he and Strong were there to sign.[33]

Clearly Judah was in a hurry. He knew the Sacramento, Placer and Nevada group was working actively on its railroad and that they hoped to extend it to Washoe. He also knew of the talk among the Placerville people about a railroad, and that many passes were already encumbered with wagon-road franchises. With their papers drawn and their signatures hardly dry, Judah and Strong hurried off to solicit subscribers. In Sacramento, Judah talked with newspaper editors and had a pamphlet and broadside printed, extolling the virtues of the Dutch Flat route.[34]

Why Judah did not wait to talk to the principals of the Sacramento Valley Railroad before instigating an entirely new enterprise is anybody's guess. They were, after all, paying for his services. Unsurprisingly, they fired him, though that hardly made a difference.[35] Judah's precipitous action may represent nothing more than his inability to resist taking hold of a promising opportunity. But Judah was fanatical about the Pacific railroad. The speed with which Judah formed the company and published announcements suggests that he was hurrying to get information about the Dutch Flat route into West Coast lawmakers' hands before they returned to Washington for the coming session. According to one report, Judah was rushing back to Washington, though apparently he did not do so.[36] Judah may have been positioning himself to control any franchise Congress might award for a Pacific railroad.[37]

Judah's new scheme left the Sacramento Valley Railroad undeterred. Executives continued supporting the Sacramento, Placer and Nevada's slow advance into the mountains. In July 1862, eight miles of the new line opened beyond Folsom, with another six miles placed in operation two months later, putting them two thirds of the way to Auburn. The next spring, the Sacramento Valley began work on its turnpike between Dutch Flat and the Henness Pass road by way of Bear Valley and the town of Bowman. This was apparently the road that became the Pacific Turnpike, connecting Dutch Flat with the Henness Pass road.

But long before any of this was accomplished, Judah had found supporters in Sacramento to finance a full instrument survey of the Dutch Flat route, in order to confirm his hasty evaluation that a railroad could be built that way to the Truckee River. They included merchants Collis P. Huntington, Mark Hopkins, Leland Stanford, Charles Crocker, and Crocker's brother, Edwin B. Crocker, an attorney. With their backing, Judah commenced his survey in early March 1861. Three months later, the Central Pacific Railroad filed incorporation papers with the state. That fall, Judah returned to Washington yet again where, despite the fact that he was merely a civilian lobbyist, he was appointed secretary to both the Senate and House committees considering Pacific railroad legislation. The southern states had seceded by this date, and there was no one to advocate a southern route; in July 1862, Abraham Lincoln signed the bill granting to the Central Pacific the franchise to build a segment of the Pacific railroad.

The company broke ground on the riverbank in Sacramento on January 8 1863. Clearly, they had a long way to go to catch up with the Sacramento, Placer and Nevada, which had been in operation almost to Auburn for three months. However, the Central Pacific was highly motivated, and construction across the flat valley floor was relatively inexpensive. In April 1864, they crossed the tracks of the California Central, which had been operating to Lincoln, California, since October 1861, at "Junction" (today's Roseville). In June, the Central Pacific reached Newcastle, which was close enough to Auburn to outflank the Sacramento, Placer and Nevada, and that company threw in the towel.

By this time, the Sacramento Valley company had begun to assist the Placerville and Sacramento Valley Railroad (which filed its organization papers in 1861) in building toward Placerville. Grading was well advanced, so, with the Sacramento, Placer and Nevada's demise, its rails were salvaged to be relaid on the Placerville line. These rails, which Judah had originally ordered for his California Eastern, were American made, and were highly coveted by the Central Pacific, which was required by law to use only American-rolled iron. The Central Pacific induced the local militia, the Auburn Grays, to resist the salvage effort, and a minor war ensued with much bluster, a little gunfire and bloodshed, and the Placer County sheriff smashing all the chairs in his office in frustration at a restraining order from the court. It was all for naught. The rail was soon in place on the Placerville railroad, and in August 1864 the Placerville and Sacramento Valley Railroad was opened to Latrobe. It reached Shingle Springs the following June.

Judah's route for the Central Pacific Railroad through the central Sierra Nevada. *(Nevada Historical Society)*

The turning point for the Central Pacific came in March 1865, when it qualified for the first of its federal bonds. These were soon sold, at considerable discount, with the money promptly used to buy control of the Sacramento Valley Railroad. The Placerville railroad was not involved in the transaction, but had clearly lost its motivation to push on into the mountains. That line fell to the principals of the Central Pacific in 1871; it was not extended beyond Shingle Springs for another fifteen years.

Clearly, from 1863 on, the Sacramento Valley Railroad had been trying to outflank the Central Pacific to prevent it from cutting into their profits from the Comstock traffic. Just what the Central Pacific's directors were trying to accomplish is less clear. Were they really trying to build a Pacific railroad, or was their objective the Comstock Lode?

The association that initially bound these men was political—they were the founders of California's Republican Party and had worked together toward party objectives since the 1856 election. In June 1861, they formally organized themselves as the Central Pacific Railroad. But at that date, Judah had barely commenced his instrument survey, and they really did not even know whether they had a viable route across the Sierra. Were they committed already to a Pacific railroad? Or, was their motive then to elect Stanford governor, using their public interest in the Pacific railroad as an appeal to California voters?

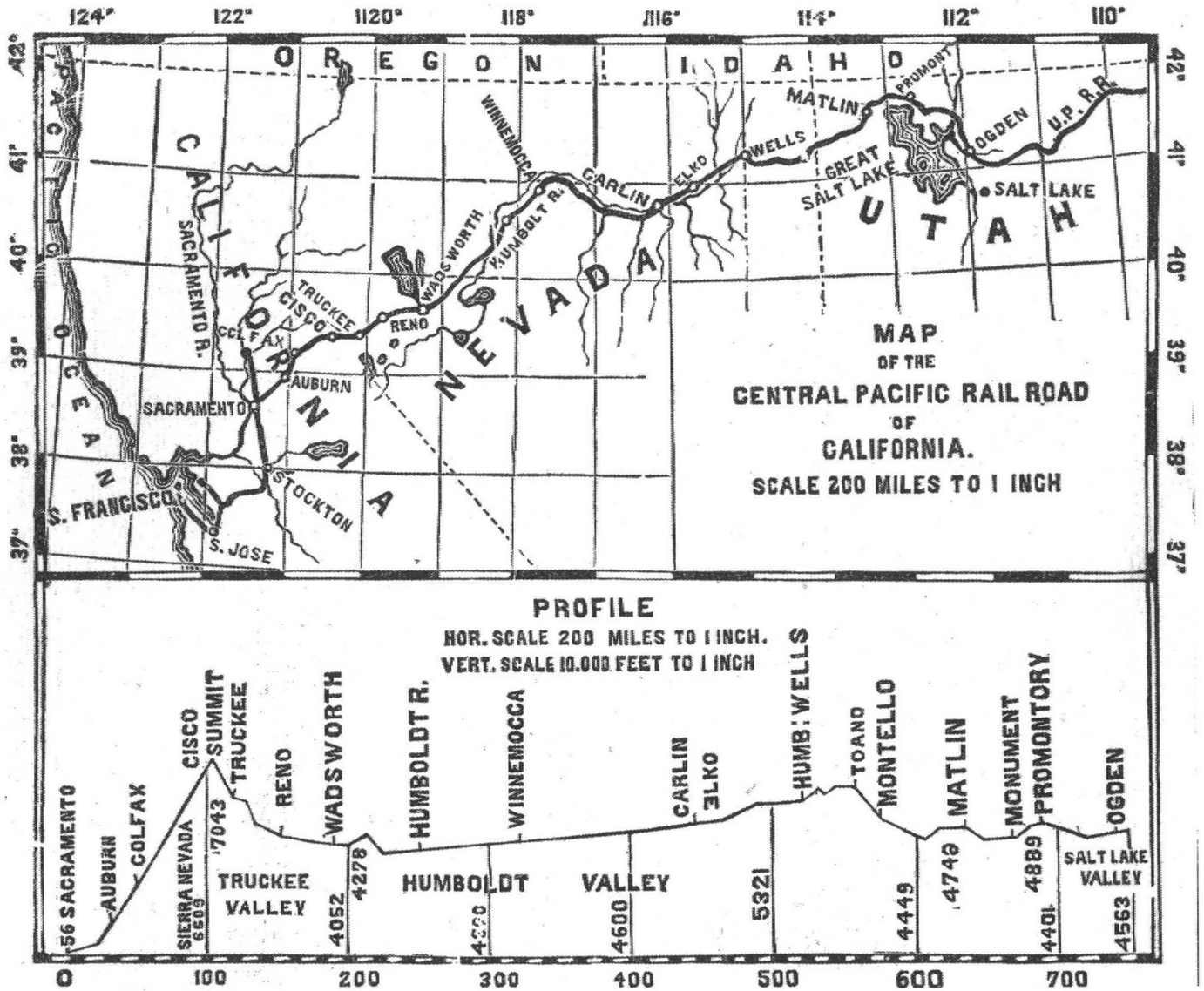
When the Central Pacific's principal directors built a turnpike from Dutch Flat to Donner Lake in 1863 and 1864, opponents charged that the company intended to extend their railroad only to Dutch Flat, labeling the whole project the Dutch Flat Swindle. When the railroad was eventually completed, in 1869, publicists said their ultimate success proved that a connection with the Union Pacific had always been their goal. But the fact of their ultimate arrival at Promontory proves nothing of their earliest motivations.

In 1887, when Congress was investigating the Pacific railroad, Leland Stanford recounted a fascinating memory of his first visit to Donner Summit, which suggests that the directors' initial interests were then directed primarily to the Comstock. He related that in October 1862, the first time that he, Huntington, and Charles Crocker went into the mountains to view the route that Judah had proposed, they were aghast at the ruggedness of the country and the difficulties of the project they had already publicly embraced. Stanford said that as he and his partners gazed at the obstacles they would have to overcome, they discussed the chances of success or failure for their enterprise. Obscured in his statement is the identity of their goal. Stanford said that they concluded:

> That if there was a way by which a vessel could start from San Francisco or from New York, and sail around Cape Horn, in behind those mountains, we could not afford to compete . . . . If this could not be done, however, and if we had only the ox and mule teams to compete with, we saw that we could obtain such a rate for carrying freight and passengers that we could afford to build the road with the prospect of further developments in Nevada.[38]

Obviously, these men went ahead with their plans for the railroad, so it must have been that a vessel could not get to wherever it was that they wanted to go. Virginia City was the one place east of the Sierra worth going to in 1861, where a vessel could not go. If Stanford's recollection is correct, their objective must have been the Comstock.

Undoubtedly, the specific goals of the directors of the Central Pacific changed with time and circumstances. They needed as much revenue from the Comstock traffic as possible to help pay for the work. Whether they initially hoped to someday have a Pacific railroad or not, the Comstock provided the hope of lucrative local traffic that would help to offset some of their costs. Had the



The completion of the Central Pacific Railroad in May 1869 provided Nevada with a rail connection with California tidewater and the eastern United States. *(Courtesy of the author)*

company failed to cross the Sierra, its railroad would never have made it to Promontory. In the event, the Central Pacific carried little of the Comstock traffic before reaching Cisco in the fall of 1868. The old road across Johnson Pass was just too well established, with inns and blacksmiths along the way catering to the teamsters.[39]

Furthermore, it is easy to overlook that in the early days of the Central Pacific, no one knew how far east the railroad would have to build in order to meet the Union Pacific. The initial Pacific Railroad Act authorized Central Pacific construction only to the Nevada border, and it seems only slowly to have dawned on company officials that they would even have the opportunity to build on toward Salt Lake. Seen from this perspective, it is understandable that the Comstock loomed so large in their plans.

The Central Pacific reached Reno in May 1868. That was as close to the Comstock as they went, but it was close enough to finally eclipse the wagon traffic on the Johnson Pass road, and in little more than four years the Virginia and Truckee was to close the gap between Reno and Virginia City. With the relatively open country of Nevada stretching in front them and the Union Pacific then barely across the continental divide at Sherman Summit, the Central Pacific's owners now had every reason to concentrate on pushing their track as far east as possible. Every mile laid before meeting the Union Pacific would net them additional land and bonds, and if they could reach the Mormon settlements of Utah, they would command that traffic, too. While it had taken five difficult years to cover the 150 mountain miles between Sacramento and Reno, the Central Pacific broke all records building across Nevada, reaching its connection with the Union Pacific at Promontory Summit, Utah, just one year after they passed through Reno.

Though generally overshadowed by the ultimate achievement of constructing the Pacific railroad, the importance of the Comstock to the history and eventual route of the Pacific railroad cannot be overstated. It turned the various California railroad companies from their slow approach toward Honey Lake into a race directly across the Sierra. Responding to the economic attraction of the Comstock, Theodore Judah located the railroad on the Truckee, rather than on Beckwith's route farther north.[40] Nevertheless, Judah's diversion of the Central Pacific toward the Comstock involved only a portion of the entire route: At Winnemucca the railroad was back on the line Beckwith had recommended along the Humboldt River.

By the same token, there was really nothing wrong with the Spanish Trail as a route for a railroad; it simply did not make sense as long as San Francisco was the hub of California's population. The Mormons never lost interest in the route, and the southern California boom in the 1880s gave strong impetus to efforts to connect Salt Lake City with Los Angeles by rail. The San Pedro, Los Angeles and Salt Lake was completed along the Spanish Trail in 1905, with tracks from Utah and California joining a few miles west of Las Vegas.

Likewise, Edward Beckwith's route was too good to ignore. The Western Pacific Railway followed it closely south of the Great Salt Lake, down the Humboldt River to Lassen's Meadow, and directly west through the Black Rock and Smoke Creek deserts to Honey Lake. From there it diverged from Beckwith's specific survey to pass close to Quincy. The Western Pacific was completed to Oakland in 1909.[41]

Thus, all of the routes considered for the central Pacific railroad eventually brought railroads to Nevada. The San Pedro, Los Angeles and Salt Lake followed Benton's direction along the Spanish Trail to Las Vegas. The Western Pacific was built along the Nobles-Beckwith path. And the Central Pacific followed Judah's route toward the Comstock. Today all of these railroads have been absorbed into the Union Pacific, and all continue to carry the nation's commerce.

The Central Pacific and the Union Pacific were joined at Promontory Summit, Utah on 10 May 1969. *(Nevada Historical Society)*

NOTES

[1]Many early railroad companies spelled the word as it appeared in their corporate names: *Rail Road*. For simplicity, I have elected to use the modern form, letting it serve for both the company name as well as the railroad it operated. The reader will notice that the word *Railroad* in *Pacific Railroad* is sometimes capitalized and sometimes not. When it is capitalized, I am referring specifically to the Saint Louis-based company with that particular corporate name. When it is not, I am referring to the generic concept of a railroad to the Pacific.

[2]In his annual message to Congress, President Jackson wrote: "and in the construction of railroads, and the application of steam power, we have a reasonable prospect that the extreme parts of our country will be so much approximated, and those most isolated by the obstacles of nature, rendered so accessible, as to remove an apprehension some times entertained, that the great extent of the Union should endanger its permanent existence." *Senate Journal*, 22nd Cong., 1st Sess., 6 December 1831.

[3]One question I have never seen adequately explored concerns the extent to which the desire for additional routes for a Pacific railroad drove the politics and diplomacy that led to the Mexican War. A southern route was proposed by Colonel James Gadsden (subsequently associated with the Gadsden Purchase) at a Memphis railroad convention in November 1845, apparently in response to Asa Whitney's plan. This was after Texas had been annexed, but well before the United States actually possessed the territory to be crossed by such a route.

[4]LeRoy R. Hafen and Ann W. Hafen, *Old Spanish Trail; Santa Fé to Los Angeles* (Glendale: Arthur H. Clark Company, 1954, 1960), 109-129.

[5]Bil Gilbert, *Westering Man; The Life of Joseph Walker* (New York: Atheneum, 1983), 119-149.

[6]William H. Goetzmann, *Army Exploration in the American West 1803-1863* (Lincoln: University of Nebraska Press, 1979), 109-208.

[7]David Haward Bain, *Empire Express: Building the First Transcontinental Railroad* (New York: Viking, 1999), 51-53.

[8]The first expedition mounted for the examination of Benton's route, that of Edward F. Beale, actually preceded the Army expedition. It was reported by Gwinn Harris Heap in *Central Route to the Pacific* (Philadelphia: Lippincott, Grambo, and Co., 1854; reprint Glendale: The Arthur H. Clark Co., 1957). The second was John C. Frémont's expedition, which traced Benton's route the following winter. It was reported by Solomon Nunes Carvalho in *Incidents of Travel and Adventure in the Far West with Col. Frémont's Last Expedition* (New York: Derby and Jackson, 1857; reprint Philadelphia: The Jewish Publication Society of America, 1954).

[9]Thomas H. Benton, *Letter from Col. Benton to the People of Missouri* (reproduced with Heap, *Central Route to the Pacific*, 48-49); the letter also appeared in the *Sacramento Union* (28 April 1853).

[10]Edward G. Beckwith, *Report of Exploration near the 38th and 39th Parallels* (Washington, D. C.: A. O. P. Nicholson, 1855), 11-12; and Goetzmann, 283-7. For Benton's expectation that the Pacific railroad would run via Walker's Pass see *Sacramento Union*, 30 April and 18 June 1853.

[11]John W. Gunnison, *The Mormons, or Latter-Day Saints, in the Valley of the Great Salt Lake* (New York: Lippincott, 1860; reprint Brookline, Mass.: Paradigm Publications, 1993), 152-53.

[12]From 1851 until the winter of 1853-54 the Mormons got their mail from California via the Humboldt. However, starting in the spring of 1854 that route was abandoned in favor of the Spanish Trail.

[13]W. J. Burton, an unpublished "History of the Missouri Pacific Railroad" prepared at the behest of that company (1956), 127. Copy available at the National Museum of Transportation, Saint Louis, Missouri.

[14]Howard Stansbury, *Exploration of the Valley of the Great Salt Lake of Utah* (1852; reprint Washington, D. C.: Smithsonian, 1988), 217-67.

[15]Jefferson Davis, "Instructions from the Secretary of War," 21 February 1854, published in Edward G. Beckwith, Report of Explorations on the Line of the Forty-first Parallel, . . ., 33d Cong., 1st sess., H. Ex. Doc. 129, 113-14.

[16]The story that Lassen went all the way to Missouri in 1847 has been contested ever since H. H. Bancroft (*History of California*, IV, 708) expressed doubt about it, maintaining that Lassen only went as far east as Fort Hall, and that in 1848. Apparently on Bancroft's authority, this view was repeated by George Stewart (*California Trail* [New York: McGraw-Hill, 1962], 197) and Thomas Frederick

Howard (*Sierra Crossing: First Roads to California* [Berkeley: University of California, 1998], 72). However, the story of Lassen going all the way to Missouri in 1847 with Stockton was promulgated in Lassen's lifetime (*Red Bluff Beacon*, reprinted in *Hutching's California Magazine* [May 1859], 512) and was accepted by Georgia Williss Read and Ruth Gaines in their meticulously documented "Critical Notes" to J. Goldsborough Bruff's journals (*Gold Rush* [New York: Columbia University Press, 1944], 545, 1071). The issue is finally settled to my satisfaction by the report of Lassen's arrival in Missouri with Stockton in the *Brunswicker* (Brunswick, Missouri) of 4 November 1847.

The opinion that the combination of the Applegate road and the Pit River trail offered the best route into northern California is expressed in Myer's letter of 13 February 1849 to the War Department, and is itself reprinted in Read and Gaines, "Critical Note," 1201-2.

[17]R. S. Williamson, "Captain W. H. Warner's Route through the Sierra Nevada," 14 February 1850 (reprinted from an uncited source in Mae Helene Bacon Boggs, *My Playhouse Was a Concord Coach* [Oakland: Howell-North, 1942], 42-45); William T. Sherman, *Memoirs of Gen. W. T. Sherman* (New York: Charles L. Webster and Co., 1892), I, 107.

[18]"Speech of Hon. Wm. H. Nobles" (Saint Paul: Olmsted and Brown, 1854), 5. Nobles specified the northern extent of his exploration as being within "one hundred miles of the pass through which Gov. Stevens has located his route."

[19]That Lassen had been Nobles's guide on at least the Big Meadow-to-Honey Lake portion of his route is the stated opinion of Lassen acquaintances as cited in *Hutching's California Magazine* (June 1857), 537. The account of Nobles's late 1851 visit to Lassen's ranch and the initial attempt to interest people there in the new route comes from the depositions for *Wilson and Wilson vs. Lassen and Gerke* preserved in the California State Archives, Sacramento.

Nobles's Pass itself was never well defined. The name is commemorated with a "Nobles Pass" on the northeast corner of Lassen Peak, and the Susan River (after which Susanville is named) is named for William Nobles's wife, Susan, who was left behind in Minnesota (W.N. Davis, *The Naming of the Susan River: Susan Nobles—Honey Lake Valley's First Susan* [Sacramento: private printing, 2002]).

With Nobles's discovery it was realized that the mountains east of Goose Lake that were crossed first by the Applegates and then by Lassen were not part of the Sierra Nevada at all. They were subsequently named the Warner Mountains after William Warner, who was killed on his expedition.

[20]Paul F. Starrs, "Connecting the Continent: Esmeralda County, Nevada, and the Atlantic and Pacific Railroad Survey of 1853," *Nevada Historical Society Quarterly* 40: 3 (Fall 1997), 232-52.

[21]Anna Judah, letter to Amos Parmalee Catlin, published in *Themis* (14 December 1889); and *Sacramento Union* (5 May 1854).

[22]*Sacramento Union* (11 August 1855; see also 20 January 1855).

[23]The publication of the reports of the Army's Pacific Railroad Survey thoroughly upset the plans of *the* Pacific Railroad—that Missouri company boldly heading west. The news that Cochetopa Pass was not favorable for a railroad led to a bifurcation of that company's efforts as they began to concentrate on the South-West Branch railroad to build toward the thirty-fifth parallel route. Later, that company became the Atlantic and Pacific, which, for a time, was joined with the Atchison, Topeka, and Santa Fe and later became the foundation of the Saint Louis and San Francisco. Meanwhile, building on their original course, and delayed by the Civil War, the Pacific Railroad finally reached Kansas City in 1865. Burton, "History," 188-90; and H. Craig Miner, *The Saint Louis – San Francisco Transcontinental Railroad; The Thirty-fifth Parallel Project*, 1853-1890 (Lawrence: University of Kansas, 1972).

[24]Victor Wolfgang Von Hagen, *Frederick Catherwood* (New York: Oxford, 1950), 113; *Sacramento Union*, (14 November 1854).

[25]Theodore D. Judah, *Report of the Chief Engineer upon the Preliminary Survey, Revenue, and Cost of Construction of the San Francisco and Sacramento Rail Road* (San Francisco: San Francisco and Sacramento Railroad, 1856), 26, 31.

[26]James W. Denver, *Report of the Select Committee on the Pacific Railroad and Telegraph*, 34th Cong., 1st Sess. H. Rept. 358, August 1856; *Sacramento Union*, (30 June, 18 July 1856).

[27]Theodore D. Judah, *A Practical Plan for building the Pacific Railroad* (Washington D. C.: Henry Polkinghorn, 1857), 17.

[28]Nobles was appointed by Buchanan to superintend construction of the road between Minnesota and South Pass. Nobles County, Minnesota, is named in his honor. James Denver was appointed

by Buchanan governor of Kansas Territory, and Denver City, Kansas Territory (now Colorado), was named in his honor.

Kirk and Bishop attempted to locate the national wagon road well south of its intended course, bringing it as close to Carson Valley as possible before running it north to Honey Lake. The controversy resulted in Kirk's resignation and the road was completed on its intended course by Frederick W. Lander (after whom Lander County, Nevada is named). Mavis Shahrani, "Wagon Roads—1858 Season," in *Frederick West Lander: A Biographical Sketch 1822-1862*, Joy Leland, ed. (Reno: Desert Research Institute, 1993), 103; Alice Baldrica "Lander and the Settlement of the Pyramid Lake War," in *Frederick West Lander: A Biographical Sketch 1822-1862*, Joy Leland, ed., 151.

Judah's whereabouts between March 1857 and April 1858 are unknown. There is some indication that he was considered for the position of engineer on the national road, but it is not known whether this was before or after Bishop had that job. In any case, he was not in California. W. Turrentine Jackson, *Wagon Roads West* (New Haven: Yale University Press, 1964), 168, 175, 176, 179.

[29]Judah, *Pacific Railroad. Report of Theodore D. Judah, Accredited Agent, Pacific Railroad Convention, upon his Operations in the Atlantic States* (San Francisco: 1860; reprinted in the *Sacramento Union*, 25 July 1860).

[30][Marysville] *Appeal* (23 June 1860), quoting the Nevada City *Democrat*.

[31]*Sacramento Union*, 25 June 1860; [Auburn] *Placer Herald* (7 July 1860); Testimony of Daniel W. Strong to U. S. Pacific Railway Commission, Serial 50th Cong., 1st sess., 1887–88. S. Ex. Doc., 2959.

[32]*Sacramento Union* (6 October 1860); "Evidence of L. L. Robinson," *Evidence Concerning Projected Railways across the Sierra Nevada Mountains . . .* (Carson City: Committee on Rail Roads of the First Nevada Legislature, 1865), 205.

[33]Strong testimony to United States Pacific Railway Commission, 2839; Judah, *Report . . . upon the Preliminary Survey . . .*, (Bancroft Library, University of California, Berkeley), 57-59.

[34]Strong to U. S. Pacific Railway Commission, 2839-40; "Central Pacific Railroad Company of California" (San Francisco: Towne and Bacon, 1860); and "Communication to direct attention . . . ," 1860 (broadside, publisher unknown).

[35]"Evidence of L. L. Robinson," 205.

[36][Placerville] *Mountain Democrat* (1 December 1860).

[37]Judah's decision to form an independent railroad for the Donner Pass route, rather than to help develop the route for the Sacramento Valley Railroad, is one of those fateful turning points in history. The antagonism between the Central Pacific and the Sacramento Valley cost both companies dearly. Conceivably, Judah could have lobbied Congress for a Pacific railroad franchise for the Sacramento Valley Railroad, as he did for the Central Pacific. Many things would have been different. Ultimately, Judah's course of action probably turned on issues of personalities. Judah had a strong character, as did Lester and James P. Robinson, the contractors Silas Seymour sent out to build the road and who subsequently managed it. Perhaps their relationship was set by their earlier relationship in connection with the construction of the Sacramento Valley Railroad in 1854 and 1855. Perhaps, as was hinted by Charles Crocker, Judah believed that Robinson had not helped his brother fully in a Florida railroad scheme years before.

[38]Testimony of Leland Stanford to U.S. Pacific Railway Commission, 50th Cong., 1st sess., 1887-88, 2618.

[39]Mark Hopkins to Collis P. Huntington, 16 February 1866.

[40]The lure of the Comstock may also have diverted the Central Pacific from what may ultimately have been the better route—the path via Honey Lake. Driving directly into the Sierra, the Central Pacific incurred the opposition of everyone already engaged—and invested—in the Virginia City trade. That opposition cost the Central Pacific dearly in litigation over contested local bonds during these critical, formative years. While the path up the valley and around the Sierra to Honey Lake may have been a few miles longer, the cost of construction—and eventual cost of operation—would have been less. Furthermore, those extra miles would have earned additional federal bonds. Too, they would have carried more Idaho-bound freight, which was the bulk of their business before they reached Reno. The finished railroad would have served Oregon better, and would have made the eventual Modoc cutoff unnecessary. Beyond that is pure speculation. But, had the Central Pacific built toward Honey Lake, they likely would have been east of the Sierra a year or two sooner. Had that happened, they would probably have been carrying Comstock commerce sooner, and they may well have met the Union Pacific somewhere in Wyoming.

[41]The Western Pacific fulfilled the ambition of the original Pacific Railroad that had broken ground at Saint Louis in 1851. The Pacific Railroad was reorganized as the Missouri Pacific in 1872, and reached Pueblo, Colorado, in 1887, where it connected with the Denver and Rio Grande. That narrow-gauge line had been built across Marshall Pass (a short distance north of Cochetopa Pass) in 1880, and extended westward by way of the Gunnison River to a connection with the Denver and Rio Grande Western (and Salt Lake City) in 1883. The Denver and Rio Grande's standard-gauge connection between Pueblo and Salt Lake City via Tennessee Pass was completed in 1890. Both the Missouri Pacific and the Denver and Rio Grande were controlled by Jay Gould, whose son George financed the construction of the Western Pacific. Thus, in time, the railroad that had hoped to become the first transcontinental railroad became the last.

Building the Virginia and Truckee Railroad

RICHARD PITTER

Ten years after the 1859 discovery of silver ore at Virginia City, after roughly two and a half million tons of ore had been processed and much more waste rock and low-grade ore had accumulated on the dumps above ground, and after ninety million dollars in bullion had been produced from Comstock ore, the Virginia and Truckee Railroad was built to serve the mining district.[1] How was that railroad built? This article reviews the region's efforts to obtain less expensive and more reliable transportation; it includes the early attempts to organize railroad companies to serve the Comstock, the founding of the Bank of California in 1864, the events that led to the formation of the Virginia and Truckee Railroad, and the construction phase of the railroad. My understanding is based on documents and newspaper articles, along with my conjectures on how the missing pieces fit together. Of course, this is incomplete and subject to challenge and revision. That is the way of research.

As built, the Virginia and Truckee Railroad was an offspring, of sorts, of the Bank of California. The railroad's president, William Sharon, was the bank's agent in charge of Comstock operations. Two other shareholders of the railroad company were Darius O. Mills and William C. Ralston, who were president and cashier, respectively, the two top officers of the Bank of California. The story of how the railroad was built is convoluted. Attempts to simplify the story in print have led to misinterpretation and fiction. Three examples suffice here.

First, there is the story of William Sharon's fall from riches to rags and his employment on the Comstock by the Bank of California. Irving Stone's *Men To Match My Mountains* describes this:

Richard Pitter has published articles about the Virginia and Truckee Railroad and the Comstock era. The Lake Tahoe Historical Society published Dr. Pitter's book about Hank Monk, the famous stagecoach driver. Dr. Pitter received his Ph.D. in Meteorology from UCLA and was an associate research professor in Atmospheric Sciences at the Desert Research Institute, Reno, NV from 1981 to 1994. He teaches math and science at Wentworth Institute of Technology, Boston and Maimonides High School, Brookline, Massachusetts.

> Now in the summer of 1864, nettled by the "chambermaids and ex-sheriffs soaring to dizzy heights in the financial firmament," he [Sharon] studied the Comstock situation, decided he would plunge his $150,000 to gain control of North American, of which he already owned a thousand shares, because he believed that pending lawsuits would be settled in North American's favor: the Overman mine was in bonanza; the vein should run slantwise through North American; he would make millions.
>
> Instead, a group of unscrupulous brokers dealt him from the bottom of the deck, something no poker shark had been able to do, reselling him his own stock at a considerably increased price. He lost his $150,000, his beautiful home on Stockton Street, the last of his resources, and was obliged to ask his friend, Colonel John D. Fry, to take him to Ralston's office in the Bank of California and plead for a job. Sharon did not take the loss with good grace. Being the laughingstock of San Francisco made him a cold, embittered man . . . looking for an opportunity to wreak vengeance.
>
> It was the worst possible moment to ask Billy Ralston for anything; reliable miners had just reported to him that the Comstock was flooded, finished, that it was impossible to go below the five-hundred-foot depth at which all mining had stopped. Though a last few of Diedesheimer's pumps were groaning valiantly, the mining shafts were sumps of scalding-hot water that came rushing into the mines from underground volcanic rivers.
>
> Comstock stocks on the San Francisco Stock and Exchange went crashing; Gould and Curry, which had been paying a dividend of $125 a share, fell from $6,300 to $2,400 to $900 a share; Ophir dropped from $1,580 to $300. Most of the newly made San Francisco fortunes ran out the same hole they had come in.
>
> Not only did Ralston have $3,000,000 of the Bank of California money invested in the Comstock mines, and more millions in the San Francisco factories and foundries supplying the Comstock, but the Bank of California correspondents in Virginia City, acting as a collecting and lending agency, withdrew their account and vanished.
>
> The job that William Sharon wanted was manager of the Bank's accounts in Virginia City. Ralston was convinced that the Mount Davidson mines were not through, but he was by no means convinced that the cold, bitter, defeated man standing before him was the right one to bring the Comstock back. To oblige Colonel Fry, his father-in-law, he gave Sharon a try, persuading his reluctant board by bringing evidence to bear that Sharon had been an incomparable poker player, and that a good poker player was precisely what was needed in the Washoe.[2]

For the second example, Dan De Quille's *The Big Bonanza* describes how William Sharon, who is called the father of the Virginia and Truckee Railroad, built the road:

> In building this road Mr. Sharon secured a subsidy of $500,000 from the people of Washoe in aid of the project, constructed as much of the road as the sum would build, then mortgaged the whole road for the amount of money required for its completion. In this way he built the road without putting his hand into his own pocket for a cent, and he still owns half the road.[3]

The third example is an often-repeated account of an early 1869 meeting between Sharon and Isaac E. James, who surveyed the Virginia and Truckee Railroad. According to Charles Howard Shinn's *The Story of the Mine*:

> . . . Sharon, a man of affairs, sent for the best mining surveyor on the Comstock. This was Superintendent James, of the Sierra Nevada Mining Company. The conversation that follows is from his own statement. Sharply, and without a word of explanation, Sharon said:
>
> "James, can you run a railroad from Virginia City to the Carson River?"
>
> "Yes."
>
> "Do it, at once."
>
> The next day a party of surveyors were in the field along the mountain trails and highways. In a month the twenty-one miles of route were mapped out, grading had been already commenced, and the rails had been ordered from England. Sharon himself had not been idle. He had formed his company, had bought out the necessary rights of those who had several moribund charters, and had obtained from the legislature a new charter. More than this, he had secured legislative authority for the issuance of $500,000 in bonds from the counties of Storey and Ormsby as a free gift to the railroad. It is needless to add that the counties duly issued the bonds without making any conditions whatever. The mining companies on the lode subscribed $700,000. Rather a busy thirty days this, and well worth noting as an instance of Comstock energy.[4]

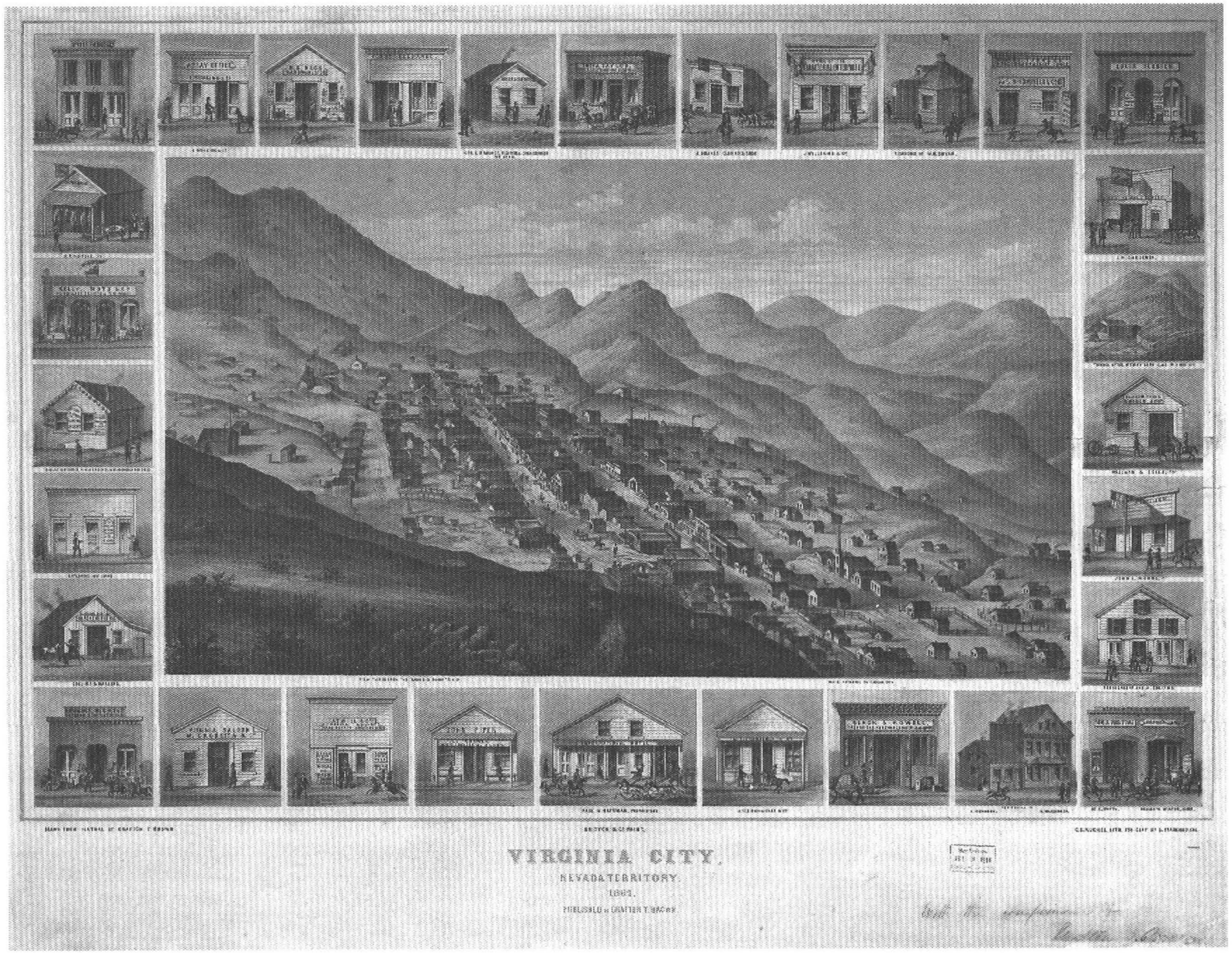
This example is found with small variations in Lucius Beebe and Charles Clegg's *Virginia and Truckee*[5] and in Gilbert H. Kneiss's *Bonanza Railroads*.[6]

Although most of the above-mentioned books were written for public consumption rather than for historical accuracy, the stories have become the de facto story of the railroad's financing and construction. The story of how the railroad was built is more complicated, but more enlightening.

Under Utah territorial law, the county court granted franchises for toll roads, bridges, and other public works. A franchise permitted the petitioners to claim the land, build the road or bridge, and then collect tolls for their services.

Shortly after the Comstock Lode was discovered, Leonard L. Treadwell acquired several hundred acres of timber in the foothills west of Carson City. About the same time, Abraham Curry, Henry DeGroot, and James M. Thompson planned to harness the Carson River near China Town (Dayton) and to develop water-powered mills. Those men formed a company with David B. Milne, Jonathan Williams, Sidney H. Marlette, and Wellington Stewart, and collectively they sought a franchise.

On October 4, 1860, the Carson County Court of Utah Territory awarded a franchise that authorized the group to build a "rail-road" from Carson City to Virginia City and thence to China Town by the best route. The franchise also granted the company four miles of land along the Carson River at China Town



Virginia City as depicted by lithographer Grafton Brown in 1861. *(Library of Congress)*

and permission to build dams and flumes to power machinery, provided they spend five hundred dollars on the railroad and two hundred and fifty dollars on harnessing the river within the next twelve months. The franchise did not specify the use of steam power on this railroad; it may have been planned as a wagon road.[7]

On October 24, 1860, the Carson County Court approved a petition by E. Gonan and J. Fullock to build a canal from below Dutch Nick's (Empire) to Gold Cañon near John Town, and thence down the canyon to the vicinity of China Town. It also permitted them to build a "rail track or rail road" from Virginia City to China Town by way of Gold Hill, Silver City, and John Town. The petition did not specify steam power, but it mentioned the need for side tracks, outlets, buildings, and machinery on the rail road. The rail road would convey ore, timber, rock matter, freight, and passengers. From the description, it may have been planned as a steam-powered railroad.[8]

Neither railroad was built. Construction costs were prohibitively high in 1860. Either venture would have required months of work to level the grade. If the company desired steam power, the rail, locomotives, and rolling stock would need to be shipped around the Horn and hauled by wagon over the Sierra. A modest steam-powered railroad could have cost a million and a half dollars or more to build and put into operation. Even a road of wooden rails for freight wagons would have been expensive to build. To put the finances into perspective, a steam railroad that charged two dollars per ton of ore and five dollars per cord of wood, tariffs later used by the Virginia and Truckee, could not have paid the interest on its capital, even if it hauled all of the wood and ore to and from the Comstock in 1861. In 1860, economics did not favor building a steam railroad to the Comstock. Capital costs and interest rates were too high, transportation of the materials to the Comstock was prohibitively high, and investors could spend their money elsewhere for better return.

If a local railroad to the Comstock was impractical in 1860, a railroad over the Sierra Nevada was sheer folly. A newspaper correspondent at Genoa wrote, "It is . . . regretted that railroad communication is impracticable between us and California, but I would say to those gentlemen who wish to elevate themselves upon the political ladder by the advocacy of such a measure, that they remind me of the bull upon the track, valiantly facing the engine. I admire their spunk, but their judgement [*sic*] I condemn."[9]

President James Buchanan signed the Organic Act into law during the final days of his administration in 1861, creating Nevada Territory. Nevada residents favored a transcontinental railroad with service to the Comstock. They also desired better wagon roads and reliable municipal services. The first Territorial legislature encouraged those developments by granting franchises similar to those granted by the Utah county courts, designed to safeguard investments.

The legislators, incidentally, rode to and from the meeting place on a railroad that was built without the benefit of a franchise. Carson City lacked a meeting

house suitable for the legislature, so Abraham Curry donated the use of a large stone building located a mile or so east of town. A horse-drawn car ran on wooden rails along east Fifth Street to ferry delegates between town and work. The rails were torn up within a year; by 1862 the legislature was meeting in town and did not require the railroad. The railroad appears on DeGroot's 1862 Map of Nevada Territory. A reporter for the 1861 legislature noted, "Today I visited the Capitol that is to be. It is located in the upper story of a lonely stone building, nearly two miles east of Carson City and on the opposite side of the narrow alkali plain on which the city is built. A horse railroad will take the 'assembled wisdom' from the city to the Capitol, the railroad track being made of plank set up edgeways."[10]

The Central Pacific Railroad was formed under a California legislative franchise, which let the company build the railroad by the best practicable route within that state. Projected expenses far exceeded the company's abilities, and the company sought federal subsidies.

Leland Stanford and Charles Crocker of the Central Pacific Railroad visited the Nevada Territorial Legislature on October 24, 1861, to request a franchise for the portion of the Central Pacific Railroad through Nevada. Their high-handed presentation greatly irritated the legislators, but the delegates recognized the railroad's importance to Nevada, and on November 25, 1861, they passed the Nevada Railroad Act.[11] The act advanced the Central Pacific's endeavor by showing that both California and Nevada supported the venture. With that legislation in hand, Charles Crocker went to Washington, D.C., and obtained the first federal legislation in support of the transcontinental railroad.

The 1861 Nevada Territorial Legislature passed two other railroad acts. One, promoted by Henry A. Cheever, Ophir Mill superintendent of Washoe Valley, proposed building a railroad from Virginia City to Washoe City. The railroad would transport ore from the Ophir Mine at Virginia City to its mill, and haul timber back up the grade. The route crossed the Ophir Grade, which was a toll road that ran around the southern flank of Mount Davidson. A mile-long wooden causeway crossed a marshy area north of Washoe Lake. The railroad would extend beyond the Ophir Mill to Manuel Penrod's sawmill and Captain Dall's quartz mill (Franktown). The act specified five hundred thousand dollars of capital stock in the company.[12] That amount was inadequate and another act was passed in 1862, raising the figure to a million and a half dollars,[13] but even so, the railroad was not built. As mentioned earlier, the Ophir Mill was expensive to operate and by 1862 more efficient mills were operating. The Ophir Mine shipped lower-grade ore to other mills, retaining only a small amount of its richest ore for its mill. But in 1863, the Ophir Mine ran out of high-grade ore, so the railroad project was set aside and never again picked up.

Another railroad venture obtained a franchise from the 1861 legislature. The Virginia, Carson, and Truckee Railroad Company, a venture by several mill men and lumber men, was granted a franchise provided that the company had

three miles of railroad in operating condition within eighteen months. That proposed road was to run from Virginia City and Gold Hill to a point near the New York House (Mound House), and thence to Carson City and back northward to the Truckee River. The railroad franchise contained options to build a branch to Dayton and extend the line along the Carson River to serve the mills in that vicinity, and to extend its tracks along the Truckee River as far west as the California state line.[14] In 1861, many quartz mills on the Carson River were located in the vicinity of Dayton, and several people had proposed building mills at the mouth of the Truckee River Canyon, where ample water power was available. The Virginia, Carson, and Truckee Railroad was not built. It was a speculative venture, its franchise obtained with hopes of selling to an eastern financier. Eastern investors, however, were not interested.

The Nevada Territorial Legislature met again in late 1862. In addition to amending the Virginia City and Washoe Railroad Act of the previous session, it approved three railroad franchises that affected the Comstock. The Virginia City and Silver City Railroad would run between those towns with service to Gold Hill. It was intended to haul ore to the mills in lower Gold Hill and Gold Cañon. The legislature gave the company two and a half years to complete the line and to put the road into operation.[15] The railroad's projectors included several prominent men who owned reduction mills along the route. This modest railroad, however, proved to be more expensive than local financing could afford.

A group of investors, including several men involved with the previous Virginia, Carson, and Truckee Railroad Company, obtained a franchise in 1862 for the Virginia and Truckee Railroad Company. The route was similar to the previous route, but it named the Half-Way House as the hub for four branches of the railroad. One branch would run to Gold Hill and Virginia City, another to Carson, a third to Dayton, and the fourth through Washoe City to the Truckee River.[16] The group was unsuccessful in securing financing.

The third franchise granted by the 1862 legislature was awarded to the Lake Bigler and Virginia Railroad Company. The main line was to run from the California state line at the south shore of Lake Bigler (Lake Tahoe) to Virginia City by the best practicable route, with a branch line to Carson City and the option of extending another branch line through Washoe City to the Truckee River.[17] At the time, a California group was organizing the San Francisco and Washoe Railroad, and was interested in building a railroad through Placerville, California, to Virginia City.[18] The joint venture failed to obtain sufficient funding for construction.

The Nevada Territorial Legislature's third session, which met early in 1864, extended the time provided for the Central Pacific Railroad to build into Nevada, but otherwise passed no railroad acts. The public was aware that railroad franchises were often used for speculation rather than as railroad-building ventures. The speculators, franchise in hand, sought financial magnates who could buy the rights and then build the railroad. Three members of the first two territorial

legislatures had been named as incorporators of railroad companies. Theodore Winters, a member of the 1862 House, was named in the 1862 legislation granting a franchise for the Virginia and Truckee Railroad Company. William Stewart, member of the 1861 Council and the 1864 House, and Abraham Curry, member of the 1862 House, appeared in the 1862 legislation granting franchise to the Lake Bigler and Virginia Railroad Company.

On October 31, 1864, President Abraham Lincoln, granted authority by the United States Congress, created the state of Nevada. The first Nevada State Legislature met in early 1865. It passed two railroad franchise acts and a railroad incorporation act. The most important railroad legislation of that session was the railroad incorporation act, which established procedures for a company to form a railroad corporation, the rules the corporation would abide by, and the benefits that such corporation could then enjoy. The act, passed on March 22, 1865, stated that the company had to file with the secretary of state, listing its principal termini, the length of its line and the amount of its capital stock, and ten investors who had pledged, among them, one thousand dollars for each mile of route, having already deposited 10 percent of the pledged amount with an officer of the company.[19]

Prior to 1865, railroad companies desiring to serve the Comstock had to obtain a charter, granted by the county under Utah Territory law until 1861, and then by the legislature under Nevada Territory law. The Nevada State Legislature changed the rules. No longer would the legislature spend time receiving and arguing the merits of specific railroad charters. Any company could form and file its articles of incorporation. Prior to passing the railroad incorporation act, however, the legislature granted two railroad charters.

On March 2, 1865, the legislature approved a bill to charter a railroad to run from Virginia City to the Truckee River. On September 1, 1865, the same group who had received the charter on March 2, filed Articles of Incorporation to form the Virginia and Truckee River Railroad Company. The route, surveyed by Isaac E. James, ran from Virginia City and Gold Hill eastward across American Flat to the summit between Eagle and Washoe valleys, with a four-mile branch line to Carson City. The main line then continued north through Washoe City and Steamboat Springs to the Truckee River at a point called Fuller's Crossing (then owned by Myron Lake). According to the legislative charter, that company had exclusive rights to that route, provided it constructed and put into operation a railroad within three years of the legislation that granted the charter.[20] By 1867, newspapers suggested that the charter was not worth a dollar, but the exclusive clause may have prevented other railroad ventures.

On March 9, 1865, the legislature approved a bill to charter a railroad from Virginia City to Dayton. A company of mill men sought this franchise, which permitted the railroad to run from Virginia City through Gold Hill and Silver City to Dayton. The franchise required the railroad to be placed in operation within two years.[21]

Born near Plymouth, Ohio on January 12, 1826, William C. Ralston grew up there and near Wellsville, Virginia (now West Virginia) before he began working on Mississippi riverboats. He headed for California in 1849, but a banking business offer at Panama City that also developed into shipping interests, proved more attractive than mining. After moving to San Francisco in 1855, he and associated formed Garrison, Morgan, Ralston, and Fretz, a San Francisco banking company, with seven hundred thousand dollars in capital. In 1857, the two senior parties withdrew their interest in the firm, and Fretz and Ralston opened a new firm, with only fifty thousand dollars in capital, at Washington and Battery streets in San Francisco. The bank, although short on capital, supported California ventures at a time when hard money was precious in the Golden State.[22]

Fretz and Ralston reorganized in late 1860 as Donohoe, Ralston and Company. When news of the Comstock discoveries spread across the Sierra Nevada, Ralston personally invested in the new mining companies. Ralston was the first treasurer of the Ophir Silver Mining Company, which incorporated in 1860, and the first treasurer of the Gould and Curry Silver Mining Company, which incorporated the next year.[23]

In early 1864, Ralston invited a score of businessmen to join him in a banking venture. Some of the businessmen were his Mississippi friends who had been successful on the Coast, some he knew from his Panama and San Francisco shipping businesses, and some were already involved in Comstock ventures. To unite the group, Ralston invited Darius O. Mills to serve as the new bank's president, while Ralston himself served as its cashier, the second in command and superintendent of day-to-day operations. On July 5, the Bank of California was established with two million dollars in capital stock.

The charter directors of the bank included some of the West Coast's leading businessmen. James Whitney, Jr. and William Norris were the president and secretary of the California Steam Navigation Company; Jacob Kamm, who worked with Ralston during his Mississippi riverboat days, was a Portland shipbuilder and major owner of the Oregon Steam and Navigation Company; Louis McLane was owner of the Pioneer Stage Company, which later became part of the Wells Fargo and Company system of transportation and banking; John O. Earl (early purchaser of the pioneering Comstock claim) was president of the Gould and Curry Mine, where Ralston was treasurer; A. J. Pope was a lumber merchant; William Barron (also with the Potosi Mine) and Thomas Bell were cinnabar (mercury) mining magnates; Alvinza Hayward was a mine owner and pioneering mill man on the Comstock, and H. W. Carpentier was an owner of the California State Telegraph Company.

Most banks on the West Coast relied on good relations with other banks in eastern and foreign cities for cashing their banknotes, but the rise of San Francisco created a vigorous new shipping market along the Pacific coast and with the Orient. A businessman's banknote when conveyed to shippers in faraway

places might be subject to a hefty discount—if accepted at all. To facilitate commerce and industry, the Bank of California was established to "receive deposits, attend to the collection of paper, draw exchange by telegraph or otherwise on New York, London, Dublin, etc., on the most favorable terms."[24] The bank immediately distributed a large part of its capital elsewhere for the redemption of its banknotes. On July 13, it sent more than $263,000 in gold and silver to New York via Panama. On July 23, it sent another $647,000 in gold and silver to the East Coast and major cities in Europe. The bank advertised that it issued letters of credit that could be immediately redeemed at full value throughout the United States, Europe, India, China, Japan, and Australia.[25] Accordingly, the Bank of California grew rapidly. At the stockholders' meeting in 1867, the bank reported doing sixty-two million dollars in business during the previous year.[26]

Why would a group of businessmen, especially Mills, who was among California's most conservative bankers, invest in the Comstock region at all? The bank's principal business was in foreign commerce and trade. It held deposits, principally by businesses, providing security for liquid assets. It also extended loans to businesses in San Francisco, elsewhere in California, neighboring states and territories, and Mexico.[27] The Comstock was not the only mining district where it opened offices, but it maintained its branch office in Virginia City for fifty-three years. The bank offered loans at a favorable 2 percent monthly interest rate, considerably lower than the 5 percent monthly interest rate that was commonplace on the Comstock.

In the 1860s, the Bank of California had a strong, conservative basis of operations that provided consistent dividends to its shareholders and amassed increasing capital for its operations. But the bank also gambled on mining districts. Something must have motivated the directors to accept this risk. Perhaps, it was an altruistic gesture: Mining had attracted people to California, so mining could provide other immense opportunities for development and prosperity. Perhaps it was a way to use the bank's position for the personal benefit of some of its directors. Mining-stock speculation was a curious phenomenon at that time. Businessmen and individual fortune seekers alike could risk their money on mining stock. Each incorporated mine consisted of a fixed number of feet on the lode. The mines issued certificates of "undivided feet," and later issued certificates of shares, with each share equal to a fraction (typically 1/4 to 1/20) of one of those undivided feet. Shares were traded at exchanges on Market Street in San Francisco and on C or D street in Virginia City.[28] Gentlemen's clubs accommodated members who wished to be informed of the latest mining conditions and perhaps to trade shares.

Beginning with the Ophir Silver Mining Company's incorporation in 1860, Comstock mine stocks were publicly traded. When the Bank of California formed, a dozen Comstock mining companies issued stock. Most people who played the mining-stock market held stock on a short-term basis for speculative purposes, and stock values fluctuated widely, sometimes increasing in value by

100 percent or more within a few days. When they won, they often won big; when they lost, they often lost their entire wager, much like today's lotteries in some states.

As treasurer of the Ophir, Ralston had first access to and analysis of the mine's finances. His recommendations were delivered to the meetings of the company directors and were used to determine whether assessments or dividends should be declared. Announcements of dividends drove up the price of the company's stock. Assessments, based on the amount of stock owned and used to raise funds to cover expenses, drove the prices down. Announcement of no dividend at a time when the public expected one would also drive the price down. When a mining company levied an assessment, each shareholder was responsible for paying the assessment to the company by a certain date, failure to pay meant forfeiting the stock entirely. This enabled speculators to buy the stocks at discount, even considering the assessment payments. Banks or their agents could assist people by purchasing, at discount, shares that owed assessments.

Consequently, knowledge of a mining company's financial position, even before the mine's directors received the information at their meeting, could be used to advantage. Buy or sell suggestions could be telegraphed by the treasurer to colleagues in time for them to act, purchasing stocks that would likely be increasing in value or selling those for which a decrease was probable. The scheme was legal at the time, but it was not foolproof. There was a chance of discovery of a rich ore body, or a fire or flood in the mines. Such chance occurrences were relatively infrequent and would break about evenly between detriment and benefit to those acting on inside information.

This plan did not require majority ownership of the mines throughout the year. Majority ownership was important only at the annual meeting, when each shareholder or his proxy voted for directors, who in turn voted for the treasurer of the company. As agent for speculators who bought stocks on margin, the Bank of California held those stocks as collateral and exercised voting privileges at the annual meetings. With this leverage to influence the election of mining company directors, and as the principal banking institution on the Comstock, the Bank of California was well positioned to be elected treasurer. Although anecdotal stories relate this and other methods of "stock jobbing," and although Adolph Sutro published accusations of the Bank Ring engaging in such activities, no evidence has been found—or is expected to be found—to suggest that Sharon or Bank of California directors did this. If it was done, it provides a reason why the bank might have invested in risky mining ventures.

The Bank of California opened its doors in San Francisco on July 5, 1864, in offices of Garrison, Morgan, Fretz, and Ralston, at the corner of Washington and Battery streets. On December 13, 1864, the bank purchased property on the corner of California and Sansome streets. The existing structure was moved and a new building was erected.[29] On the Comstock, the Bank purchased the

offices of Arnold and Blauvelt, at the corner of C and Taylor streets in Virginia City, and remodeled it, making it burglar and fire proof.[30] The Virginia City office opened that October 30. Its branch agent was William Sharon and its cashier was James A. Ralston, one of W. C. Ralston's younger brothers.[31] Another branch office opened at Gold Hill in May 1865, in a building formerly operated by Almerin B. Paul's bank.[32] By the time the bank opened its offices in Virginia City, it already had the majority of its capital distributed to Eastern and foreign cities. As businessmen obtained and redeemed its banknotes, additional gold and silver shipments were sent to those cities. It appears that the bank allocated less than one million dollars as initially available for business loans. It is unlikely that the Comstock received a large portion of that amount for loans.

In 1864, when the Bank of California was formed, the Comstock was not yet ripe for monopoly. A dozen major mines on the lode were incorporated; most were valued at one hundred to one million dollars. If the court upheld the multiple-ledge concept, dozens of other mining companies would be involved with ore production. More than a hundred mills reduced Comstock ore to bullion. Teamsters were as numerous as mosquitoes on the river in July, and notoriously independent. Rival stagecoach and fast-freight companies existed between all well-traveled points. Numerous timber suppliers served the Comstock. A monopoly in mines, mills, transportation, or timber would have been expensive to acquire and impossible to maintain. The only corner the Bank of California had in 1864 was its instant reputation as the leading financial institution on the Comstock, and with that edge it sought appointment of itself as treasurer of major mining companies.

Comstock mining activity peaked in mid 1864. The Mexican and Ophir bonanzas were over. The Gould and Curry bonanza was waning. The Savage, Chollar, and Potosi were shipping ore. The Little Gold Hill mines were producing. The Yellow Jacket and Crown Point (which soon named the bank as their treasurers) were just coming into good ore. According to one account, the Comstock mines produced more than 680 thousand tons of pay ore in 1864, their all-time high tonnage.[33]

When shareholders faced assessments, they often unloaded their shares for "pennies on the dollar" rather than face total forfeit to the mining company. When agents purchased shares at discount, they presumed that they could find buyers and still profit. This did not work when monthly assessments became common. Stateler and Arrington, a banking and stockbrokerage company at Virginia City, failed during July 1864. William Arrington, N. O. Arrington, and Stateler and Arrington owed assessments on Overman, Omega, Keystone, and Croesus mining stocks.[34] In mid August, all the officers of the brokerage left the region. Other bankers were also affected by the stock-market decline.

Donohoe, Ralston, and Company held shares of North American and Golden Swan stock as collateral when assessments were levied, and William Sharon held

twenty shares of North American for which four-hundred-dollar assessments (per share) had been levied.[35] This is a much tamer picture of Sharon's plight than Irving Stone painted. George Lyman relates a similar story of Sharon's stock-market loss shortly before joining the Bank of California,[36] but it lacks credibility on several points, even though it was taken from Sharon's own account, given near the end of his life in 1881. Sutro offered a more reasonable alternative,[37] is more reasonable: Sharon's alleged stock-market losses were related to his actions as a bank agent, in which he purchased stocks facing assessments at deep discounts. He did not arrive on the Comstock deeply in debt, but rather with money to invest.

Sharon oversaw the bank's portfolio of loans and deposits, along with its issuance of letters of credit and banknotes. Loans made up a small part of the banking business. Where he made loans is unknown, except that the bank foreclosed on several silver mills a few years later. Some accounts state that Sharon quickly gained control of the Yellow Jacket and Crown Point mines, but, based on the stock values of those mines, it appears that he was merely able to parley a temporary majority of votes at the time of the annual meeting through a combination of the shares he owned, those he held for clients while acting as their agent, and proxies, possibly from other bank directors. The Bank of California's risk in investing on the Comstock was rewarded when the Yellow Jacket discovered a bonanza and other Gold Hill mines struck pay ore soon after.[38]

In May 1867, mining was active on the Comstock. Several mines were hauling between two hundred and five hundred tons of ore to mills daily. But during October, the ore shipments were only one third of that level.[39] Mines that shipped pay ore were working previously discovered ore bodies. Whether new ore bodies would be found when those were exhausted was anyone's guess. The bank had foreclosed on several silver mills that were out of business because of limited ore for processing.[40] Many workers on the Comstock were unemployed.[41] When out of use, no property deteriorates more rapidly than a silver mill. During 1866-67, a number of small mill operators separately and independently decided to abandon their mills rather than face the accumulating debt caused by the paucity of ore being shipped for processing. Eliot Lord writes that the bank's operators wanted the mills to continue in operation under their owners, and would have extended its accommodation to any reasonable point to this end. Nevertheless, seven mills fell into the bank's hands because of foreclosure.[42] Sharon sold one mill for about 5 percent of the debt.

Despite the decline in mining production, mining stocks remained highly volatile in 1867. There are indications (as shown below in the mining-company support of the Virginia and Truckee Railroad) that many of the mine owners and superintendents worked with the bank. Perhaps, the Hale and Norcross Mine was an exception, or perhaps another motive was the reason. Nonetheless, Sharon worked diligently, with apparently no heed to cost, in order to acquire a stockholder majority at the annual meeting of the Hale and Norcross Mine,

a foolhardy move for a mine that was shipping ore but not in bonanza, unless an imperative need existed for control of the mine.

John P. Jones and Alvinza Hayward had recently undermined Sharon to gain control of the Crown Point Mine. Hayward, a director of the Bank of California, may not have been perceived as a threat until after he gained control. Even after the coup, Jones and Hayward worked with the bank, although it is possible that the Crown Point Mine appointed a different treasurer. If so, losing one mine could have led to a desire to control another one.

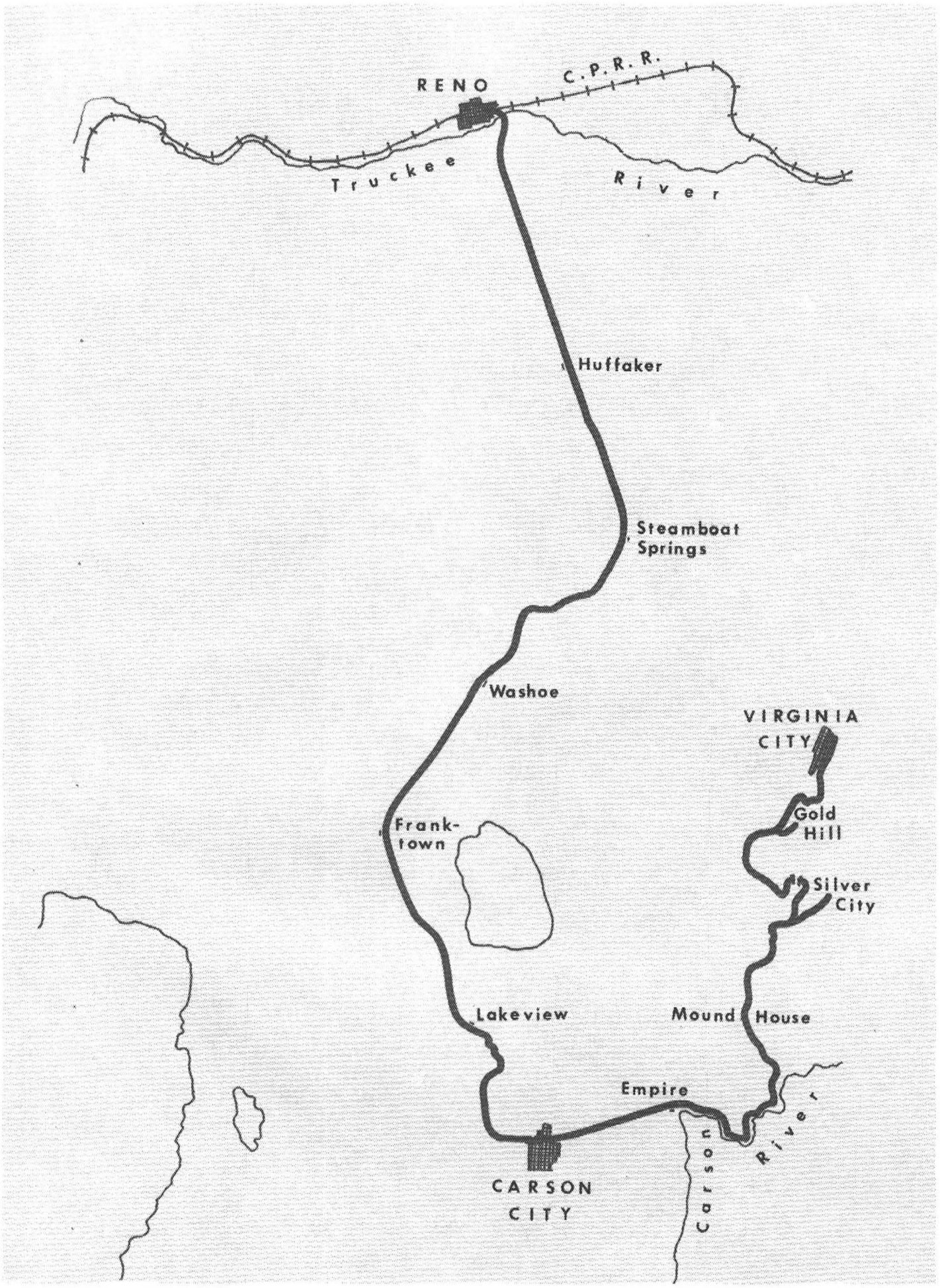
But Sharon's expense to acquire the Hale and Norcross is legendary. Elias Jackson "Lucky" Baldwin sold one "foot" of stock to Sharon for twelve thousand dollars. The price had been less than five hundred dollars when Baldwin had left on a safari. He instructed his broker to sell shares if the price rose sufficiently. However, he inadvertently took the safe key with him, so the broker was obliged to wait for Baldwin's return.[43]

The Bank of California was a first-class business operation. The timing between Sharon's purchase of majority voting rights for the annual meeting of the Hale and Norcross Mine and the arrival of Mills and Ralston in Virginia City specifically to meet with Sharon suggests that they were not pleased with his specific actions. The mining district of the Comstock was depressed at the time, but not so utterly despondent that it would cause any panic.

The general story about the meeting is that Mills and Ralston agreed to Sharon's plan to build a railroad and to develop a company to operate silver mills as a means for protecting the bank's investment in the Comstock. From the documents available, it appears that Sharon assuaged any panic that Ralston and Mills may have had as a result of the Hale and Norcross acquisition. He also persuaded them to support the formation of Union Milling and Mining Company, which would oversee the mills that the bank had foreclosed upon, while Sharon would independently work with a group of Comstock businessmen to form a railroad to deliver ore to the mills.

Union Milling and Mining Company was formed in June 1867. Its charter members were D. O. Mills, William Sharon, Alvinza Hayward, Thomas Sunderland, W. C. Ralston, Charles Bonner, Thomas Bell, and William E. Barron—except for Sharon, Bonner, and Sunderland, it was composed of Bank of California directors. More important, Lord mentions that its stockholders were the principal owners of the Comstock Lode's most productive mines. Over the next two years, Union Milling and Mining Company acquired more mills, including several large water-powered mills on the Carson River.[44]

On May 8, 1867, the Virginia and Truckee Railroad filed its Articles of Association with the state of Nevada. Ten incorporators, who subscribed to twenty-one thousand dollars in shares, with 10 percent down, were named in the filing. They were Alexander W. Baldwin, Frederick A. Tritle, William Sunderland, William Sharon, William S. Wood, James Wilson, W. E. F. Deal, Charles Bonner, W. H. Lowell, and J. B. Stevenson.[45] None of the Bank of California



The Virginia and Truckee Railroad's round-about route between Virginia City and Reno met the railroad's objectives to connect the Comstock with both the wood yards and water-powered mills along the Carson River and the transcontinental Central Pacific railroad at Reno. The route was also influenced by management's pursuit of other people's money. *(Map by Wendell W. Huffman)*

directors was named as an incorporator of the Virginia and Truckee Railroad Company. Sharon, Sunderland, and Bonner were members of both the railroad and the milling companies. Sharon was the treasurer and Sunderland, an attorney, the company president until 1868 when Sharon succeeded him. Two separate groups developed the two companies in tandem to provide cheap transportation of ore to the silver mills. They envisioned that the Bank of California and Bolton, Barron and Company, another Comstock bank, would jointly cover capital costs.

The immense waste rock piles around Virginia City and Gold Hill contained a vast amount of low-grade ore. It could not be profitably reduced to bullion in 1867, principally because of the cost of transportation by mule team to the silver mills. Rail service would reduce the cost of transportation significantly. In addition, most silver mills at the time were small operations. Larger mills reduced the processing cost. The railroad and the milling companies together could make profitable processing of the waste piles a reality. Their separate incorporators anticipated a decade or more of ore hauling and processing, based on the size of the waste rock piles on the surface. However rich the ore was, the railroad and the mills would both charge by the ton.

Virginia and Truckee Railroad Company, as incorporated in 1867, was projected entirely through Storey County, and estimated to be twenty-one miles in length. The company's anticipated capital stock was $1.2 million. As the Articles of Association specified, "The contemplated railroad is to be constructed from a point near the south line of the town of Gold Hill by the nearest and most practicable route in a northerly direction to a point upon the Truckee River which intersects the line of the Truckee River at or near the boundary line between sections 16 and 17, township 19 North, Range 21 East."[46]

On May 14, 1867, Isaac E. James began to survey the route. It ran over Geiger Summit and down Lousetown Creek to the Truckee River near Sturtevant's Ranch, about six and a half miles east of Stone and Gates Crossing. In Virginia City, the tracks were surveyed along D and G streets, and a branch line was surveyed to the eastern part of Gold Hill.[47]

At the time, the Central Pacific Railroad was working its way east through the Sierra Nevada, on a route projected to run across Nevada along the Truckee River and then the Humboldt River. At the time, Reno did not exist. Securing a railroad link to the Central Pacific was sought as the ideal way to link remote Virginia City with the rest of the nation. As good as the idea of a railroad sounded, some people argued that the route ran through barren land, where there was no timber or water, no settlements, and consequently no benefits to the citizenry of the region. The arguments against the route also included the fact that no towns, except Virginia City and Gold Hill, would benefit from the railroad. Residents of Carson City and Washoe City argued that such a route would bypass the state's existing milling and timber operations; California timber interests would gain competitive advantage and new mills projected

on the Truckee River would profit at the expense of many silver mills already located in the region.[49]

Union Milling and Mining Company held seven mills spread widely throughout the region. Those mills could be gutted and the workings moved to a location on the Truckee River that the railroad would serve. One source estimated that there were hundreds of thousands of tons of ore in the Comstock waste rock piles, with value of at least twelve dollars per ton in gold and silver, which could not be profitably reduced in the local steam-powered mills adjacent to the Comstock.[50] Large water-powered mills could profitably process ore of value as poor as ten dollars per ton in gold and silver.[51]

Why was the Virginia and Truckee Railroad not built in 1867? Construction funding was one obstacle. By July, newspapers were arguing against Governor Henry Blasdel's proposal for a Storey County mining tax designed to raise funds in support of the railroad project.[52] When the legislature met in early 1869, the railroad funding situation had changed significantly, and no mining-tax bills were submitted.

The high cost of transporting construction materials to the Comstock also worked against the railroad. Although the Central Pacific was running from Sacramento almost to the Sierra summit, the iron rail, locomotives, rolling stock, and other equipment would require hauling by wagon over the summit of the Sierra to the Virginia and Truckee's northern terminus on the Truckee River.

The greatest obstacle to the railroad project was the use of the Truckee River as water power for new silver mills. The projectors envisioned completion of the railroad before the Central Pacific arrived, so they needed another revenue source. The only likely source was the shipping of ore to mills that were planned on the Truckee River. Careful examination of the river by engineers, however, revealed that while it had sufficient flow to support mills, it did not have sufficient drop below Crystal Peak (Verdi) to provide for the efficient construction of flumes or ditches for water power to mills. It is likely that Union Milling and Mining first realized this shortcoming and informed the Virginia and Truckee Railroad of the problem. When that information was factored into the railroad plan, the projectors realized that a railroad from Virginia City to the Central Pacific had insufficient home traffic for success. Both ore and wood would also be shipped over the Central Pacific, and the larger railroad could adjust its rates to squeeze out the small local line.

But a direct railroad to the Central Pacific would cost about $1.2 million to build, while an indirect route to the Central Pacific, one that served existing wood and milling operations in Nevada, would cost about $3 million. The Virginia and Truckee's directors considered the additional cost to be prohibitive, but the survey went on. It was completed shortly after filing its Articles of Association. News articles suggested immediate construction, but when no workers were sent into the field to level the grade, people became apprehensive.[53] One correspondent reminded the newspaper that a perfectly good legislative charter existed, to run a

railroad from the Truckee River at Truckee Meadows through Steamboat Springs, Washoe City, and around the south side of Mount Davidson to the Comstock, with a short branch or two serving Carson City and the lumbering and milling interests along the Carson River.[54] Indeed, that charter was in place, and although its projectors had no means of raising the capital required to build the railroad, they held exclusive rights to that route.

Several Comstock mines had previously pledged donations to Adolph Sutro's tunnel project that was intended to provide much needed drainage for the underground mines. In 1866, the mines notified Sutro of their need to postpone donations. In January 1868, the major mining companies all revoked their pledges.[55] Sutro charged that the principal owners of those mines were members of the Bank Ring, but the superintendents included John P. Jones and Alvinza Hayward, who had wrested the Crown Point Mine from Sharon, and John W. Mackay, who was not associated with the Bank Ring, and would lead a group in acquiring the Hale and Norcross Mine from Sharon, leading to the Big Bonanza enjoyed by the Consolidated Virginia and California mines. Sutro's tunnel entitlement held a bitter pill for mining companies. It would assess all the mines two dollars per ton of pay ore they excavated, regardless of how they transported it to mills. The mines were principally excavating "third grade" ores, which yielded about twenty-five dollars per ton in bullion. The net profit for mines shipping this ore was about five dollars per ton. Each superintendent saw Sutro's tunnel as a serious drain on his company's revenues.

On March 5, 1868, the Virginia and Truckee Railroad Company reorganized. It intended to connect the Comstock to the Central Pacific Railroad by a route through Storey, Ormsby, and Washoe counties.[57] The company's capital value was $3 million. It received shareholder subscriptions to the amount of $32,699, representing more than 10 percent of its capital stock. Its shareholders included Darius O. Mills, William C. Ralston, William Sharon, Alvinza Hayward, William E. Barron, Thomas Sunderland, Thomas Bell, Frederick A. Tritle, John B. Winters, Alex W. Baldwin, Charles Bonner, John P. Jones, John D. Fry, Thomas H. Williams, J. E. dela Montagnie, and Henry M. Yerington.[58] The 1867 company expanded its list of shareholders, picking up several directors of the Bank of California and several prominent Comstock mining superintendents.

The company held public meetings in Carson City on February 28, 1868,[59] and in Washoe City on March 5, 1868,[60] to promote the idea that Ormsby and Washoe counties could become additional shareholders in the railroad in return for voter approval of two hundred thousand dollars and three hundred thousand dollars, respectively, of bonds to defray part of the cost of building the railroad. According to the petition, the counties would receive dividends and each appoint a member to the Board of Directors, but would be exempt from assessments of the railroad. The petition circulated in both counties received strong support.

The concept of counties becoming shareholders was attractive, since many people believed that a railroad to the Comstock would generate tremendous

dividends that would enable counties to reduce taxes significantly. Some people, however, saw problems with the plan. The combined county representation on the railroad company's Board of Directors would always be a minority, and consequently without power. The directors could continually vote to spend profits rather than to award dividends, so there was no assurance that a profitable venture would yield dividends.

Worse, although nobody mentioned it then, in order for counties to become involved as shareholders in private corporations, an amendment to the Nevada Constitution was necessary. The legislature would need to approve the change in its 1869 and 1871 sessions—a wait that made such a course impractical. If the railroad company knew this, and it should have, why did it promote the petitions? In addition to soliciting an overwhelming indication of support by the voters of those counties, the petition stated the intention of its signers, who "pledged themselves, without regard to party, to nominate for the Legislature no man who would not give his promise to vote for the passage of a bill authorizing the County Commissioners to issue the requisite bonds."[61]

Later in the year, a petition was circulated in Storey County asking voters to approve a railroad bond of three hundred thousand dollars as a gift to the railroad company.[62] That petition also received strong support. The backers argued that the railroad's economic benefits would exceed the increased taxes needed to cover the bonds, and that if the railroad was to be built, it needed to be done as quickly as possible.

In addition, the Virginia and Truckee Railroad obtained formal commitments from the Comstock's most prominent mines. On December 28, the Alpha Mine, represented by John D. Fry (Sharon's father-in-law), committed twenty-five thousand dollars. On December 29, 1868, the Crown Point and Kentuck mines, both represented by Fry, committed seventy-five thousand dollars each. On January 19, 1869, the Yellow Jacket Mine, represented by John B. Winters, committed one hundred and fifty thousand dollars. On March 20, 1869, the Overman Mine, represented by J. E. dela Montagnie, committed twenty-five thousand dollars. Other mines contributed as well. They subscribed an aggregate seven hundred and thirty-five thousand dollars to the Virginia and Truckee Railroad, to provide funds for construction that would be returned to the mining companies through reduced ore-hauling rates.[63] The payments by the mines were spread over several months in 1869, when the railroad needed the money to pay construction costs, so that the mines could absorb the costs or, if necessary, levy assessments to cover the payments.

When the biennial legislature met in 1869, the railroad's directors dismissed the option of making counties shareholders—it would take votes from two consecutive legislatures to enact a constitutional amendment to do that. The railroad project could not wait that long. Two railroad-bond bills were submitted in the opening days. Delegates from Ormsby County submitted Senate Bill eleven, while Storey County legislators submitted Assembly Bill 5.

The two bills were similar. The Ormsby County bill directed the county commissioners of that county to issue two hundred thousand dollars in bonds, at 7 percent annual interest, and to deliver the money to the Virginia and Truckee Railroad Company upon the company's completion of a first-class railroad from Carson City to Virginia City.[64] The Storey County bond bill directed the county commissioners of that county to issue one hundred and fifty thousand dollars in bonds, also at 7 percent annual interest, and to deliver the money to the railroad company upon the completion of a grade that was ready to receive the rails, between Virginia City and Carson City, and to similarly issue and deliver another one hundred and fifty thousand dollars upon completion of the railroad along the same line.[65]

The railroad incorporators used the Bank of California to sweeten the pot. The bank agreed to subscribe to the Storey and Ormsby County railroad bonds at 7 percent interest per annum. The bank would buy the bonds and the counties would turn the money over to the railroad company. Then the counties would pay off the bonds through increased taxes over the next several years. The Bank of California also agreed to redeem Nevada scrip at par, easing a difficult problem with legislators. During the early years of statehood, the Nevada treasury was chronically cash poor and the state occasionally had to issue scrip in payment of its debts. It would have to do so again in 1869. The Bank of California not only offered to redeem scrip at par while other banks imposed a discount, but it also extended a favorable interest rate—1.25 percent per month—to the state. The Bank of California actions signaled the Virginia and Truckee Railroad Company's honorable intentions to build the railroad.[66]

The bond bills faced more opposition from non-legislative forces than from the legislators themselves. Some Ormsby County voters complained when they learned that the bonds would go to the railroad as gifts and they would not share in the dividends from the railroad. In 1868, they had signed a petition for the county to become a shareholder, and they anticipated dividends to offset the additional taxes. Although Storey County voters had signed a petition supporting bonds as a gift to the railroad, some people protested that they had understood that the railroad would run through to the Central Pacific, but the bill required only that the railroad to completed as far as Carson City.

For both issues, the arguments for passage were identical: If a railroad was to be built, it must be built at once, under whatever terms to which the railroad company would consent.[67] After hearing petitioners, the respective chambers voted nearly unanimously for passage of the bills and forwarded them to the other for consideration.[68] As the bills approached legislative passage, with Governor Blasdel's informal assurance that he would sign them, the Virginia and Truckee Railroad Company contracted an order for two thousand tons of iron rail from Sheffield, England. The rails were shipped from Liverpool in early March, and arrived in San Francisco in late summer.[69]

The two county bond bills passed both houses of the legislature, and the governor signed them. But that was not the end of the session's interest in railroads. Lyon County delegates submitted a railroad-bond bill, styled after the others, directing its county commissioners to issue seventy-five thousand dollars in bonds and to deliver the money to the railroad upon its completion to within twelve hundred feet of the Trench Mill in Silver City.[70] A petition requesting the bond had received the signatures of 250 people, who owned more than half the taxable property in the county. Thus, the mill men in Lyon County were concerned with the location of the railroad, and they feared that their mills would be left out of the coming prosperity. The decision to seek a railroad to Silver City, rather than to Dayton, was probably influenced by the limited resources for repaying such a bond. The Lyon County railroad-bond bill passed the legislature and was signed into law.

The Lyon County railroad-bond bill likely interested Sharon considerably. He had left practically no stone unturned in search for other people's money for building the railroad, yet this bill represented money he had not sought. No newspaper accounts during 1868 or early 1869 mentioned Silver City or Dayton as possible termini of the railroad, and the Articles of Incorporation filed on March 5, 1869, mentioned Storey, Ormsby, and Washoe counties, but not Lyon County. Thus, on the eve of construction, Sharon may have called James into his office and instructed him to relocate the route as necessary to achieve that end. Two days after Lyon County introduced its railroad-bond bill, the Union Milling and Mining Company purchased the Santiago Mill on the Carson River.[71] A railroad line that avoided Lyon County would have avoided the Santiago Mill, so the timing of its purchase indicates that the railroad company hastily changed the location of its main line between Carson and Virginia.

The legislature also received and passed the Washoe County railroad-bond bill. It differed from the other county railroad-bond bills: Washoe County would issue bonds to any railroad that connected the Central Pacific at the new town of Reno to the Virginia and Truckee at Carson, provided that the county voters approved the amount of the bond requested by the railroad company after completion of the road. Thus, the amount and all terms of the bond were left for future determination, on approval by the voters.[72]

Sharon understood that the bill was poison bait, daring the railroad company to build through Washoe County with hopes of obtaining money after completion. The company had held a public meeting in Washoe City on March 5, 1868, addressing the railroad's desire for the voters of that county to support railroad construction. The meeting asked voters to sign a petition like the one proposed to Ormsby County, which would give the county partial ownership of the railroad in return for support of construction. But Washoe County was then undergoing a tremendous change—the Central Pacific Railroad was about to auction lots in a new township, Reno. A large portion of the county population relocated to Reno within months.

On February 18, 1869, Henry F. Yerington led the groundbreaking ceremonies somewhere between Empire and Gold Hill and telegraphed the fact to the Virginia and Truckee's treasurer, H. F. Rice.[73] The Union Milling and Mining Company had acquired Yerington and Rice's Merrimac Mill in 1868. When Yerington became associated with the railroad venture is uncertain, but he was a charter shareholder in the company and was present at the Washoe City meeting. The groundbreaking was probably Yerington's first act as a railroad official. As construction began, Yerington was the superintendent and I. E. James was the engineer of the railroad. Jules Holmes was in charge of the grading.

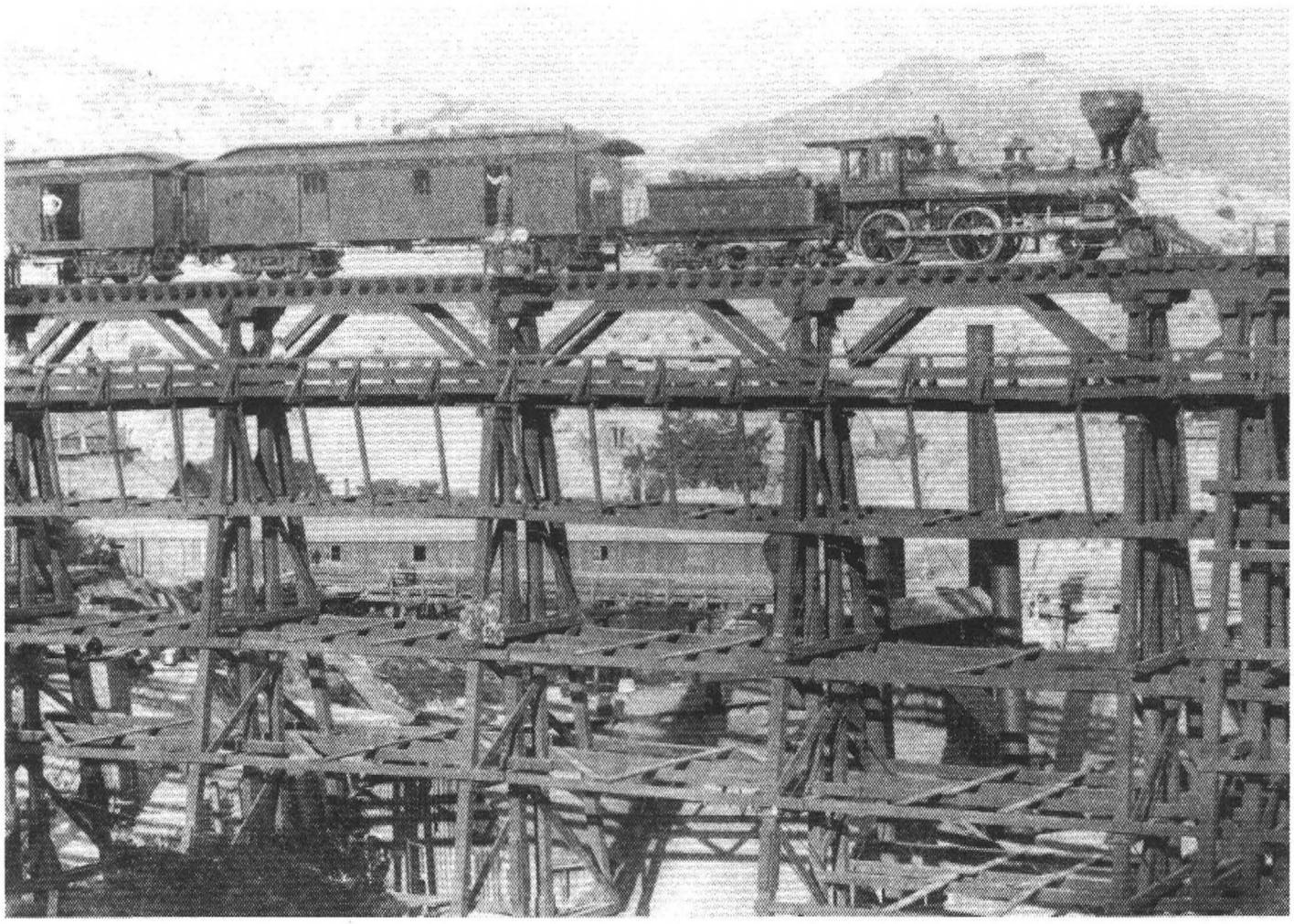
In March, laborers at four camps were working on the line.[74] For several months, the only work performed was the boring of tunnels and the leveling of the grade—without power machinery. The railroad grade had been staked out, but it involved numerous cuts and fills and four tunnels. Grading was accomplished without power machinery. To open a cut, a crew dug a hole and planted several kegs of black powder, which when detonated usually loosened the surrounding soil sufficiently so that it yielded to the shovel. The crew loaded horse-drawn carts and dumped the dirt and rocks where a fill was required. Boulders and large rocks required more work. Two men drilled a line of holes with a sledgehammer and star drills, called double-mucking, and then filled the two-inch-diameter holes with black powder. When simultaneously detonated, the force cleaved the rock along the line of the holes.

Along the Carson River, between the Santiago and Vivian mills, the railroad initially intended to bore a tunnel on a sharp curve between two fills. The earth, however, was not stable enough for a tunnel, so a seventy-foot-high cut was necessary. The walls of the cut were initially very steep and rock slides or avalanches at that site plagued operations for several years. That cut was called the Vivian Cut.[75]

In March 1869, disaster struck the Comstock mining district. A fire broke out at the eight-hundred-foot level in the Yellow Jacket Mine on March 29. Twenty-six miners died from that blaze. Efforts to quench the fire continued for more than two weeks, and with the Yellow Jacket no longer safe, it had to be sealed off. If the Virginia and Truckee Railroad had not already been under construction, that disaster would have severely weakened confidence in Comstock mining.[76]

The transcontinental railroad was completed on May 10, 1869. Soon afterward, more than a thousand laborers from that project found work on the Virginia and Truckee Railroad. Newspapers reported an excess of sixteen hundred men at work on grading in thirty-eight camps along the line, with additional workers expected. Perhaps more than two thousand men worked on the railroad grading at a time, the majority being Chinese,[77] at a time when Virginia City's population was about ten thousand.[78]

The location of the railroad tracks in Carson City waited until the company secured agreements to various tracts of property. In May 1869, almost a year after



The Virginia and Truckee's Crown Point Trestle. *(Nevada Historical Society)*

the preliminary surveys, I. E. James marked out the railroad route and locations of buildings through Carson City.[79] When a group of Chinese laborers began work on the grading west of Carson City, on September 18, the farmer Samuel A. Nevers barred them from his land, claiming that the railroad company had no business building across his land. A few days later, the company secured agreements with a neighbor, Aaron D. Treadway, who permitted the railroad to be built alongside his lane. Nevers procured a court order that required the railroad company to post a bond against damages if it desired to build on his land, but the railroad had no interest in building through Nevers's property.[80] In contrast, part of Treadway's property became a favorite regional park and picnic ground for decades, readily accessible by rail.

The line between Carson and Virginia required several wooden trestles. The most famous one was built over the Crown Point Ravine at Gold Hill. A more spectacular location for a trestle 83 feet tall and 350 feet long could hardly be imagined, for when built it framed the Kentuck Mine in its morning shadow and the Crown Point and Yellow Jacket hoisting works in its afternoon shadow. The railroad honored the rights of way of several wagon roads under the trestle. One road passed diagonally under the trestle where a bent was to be located. A horizontal beam twenty feet above the ground terminated the bent's two center posts, so the bottom story of the

bent provided clearance for wagons to operate on their original road. The right of way of a mine-cart railroad trestle to the Kentuck dump was also preserved.

Construction began in early June on the Crown Point Trestle. J. W. Kelsey was the foreman in charge, starting with grading and laying mortar foundations, followed quickly by timbering crews.[81] The timber consisted principally of twenty-foot long, fourteen-inch square timbers. Workers half-lapped timbers end to end to make the tall posts for the bents.

Several features of the Crown Point Trestle added to its distinction and beauty. The construction workers fastened stringers to beveled cornices set on the bents, and, instead of cross-bracing on the side faces, an appealing trapezoidal bracing was used, serving not only as cross-bracing from bent to bent, but also as additional support for the stringer. Each bent had sway bracing, and substantial horizontal longitudinal bracing was used. The Virginia and Truckee used similar trapezoidal bracing on several other timber trestles it built in Virginia City during the 1870s.[82]

Warren Rose and A. C. Hay were foremen in charge of boring the American Flat Tunnel. Construction on that 570-foot long tunnel began in February. On May 25, tunneling began for the 450-foot-long Fort Homestead Tunnel in Gold Hill, under Jim O'Donnel. The Fort Homestead Tunnel heading, being excavated from both ends, broke through on July 26. O'Donnel left to become a foreman in the Yellow Jacket Mine, and A. C. Hay and William Lee became the foremen in charge of completing the Fort Homestead Tunnel.[83]

The Virginia and Truckee also began two other tunnels between Virginia City and Gold Hill in late May. A Mr. Hinkley was foreman of the Straight or Yellow Jacket Tunnel. It was 450 feet long. The last tunnel was short, 90 feet long, running through a ridge beneath a toll road to Dayton. At times, it was called the Ward or Julia Tunnel, after nearby mines. After it was bored through, the railroad company suspended work on it for a while, moving laborers to grading jobs that needed more immediate attention. J. Frank Church was the grading superintendent for the segment of the line north of the Overman Mine.[84]

Accidents were common and frequently fatal in the Comstock Mining District and railroad construction was no exception. Local newspapers reported three construction-related accidents. The articles noted that in each case the deceased person was responsible for the accident that cost his life. The first fatal accident occurred near the north face of the American Flat Tunnel. William Lynes, a Gold Hill resident and former miner, was busy with John Dennis filling a drill hole with powder. A rain shower hit, and most workers sought cover, but Lynes and Dennis hastened to finish their task. Dennis held the fuse while Lynes applied powder with an iron spoon. The spoon struck a spark on the rock. The blast caught Dennis in the hand and face, but the greatest force of the blast threw Lynes forty feet through the air. Dennis, in great pain, ran back to the shelter and called for help. The workers found Lynes still alive, but he lived for only a few moments. Later accounts reported that Dennis, though thoroughly scarred, appeared to be recovering.[85]

The second fatal accident took place near the Vivian Cut, on the Carson River. When Charles Ball set off a blast, it threw him one hundred fifty feet through the air and instantly killed him.[86] The third fatality occurred at the Crown Point Trestle. A few weeks before, a falling timber had stuck like an arrow in the ground a few feet from a worker shoveling quartz on the Kentuck dump, who was knocked down by the percussion of the timber. Edward Foley, a former seaman, was guiding a timber into place when a knot slipped on the hoist and the timber fell into the ravine, pulling the guide rope and Foley down on top of it, killing him instantly.[87]

Another event could have been serious, but turned out otherwise. While blasting the approach to the north end of the American Flat Tunnel, workmen used large quantities of powder. One particular blast threw up enough rock to ballast a ship, including a boulder the size of a dump cart. The boulder fell upon a two-story stone boarding house used by the railroad workers, falling through all the floors and coming to rest in the cellar. It demolished the dining table, demoralized the dishes, and greatly astonished the cook, who was fortunately out of the way, in the kitchen.[88]

From March through August, little was reported about the railroad except for the grading. In August, other supplies began to arrive in Carson, including two locomotives that arrived on wagons and a string of iron dump cars. The railroad company owned a sawmill and a flume in Ash Canyon, west of Carson City, and began producing cross ties for laying the track. Huge stacks of ties accumulated at the end of the flume, and some were hauled to the site of the depot in Carson. The railroad company also contracted with sawmills and lumbermen for ties, cordwood, and lumber to be delivered to the line of the railroad by the end of the year. But no iron rails were to be seen.[89] Nevertheless, in early September workers began setting up the two locomotives from Booth Locomotive Works in San Francisco. Engine No. 1 was the LYON and engine No. 2 was the ORMSBY. Both were wood burners with 2-6-0 wheel arrangements and forty-inch drivers[90]

In mid September, the iron rails arrived in San Francisco. They were loaded on barges for transport to Sacramento, and from there they rode the Central Pacific Railroad to Reno. At Reno, the rails were hauled by teamsters and railroad-owned wagons to Carson City. The railroad company claimed they would haul a hundred tons of rail daily. After three weeks, they had hauled seventeen hundred tons to Carson City, and other wagon loads were en route.[91]

In late September, about two hundred miners from Gold Hill took exception to the railroad company's practice of employing Chinese laborers and advanced on the grading crews working at American Flat causing the Chinese to flee into the hills for safety. Sharon met with the Gold Hill and Virginia City miners' unions to quell a riot and restore order so that the railroad might be completed at a reasonable date. He and the miners' unions entered into a formal agreement, stating that he had no intention of ever introducing Chinese into the mines on the Comstock and that, thenceforth, Chinese laborers would not work north of

the North American Mine in American Flat. In return, the miners agreed that they would not harass Chinese railroad laborers. The Chinese returned to work about October 5, completing the grade below the North American Mine.[92]

The first spike ceremony was held at 7 a.m. on September 28, at the site of the depot in Carson City. Michael Sullivan was foreman in charge of track laying.[93] The crews commenced laying rails westward from the depot, away from the Comstock, up Treadway's lane toward the flume in Ash Canyon. Thus, with rails arriving on the ground at the depot and ties available at the west end of the track, all the supplies for track laying could be loaded onto the ten platform cars, as flat cars were then called, and shunted to the advancing front.[94]

Track laying progressed at approximately half a mile daily. Eight days after workers drove the first spike they had laid about four miles of track—two westward and two eastward from the depot. Whereas grading was slow work, track laying was worth watching. Engineers let people ride on the trains to the advancing end of the rails. News accounts mentioned ladies adorning the cow catcher and riding in the cab with the train crew, and other riders gracing the tender, greatly enjoying the sensation of traveling by rail, even if it was only a short trip back to town to pick up more construction supplies. When Yerington put a halt to carrying riders, the *Territorial Enterprise* complained that the superintendent had ruined the fun.[95]

The railroad company began business with no office buildings, shops, or depots. It acquired permission to use a large building of the Mexican Mill in Empire for its machine shops.[96] The building was attractive, since the Mexican Mill used water power to run its machinery. However, there is no indication that the railroad actually occupied the Mexican Mill building. Instead, the company constructed a car shop east of Virginia City's Chollar-Potosi Mine. The rails snaked their way past Empire and into the Carson River Canyon. After passing through the Vivian Cut and over a large fill, the rails followed the grade out of the canyon and onto the bench above the Carson River, at the Mound House. Although the grade past the Mound House was the heaviest grade on the line, it was the straightest stretch beyond Empire, and Yerington proposed that the railroad company would try to lay a mile and a half of rail in one day. It took two days to move ties and rails to the fore, in preparation for the herculean task. On the appointed day the track layers, under the command of Sullivan (who had previously supervised track laying on the Central Pacific Railroad), set to the task. At the end of the day, the exhausted crews had laid seventy-five hundred feet of track, within five hundred feet of their goal.[97]

Track laying was mostly restricted to the main line, except for passing tracks at Carson City and Mound House, and a few switches for loading rails and crossties. The initial order of rail, two thousand tons, was scarcely enough to complete the main line from Ash Canyon to Virginia City. The side tracks and the spur to Silver City were put aside until a second shipment of rails arrived. That shipment was at sea while the initial track laying proceeded. However,

there was a setback that the railroad had to accommodate. A barge carrying rails from San Francisco to Sacramento sank and the salvage operator stalled, trying to obtain a better price from either the insurance company or another interested party. That barge load of rails was needed to complete the track to Virginia City.[98]

On November 2, the rails were laid through the tunnel at American Flat. When the LYON emerged from the tunnel, the engineer pulled her whistle cord, announcing arrival of the iron horse to within sight of Gold Hill. Immediately taking the cue, the mines and mills in Gold Hill responded, raising a dissonant chord of greeting. At Virginia City, the ceaseless din of whistles in Gold Hill signaled alarm—there must be a fire. At once, the fire bells rang and the engine companies assembled and raced their pumpers and hose carts over the Divide. When they arrived on the scene, they found nothing amiss, and it took some time before the firefighters ascertained the cause of the uproar.[99]

In October, three locomotives for the Virginia and Truckee Railroad arrived in Reno on the Central Pacific, two from the Baldwin Locomotive Works of Philadelphia, and one from the Booth Locomotive Works in California. The Baldwin locomotives were the CARSON, No. 4, and the VIRGINIA, No. 5. Both were 2-6-0 locomotives with forty-eight-inch-diameter drivers. The Virginia and Truckee Railroad Company planned to put the locomotives into operating condition at Virginia, out of the way of the construction hubbub. Instead of being disassembled into wagon loads, the locomotives were fitted with "wheels" to permit them to be drawn intact by oxen to Virginia City.

The trek from Reno to Virginia started well, since the bridge over the Truckee River (Myron Lake's toll bridge) held the heavy locomotives, but they bogged down on the steep Geiger Toll Road when storms hit the region. The multiple teams of oxen succeeded in drawing the VIRGINIA over the summit, and a few days later a tender, but the CARSON had to be disassembled and loaded into wagons. When its boiler was hauled through C Street of Virginia City, the bell rang all the way through town.[100]

The locomotives were set up in the new car shops at the south end of town, and John C. Meyers of the Baldwin Locomotive Works arrived to put them into operating condition and instruct the mechanics on proper maintenance. Isaac P. Lewis arrived to instruct engineers on proper operation of the locomotives. The VIRGINIA was operated on a short length of track in front of the shops before the rails reached Gold Hill. The CARSON was assembled and placed into operation just before the tracks of the main line reached the Virginia car shops.[101] The Booth locomotive, STOREY, No. 3, was placed on wagons and hauled to Carson City. The STOREY was a 2-6-0 locomotive with forty-eight-inch-diameter drivers.[102]

The final ten days of construction, as the rails ringed American Flat and reached Gold Hill, were a scene of hasty fury on all fronts. Several parts of the grade were still not quite ready to receive the rails, so graders toiled late into

the evenings under the superintendence of J. J. Holmes and his foremen. On the heels of the graders, the track layers, commanded by Sullivan, worked as energetically as possible to advance the rails. One newspaper commented on the excitement and mentioned that the track layers sought to finish their task before the graders did.[103]

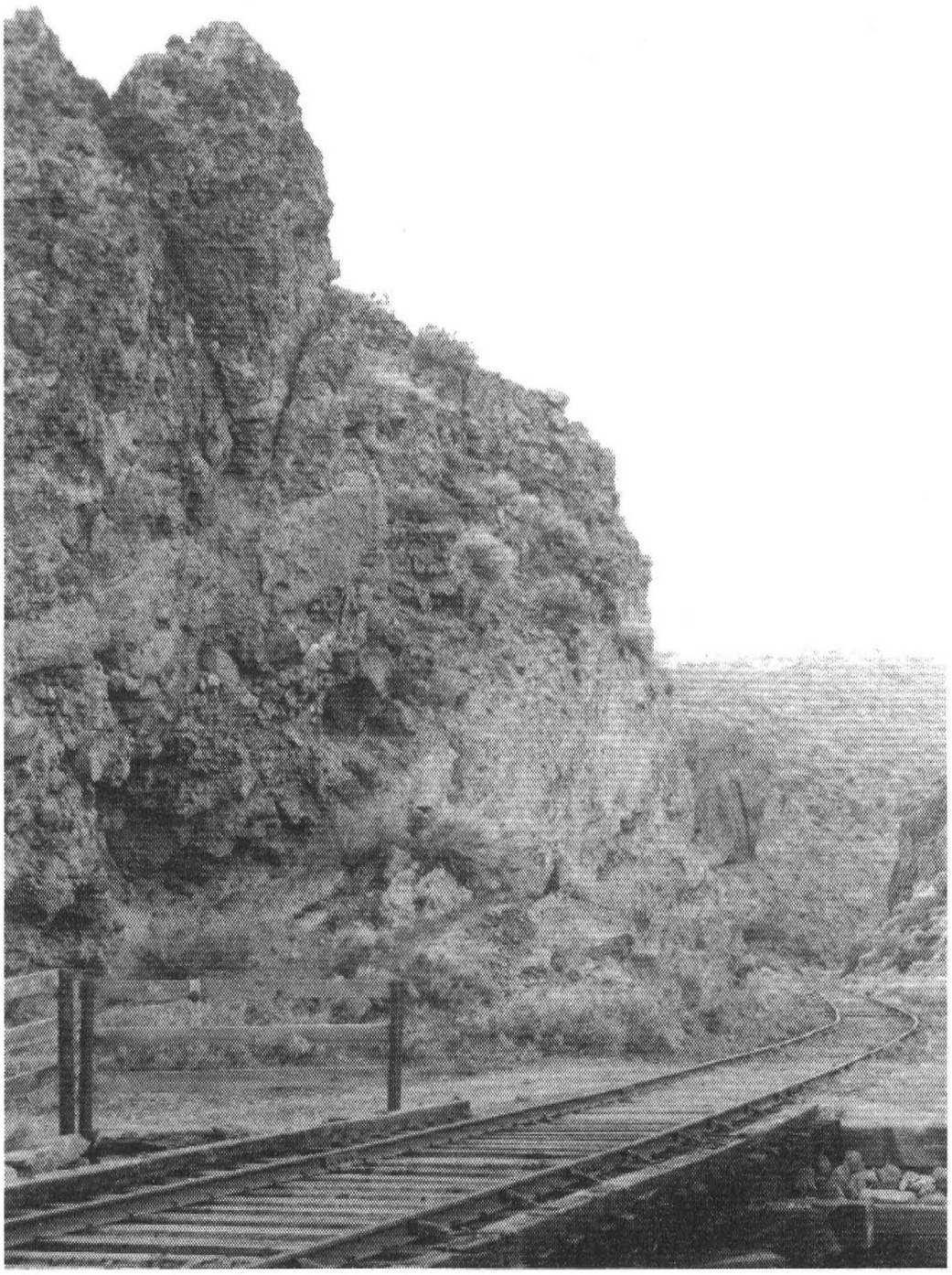
On the morning of November 12, the rails were reported to be within thirty-eight hundred feet of Gold Hill—seven-tenths of a mile. The railroad company anticipated completion of the railroad into Gold Hill, that is, over the immense Crown Point Trestle, and planned for a short ceremony commemorating the event. By 3 p.m., when the *Gold Hill Evening News* was put to bed, the rails were just about onto the trestle itself, and shortly after 5 p.m. the crews finished their task, having laid the rails over the bridge and another few hundred feet beyond.

Crowds were gathering before the rails reached the trestle, and by 5 p.m. a tremendous horde waited. People crowded the hillsides by the North Yellow Jacket works, the bluff by the Belcher Hoisting Works, the hillsides by the Little Gold Hill mines, the promontory where Fort Homestead and its shiny cannon was prepared for its greeting, the Crown Point and South Yellow Jacket works, and elsewhere within that topographically irregular town of Gold Hill. American flags fluttered in the cold afternoon air and banners and streamers decorated stores, mines, and mills alike, as though the end of the war had fallen on the Fourth of July and there was great cause for celebration. The crowd was probably the largest assembled up to that time in Gold Hill, and probably one of the three largest ever in that town, the arrivals of Generals Philip Sheridan and Ulysses S.Grant during the 1870s being the only other serious contenders.

Shortly after 5 p.m., the crowd heard a shrill whistle and the LYON appeared round the bend pulling a flatcar bearing several prominent citizens and the Gold Hill Brass Band. Immediately, all the steam whistles in Gold Hill resounded to greet the train. Along the Divide, the Challenge, Empire, Confidence, Imperial, Alpha, Exchequer, and Bullion mines hailed the locomotive. In the ravine itself, the Yellow Jacket, Kentuck and Crown Point mines added to the hellish din. In lower Gold Hill and Silver City, more than a dozen quartz mills added their whistles to the cacophony, and to the north in Virginia City, the Chollar-Potosi, Savage, Hale and Norcross and Gould and Curry mines also sounded their whistles to contribute to the celebration.

Sharon rode in the cab of the locomotive, and Yerington sat on its roof as the engine glided smoothly across the wooden trestle, sounding its whistle the whole way. The Gold Hill Brass Band played a lively tune, but nobody could hear the horns over the din of steam whistles; only the big bass drum was audible. From Fort Homestead, on a knoll above Gold Hill, the twelve-pound cannon—the GENERAL GRANT—boomed forth greetings to the railroad.

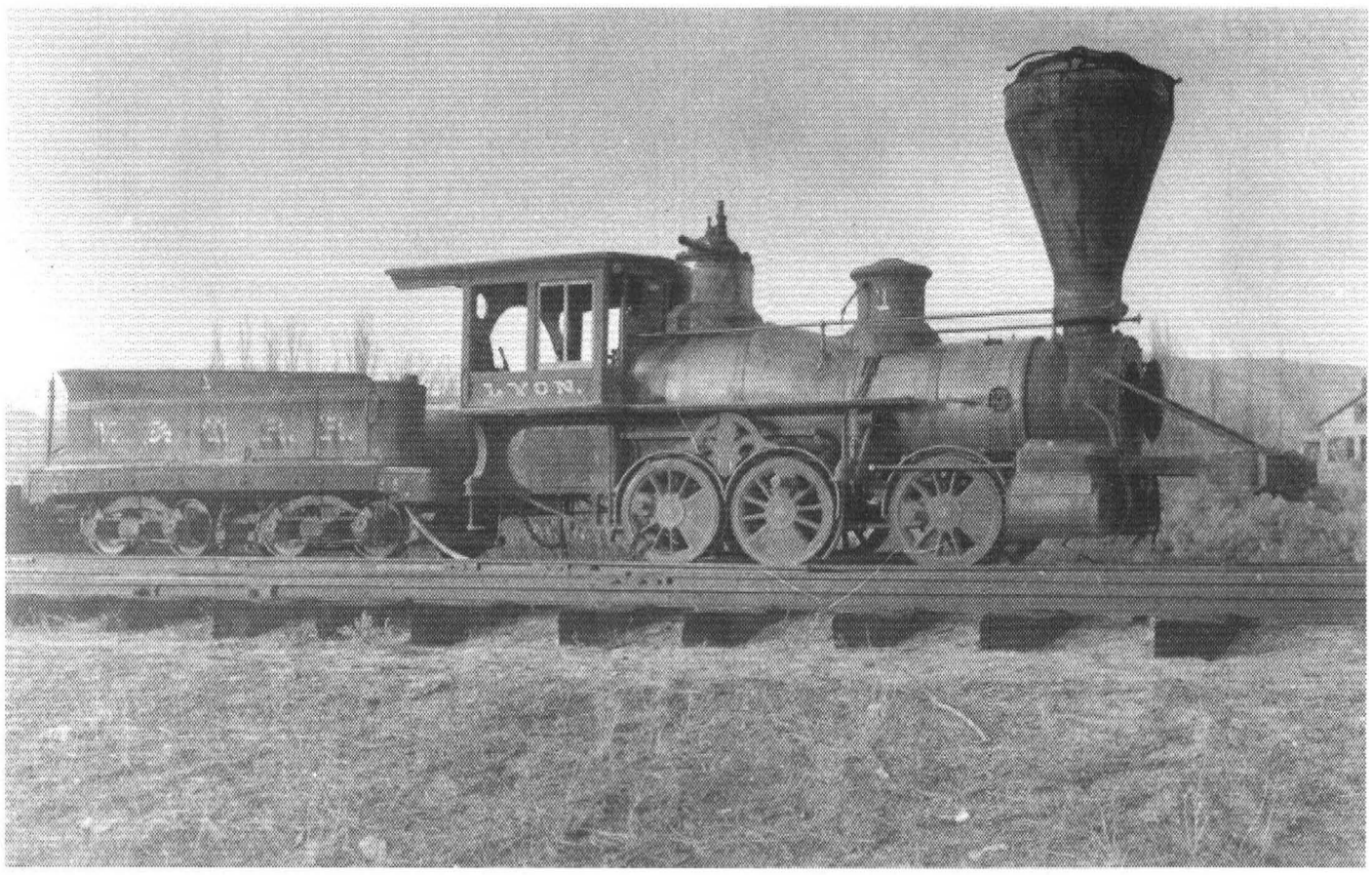
Throughout the display, a number of men stood, hats off, for they understood the implications of the railroad to the Comstock. For a full decade, cheap and reliable transportation had been recognized as an essential element for the per-



Virginia and Truckee Railroad trestle and track between Washoe City and Pleasant Valley. *(Nevada Historical Society)*

manence of the region. Unlike their friends "Old Virginny," Henry Comstock, Sandy Bowers, and dozens of others who had participated in the excitement of discovering the mining district, these gentlemen had stayed and survived long enough to witness the arrival of the iron horse.

The LYON gently eased her way through the parting crowd and stopped at the end of the track, venting pressure, and the important citizens disembarked, heading for the champagne tables. But as the din began to slacken and the dignitaries approached the tables of lager and champagne, another shrill whistle blew and the ORMSBY came into view around the bend. The mines and mills resumed their shrieking as the ORMSBY, pulling one car loaded with railroad iron and another with wood for a local mine, rolled effortlessly across the bridge



The Virginia and Truckee's LYON. The first engine to run on V & T track. Built by Booth and Co., 1869, at a cost of $16,500. Carson City, Ca. 1900. *(Nevada Historical Society)*

and stopped behind the LYON. Sharon invited the dignitaries to champagne and then directed the other well-wishers to help themselves to drinks. The crowd edged forward, timidly at first but then with such vigor that the lager was consumed in less time than it took one news reporter to write about it.

Using the tender of the LYON as a podium, Crown Point superintendent John P. Jones offered a few words to the crowd. He noted the opposition to the railroad bonds, but stated that the savings on just one cord of wood a year would pay for the additional taxes. Then Sharon spoke, mentioning that all great achievements in history were won over significant opposition. He understood why people objected to the bank and to the railroad, but asserted that the railroad was the beginning of an era of widespread prosperity in the region. The crowd cheered James, Yerington, Holmes, and Sullivan.

As a Washoe zephyr blew in and the temperature of that dreary November evening fell to the bone-chilling point, Mayor Gibson of Gold Hill coyly suggested that those interested in continuing the conversation could do so at the Cross and Gibson Saloon, just up the street. With that, the crowd disassembled.[104]

Upon completion of the tracks as far as Gold Hill, the Virginia City newspapers proudly proclaimed that the "last spike," of beautifully polished silver, would be driven with a silver sledge, weighing fifty ounces. The crew at the car shops at the south end of town demanded that the last tie of the railroad

that connected with their tracks should be bound with silver and that the last tie be of gold, but they settled for a pine tie and an iron spike on November 19, when the line was connected and their cooped-up locomotives were able to roam the whole line.[105]

By December 7, 1869, the Virginia City terminal was located near the Gould and Curry hoisting works at the south end of town. The company was still working on grading on the final leg of the line. On January 25, 1870, the *Gold Hill Evening News* reported that the grading was nearly completed to the depot site.[106]

The last portion of grading was a cut by the Hale and Norcross dump, which was finished on January 27, 1870. At noon on January 28, the track was laid past the Savage works and was completed to the depot late that afternoon. The first train to the Virginia depot was the early train on Saturday, January 29, which came up from Carson. The *Evening News* reported: "The locomotive kept up a fierce tooting as it passed triumphantly into the heart of the city, responded to in like manner by the Gould and Curry whistle. Many of the natives ran from all directions, thinking it was fire, and were considerably disappointed to find that it was only John James and a few other passengers arriving from Carson." [107]

Before the main line was completed to Virginia City, the Silver City branch line was well under way. That branch line, constructed to qualify for $75,000 secured by a bond issue in Lyon County, would serve the Trench, Bacon, Pioneer, and Devil's Gate mills in Silver City. Grading neared completion on February 6, 1870. Carpenters were already at work on the high trestle and dumps on the side of Grizzly Hill, above Silver City. The track laying began during the first week of February and was completed on February 12.[108]

This trestle was a magnificent structure. Between its bents, eight ore bays were constructed to accept ore directly from the railroad company's bottom-dump iron-ore cars. A track at the base of the trestle, and running parallel to it, extended from the ore bays to a hoist house several hundred feet down the hill. A pulley system and counterweight made it possible to operate a large two-bay dump car. A conductor rode the car and operated a brake. Gravity from chutes at the trestle loaded the car and gravity unloaded it into smaller iron-ore carts on another track that ran down a trestle from the hoist house to the mills. Four smaller ore carts served the mills. The five ore carts were built at Haskins' blacksmith shop in Virginia City. The Silver City branch was reported completed by March 6, and on Saturday, March 12, a formal inspection of the branch and ore-handling facility was conducted by commissioners and officers of Lyon, Ormsby, and Storey counties. Everyone present agreed that it was of first-class workmanship and adequately served the needs of the mills that lay below it in Gold Canyon. When the inspection was complete, refreshments were served. The officials of the railroad company believed that they had satisfied all the requirements for obtaining the seventy-five thousand dollars in railroad bonds from Lyon County.[109]

After formally inspecting the branch, the county commissioners rejected the Virginia and Truckee's request for the money, saying that the railroad had not met

the terms specified by law, namely, that the railroad tracks come to within 800 feet of the Trench Mill. Although ore was gravitationally transferred from railroad ore car to the mill by way of the two intermediate iron-ore carts, the railroad tracks themselves only approached within 1,200 feet of the mill. The railroad company protested that judgment and the case was heard by the Nevada Supreme Court, which decided that the terms of the act had not been met as specified, and that the county was not required to give $75,000 to the railroad.[110]

The Virginia and Truckee's next major branch connected the dumps below the Crown Point Trestle with the main line. A. C. Hay served as grading foreman. Grading commenced on January 31, 1870. The branch served dumps of the Overman and Belcher mines, and terminated where the dumps of the Crown Point, Yellow Jacket, and Kentuck mines came together. It left the main line near the office of the Overman Mine and descended down a grade of 90 feet to the mile. Although that grade was less than the 116 feet to the mile of the main line, the heavy loaded ore cars had to be pulled up the branch line. That test of hauling strength led to several claims of the "biggest load yet" by railroad crews.[111]

What about the story that William Sharon was financially ruined just prior to joining the Bank of California as its agent in Virginia City and Gold Hill? The records do not support Irving Stone's account, even though Sharon provided the story himself. Sharon had not lost one hundred and fifty thousand dollars plus his "thousand shares" of North American stock. His stock assessments were small and expected in the course of business. Sharon's background in law and banking, rather than his poker acumen, was suitable for the Bank of California.

Dan De Quille's account, which stated that Sharon secured a subsidy and built what he could, then mortgaged the road to finish it, is technically correct, although Sharon did subscribe to stock with "his own pocket." The promise of county ownership of the railroad misled the public. Had the meetings in Carson City and Washoe City specified subsidies rather than ownership, the petitions probably would have gained little support. When the Virginia and Truckee Railroad first began operations in late 1869, it owed over $700,000 in indentures to various mining companies, to be repaid through lower ore-hauling costs. It also owed money to wood companies and teamsters. They had agreed to work for the Virginia and Truckee Railroad on the basis that they would be paid half on completion and half at an unspecified later date.[112]

The threat of competition in the form of a narrow-gauge railroad, proposed in 1871 to run from Reno to Virginia City by a direct route, led the Virginia and Truckee Railroad to immediately take steps to secure its monopoly on rail transportation to the Comstock. Supplies it shipped to Reno, and the road was in operation to Steamboat Springs in late 1871; it was completed to Carson City in 1872. The first passenger train from Reno to Virginia City ran on October 1, 1872. The need for construction capital, at a time when the railroad was

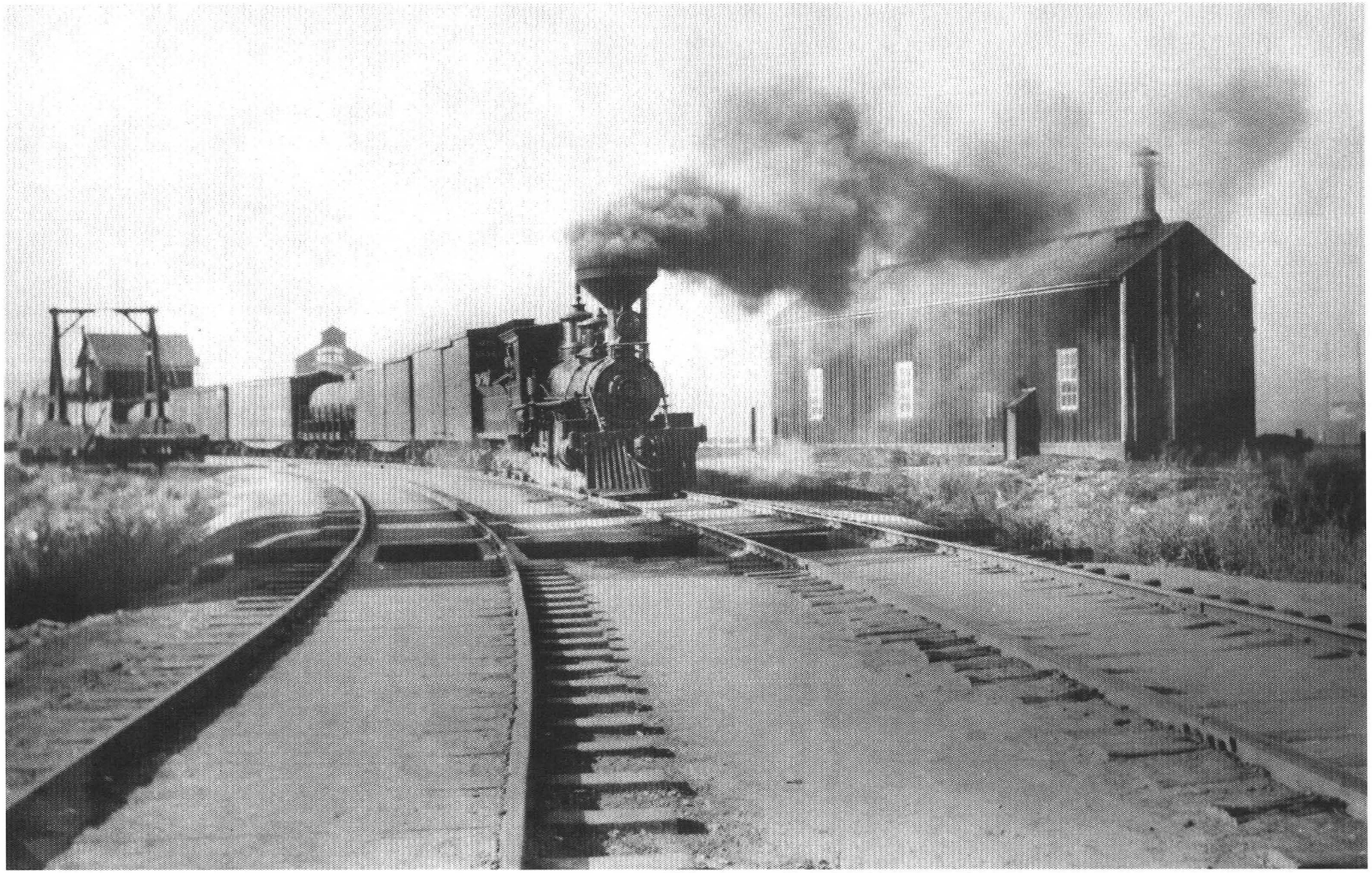
increasing its locomotive power and rolling stock, as well as building facilities on its original line, required mortgaging, which was paid off in 1874.

Charles H. Shinn's story about the short conversation between Sharon and James, quoted above, fits well with Sharon's surprise at the Lyon County railroad bill, but not in the context that Shinn presented it. Sharon had worked for nearly two years to get a railroad built to the Comstock. James had already surveyed the route from Carson City to Virginia City. Such a meeting between Sharon and James indicates that the railroad company shifted its route just a few weeks before construction began. As documents show, Sharon had planned the subsidies ten months previously, and had already secured the mining industry's participation.

If anything, Sharon's focus on the railroad project caused him to put the Hale and Norcross annual meeting on a back burner. It was at that time that John Mackay, James Fair, James Flood, and William O'Brien gained control of the Hale and Norcross and started the association that led to the Big Bonanza five years later.

Over the years, the Virginia and Truckee Railroad made various changes. In 1905, it reincorporated as the Virginia and Truckee Railway and in 1906 it began operations on a fifteen-mile line south from Carson City to Minden. The Minden branch line served the agricultural region's needs. The railroad hauled low-grade ore from the Comstock to water-powered mills until close to the turn of the twentieth century. Thus, the projectors were right—the railroad was sustained by the ore dumps, regardless of the fate of below ground mining on the Comstock.

Over the years, new industries formed in the region and used the railroad as their principal hauler. The railroad company posted profits annually until the mid 1920s, when paved highways and truck transport eroded its hauling monopoly to the region. The Virginia and Truckee abandoned its lines to Virginia City in 1938. Its main line then ran from Reno to Minden until the end of its operations, on May 31, 1950. Many resources present the colorful history of the railroad and document its contributions to the economy of the region.[113]



Locomotive No. 17 leaving Reno, about 1905. The Virginia and Truckee's Reno engine house is on the right. This was during the Tonopah boom when the railroad was experiencing heavy traffic. *(Nevada State Railroad Museum)*

NOTES

[1]Eliot Lord, *Comstock Mining and Miners* (1883; reprint, Berkeley: Howell-North Books 1980), 416.

[2]Irving Stone, *Men To Match My Mountains* (New York: Berkley Publishing Group, 1982), 250-51.

[3]Dan De Quille, *The Big Bonanza* (1876; reprint, Reno: Nevada Publications, 1974), 402.

[4]Charles Howard Shinn, *The Story of the Mine* (1896; reprint, Reno: University of Nevada, 1980), 166-67.

[5]Lucius Beebe and Charles Clegg, *Virginia and Truckee: A Story of Virginia City and Comstock Times*, (1949; reprint, Berkeley: Howell-North, 1980), 3.

[6]Gilbert H. Kneiss, *Bonanza Railroads* (Palo Alto: Stanford University Press, 1954), 52.

[7]Carson County Court Records , Book A, Utah Territory, pp. 49-52, Nevada State Archives and Library, Carson City.

[8]*Ibid.*, 186-88.

[9]*San Francisco Herald* (2 May 1860).

[10]Andrew J. Marsh, *Letters from Nevada Territory: 1861 - 1862*, William C. Miller, Russel W. McDonald, and Ann Rollins, eds. (Carson City: Legislative Counsel Bureau, State of Nevada, 1972), 2.

[11]On 25 November 1861, the legislature passed "An Act granting to certain persons the right to construct a Railroad from the Western to the Eastern Boundary of the Territory of Nevada." *Laws of Nevada Territory: First Session, 1861.*

[12]On 29 November 1861, the legislature passed "An Act to Incorporate the Virginia City and Washoe Railroad Company." *Laws of Nevada Territory: First Session,* 1861.

[13]On 17 December 1862, the legislature passed "An Act to amend an Act to incorporate the Virginia City and Washoe Railroad, passed at the First Session of the Legislative Assembly of the Territory of Nevada." *Laws of Nevada Territory: Second Session,* 1862.

[14]On 29 November 1861, the legislature passed "An Act to incorporate 'The Virginia, Carson, and Truckee Railroad Company.'" *Laws of Nevada Territory: First Session,* 1861.

[15]On 19 December 1862, the legislature passed "An Act to Incorporate the Virginia City and Silver City Railroad Company." *Laws of Nevada Territory: Second Session,* 1862.

[16]On 20 December 1862, the legislature passed "An Act to Incorporate the Virginia and Truckee Railroad Company." *Laws of Nevada Territory: Second Session,* 1862.

[17]On 19 December 1862, the legislature passed "An Act to authorize certain parties to construct a Railroad." *Laws of Nevada Territory: Second Session,* 1862.

[18]*Gold Hill Evening News* (3 January 1865).

[19]On 22 March 1865, the legislature passed "An Act to provide for the incorporation of Railroad Companies, and the management of the affairs thereof, and other matters relating thereto." *Laws of the State of Nevada: First Session,* 1865.

[20]Senate Bill 20 passed the legislature on 2 March 1865. *Laws of the State of Nevada: First Session,* 1865.

[21]Assembly Bill 214 passed the legislature on 9 March 1865. *Laws of the State of Nevada: First Session,* 1865.

[22]David Lavender, *Nothing Seemed Impossible: William C. Ralston and Early San Francisco* (Palo Alto: American West Publishing Co., 1975), 110.

[23]*Ibid.*, 136, 146, 151.

[24]Neil C. Wilson, *400 California Street: A Century Plus Five* (San Francisco: The Bank of California, 2d ed., 1969), 19.

[25]*Ibid.*, 22.

[26]Lavender, *Nothing Seemed Impossible,* 179.

[27]*Daily Trespass* [Virginia City] (2 October 1867).

[28]Wilson, *400 California Street,* 12.

[29]*Ibid.*, 26.

[30]*Gold Hill Evening News* (17 October 1864).

[31]Lavender, *Nothing Seemed Impossible,* 186.

[32]*Gold Hill Evening News* (1 May 1865).

[33]Francis Church Lincoln, *Mining Districts and Mineral Resources of Nevada* (Las Vegas: Nevada Newsletter Publishing Co., 1923), 225.

[34]*Washoe Daily Evening Herald* (2 July 1864).

[35]*Ibid.*

[36]George D. Lyman, *Ralston's Ring: California Plunders the Comstock Lode* (New York: Charles Scribner's Sons, 1937), 1-8.

[37]*Daily Independent*, Supplement [Virginia City] (31 October 1874).

[38]Grant H. Smith, *History of the Comstock Lode: 1850 - 1920* (Reno: Nevada Bureau of Mines and Geology [reprint of *University of Nevada Bulletin*, 37:3 (July, 1943)], 1980), 93.

[39]*Daily Trespass* [Virginia City] (30 October 1867).

[40]David Lavender, *Nothing Seemed Impossible*, 233.

[41]*Daily Trespass* [Virginia City] (30 October 1867).

[42]Lord, *Comstock Mining*, 245-46.

[43]C.B. Glasscock, *Lucky Baldwin: The Story of an Unconventional Success* (Reno: Silver Syndicate Press, 1993), 119, 139-140.

[44]Lord, *Comstock Mining*, 249.

[45]Articles of Association of the Virginia and Truckee Railroad Company, filed 8 May 1867, Nevada State Archives, Carson City.

[46]*Ibid.*

[47]*Gold Hill Evening News* (18 June 1867).

[48]*Ibid.* (14 May 1867).

[49]*Eastern Slope* [Washoe City] (17 August 1867).

[50]*Daily Trespass* [Virginia City] (6 June 1867).

[51]*Gold Hill Evening News* (20 April 1867).

[52]*Ibid.* (27 July 1867).

[53]*Daily Trespass* [Virginia City] (4 September 1867).

[54]*Eastern Slope* [Washoe City] (25 May 1867).

[55]*Daily Independent*, Supplement [Virginia City] (31 October 1874).

[56]*Daily Appeal* [Carson City] (11 February 1868).

[57]Articles of Incorporation for the Virginia and Truckee Railroad Company, filed 5 March 1868, Nevada State Archives. Articles of Incorporation were filed 5 March 1868. The proposed route was described as follows: "The contemplated Railroad is to be constructed from the city of Virginia by way of Empire City, Carson City and Washoe City, to a point on the Central Pacific Railroad, on the Truckee River, State of Nevada. The said Railroad will pass through the counties of Storey, Ormsby and Washoe and its length will be about forty-two miles."

[58]Stock Book, Virginia and Truckee Railroad Company Archives, Special Collections Department, University of Nevada, Reno.

[59]*Daily Appeal* [Carson City] (28 February 1868).

[60]*Eastern Slope* [Washoe City] (7 March 1868).

[61]*Daily Appeal* [Carson City] (27 February 1868).

[62]*Gold Hill Evening News* (11 December 1868).

[63]Virginia and Truckee Engineer's Ledger, Nevada State Railroad Museum, Carson City.

[64]*Territorial Enterprise* [Virginia City] (14 January 1869).

[65]*Daily Safeguard* [Virginia City] (14 January 1869).

[66]*Territorial Enterprise* [Virginia City] (29 January 1869).

[67]The *Territorial Enterprise* favored the railroad bills, while the *Virginia City Daily Safeguard* opposed the bills. Both newspapers provided editorials on the matter during January 1869.

[68]*Territorial Enterprise* [Virginia City](20-22 January 1869).

[69]*Gold Hill Evening* News (23 January 1869).

[70]*Territorial Enterprise* [Virginia City] (28 January 1869).

[71]*Daily Safeguard* [Virginia City] (30 January 1869).

[72]The Washoe County railroad-bond bill was introduced in the Senate by Mr. Sharp, a Washoe County senator, on 22 February. On 4 March, the last day of the legislative session, it was approved by the Senate, 18-0, and the Assembly, 24-2. The next day it was signed by the governor. *Laws of the State of Nevada: Fourth Legislative Session*, 1869.

[73]*Gold Hill Evening News* (19 February 1869).

[74]*Daily Appeal* [Carson City] (26 March 1869).

[75]*Territorial Enterprise* [Virginia City] (9 April 1869).

[76]*Gold Hill Evening News* (29 March, 10 April 1869).

[77]*Ibid.* (24 May 1869).

[78]The 1870 United States Census reported 11,300 people living in Storey County.

[79]*Daily Appeal* [Carson City] (26 May 1869).

[80]*Ibid.* (19, 23, and 24 September 1869).

[81]*Gold Hill Evening News* (1 June 1869).

[82]Crown Point Trestle drawings made during the 1918 Interstate Commerce Commission Railroad Valuation Survey, Virginia and Truckee Railroad Company Archives, Special Collections Department, University of Nevada, Reno Library.

[83]*Gold Hill Evening News* (26 July 1869).

[84]*Ibid.*

[85]*Ibid.* (7 June 1869).

[86]*Territorial Enterprise* [Virginia City] (4 July 1869).

[87]*Gold Hill Evening News* (5 August 1869).

[88]*Ibid.* (26 July 1869).

[89]*Daily Appeal* [Carson City] (21 July, 20, 24 August 1869).

[90]*Ibid.* (5 September 1869).

[91]*Ibid.* (17 September 1869); *Reno Crescent* (25 September 1869).

[92]*Reno Crescent* (2 October 1869); *Territorial Enterprise* (8 October 1869).

[93]*Daily Appeal* [Carson City] (5 September 1869). Michael Sullivan was one of the men in the Central Pacific construction crew who laid ten miles of track on 28 April 1869. John J. Stewart, *The Iron Trail to the Golden Spike* (Riverside: Meadow Lark Press ,1994), 138; Robert L. Fulton, *Epic of the Overland* (Los Angeles: N. A. Kovach, 1954), 46.

[94]*Daily Appeal* [Carson City] (28 September 1869); *Reno Crescent* (2 October 1869).

[95]*Daily Appeal* [Carson City] (5 and 10 October 1869); *Gold Hill Evening News* (26 October 1869); *Daily Appeal* [Carson City] (28 October 1869); *Territorial Enterprise* (29 October 1869).

[96]*Territorial Enterprise* [Virginia City] (9 April 1869).

[97]*Daily Appeal* [Carson City] (24 October 1869); *Gold Hill Evening News* (26 October 1869).

[98]*Gold Hill Evening News* (16 September 1869).

[99]*Territorial Enterprise* [Virginia City] (4 November 1869).

[100]*Daily Appeal* [Carson City] 13 October 1869; *Territorial Enterprise* [Virginia City] (27, 29 October 1869).

[101]*Gold Hill Evening News*, 5 November 1869.

[102]*Reno Crescent* (23 October 1869); *Territorial Enterprise* [Virginia City] (27 October 1869).

[103]*Daily Appeal* [Carson City] (12 November 1869).

[104]These paragraphs merge accounts of the event reported by the Carson City *Daily Appeal* (12-13 November 1869), *Gold Hill Evening News*, (12, 13 November 1869), and *Territorial Enterprise* (13 November 1869).

[105]*Gold Hill Evening News* (13 November 1869).

[106]*Gold Hill Evening News* (25 January 1870).

[107]*Gold Hill Evening News* (28, 29 January 1870).

[108]*Territorial Enterprise* [Virginia City] (11 February 1870).

[109]*Gold Hill Evening News* (14 March 1870).

[110]*Territorial Enterprise* [Virginia City] (1, 6 March 1870).

[111]*Territorial Enterprise* [Virginia City] (5 February 1870); *Carson Daily Appeal* (6 March 1870).

[112]Virginia and Truckee Engineer's Ledger, Nevada State Railroad Museum, Carson City.

[113]One of the first comprehensive books on the history of the Virginia and Truckee is Ted Wurm and Harre W. Demoro, *The Silver Short Line* (Virginia City: Virginia & Truckee Railroad 1983).

Notes & Documents

Riding the Red Dragon
McKeen Motorcar No. 70 and the Virginia and Truckee Railway

MICHAEL A. "BERT" BEDEAU

The Virginia and Truckee Railroad—renamed the Virginia and Truckee Railway following bankruptcy reorganization in 1904—is perhaps the most famous and mythologized short-line railroad in the United States. Its most eloquent chronicler, the late Lucius Beebe, wrote: "The legend of this sparkling railroad to Golconda has so often been invoked by true believers in the faith of steam locomotion that there are those who imagine it to be a railroad of elfland, one with Babe the blue ox and the Big Rock Candy Mountain of the drifters and bindle stiffs."[1] From the beginning, mining on the Comstock Lode in what is now Storey County, Nevada, meant that logistics and transportation were of paramount concern. The mines were primarily located in Virginia City and Gold Hill, precariously perched on the treeless slopes of bone-dry Mount Davidson at an elevation of more than six thousand feet above sea level. The milling of raw ore into relatively pure gold or silver ingots required a substantial and steady water source, which was not available on the lode. Thus, mills were established along the Carson River, fifteen miles south of, and twelve hundred feet lower than, the Comstock region. As the mines exhausted surface diggings and went underground, an enormous amount of timber was needed to shore up the workings. Again, there was no timber available on the Comstock, and wood had to be cut and hauled up the hill.[2]

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Transportation in the 1860s in Nevada relied on horse, mule, and ox power, all expensive and of limited capacity. This meant that the costs of extracting ore from ever-deeper mines were high—so much so that by the mid 1860s the Comstock mines entered their first serious downturn or *borrasca*. At this time, the Bank of California began to consolidate its holdings on the Comstock. Under the direction of William Sharon and the bank, the Union Milling and Mining Company took control of most of the mines and mills on the lode.[3] Along with consolidation the Bank Crowd, as they were known, began to consider the need for less expensive and more reliable transportation. If the cost of hauling timber and supplies uphill and the cost of hauling ore downhill could be reduced, profits might rise dramatically. Sharon and his financial partners determined that the only viable solution to the transportation problem was a steam railway linking the mines in Virginia City and Gold Hill with Carson City and the mills along the Carson River, where logging flumes brought timber down out of the Sierra Nevada.[4] The first rail for the Virginia and Truckee Railroad was spiked down in September of 1869. By this time, the scope of the enterprise had expanded to linking Virginia City with the newly completed transcontinental railroad at Reno. The line was completed from Carson City to Gold Hill on November 29, 1869, and to Virginia City on January 29, 1870. The line from Carson to Reno was completed in 1872.[5]

The reduction in transportation costs had the desired effect, and the mines returned to high production and profitability. By 1873, the Virginia and Truckee was earning more than a hundred thousand dollars in profit per month.[6] Virginia City and the Comstock mines continued to prosper during the 1870s. By 1880, however, mining on the lode had begun to decline. The ore quality became too low to mill profitably, particularly with the expense of maintaining a mining infrastructure that in some cases reached more than three thousand feet below the surface.[7]

THE VIRGINIA AND TRUCKEE IN THE EARLY TWENTIETH CENTURY

Various attempts to revive the Comstock mines in the latter part of the nineteenth century came to naught, and by 1900 the Virginia and Truckee found itself with only a fraction of its former income. Bad luck also dogged the company. In 1900, it sold the Carson and Colorado, its subsidiary narrow-gauge line. In the 1880s, the company had constructed the Carson and Colorado, also known as The Slim Princess, to serve various short-lived mining communities in central Nevada. The subsidiary was never a paying proposition, and when asked about its prospects, the Virginia and Truckee's president, D. O. Mills, stated, "either we have built the railroad three hundred miles too long or three hundred years too soon."[8] The Virginia and Truckee was thus grateful to sell its Carson and Colorado to the Southern Pacific. One month later, the next Big Bonanza (for

The first operation of the McKeen car in Minden, Nevada, 1910. *(Nevada State Railroad Museum)*

which Carson and Colorado had been built in hope of exploiting) materialized in the form of Jim Butler's legendary gold strike at Tonopah. This set off the last great American mineral rush, one that in turn made the Carson and Colorado a paying proposition for its new owners. The Virginia and Truckee did reap a bit of revenue from interchange traffic with its former subsidiary. It was soon bypassed, however, when a new line built by the Southern Pacific connected its main line with the Carson and Colorado.[9]

Revenues continued to decline for the Virginia and Truckee and in 1904 it was forced into bankruptcy reorganization. The railroad's directors realized that a new source of traffic was needed in order to return the line to profitability. In 1905, the decision was made to build a new line connecting Carson City with the growing and prosperous agricultural region to the south. The Virginia and Truckee platted a new town, Minden, for the line's terminus, and construction began in earnest in the spring of 1906. The first train into Minden arrived on August 1, 1906, and the new line quickly became the dominant revenue producer for the company.[10] This new line also required a reassessment of equipment. In 1901, all of the railroad's locomotives were at least twenty-five years old. They consisted mainly of 4-4-0 (American) and 2-6-0 (Mogul) locomotives having what, by the turn of the century, would be considered relatively low maximum speeds and hauling capacities. The new Minden line had comparatively few sharp curves and much easier grades than the Virginia City line. Beginning in 1905, therefore, the Virginia and Truckee opted to purchase new and more efficient equipment.[11]

By 1909, the new Minden branch had produced substantial revenue for the Virginia and Truckee. For the fiscal year ending June 30 of that year, the Minden

branch accounted for 9,084 paying passenger tickets with operating revenue of $10,262.20.[12] Initially, the company operated a single daily steam-powered passenger train on the Minden line. The management concluded that supplemental passenger service on this line could be profitable if costs could be kept down. Some manner of the new-to-the-market self-propelled motorcar seemed to be the answer. Motorcars of the time required less fuel cost per passenger mile than a standard steam train. In addition, a motorcar required only a two-man crew, thereby saving half of the labor costs of a traditional steam train.[13]

E. H. HARRIMAN, W. R. MCKEEN, JR., AND THE MCKEEN MOTOR CAR COMPANY

The McKeen Motor Car Company resulted from the convergence of two extraordinary figures in American railroad history: Edward Henry Harriman and William Riley McKeen, Jr. Of the two, Harriman is better known. He was born in 1848 into a family that had been in the mercantile business in and around New York City for three generations.[14] Like many in his family, Harriman had a talent for figures and the hardboiled business dealings typical of America in the mid nineteenth century. His financial career began at the tender age of fourteen, when he served as a messenger and order taker in the wide-open Wall Street during the Civil War years.[15] Harriman quickly rose to prominence, becoming a member of the New York Stock Exchange in 1870.[16] Over the next several decades, Harriman came to amass a substantial fortune and to place himself, both through shrewd business acumen and family ties to most of the New York business elite, at the very center of American industry and finance. He developed an aptitude for taking troubled companies and returning them to robust financial health through innovation, investment, and scrupulous cost control. This was particularly true of railroad companies.[17]

In 1898, Harriman undertook his greatest corporate rejuvenation in the form of the financially prostrate Union Pacific Railroad. One of the original companies involved in building the first transcontinental railroad in the 1860s, by the 1890s the Union Pacific was in dire financial straits and was considered by many on Wall Street and in the railroad industry to be a lost cause. Scandal-ridden and undercapitalized almost from its inception, the Union Pacific had lapsed into bankruptcy during the Panic of 1893 and still had not emerged five years later. The railroad was in deplorable physical condition, its equipment outmoded and competitors on all sides waiting for what seemed to be the inevitable fire sale.[18] Harriman took it on and subjected every aspect of its operation and financial structure to close and unbiased scrutiny. He mounted a massive capital improvement campaign and began to question every expense and means of conducting business in a meticulous search of maximum cost efficiency.[19] By 1901, Harriman was in a position to add the Southern Pacific Railroad to his holdings, creating a rail empire second to none in the United States.[20]

In obtaining the Union Pacific, Harriman also acquired the services of an extraordinary engineer. William Riley McKeen, Jr., born in 1869, had literally grown up in the railroad business. His father had been a well-known Indiana banker and president of the Terre Haute and Indianapolis Railroad. McKeen was graduated from the Rose Polytechnic Institute in Terre Haute, Indiana, in 1889. He then went on to do graduate work in mechanical and electrical engineering at the Johns Hopkins University in Baltimore, and at the Charlottenburg Polytechnikum in Berlin. McKeen began his railroad career in 1891 in Columbus, Ohio, and was soon after appointed master car builder and general foreman of the Terre Haute and Indianapolis Railroad's car and locomotive shops. Subsequently, he returned to Rose Polytechnic and earned a master of science degree in 1896 and a master of engineering degree in 1898. That same year, he moved to North Platte, Nebraska, to work as district foreman for the Union Pacific. By 1901, McKeen was a master mechanic for that railroad's operations at Cheyenne, Wyoming, and in June 1902 he became superintendent of motive power and machinery at Union Pacific's massive main shop complex in Omaha, Nebraska.[21]

Where the initial inspiration for the McKeen car came from is unclear. Some sources attribute it to developments in marine architecture and engineering.[22] Others say that Harriman drew inspiration following an automobile tour during a 1903 trip to Europe.[23] Clearly, however, experiments with self-propelled railcars had been undertaken prior to the development of the McKeen car.[24] Also, E. H. Harriman made a financial success of his business ventures by examining every aspect of corporate operation and mercilessly hunting for efficiency and ways to cut costs. One of the costs that Harriman wished to cut at Union Pacific was the expense of branch-line passenger operations. To generate freight revenue, particularly from agricultural products, many railroads in the West and Midwest had constructed webs of branch lines to serve lightly populated rural areas. Union Pacific had many such lines, especially in Nebraska. Passenger operations on many of these lines were unprofitable and a drain on the corporate bottom line. Harriman determined that finding a low-cost substitute for steam passenger trains on these lines was an important part of his effort to maintain a resuscitated Union Pacific.[25]

In 1903, Harriman turned this idea over to his chief mechanical officer, McKeen, who immediately set to work to design an efficient self-propelled railcar that would meet the needs of branch-line passengers, while reducing operating costs. McKeen fixed his attention on the internal combustion engine as the most efficient and reliable means of propulsion. Requiring only a two-person crew, a railcar would reduce by half the labor cost of a traditional steam train. His prototype car, a thirty-one-foot-long wooden version of the later steel car, was completed in early 1905 and dubbed Union Pacific M-1. The M-1 was gasoline powered and exhibited the same aerodynamic design that came to typify a McKeen car.

Company officials immediately dispatched the M-1 on a publicity tour of the Union Pacific system from Omaha to Portland, Oregon, and back. Following this

journey, the M-1 was placed in revenue service on a branch line between Kearny and Calloway, Nebraska. The tour generated significant interest in the odd-looking car—sufficient to encourage additional work at Union Pacific's Omaha shops. The M-2, McKeen's first fifty-five-foot-long car, featured all steel construction and emerged in 1905. The M-7 of 1906 was the first McKeen to have the signature porthole windows and depressed center entry doors. Response to these efforts was positive enough that Union Pacific established a subsidiary company, with McKeen as president to produce gasoline-powered railway motorcars. The McKeen Motor Car Company occupied a series of buildings at the north end of the massive Union Pacific shop complex in Omaha.[26]

Between 1908 and 1920, the McKeen Motor Car Company produced approximately 160 railway motorcars that were used across the United States, and in Mexico and Australia.[27] The distinctive vehicle designed by William R. McKeen incorporated several innovations to railroad engineering and design, innovations that presaged more widespread changes that were to revolutionize rail transportation in the twentieth century, and also contribute to the ultimate decline of most rail passenger operations.

INTERNAL COMBUSTION PROPULSION

Perhaps the most important innovation associated with the McKeen car is the application of a new power source—the internal combustion engine. Almost from the beginning, railroad companies sought less expensive ways to provide transportation service. They had experimented with the concept of a self-propelled railcar, as opposed to a car pulled by a separate locomotive, as early as the late 1850s. Throughout the nineteenth century, they applied a variety of power sources to rail equipment in a search for a less costly alternative to the traditional steam train. Perhaps the best success along these lines came from street railways or trolleys that, using electric power, rapidly became the primary mode of urban public transportation. Indeed, by 1900, interurban electric cars had made steady inroads into traditional steam railroad territory and profits.[28]

Electrification, however, required substantial investment in new infrastructure, in addition to new rolling stock. As such it was not cost effective in lightly populated markets. Similarly, self-propelled steam cars never provided sufficient results to encourage mass production.[29] It was the development of the internal combustion engine powered by petroleum distillates such as diesel and gasoline that provided the most hope for true innovation and cost savings. As early as the 1880s, experiments with primitive gasoline engines affixed them to a variety of carriages, horsecars, and rail equipment. Early trials were conducted by a number of companies, none of which resulted in anything more than unique experiments. The only car even tested by a railroad company was the Eureka—a gasoline car built by the colorfully named Vimotum Hydrocarbon Car Company of Chicago.

Despite tests by both the New York Central and Pennsylvania railroads in 1899, the Eureka did not perform well enough to interest either company and Vimotum quickly disappeared.[30]

By the time William McKeen began planning his car in 1903 and 1904, however, developments in engine design and increasing power production by gasoline motors induced him to select a two-hundred-horsepower gasoline engine for his power plant. While large engines of this sort had been installed in watercraft, McKeen's was the first practical application of this new technology in rail transport.[31] Other companies quickly followed the McKeen lead. General Electric began working on gasoline-electric motorcars and began production for sale in 1909.[32] Other companies that produced motorcars prior to World War I included the Kuhlman Car Company of Cleveland, the Strang Gas Electric Car Company of New York, and the Hall-Scott Company of Berkeley, California.[33] In all, more than 250 gasoline motorcars had been put in operation between 1905 and 1917—approximately 160 of them built by McKeen.[34]

Streamlining

The slow speed of early trains did not make air resistance a worthy consideration in railroad design. As train speeds increased in the mid nineteenth century, however, air resistance was identified as a clear obstacle to operation at high speeds. S. R. Calthrop patented an early design for a streamlined train on August 8, 1865. This train bore a striking similarity to the McKeen. It had a pointed nose, an arched roof, and was covered with an uninterrupted outer skin to reduce drag. Although Calthrop's train was never produced, it did embody both the detail and the concept of reducing air resistance, as understood in the nineteenth century. This early design may have given inspiration to another and more tangible attempt at streamlined design—the Adams Windsplitter. Beginning in the late 1880s, F. U. Adams, an engineer associated with the Baltimore and Ohio Railroad, began to research the concept of wind resistance and design as applied to rail transportation. He published a book in 1892 on the subject titled *Atmospheric Resistance in Its Relation to the Speed of Trains*, in which he proposed a plan for an aerodynamic train that incorporated many features of the Calthrop design. In 1899, he constructed an experimental set of cars that became known as the Adams Windsplitter. The Baltimore and Ohio conducted tests in 1900 using this train set. The results, however, could not justify the construction of new cars for the line's passenger operations and the experimental cars were quickly dismantled.[35]

In the fall of 1903, a series of high-speed rail tests were conducted on a specially constructed line running between Berlin and Zossen in the German state of Prussia. The Studierengesellschaft, a cooperative venture between German industry and the Imperial government, conducted these tests. All aspects of high-speed

electric rail transport were examined and tested, including rudimentary experiments involving air resistance and wind. Experimental railcars were fitted with both rounded and pointed ends in an attempt to increase efficiency.[36]

For each design, primitive experiments measured the amount of air resistance generated from 50 to 200 kilometers per hour; the results were compared to those from a traditional blunt-ended car. The report concluded that "the pointed noses diminish the air resistance very considerably—for instance, at a speed of 200 kmph [124 mph] it is reduced about 8 percent. If from the start, in constructing the car, the most favorable form for overcoming the air resistance is used, the air resistance can be still further diminished."[37]

There is a striking similarity between the modified car design used in these tests and the design that McKeen used for his railcars. The German tests were published in the United States in 1905, the same year that McKeen designed the M-1, his first railcar for Union Pacific. McKeen cited the 1903 Berlin-Zossen tests and an experimental electric car demonstrated at the 1904 Saint Louis World's Fair as the genesis of his pointed front and rounded rear.[38] Given that efficiency was a mania with his backer, E. H. Harriman, and that the entire purpose of self-propelled railcars was cost savings, it is not surprising that even a modest 8 percent reduction in wind resistance would be more than sufficient reason for McKeen to adopt this earliest mass-produced example of what came later to be known as streamlined design.

It is also important to note that McKeen was a consummate showman and promoter. It is just as likely that the desire to make a bold and attention-grabbing visual impact with his new car played an important role in his decision to utilize these sources for his motorcar design.[39] Other commentators have remarked on the nautical character of the McKeen—described as an "upside down boat" or a "submarine on rails."[40] As with the gas engine, McKeen took experimental elements and applied them for the first time to a production rail vehicle. The result was visually imposing and unusual, if not particularly sound from a modern aerodynamic perspective.

STEEL CONSTRUCTION OF RAILROAD CARS

McKeen was not the first railroad engineer to employ steel construction. Indeed, fire had been a major problem with wooden cars for many decades, and the use of iron, steel, and other fireproof materials had been examined and experimented with often during the latter half of the nineteenth century.[41] Railroads resisted the introduction of steel cars as being too costly to construct and, as they were heavier than wooden cars, less cost efficient to operate. Indeed, steel cars were first produced for electrified subway trains. In 1902, the Interborough Rapid Transit Company selected all-steel cars for New York's first subway line. Following a horrific fire in the Paris subway, the added safety of a steel car was a key factor in enticing a skeptical New York public to ride on the new subway.[42]

McKeen had similar concerns about safety and marketability for his motorcar. As in the case of the underground railways, gasoline engines were new to the traveling public in 1905. Moreover, early gasoline engines were prone to fire. The loss of the wooden M-1 to fire only reinforced the need for steel construction if the McKeen car was to achieve wide acceptance.[43] McKeen also wrestled with the need for keeping the car body as light as possible. While steel was durable and fire resistant, it was also heavy. McKeen devised a unique construction design based on arched steel trusses. This, combined with a stressed-steel skin and round windows, allowed the shell of the car's body to serve as a combination plate and trussed girder. The result was a highly innovative, lightweight car body with exceptional strength. This design would not be used again in rail transportation until the early 1930s, when lightweight streamlined passenger units were developed.[44]

The Rise and Demise of the McKeen Motor Car Company and Later Developments in American Railroading

The McKeen Motor Car Company met with initial success. Their motorcars were innovative and striking, receiving much attention in the press. Since Harriman and the Union Pacific owned a large interest in the McKeen company, it was logical for the Union Pacific, Southern Pacific, and other Harriman-affiliated roads to buy a large number of McKeen cars. Indeed, thirty-two of thirty-eight cars produced by McKeen between 1905 and 1909 went to Harriman companies. However, other railroads also took an interest, including the Virginia and Truckee Railway, which purchased McKeen Motorcar No. 70 in 1910. By 1912, one hundred twenty-five McKeen cars were in service and ultimately fifty different railroads would operate McKeen equipment.[45]

Success, however, was short lived. Beginning in 1913, sales of McKeen cars began to fall. With American involvement in World War I in 1917, materials for new railcars disappeared, and operations at the McKeen shops were halted. Some have claimed that difficulties with McKeen's mechanical transmission, which was balky and primitive, were responsible for declining sales.[46] It is more likely, however, that the gasoline motorcar fell victim to other changes in the American economy. This is borne out by the fact that General Electric and other manufacturers that did not rely on a mechanical transmission also experienced a steep decline in sales in the years immediately prior to World War I. Certainly, the meteoric rise and popularity of the automobile was a factor in this downward trend. In 1905, the automobile was an unreliable toy for the very wealthy. By 1917, it had become a fixture on the American scene. Given the improvement in automobiles (and trucks) and highways during this period, it is not surprising that the demand for railcars, always used and marketed for short-haul operations, should decline. Moreover, it is likely that there were only a limited number of

rail operations that were suitable for gasoline motorcars. By the mid 1910s, it is probable that the market had been saturated.[47]

Whatever the reason for the McKeen Motor Car Company's decline, very few cars were ordered after 1917. Following the end of World War I, the United States entered a recession with rural areas hit particularly hard. In 1920, the McKeen Motor Car Company was liquidated, and William McKeen retired to an avocado ranch in Montecito, California, where he lived until his death, in 1946.[48] Despite the closure of the McKeen operation, the gasoline motorcar continued on. In the 1920s, railroads faced increased competition from autos and trucks in addition to increasing costs. A second generation of self-propelled railcars emerged during this period, but these relied on electric rather than mechanical transmissions. The true vindication of McKeen's radical ideas did not fully emerge on the American scene until the advent of the streamliners.[49]

By the early 1930s, America was in the depths of the Great Depression. The economic downturn that began with the 1929 stock-market crash sent the already shaky railroads reeling. Revenues and passenger ridership plummeted. Many branch-line operations were terminated. However, new technology made the innovations first introduced by McKeen in 1905 worth another look, not for low-capacity branch-line service, but rather for new high-speed intercity passenger trains. It is no coincidence that the first streamlined train to be introduced was built at the direction of W. Averell Harriman, E. H. Harriman's son, for the Union Pacific Railroad. W. B. Stout designed the M-10,000, and Harriman ordered it from the Pullman Company in 1933. It incorporated internal combustion propulsion, aerodynamic design, and lightweight metal construction, all innovations utilized by McKeen thirty years before. When the three-car articulated train, named City of Salina, debuted in early 1934 it caused a national sensation Over the next twenty years, virtually every major railroad in America converted to diesel-powered streamlined passenger equipment. By the 1950s, internal combustion had taken over freight operations as well. By 1960, steam-operated trains were a novelty.[51] McKeen was indeed thirty years ahead of his time, and his motorcar showed the way for the development of rail transportation in the twentieth century.

McKEEN MOTORCAR NO. 70 (VIRGINIA AND TRUCKEE MOTORCAR NO. 22)

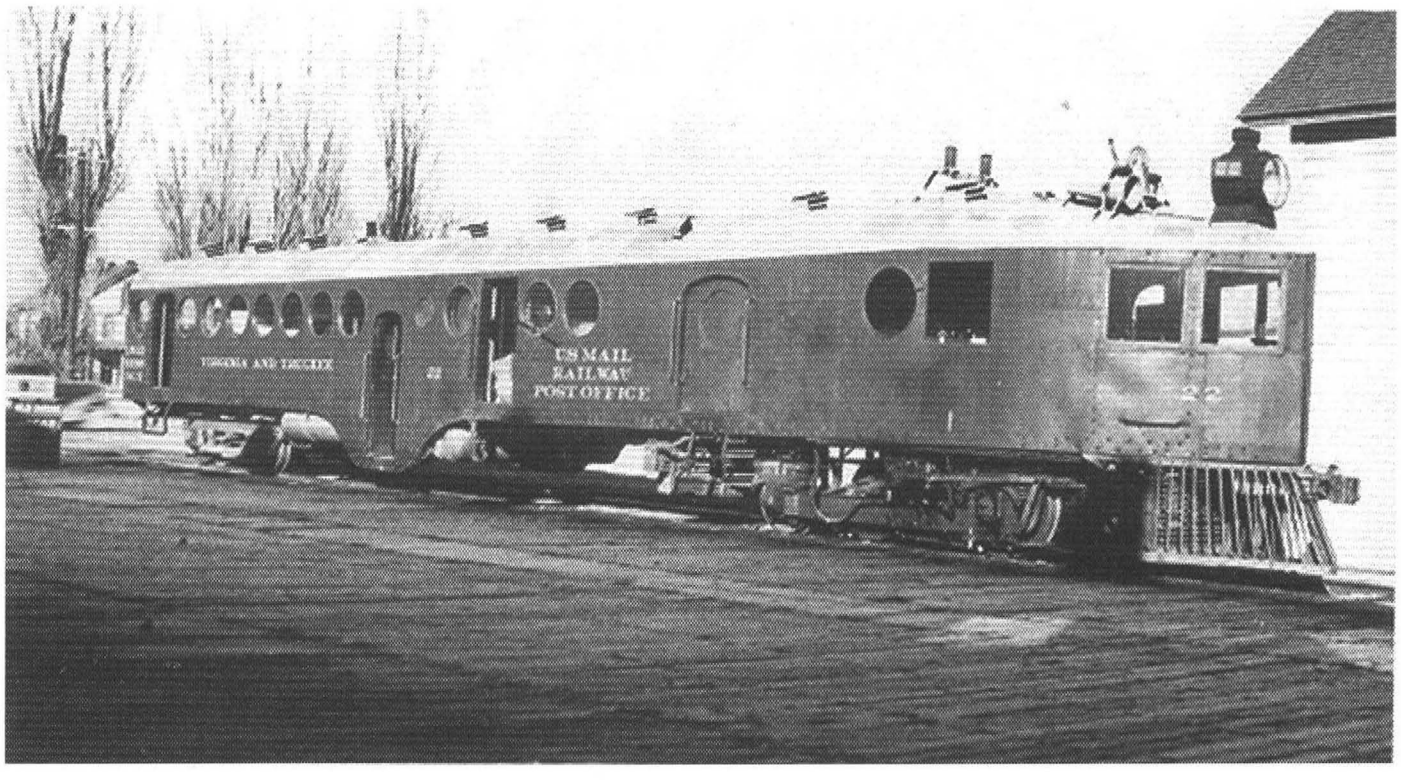
The first indication of the Virginia and Truckee's interest in a McKeen car is to be found in the private files of Henry M. Yerington, the railroad's general manager and vice-president. Yerington apparently began to examine the question of a motorcar for the Virginia and Truckee in early 1909. His motorcar file, now preserved in the Special Collections Department at the library of the University of Nevada, contains a trade clipping dated June 24, 1909, that shows a fifty-five-foot McKeen car.[52]

By September of that year, the railroad's president, D. O. Mills, had received correspondence from William R. McKeen regarding the purchase of a McKeen

car. Mills was already familiar with the motorcar because the Bellingham Bay and British Columbia Railroad, which the Mills family owned, had purchased and operated a seventy-foot McKeen car. Mills sent McKeen's letter, presumably with his endorsement, to Yerington in Carson City. On September 9, 1909, a front-page story in the *Carson Appeal* indicated Yerington's interest in a McKeen motorcar for the line's Minden branch. Two days later, Yerington wrote to McKeen requesting a draft contract and price for a seventy-foot McKeen car.[53] By October 6, 1909, final details had been agreed upon, and the order for the McKeen car was placed. The final price for a seventy-foot, eighty-four-passenger car, complete with extra-wide baggage doors, was $22,000 f.o.b. Omaha, to be delivered by March 20, 1910.[54]

McKeen Motorcar No. 70, painted dark red, and with "VIRGINIA AND TRUCKEE RAILWAY" and the numeral 22 in gold, was completed by the agreed-upon date, March 20, 1910. The next month, the Virginia and Truckee dispatched a machinist, Ed Peterson, to Omaha to receive training in the operation and maintenance of the new motorcar and to bring it to its new home in western Nevada.[55] Peterson took numerous photos during his time in Omaha and on the journey back to Nevada; these have been preserved by the Nevada State Railroad Museum.

Thus it was that, beginning in the summer of 1910, passengers between Minden and Carson City were often treated to a ride in the Red Dragon, as the McKeen car came to be known. She must surely have presented an odd—even Jules Verne-esque—sight to the bystander of that day with her pointed prow,



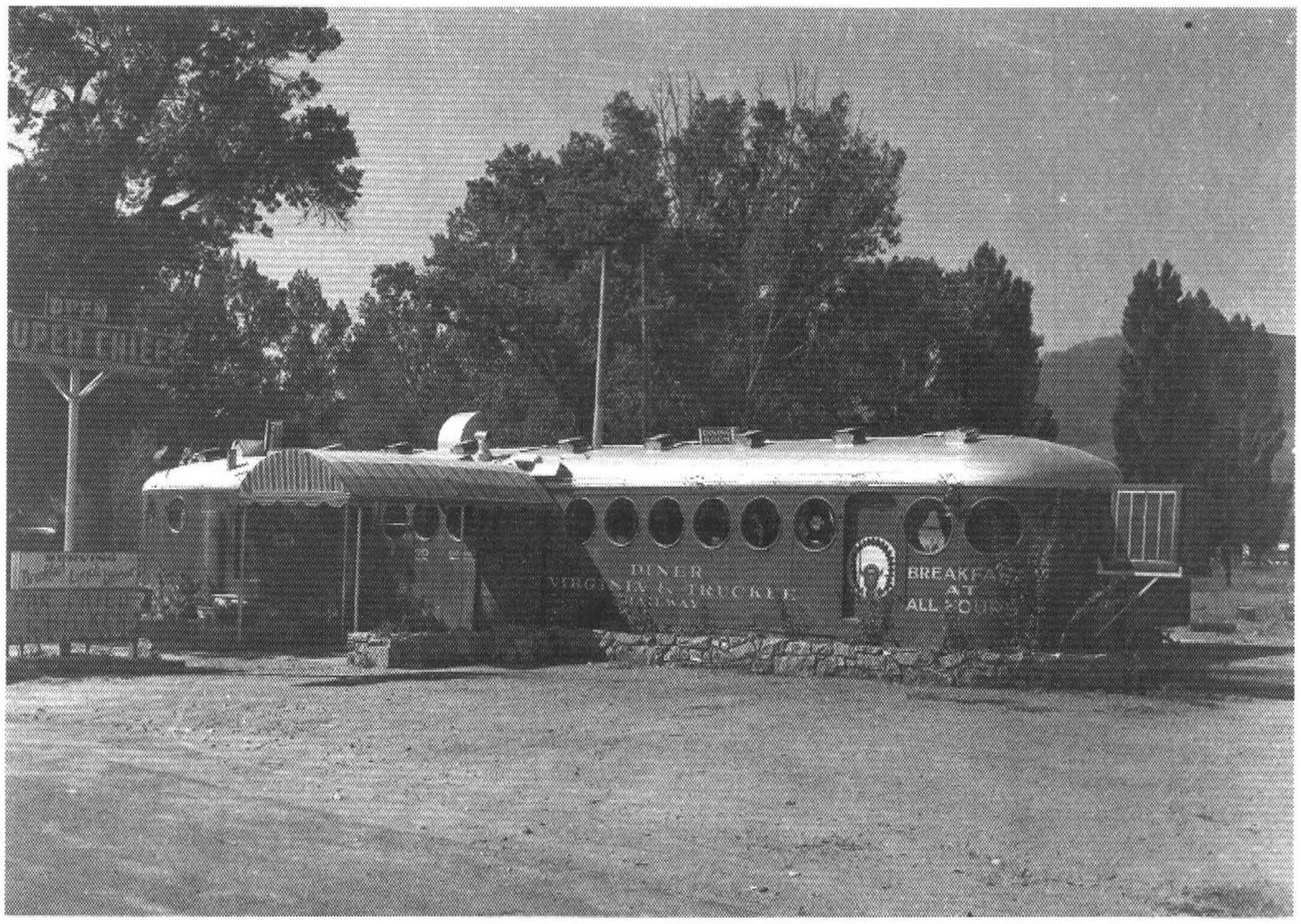
McKeen Motor Car No. 70 as a mail car, July 1938. *(Nevada State Railroad Museum)*

porthole windows, and lack of steam power. The McKeen was also a somewhat temperamental piece of equipment, requiring a significant amount of mechanical finesse to operate even under ideal conditions. Typically, the company did not even attempt to operate the car during the cold Nevada winters.[56]

The Virginia and Truckee continued to post modest profits through the 1910s and into the early 1920s. By the mid 1920s, however, improvements in roads and motor transportation began to eat into both the freight and passenger revenue on the line. As a result, the company posted a loss in 1924.[57] McKeen Motorcar No. 70 continued in regular service as the fortunes of the Virginia and Truckee dwindled through the 1920s and 1930s. But when the Great Depression began in 1929, the company scaled back passenger operation and took McKeen Car No. 70 out of regular service. For the next two years, it was used only for specials and extras while the management worked to win governmental approval to convert the car for use as a Railway Post Office and Railway Express handler. Intervention by United States Postmaster General Walter Folger Brown, at the behest of Odgen Livingston Mills, secretary of the treasury and son of the railroad's late president, D. O. Mills, resulted in Post Office approval for conversion in the spring of 1932. The conversion work consisted of turning the smoking compartment into a Railway Post Office and placing a new partition in the main compartment. The rear of the car had two new freight doors added and was used for the Railway Express operation. The center of the car retained seating for twenty-four passengers. McKeen Motorcar No. 70 operated fairly consistently in this configuration for an additional thirteen years.[58]

Virginia and Truckee operations during the 1930s continued to lose money. With the death of O. L. Mills in 1937, the management could no longer avoid dealing with the persistent losses. The company entered receivership in 1938, and it was quickly announced that the Virginia City-to-Carson City portion of the line would be abandoned.[59] World War II brought a reprieve for the Virginia and Truckee as restrictions on gasoline and rubber use increased demand for both freight and passenger service. Following the war, the railroad once again was faced with severe losses and lack of demand for services. In addition, the equipment was aging to the point where maintenance and repair costs greatly increased operating expenses.[60] At this point, the management decided that it was time to retire McKeen Car No. 70 after thirty-five years of service. The last revenue run was on October 31, 1945—Nevada Admission Day. In her time with the Virginia and Truckee, the McKeen car traveled more than a half a million miles on her original engine and served many thousands of passengers—a truly remarkable record.[61]

In 1946, the company removed the engine and trucks from McKeen Car No. 70 and sold the car body for local use as a restaurant. Known variously as Denny's Diner, the Virginia and Truckee Diner, and the Super Chief Diner, the car body occupied several locations in Carson City. In 1955, it was moved to



McKeen Motor Car N. 70 as the Super Chief Diner, ca. 1950.
(Nevada State Railroad Museum)

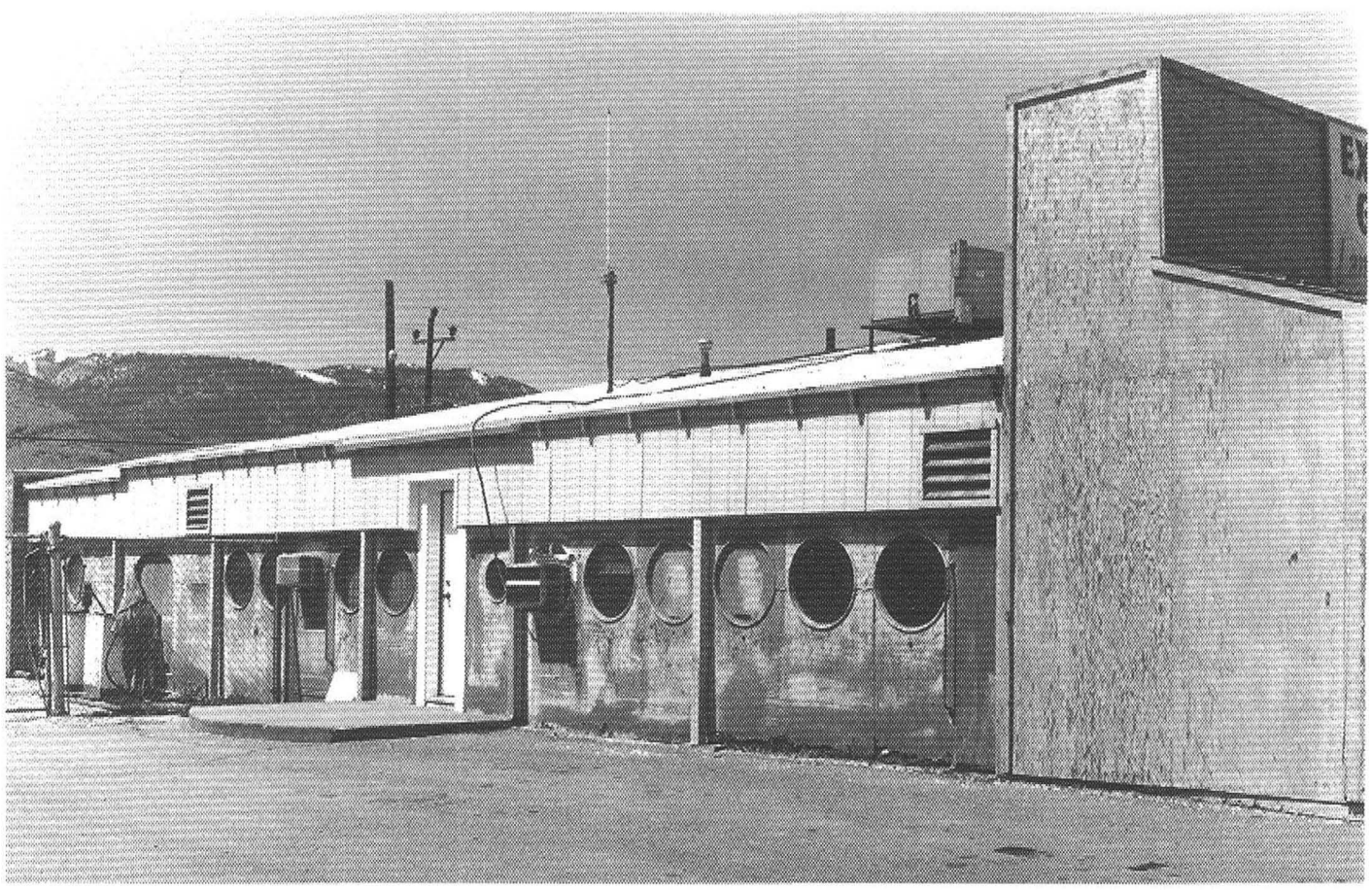
1400 South Carson Street, where it remained until 1995. From 1962 until 1995, the McKeen car was part of Al's Plumbing, and was used to house storage and offices for the enterprise. In 1995, Al Bernhard and his family generously donated McKeen Motorcar No. 70 to the Nevada State Railroad Museum.[62] The car body was moved to the museum in 1996, where it has been in the process of restoration ever since.

As part of the rehabilitation study for McKeen Motorcar No. 70, the Nevada State Railroad Museum compiled a list of all known McKeen manufactured equipment still in existence. It identified only four motorcars. Of the other McKeen products still in existence, none even approximates No. 70's state of preservation. It is one of two seventy-foot car-bodies remaining. The other was rebuilt with significant modifications to the car body and made into a diesel electric switcher. As of 1997, it was located at the Kettle Moraine Railway in North Lake, Wisconsin. Two other motorcar bodies (a fifty-foot and a fifty-eight-foot) also remain. Each has been radically modified, one converted to a passenger car and one cut in half and used for a storage shed.[63] The fifty-foot car body was in private ownership in Fairbanks, Alaska, and the two pieces of the fifty-eight-foot body were in private ownership in Price, Utah.[64] Of the

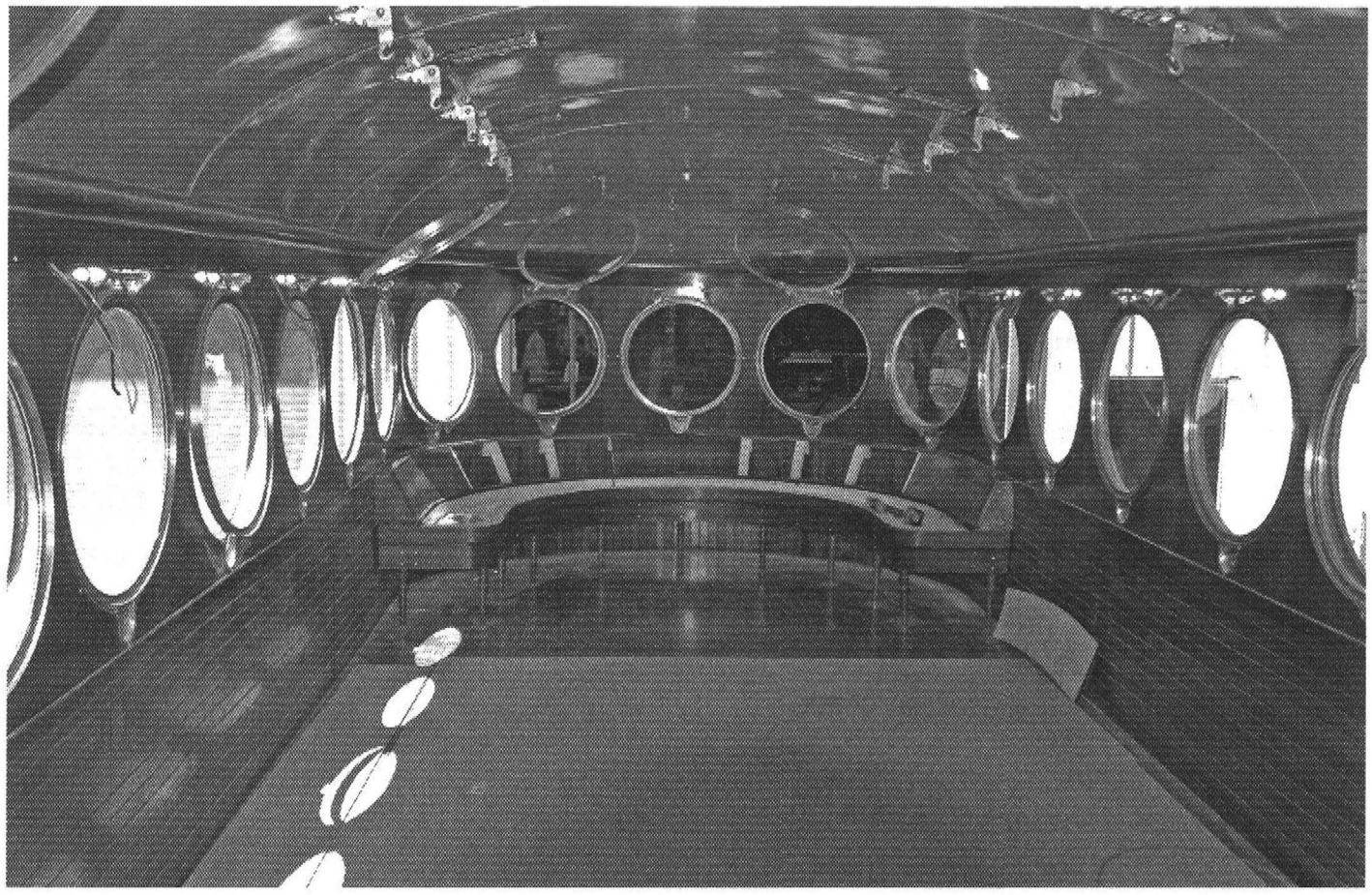
four, McKeen Motorcar No. 70 clearly retains the most physical integrity. In all other cases, the car body has been significantly altered and in all cases the power plant removed.[65]

Underscoring the importance of the McKeen car No. 70, the railroad history expert Stephen Drew commented,

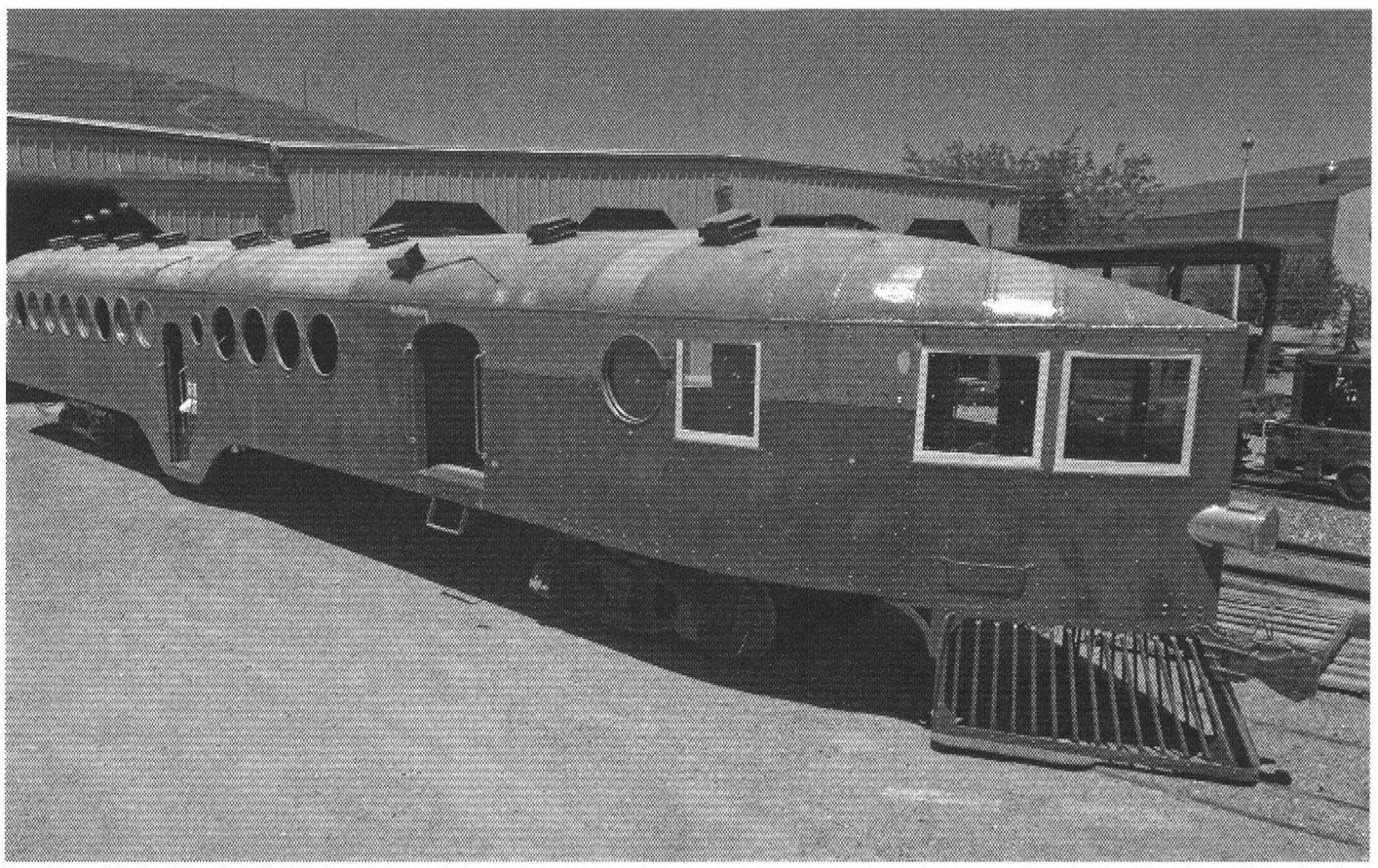
> One of approximately two hundred motorcars and trailers produced from 1905 until the McKeen Motor Car Company dissolved in 1920, the Virginia and Truckee McKeen car is the best survivor of this revolutionary streamlined Nebraska builder. . . . As both a rare surviving product of the highly regarded McKeen Company and a half-million-mile veteran of Nevada's famous Virginia and Truckee Railway [it] is a national treasure.[66]



McKeen Motor Car No. 70 as Al's Plumbing and Heating, April 12, 1981.
(Nevada State Railroad Museum)



The McKeen Car's interior restored smoking compartment, May 26, 2005.
(Nevada State Railroad Museum)



The Virginia and Truckee's McKeen Car under restoration, May 2005.
(Nevada State Railroad Museum)

NOTES

[1]Lucius Beebe and Charles Clegg, *Steamcars to the Comstock* (Berkeley: Howell-North Books, 1957), 9.

[2]Russell R. Elliott, *History of Nevada* (Lincoln: University of Nebraska Press, 1973), 126-27.

[3]Beebe and Clegg, *Steamcars to the Comstock*, 10.

[4]Lucius Beebe and Charles Clegg, *Virginia and Truckee* (Oakland: Grahame H. Hardy, 1949), 11.

[5]Kyle K. Wyatt, *Virginia and Truckee 4-6-0 Locomotive No. 27 Restoration Feasibility Study* (Carson City: Nevada State Railroad Museum, 1997), Sec. 1, 1.

[6]Beebe and Clegg, *Steamcars to the Comstock*, 16.

[7]Ronald M. James, *The Roar and the Silence: A History of Virginia City and the Comstock Lode* (Reno: University of Nevada Press, 1998), 235-57.

[8]Beebe and Clegg, *Steamcars to the Comstock*, 74.

[9]*Ibid.*, 75-76.

[10]Grace Dangberg, *Carson Valley: Historical Sketches of Nevada's First Settlement* (Minden: Carson Valley Historical Society, 1972), 120.

[11]Mallory Hope Ferrell, *Virginia and Truckee: The Bonanza Road* (Mukilteo, Wash.: Hundman Publishing, 1999), 149.

[12]Stephen E. Drew, *Virginia and Truckee Railway McKeen Motor Car No. 22 Restoration Feasibility Study* (Carson City: Nevada State Railroad Museum, 1997), 17.

[13]*Ibid.*, 17-18.

[14]Maury Klein, *The Life and Legend of E. H. Harriman* (Chapel Hill: University of North Carolina Press, 2000), 28-29.

[15]*Ibid.*, 32-33.

[16]*Ibid.*

[17]*Ibid.*, 45-47.

[18]*Ibid.*, 105-7.

[19]*Ibid.*, 123-29.

[20]*Ibid.*, 217-21

[21]Drew, *Virginia and Truckee. . . Car No.* 22, 3.

[22]*Ibid.*; James H. White, Jr., *The American Railroad Passenger Car* (Baltimore: Johns Hopkins University Press, 1978), 594.

[23]Klein, *Life and Legend*, 263.

[24]White, *American Railroad Passenger Car*, 579.

[25]*Ibid.*, 594.

[26]*Ibid.*, 595.

[27]Drew, *Virginia and Truckee Railway . . . Car No.* 22, 8-9.

[28]White, *American Railroad Passenger Car*, 579.

[29]*Ibid.*, 579-81.

[30]*Ibid.*, 593.

[31]*Ibid.*

[32]*Ibid.*, 597-98.

[33]*Ibid.*, 600.

[34]Drew, *Virginia and Truckee Railway . . . Car No.* 22, 9.

[35]August Mencken, *The Railroad Passenger Car* (Baltimore: Johns Hopkins University Press, 1957), 83-86.

[36]Berlin-Zossen Railroad, *The Berlin-Zossen Electric Railway Tests of 1903: A report on the test runs made on the Berlin-Zossen Railroad in the months of September to November 1903*, Franz Welz, trans. (New York: E. E. McGraw Publishing Company, 1905), 15-16.

[37]*Ibid.*, 32.

[38]White, *American Railroad Passenger Car*, 579; Raymond S. Zeitler, *Self-Contained Railway Motor Cars and Locomotives* (Chicago: American School, 1921), 30.

[39]Drew, *Virginia and Truckee . . . Car No.* 22, 6.

[40]White, *American Railroad Passenger Car*, 595.

[41]*Ibid.*, 117-30.

[42]*Ibid.*, 131.

Notes

[1]Lucius Beebe and Charles Clegg, *Steamcars to the Comstock* (Berkeley: Howell-North Books, 1957), 9.

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[29]*Ibid.*, 579-81.

[30]*Ibid.*, 593.

[31]*Ibid.*

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[42]*Ibid.*, 131.

[43]*Ibid.*, 595.
[44]Drew, *Virginia and Truckee . . . Car No. 22*, 6.
[45]*Ibid.*, 10.
[46]*Ibid.*, 8-9.
[47]White, *American Railroad Passenger Car*, 596-602.
[48]Drew, *Virginia and Truckee . . . No. 22*, 9.
[49]White, *American Railroad Passenger Car*, 605-11.
[50]*Ibid.*, 613.
[51]*Ibid.*, 615.
[52]Drew, *Virginia and Truckee. . . Car No. 22*, 18.
[53]*Ibid.*, 18-19.
[54]*Ibid.*, 21-22.
[55]*Ibid.*, 24.
[56]*Ibid.*, 25.
[57]Dangberg, *Carson Valley: Historical Sketches* (Minden: Carson Valley Historical Society, 1972), 120.
[58]Drew, *Virginia and Truckee. . . Car No. 22*, 57.
[59]Wyatt, *Virginia and Truckee 4-6-0 Locomotive No. 27*, Sec. 1, 4.
[60]Beebe and Clegg, *Steamcars to the Comstock*, 21.
[61]Drew, *Virginia and Truckee . . . Car No. 22*, 61-62.
[62]*Ibid.*, 70-72.
[63]*Ibid.*, 122.
[64]*Ibid.*
[65]*Ibid.*
[66]*Ibid.*, 2.

In Memoriam

Hal Rothman

1958-2007

Perhaps no historian ever made a bigger splash on Nevada history in a shorter time than Hal Rothman. Sadly, his time proved far too short: he died on February 25, 2007, of Amyotrophic Lateral Sclerosis, commonly known as Lou Gehrig's disease. He was 48.

Rothman was born on August 11, 1958, in Baton Rouge, Louisiana, to a math professor and a political science professor. Naturally, he had no intention of following them into the academy and briefly left school to work as a roadie for rock 'n' roll bands. He returned to Illinois to complete a B. A. in history and later earned his advanced degrees from the University of Texas at Austin. In 1987, he joined the faculty of Wichita State University, where he taught for five years and ran the public history program. He merged that field with his work in environmental history, producing several histories of national parks and monuments for the federal government while spending a decade as editor of *Environmental History Review*, which became *Environmental History* during his tenure. There he did a great deal to shape how and what other scholars read about that growing and important field, and he wrote several important books on the subject.

But if western historians knew Hal early on for his work in environmental history, more of them and many outside of academe would get to know him for his work as a history professor at UNLV. Hired in 1992, and eventually rising to distinguished professor of history, he immersed himself in studying Las Vegas, talking and writing about it in scholarly and public forums, locally, nationally and internationally. In 1998, his award-winning *Devil's Bargains: Tourism in the Twentieth Century West* analyzed the role of tourism in shaping Las Vegas and other western communities—and how those communities shaped both tourism and themselves. He co-edited a collection of impressionistic articles on Las Vegas, *The Grit Beneath the Glitter*, and, in 2001, published his own analysis, *Neon Metropolis: How Las Vegas Started the Twenty-First Century*. His connection to state historical activities included service on this journal's editorial board and an article, "Partners in the Park: Navajo People and Navajo National Monu-

ment," published in the Fall 1993 issue, as well as membership on the State of Nevada Historical Records Advisory Board.

Hal wrote ten books and six edited volumes, in addition to numerous articles and presentations, and at least two more books are in the pipeline on a variety of western and environmental topics. He also contributed op-ed columns and essays to a variety of local, regional and national publications. He became a weekly columnist for the *Las Vegas Sun* and won two Nevada State Press Association Awards for his work.

Hal also became known as a "quote machine" because he became a popular media presence. In 1996, the Arts & Entertainment cable network aired a four-hour documentary on Las Vegas whose guiding creative force was Susan Berman, the author of a book about her life as the daughter of mobster Davie Berman. Rothman served as the leading on-camera historical voice, beginning a decade in which he frequently offered his views on a wide variety of issues affecting the city. He appeared everywhere from documentaries on The Travel Channel to columns by George Will and news stories on CNN.

Hal's walls and mantelpiece became crowded with awards and honors. In 2004, he was inducted into the Nevada Writer's Hall of Fame and received the Harry Reid Silver State Research Award, the highest honor for scholarship at UNLV, where he also held the title of distinguished professor of history and won the Alumni Association Distinguished Faculty Award and became a Marjorie Barrick Distinguished Scholar.

Through all of his scholarly work, he was devoted to his family. Indeed, it was when he was bringing his family home from an overseas vacation that he detected the signs of what the Mayo Clinic later diagnosed as ALS. He was devoted to his wife Lauralee; his daughter, Talia; his son, Brent; his parents, Neal and Rozann Rothman; and his sisters, Elaine Rothman-Tang and Ann Wise. They returned that love, caring for him as he lost the ability to move and speak.

I cannot pretend to have been a close friend. I was part of a vast circle of people he knew. We saw each other now and then at Cashman Field, where he would take his son to see the minor league Las Vegas 51s play baseball and marvel that I, a Dodger fan, at least had the good sense to marry a Giants fan, or at the Thomas & Mack, where Hal was a regular as faculty representative to the NCAA and as a diehard Rebels fan. After watching him one night, I once suggested that he would become the first fan the referees ever called for a technical foul. He was not terribly amused, mostly because, as he explained, he was right and the referees were wrong.

This article might make you think that Hal was hardly the typical scholar. You would be right. If you thought of professors as quiet pipe smokers who wear tweed jackets with elbow patches, Hal was glad to stand that impression on its head. He was a physical fitness fanatic who described history as a "contact sport," and loved to argue and laugh, whether talking about Las Vegas or explaining his use of the "post-modern salute" as he drove to and from his of-

fice. His displeasure was that others were slowing him down because he had a lot that he wanted to do and say. Only his illness slowed him down, but his influence will long survive.

As Hal's colleague David Wrobel wrote, "Hal's brave struggle with this terrible disease was also an enormously expensive one." Contributions can be made to the Hal Rothman Family ALS Fight Fund, Account # 81005997, Silver State Bank, 8901 W. Sahara Avenue, Las Vegas, NV 89117. Hal's family requests donations to the ALS Foundation or Henderson's Midbar Kodesh Temple, which he co-founded. UNLV has established a Hal Rothman Tribute Fund for History; please send donations to UNLV Foundation, Box 451006, 4505 S. Maryland Parkway, Las Vegas, NV 89154.

Michael Green
Editor-in-Chief

Book Reviews

A World of Its Own: Race, Labor, and Citrus in the Making of Greater Los Angeles, 1900-1970. By Matt Garcia (Chapel Hill: University of North Carolina Press, 2001)

A volume in the University of North Carolina's distinguished series "Studies in Rural Culture," *A World of Its Own* investigates the social and cultural experiences of Mexicans and Mexican Americans working in and around orange groves of the San Gabriel and Pomona valleys of the Los Angeles basin. The title pays homage to Carey McWilliams, who observed in 1946, "This citrus belt of peoples, institutions, and relationships has no parallel in rural life in America. . . . It is a world of its own." While McWilliams's brief analysis of the citrus belt is enduringly brilliant, Garcia's book provides a full-scale portrait of the "peoples, institutions, and relationships" of this world. In doing so, *A World of Its Own* enriches the historiographies on citrus, Mexican Americans, and race relations—all fields to which McWilliams made early and lasting contributions.

The historiography on California citrus per se is surprisingly sparse, with only two monographs in recent years. One is a history of the science of growing oranges while the other, Gilbert González's superb *Labor and Community*, is closely related to Garcia's book. González also focuses on Mexican communities or *colonias* surrounding the groves, though his study looks at Orange County. For Chicano history, *Labor and Community* represents a shift in focus to a rural rather than urban setting. While accepting that Orange County fits the rural rubric, Garcia distinguishes his study by noting that the San Gabriel Valley was an urban-rural hybrid. But the most significant differences between the two books reside not in the varied geographies of the *colonias* each author studies but in the way each author studies them. Garcia's attention to space, the construction of race, and the cultural expression of resistance and identity distinguish his book from González's more traditional community study.

Garcia's first two chapters, taking up the development of the citrus industry and the formation of the *colonias*, set the scene. In doing so, Garcia does not simply offer up the setting as background. Influenced by geographers such as Edward Soja as well as new historical work on racial formation, Garcia reveals how the shaping of space in the valleys was intertwined with the making of race. While the physical environment took on a new look as citrus groves were planted in the region, so did the social and cultural environment. Literal and figurative borders were established. In these chapters, Garcia puts spatial theory to good use in mapping the region in a way that at once delineates the exclu-

sionary practices of the dominant Anglo class and the ways in which Mexican and Mexican Americans made the most of the spaces they inhabited. Garcia sees "community space as a site of conflict and resistance" (p. 50). Though white reformers and growers sought to shape the living space and therefore the lives of citrus workers, Garcia convincingly argues that residents were able to "repel white efforts to control and manipulate Mexican worker communities" (p. 73). Later chapters look at the "cannery culture" of female packers, labor in the groves, the impact of *braceros* on the *colonias*, the development of civil-rights activism in the postwar era, and the role of music and dance halls as sites of intercultural conflict and exchange. Ambitious both in conception and in scope, Garcia's book creates a full portrait of the agency and creativity of his historical actors even as the lines of power and domination are brought into focus. Particularly valuable is Garcia's nuanced treatment of intercultural cooperation and tension as well as divisions within the *colonias*.

Garcia's analysis and prose are lucid, even if discussions of theorists and acknowledgments of the work of other historians fill the narrative. Modest in tone, Garcia gives credit constantly, not only to other scholars but also to the people who shared their memories with him. He shows great respect for his historical subjects. Not all of them fully come to life on the page, but Garcia's approach allows us to see them as flesh-and-blood people, not nameless informants. For his more sympathetic actors, such as the brilliant and crusading Ignacio Lopez, Garcia shows Lopez's limitations and how not only some whites but other Mexican Americans contested his views and strategies. Garcia strives to understand fully the context in which each actor thought and worked, even when he is not sympathetic to them. In his fascinating chapter on the Pudua Hills theater, which hired young men and women from the *colonias* to perform plays that romanticized Spanish California, Garcia uncovers the stereotypes held by the theater's owners and patrons, who thought of themselves as "friends of the Mexican." When quoting one who attributed the "naïve naturalness" of the theater's Mexican performers to the way "old timers teach it to new ones just like young monkeys are taught to hang by the tail," Garcia shows restraint. Acknowledging that this person was trying to praise the actors, Garcia notes that her words "denied the performers recognition as creative artists, and had the unfortunate effect of denigrating and belittling all Mexican people" (p. 143). Though he could have closed his analysis of the theater by exposing this form of racism, Garcia does not take this easy exit. He wants to reconstruct the power plays going on in and around the actual plays on the stage. But to do so, he has to find a way to see, and see through, the various and changing masks his actors put on. Eric Lott's work, which has done this for blackface minstrelsy, gives him some leads. In the end, Garcia makes an intriguing, if not fully realized, case for seeing the Mexican players as what Gayatri Spivak calls strategic essentialists (p. 152).

Some readers might wish for a sparer narrative. Each chapter is laminated: it has history of institutions, testimonies of people involved, and cultural theory

applied to the situations. Some readers will appreciate most the recounting of the experiences of ordinary denizens, who are made real with their own words (Garcia makes excellent use of scores of interviews, many of which he conducted). Others may be drawn more to how Garcia situates his work in relation to cultural theory and racial identity. But if Garcia had chosen to lop off or condense one side of this history, he would have lost its strongest claim to broad significance. By grounding cultural history and cultural studies in social history, *A World of Its Own* presents a promising way of delivering a history from the bottom up that also pays attention to the expressions the historical actors wore on their faces.

Years ago, McWilliams, in searingly clear prose and analysis, showed us how the interdynamics of race, space, and labor shaped life in this separate world. Though Garcia cannot match McWilliams's taut verbal brilliance, his book—rigorous, intellectually probing, and deeply concerned with social justice—honors the master interpreter of California not only with its title but also with its valuable contribution to several historical fields that McWilliams first surveyed.

Douglas Cazaux Sackman
University of Puget Sound

The Human Tradition in the American West. Edited by Benson Tong and Regan A. Lutz (Wilmington, Del.: Scholarly Resources, Inc., 2002)

The readings assembled in *The Human Tradition in the American West* make up a collection that is, like nearly all anthologies, uneven in its execution, the clarity of its writing, and the relevance of its various arguments for the book's central thesis: That the history of the American West is best told through examining the mosaic of the lives of many people—"high and low, powerful and weak, known and unknown . . . each contributing in a large or small way to the unfolding of the human tradition." The editors of the work claim that this approach sets them squarely into the tradition of the New Western History as represented in the works of Patricia Limerick, Richard White, and others. At the same time, they note that their multicultural approach is not mutually exclusive with the Turnerian thesis of the West as cultural region. The editors further note that the boundaries of the region they call the West were not naturally determined but were set by social and political factors. Herein, they demonstrate a remarkable lack of understanding as to the origins and genesis of regions, for human factors determine regional boundaries everywhere in the world far more than natural

ones. The West is no exception and should not be treated exceptionally—as historians persist in doing—as a region shaped not by terrain or climate or soil or vegetation but by people. "Region" is always expressed in a cultural context and is a cultural description, and one suspects that, if historians delved into the literature of geography a bit more deeply, some of their pronouncements about what is and is not a region might not sound—to a geographer, at least—quite so naïve.

That said, the introductory essay by the editors and the thirteen essays (all of them in the nature of brief biographies) that follow offer some fulfillment of the editors' objective of getting at the story of the West through explication of the lives of "normal people." I am not exactly certain how one defines normal, but in almost any definition, I am reasonably certain that among those profiled in the book, some would hardly fall into the "normal" category. We do not find in the collection biographies of a Texas oilfield roughneck, a Wyoming cowboy, a California fisherman, or a Nevada miner. But we do find biographies of people who, if not measuring up to the standards of Thomas Carlyle (who claimed that "the history of the world is but the biography of great men") were nevertheless significant actors on stages of differing levels of importance: Someone like Supreme Court Justice William O. Douglas might be considered as "great" while someone like the missionary wife Eliza Spaulding might not. But none of the subjects of the essays are the nameless and faceless persons who make up the vast majority of any population. So, at the very outset, the goal of interpreting the West by examining both "high and low" or "powerful and weak" teeters on the brink of self-destruction.

None of this should be taken to mean that the work is flawed to the point that reading it is not instructive. As well known as people like Spaulding or Douglas may have been (and, to an extent, still are), other figures in the book come closer to the ideal of just plain folks: Joseph Brown and Robert Burnette—American Indian activists; Francisco Javier Clavijero and Maria Amparo Ruis Burton—Hispanic writers, the former an eighteenth-century Jesuit priest whose descriptions of the American Southwest would influence von Humboldt, and the latter a native *Californio* who lived through the American takeover of her country and wrote a novel spanning many of the important historical events of the middle years of the nineteenth century; William Jefferson Hardin, a black Wyoming legislator, and Henry Ossian Flipper, the first black graduate of the United States Military Academy at West Point and first black commissioned officer in the United States Army; Harvey Milk, the gay activist and politician of San Francisco; white "boomers" Henry de Groot, who almost single-handedly started the Arizona gold rush of the 1860s, and Eugene Pulliam, a newspaperman partly responsible for the expansion of Phoenix and the Valley of the Sun; female professionals, teacher Clara True and physician Margaret Chung. Reading their stories is worthwhile and interesting; I remain unconvinced, however, that I know more about the American West for having read them.

John L. Allen
University of Wyoming

Water in the West: A High Country News Reader. Edited by Char Miller (Corvallis: Oregon State University Press, 2000)

On occasion, the nation's leading environmental newspaper, *High Country News*, assembles a series of articles on a key topic and publishes either a special issue or an anthology. In 1987, this Paonia, Colorado biweekly published *Western Water Made Simple* (Island Press) in an attempt to explain the historical and legal intricacies behind the West's most scarce and precious substance. That book continues to be an often-consulted primer on the topic. *Water in the West* continues this tradition by including some of the most important articles the newspaper published on modern water issues during the 1980s and 1990s. The result is a superb introduction to an issue that continues to perplex and divide westerners in the early twenty-first century.

Several years of drought, shifting demographic patterns, a burgeoning western urban population, new fiscal realities, and demands from Native-American groups all make the West's water environment especially volatile today. In addition, politicians, some interest groups, and others hope to reopen consideration of apparently long-dead water projects, submit revisions of others, or push stalled ones to completion. In this milieu, *Water in the West* contains something for almost everyone interested in the region's water problems. Editor Char Miller has divided the book into topics ranging from the salmon issue, Glen Canyon Dam, the Central Utah Project and Central Arizona Project, through urban water issues, Las Vegas, and watershed restoration, to a timely consideration of Native-American water problems.

The volume contains more than forty articles, so finding common threads among them is difficult. As Ed Marston admits in his afterword, all of the pieces except one or two focus on local issues. Few big-picture observations are made. What emerges, though, is a portrait of the late twentieth-century American West's fragmented water situation that illustrates the complexities in dealing with the region's hydraulic future.

The late Marc Reisner (author of the contemporary classic *Cadillac Desert*) in a 1995 *High Country News* article summarized some of western water's most important shaping dynamics. The Bureau of Reclamation built the West's water system mainly to serve a rural constituency. Founded more than a hundred years ago, the Bureau has tried to perpetuate the agrarian ideal of nineteenth-century America in the arid West. As Reisner notes, the West's "population has become overwhelmingly urban" over the twentieth century (p. 30-31). Thus, the region will continue to witness struggles by cities to bend or alter existing water laws to more easily effect the transfer of water from the countryside to urban areas. Several other articles echo this theme to varying degrees.

Another provocative series of articles explores the Northwest's salmon problem, with support for dam breaching, a common theme running through several authors' perspectives. Other sections analyze both the Central Arizona

Project and the Central Utah Project, noting that the former was approved and largely built during "a time of boom, but came to life during a time of bust" (p. 152). Native-American water issues are discussed both in the context of the Central Utah Project and in a separate series. As many scholars have remarked, the West "faces a time bomb" with Native-American water claims, many still unresolved and in various stages of the legal system. Two of the book's most interesting portions examine the question of watershed restoration and water allocation and management. A fascinating article, "Raising a Ranch from the Dead" chronicles the story of the New Mexican Sid Goodloe's generations-long struggle to revive his rural land by reshaping it to its condition of more than a century ago when native trees and grasses flourished and small streams abounded. Goodloe's modern, productive ranch is an example of the benefits of restoring the land's watershed.

Dan Luecke's 1990 article, "The Politics of Western Water Have Changed Forever," optimistically suggests that political trends from the 1970s through the defeat of Denver's planned Two Forks Dam (1989) indicate that the West might be moving away from expanding its resource base through dam construction. George Sibley's fine 1996 piece on Glen Canyon Dam echoes this optimism, but adds a note of caution about the future of additional dam proposals. While the Bureau of Reclamation has created a more diverse bureaucratic culture, including more ecologists and biologists in what was formerly an engineering haven, "it would be naïve to think that the old-time religion [of dam advocacy] has simply disappeared, and isn't just lying low in pockets and enclaves, hoping for better times" (p. 120). Sibley seems to be correct. As the region's political reaction to the recent drought suggests, old scenarios and plans for augmenting water supply remain in larger supply than the region's dwindling water. The first reflex of many politicians to several years of drought is usually to dust off and revise old reclamation project proposals.

Marston's provocative afterword assesses the progress and significance of the environmental movement and its impact on traditional Western attitudes toward water and reclamation planning. Marston believes that the traditional high priests of regional water planning—water attorneys, politicians, and federal bureaucrats—no longer hold total sway over the area's hydraulic future. Because the West's "economics and values" are in transition, new forces are gaining input into water decisions. As Marston admits, most of the stories in *Water in the West* are premised on the idea that rivers, and indeed society, were "better off before they were dammed" (p. 336). Thus, Marston suggests that the power behind the environmental movement is its nostalgia for an earlier, simpler time. In fact, he sees the two terms as interchangeable: "the environmental-nostalgia movement." This book is thus both a celebration of the accomplishments of the "new forces" at the western decision making table, and a roadmap to the future.

Water in the West is an anthology with all the strengths and weaknesses of such a work. Some articles are stronger and better written than others, but few

readers will fault the inclusion of any of the articles or the choices made in how to organize such an immense topic. The only suggestion for improvement would be a short introduction to each section and article to give important background information on the issues for the sake of continuity.

Steven C. Schulte
Mesa State College

Ranching, Endangered Species, and Urbanization in the Southwest: Species of Capital. By Nathan F. Sayre (Tucson: The University of Arizona Press, 2002)

When J. Robert Oppenheimer tapped his beloved New Mexico to be the site of the highly secret atomic-weapons research program during World War II and the place where the thunderous first atom-bomb tests would be conducted, he did so because the area was so rural, so remote. The only imaginable fallout would be the possible death of the odd cow.

Oppenheimer's decision, and the lethal weapons that were its consequence, forever altered the geopolitical landscape. It also had earthshaking regional ramifications. The federal wartime spending that poured into the Southwest, and expanded exponentially during the Cold War, flowed through innumerable military installations and research facilities, reconfiguring local economies. The new money brought more and better-paying work, pulling labor out of agriculture and ranching, and luring migrants to these sparsely populated states. The impact has been astonishing: Within sixty years, Houston, San Antonio, El Paso, Albuquerque, Las Vegas, Tucson, and Phoenix have mushroomed in physical size and commercial import, swallowing up farm and range and converting them into what the historian Kenneth Jackson dubbed the crabgrass frontier. How pervasive this has been was revealed in the mid 2003 report of the Census Bureau indicating that suburbanization continues to be the most intense in the southwestern states; nine of the top ten fastest-growing areas are in the southern parts of California, Nevada, and Arizona. Oppenheimer would not recognize the landscape he helped transform.

How apt that those grazing quadrupeds about which the famed physicist was so unconcerned are central to Nathan Sayre's absorbing *Ranching, Endangered Species, and Urbanization in the Southwest*, an analysis of the history of a single, hubndred-thousand-acre ranch called Buenos Aires, in the Altar Valley, southwest of Tucson. In the mid 1980s, the United States Fish and Wildlife Service acquired this once-productive livestock operation, expelled the cattle, turned it

into a wildlife refuge, and hoped there to restore breeding populations of the already extirpated masked bobwhite. Controversy has swirled around the project ever since. For western ranchers, the Buenos Aires sale was just one more reminder of urban encroachment on the traditional western economy; ecotourists would gape where cowboys once rode, roped, and branded. As they sought to defend their life and work with such catchy bumper-sticker slogans as "Ranchers Were the First Conservationists," environmentalists counterattacked. The unrestrained appetites of livestock and their human tenders had destroyed indigenous grasslands and watersheds, they argued, and only the intervention of federal land managers could restore the brutally mishandled habitat.

In *The New Ranch Handbook* (2001), Sayres offered up a guide for conservationists and ranchers who wished to unite around the rehabilitation of the western range. In his new, more comprehensive work, he similarly distances himself from the "atmosphere of distrust and hyperbole" enveloping the Buenos Aires refuge, a toxic debate that has "degenerated into a largely symbolic contest over whether cattle grazing in the arid and semiarid West is 'good' or 'bad'" (p. xiv). Dismissive of these argumentative abstractions, he proposes that science can best unwrap the Altar Valley's complex environmental history. Setting the land's evolving ownership—from ranch to refuge—in a wider theoretical context, Sayre depends in part on David Harvey's argument that the "inner contradictions of capitalism are expressed through the relentless formation and re-formation of geographical landscapes" (p. xxi), a focus also shaped by social theorist Pierre Bourdieu's interest in the creation of "symbolic capital." These influences lead Sayre to his "principal theoretical task:" the examination of the "processes that have produced and reproduced economic, symbolic, and bureaucratic capital over time" (p. xxiv).

That framework sounds more daunting than it is. In nine well-drawn chapters, Sayres, who was a postdoctoral research associate with the Agricultural Research Service-Jornada Experimental Range (now an assistant professor in U.C. Berkeley's geography department), details the complicated (and unsuccessful) struggle to reintroduce the masked bobwhite (for the modest price, critics allege, of $31,000 a bird) probes the impact of private capital on Altar Valley and its human and ecological relationships since the nineteenth century deconstructs the Fish and Wildlife Service's flawed planning processes for the Buenos Aires National Wildlife Refuge that depended on incomplete scientific analysis, and which have failed to repair the battered ecosystem, and finally tackles contemporary assertions of BANWR's value as a refuge for wildlife and humanity.

In the end, Sayre concludes that the arguments over BANWR are strangely miscast. The brawl is not really about cattle and a bird subspecies. Instead, the latest form of management—a federal refuge—depends on, even as it resists, the urban impulse and the growing social need of "a habitat for leisure." Here,

Sayre locates what he considers common ground for those who have fought so bitterly in the past. "Today the ascendant land use seeks to exploit public lands . . . as outsized backyards for suburban residents" (p. 233), and the only coalition capable of stopping this kind of cultural appropriation, and the subdivisional sprawl on which it depends, is one of ranchers and environmentalists; for all their differences, they alone advocate sustained conservation on a grand scale.

Char Miller
Trinity University

America's Second Tongue: American Indian Education and the Ownership of English, 1860-1900. By Ruth Spack (Lincoln: University of Nebraska Press, 2002)

Power and Place: Indian Education in America. By Vine Deloria, Jr., and Daniel R. Wildcat. (Golden, Colo.: Fulcrum Resources, 2001)

Since the publication of the Meriam Report in 1928, scholars and bureaucrats have produced an immense body of literature on American-Indian education. Early academic studies examined the assimilationist impulse behind the boarding-school system and emphasized its destructive impact on native cultures and identities. More recently, historians have explored Indian strategies of resistance and adaptation, highlighting the many ironic and unintended consequences of the government's educational campaign. They have also shifted their attention from large, off-reservation institutions to smaller, on-reservation boarding and mission schools. The resulting case studies have revealed significant variations within the system and many examples of Indian agency, but the exercise has begun to grow stale with repetition. Meanwhile, complains Lakota scholar Vine Deloria, federal administrators continue to generate endless education reports with the same tired refrain: "We are not doing anything, we need more money, and Indians need to be involved" (p. 151). These two books attempt to break these unproductive patterns and advance our understanding of Indian education in the past and present.

Ruth Spack, a specialist in teaching English to speakers of other languages (TESOL) makes an important contribution with *America's Second Tongue*. Employing literary and post-colonial theory as well as traditional written sources, she transcends the conventional focus on school policies and student experiences by exploring the evolution and effects of English-only instruction.

Many scholars have noted the use of English as a tool of colonial domination, but without systematically explaining how schools taught the language or how Indian students used it to represent themselves and their colonizers. By taking ownership of English, Native Americans could effectively talk back to civilization in its own tongue, creating one of the major "translingual ironies" Spack identifies in her study. "Even as English functioned as a disruptive and destructive instrument of linguistic and cultural control," she contends, "it was also a generative tool for expressing diverse ways of seeing, saying, and believing" (p. 11).

America's Second Tongue surveys this complex process from several vantage points on both sides of the language frontier. Starting in the 1870s, Richard H. Pratt and other federal officials began pushing for English-only instruction, which they deemed essential to the success of their "civilizing project." It is significant that bilingual mission schools resisted Indian Office mandates that threatened their tried-and-true methods, while native parents often responded more pragmatically. They wanted their children to learn English, observes Spack, but "*only English*—not *English only*" (pp. 41-42). The imposition of a monolingual curriculum posed daunting challenges for Euro-American and Native-American instructors alike. Although the limited evidence suggests that pedagogy improved over time, non-Indian teachers rarely overcame their ethnocentrism or dependence on translators. By contrast, native instructors such as Sarah Winnemucca and Luther Standing Bear maintained pride in their tribal identity and values even as they versed their students in white ways. They became role models and cultural mediators, using their published memoirs "to reach a European American audience with new representations of Native people, including their own roles as intellectuals" (p. 82).

Spack employs the "captivity narratives" of boarding-school graduates to investigate how Indians used their newly acquired English skills. Like native teachers, she finds, students often engaged in a selective process of translingualism, "making qualitative decisions about which aspects of language to incorporate and which to reject or transform" (p. 112). They also used English as a defense against the dominant society, publishing books that criticized government policies and countered demeaning stereotypes of their people. The Lakota author Zitkala-ša (Gertrude Bonnin) infused her fiction with "subversive messages" about gender roles and native women while appealing to a mass audience hungry for romantic images of Indians. By mastering the language, she "[used] English for her own purposes, not those for which her English-only education was intended: obliteration of everything Native in America" (p. 152).

While Spack's affirmation of Indian agency will not surprise scholars familiar with boarding-school histories, her book sheds new light on the role of language education in both imposing and resisting colonial regimes. The chapter on pedagogy, in particular, deepens our knowledge by bringing the discussion

down to the classroom level and explaining how English was actually taught. Instructors differed widely in their attitudes and approaches, despite a shared ideology of assimilation, and some Euro-Americans initially disagreed with the English-only curriculum. Similarly, Spack recognizes that native responses to English education varied across social, cultural, political, and generational lines. At times, her close textual analysis cannot fully compensate for a shortage of documentary evidence, but she uses theory effectively without allowing it to choke her prose. The one exception comes in the final chapter, where the narrative stumbles over jargon, and readers unfamiliar with Zitkala-ša's work can lose their way in a thicket of literary references. Some scholars may also question the sincerity of Spack's last-minute call for decolonizing Native American studies, which rings hollow coming from a non-Indian author whose freshly minted book contains no contemporary oral interviews. Her discussion of current efforts to "indigenize" Indian education provides an interesting postscript, however, and there is indeed "a rich story to be told by Native people of how they have taken ownership of English and shaped it to accommodate new and powerful forms of expression" (p. 178).

Power and Place, a collection of fifteen essays by Vine Deloria, Jr. (Standing Rock Sioux) and Daniel R. Wildcat (Muscogee), embodies both the translingual irony and the demand for intellectual sovereignty noted in *America's Second Tongue*. As Wildcat states in his preface, the authors propose "nothing less than an indigenization of our educational system. By *indigenization* I mean the act of making our educational philosophy, pedagogy, and system our own, making the effort to explicitly explore ways of knowing and systems of knowledge that have been actively repressed for five centuries" (p. vii). Their target audience is the Indian educational community, not academic historians or general readers, but they present a powerful indictment of past policies, an affirmation of Indian survival, and a general prescription for reform. In alternating essays that blend history with philosophy, the authors survey the obstacles and opportunities native students encountered from elementary schools to college campuses. The entire educational system, they insist, "remains too often directed toward cultural assimilation into the dominant society." Indian educators are uniquely positioned to change things, though, and the book is meant to help them "explore creative ideas and ways of establishing healthier Indian communities and sovereign Indian nations" (p. 19).

Deloria takes the lead in identifying the core issue as a metaphysical conflict between native and western systems of knowledge. Traditionally, he explains, native people relied upon the concepts of power and place to make sense of the world around them. They recognized that everything possessed spiritual power, enabling them "to discern immediately where each living being had its proper place and what kinds of experiences that place allowed, encouraged, and suggested. And knowing place enabled people to relate to the living entities inhabiting it" (pp. 2-3). Today, native students confront the western scientific

worldview, which derides indigenous metaphysics as superstition and purports to describe with certainty the sum total of human knowledge. It is reductionist rather than holistic, abstract rather than experiential, technologically-focused rather than humanistic. Moreover, since western science has become disconnected from religion, it encourages exploitive relations with the rest of the human and natural world. Although Indian students must pursue professional and technical training to gain employment and assist their people, Deloria advises them "to take time and make the effort to regain a firm knowledge of traditional tribal lore . . . . There is most assuredly a profound wisdom present in many things that the tribes have preserved" (pp. 4-5).

Wildcat, a professor of American Indian studies at Haskell Indian Nations University, largely reiterates and amplifies Deloria's arguments. While this call-and-response approach gives their essays a consistency often lacking in anthologies, it also makes for a somewhat repetitive reading experience. The authors' focus on "big-picture worldviews" (p. 16) provides a compelling vision of reform, but they offer few concrete suggestions beyond the development of policies and practices based on Indian metaphysics. The book is essentially a manifesto, useful as a statement of guiding principles for tribal administrators, teachers, students, and community leaders to follow in pursuing educational self-determination. Like most manifestos, though, it suffers from a tendency to make sweeping generalizations. The authors rarely acknowledge any diversity or evolution in academic thought, writing as if all scientists and scholars still held nineteenth-century attitudes, and their portrait of Native-American society seems equally simplistic. Still, there is no denying that the American educational system has not served native people well, and that much of the problem lies in persistent cultural differences and ethnocentric assumptions. As these books suggest, Native-American communities will have to take ownership of that system if they want it to protect and serve rather than erode their interests and identities.

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The Northern Navajo Frontier: Expansion through Adversity, 1860-1900. By Robert S. McPherson (Logan: Utah State University Press, 2001)

Navajo Trading: The End of an Era. By Willow Roberts Powers (Albuquerque: University of New Mexico Press, 2001)

Because the Navajo Nation occupies a physical space slightly larger than West Virginia (which ranks forty-first among the states in size) and proclaims itself the "largest Native nation" (>http://prez.nnden.org<) in the country, scholars and lay readers alike welcome frequent examinations of its experience. Both *The Northern Navajo Frontier* and *Navajo Trading* offer deeper insight into the ways in which the Navajo Nation has moved into its present condition. Written by a historian (Robert S. McPherson) and an anthropologist (Willow Roberts Powers), respectively, the publications represent the type of imaginative research preferred by scholars in all fields. McPherson's work draws on a wide range of sources to explain the unique ways the Navajo Nation expanded along its northern frontier in the last half of the nineteenth century. Simply put, McPherson views the Nation as a principal shaper of its own destiny. Powers's work examines the modern history of an institution also born in the last decades of the nineteenth century, the trading post. She takes a somewhat similar approach to McPherson about Navajo activism, when she perceives trading and its allied activities as fundamentally shaped by the Navajo.

Several underlying themes bind together these two excellent studies. The first is drawn from McPherson's analysis that describes the emerging sense of Navajo nationhood. The tribe's edge of self-confident persistence (which still reverberates in the twenty-first century) was ground on the coarse stone of the Bosque Redondo experience, then whetted through the friction applied by the crises that continued to face the Navajo Nation. A second commonality has been the importance of the trade that developed between the Navajo and the traders who established posts in and around tribal lands. The denouement of that institution is clearly described in Powers's work. As McPherson also emphasizes, the growth of the Navajo herds from 1860 to 1900 provided the meat and wool that could be sold to the outside world that the traders represented. In his treatment of the Navajo Nation, Peter Iverson has pointed out that it was the traders' role as brokers that gave them such influence for so many decades. A third constant in these discussions is not only the growing sense of Navajo nationhood, but also the persistent strength of its empowerment. Part of McPherson's thesis is that the Navajo used their presence and power as a nation in expanding the size of their reservation when most other native groups lost land.

McPherson's advantage when his book was initially published in 1988 was his interpretation that along the frontier in Utah the Navajo were active agents for change. At least in part, their strategies helped bring about Navajo territorial expansion in that area. McPherson sees the Navajo's fundamental weapons

as both their burgeoning tribal population and the dramatic expansion of their flocks in the last four decades of the nineteenth century. Their increased success as herders seemed a blessing to the Navajo, who saw these sheep not simply in terms of their numbers but also as representing a potential yield as sources of wool and meat. Perhaps only slightly less important was their desirability as a means to pay for all the ceremonies so fundamental to Navajo life. For these reasons, then, the Navajo bitterly opposed the eventual idea of a livestock reduction program. Although John Collier ultimately became the despised scapegoat connected with the New Deal policy of "plowing under" sheep, this idea had been under discussion for some time. Anglo wool growers were as enthusiastic about the Navajo reduction program as Collier and the New Dealers, since it would reduce their competition. But for the Navajo the livestock reduction was a catastrophe, especially for small herders who lost prime animals when the policy was implemented. Yet, as great as the tragedy was, it may be seen as another stroke on the whetstone of Navajo nationhood.

The impact of the traders and their trading posts might be less singularly dramatic than livestock reduction, but the complex web of the trade did enmesh the tribe for more than a century. As Powers points out in her study of the trading post, the Navajo looked to the trading post as both a place of trade and a place of solace. Because traders became central figures in Navajo economic life, their involvement was significant in both good times and bad for more than a century. In *The Navajo Nation*, Iverson describes them as playing the roles of "translator, buyer, trader, bartender," counselor, and undertaker. Both Iverson and Powers acknowledge the ways in which traders helped encourage refinements in both jewelry making and weaving, based largely on their understanding of off-reservation markets. Powers argues that "between 1890 and 1920 the trading post became an institution: a Navajo institution, in Navajo surroundings, responding in varying degrees to Navajo needs" (p. 53). That this was truly a Navajo institution may not be clear to all readers, since the traders practiced the golden rule of the marketplace—those who have the gold make the rules. Thus, traders determined prices, quality, quantity, and even the nature of the kinds of wool preferred in the trade. After World War II, the monopolistic and paternalistic nature of the traders and their posts proved their undoing. The posts ultimately depended on a system of credit that the traders controlled, not unlike the late nineteenth-century stores in company and mining towns or on large plantations farmed by tenants. Prices were high, goods often were inferior, and competition was absent. The awakenings of individual and tribal self-awareness, stirred by World War II, are reflected in the Navajo Tribal Council's action in 1948, when it tried to bring the traders under tribal control. This step is another example of Navajo self-assertion, a practice that would flourish in the next fifty years.

Both of these studies are extremely helpful to modern students of the Navajo experience. McPherson's work remains a thoughtful activist interpretation in which the Navajo Nation is portrayed as an integral determiner of its own

fate. Certainly, his exploration of how the reservation expanded appeals to those who refuse to accept the notion that tribes always were merely passive recipients of policies formulated and implemented by others (who had little real interest in the fates of those they managed). The other side of the coin may be Iverson's point that until Arizona and New Mexico became states in 1912, the lands being given to the Navajo were so isolated and inferior that granting them to the tribe was relatively inconsequential to the federal government. Like most moments ensnared in political reality, the growth of the reservation most likely resulted from an unwitting combination of several policies, not to mention unthinking decisions.

The strength of Powers's study lies in her extensive use of interviews with former traders and their families. As informative as these are, however, the glimpse they give into the past is one that is tinged with nostalgia for the way things used to be. From the historian's perspective this archive is both good news and bad: good news that these sources have been archived, but bad news in that we lack a balanced series of interviews with the Navajo who frequented the posts. What were their opinions of the post, the trader, and the treatment received? Tribal criticism and investigations of the last fifty years have told much about the general policies that frustrated the Navajo. Missing here are individual Navajo customers, many of whom no doubt traded at the same post over several decades (and perhaps through several generations) and thereby came to know the traders and their families, as well as the post's dynamics. More than 75 percent of the interviews listed are with trader family members; the remaining did come from Navajo people, since Powers spoke with some former tribal lawyers. Some future scholar might be well advised to launch such a project before the elders and their memories are gone.

These authors should be congratulated for two insightful studies. Although McPherson's original edition came out nearly two decades ago, it remains an important reminder to use sources creatively as we try to understand the varieties of the Native American experience. It also reaffirms Charles Hudson's admonition to read between the lines. Powers has followed that advice in using resources from the United Indian Traders Association Collection in the Cline Library of Northern Arizona University. The depth of these accounts indicates not only the richness of available resources but also the possibility of future research. Both authors deserve our thanks for the work they have done and the challenge they present scholars to continue expanding our investigations.

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The Meaning of Wilderness: Essential Articles and Speeches. By Sigurd F. Olson. Edited and with an introduction by David Backes (Minneapolis: University of Minnesota Press, 2001)

Many historians have argued that the real strength of the environmental movement lies in the actions and convictions of its advocates, and perhaps better than any of his generation, Sigurd Olson embodied this ideal of words and deeds. Through countless magazine articles, speeches, and books gleaned from his own encounters with nature, Olson awakened millions of readers to the critical need for environmental preservation. His gift of language with a common touch spoke to sportsmen and senators alike, forging a powerful coalition for wilderness preservation that earned him a deserved reputation as an environmental icon. In *The Meaning of Wilderness: Essential Articles and Speeches*, Olson's biographer, David Backes, has collected eighteen shorter works spanning Olson's public life from 1928 to 1973, in an effort not only to "make these important pieces more accessible but to show the development of Sigurd's philosophy during the span of half a century as a writer" (p. x). In this goal, Backes succeeds admirably.

Backes opens the collection with a chronology of Olson's life and a brief introduction that is part biographical sketch and part justification for the book, and then provides a thoughtful preface to each entry. While obviously believing that Olson's ideas and writing remain relevant in the twenty-first century, Backes is also keenly aware that Olson was a product of his time. Olson's audience was mostly male, and so were his pronouns, and his ideas on race and class sound dated in modern scholarship. Yet Olson also anticipated some of the most current debates in environmental history. Backes argues, for example, that Olson envisioned civilization and wilderness as "necessary complements to each other" (p. xxix), as he tried to forge a modern "middle-ground land ethic" (p. xxx). Olson was also one of the first to posit the idea of "racial memory," his belief that humans still retained a fundamental, biological attachment to and with nature, which, in turn, made wilderness preservation essential. As Backes' selections illustrate, these ideas developed over the course of Olson's career, though they were forged through Olson's intimate knowledge of and genuine appreciation for the hardships and wonder he experienced in the wild and remote Quetico-Superior canoe country (which later, due in large part to his efforts, became the Boundary Waters Canoe Area).

Olson's fondness for the outdoors, and his strenuous exertion in it, gave him an appreciation of nature that is evident in early selections such as "Reflections of a Guide" (1928), "Search for the Wild" (1932), and "The Romance of Portages" (1936). In these articles, Olson introduced his idea of racial memory, arguing that the wilderness provides a vital connection to the past and human history. He also lamented Civilian Conservation Corps efforts to improve and widen historic paths as a tragedy, asserting that "on the portages, we feel at

home with the country and it is here we really know the wild" (p. 26). Olson's wilderness advocacy began to mature following World War II. In "Flying In" (1945) and "We Need Wilderness" (1946), he warned of the destruction that new technology, such as airplanes, and a growing population would wreak on the environment, and proposed the creation of a national comprehensive zoning plan for recreation to protect "the experience of seeing new and unspoiled country" (p. 57). Olson considered this preservation essential: "wilderness to the people of America is a spiritual necessity, an antidote to the high pressure of modern life, a means of regaining serenity and equilibrium" (p. 61). Such subsequent pieces as "Those Intangible Things" (1954) and "The Spiritual Aspects of Wilderness" (1961) tried to counter "wilderness, land of no use" salvos by arguing that the real value of wilderness could not be calculated in dollars and cents. Anticipating the historian Samuel Hays's assertion that a healthy environment became part of the measurement of "the good life" in the postwar era, Olson wrote that "intangible values are those which stir the emotions that influence our happiness and contentment, values that make life worth living" (p. 84). And for Olson, wilderness preservation fit this definition perfectly. As he wrote in "The Spiritual Need" (1966), "unless we can preserve places where the endless spiritual needs of man can be fulfilled and nourished, we will destroy our culture and ourselves" (p. 144).

Sigurd Olson, like his colleagues Bob Marshall and Aldo Leopold, was a critical force in what he called "the thin rank of wilderness proponents [that] manned the ramparts" (p. 168) as the environmental movement grew to maturity during the twentieth century. His words and writings captured the hearts and minds of a society beginning to come to terms with the environmental costs of more than three hundred years of unbridled "progress." For scholars and Olson fans, *The Meaning of Wilderness* is both useful and illuminating. It constitutes a "good parts" collection of Olson's significant ideas and arguments and preserves some of Olson's writing that might otherwise have slipped into oblivion. Yet, despite Backes's best efforts to include only indispensable pieces, the book is, at times, repetitive, and as such it may have only limited use in the classroom.

Sara Dant Ewert
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Public Benefits of Archaeology. Edited by Barbara J. Little (Gainesville: University Press of Florida, 2002)

This edited volume on public archaeology summarizes a positive trend that has been gaining momentum during the last decade—that is, the encouragement of public involvement in interpreting and preserving archaeological and historic sites and sharing archaeological information with a popular audience. With the National Park Service at the forefront of the movement, in *Public Benefits of Archaeology* government agencies, professional organizations, academic institutions, museums, and publishers share their views on how to promote and enhance the public benefits of this discipline. The articles are diverse and several ideas are shared in the twenty-three chapters. This information will certainly be of interest to anyone involved in historic preservation, interpretation, or volunteer coordination. The idea for this book was conceived at a 1995 conference on the "Public Benefits of Archaeology" sponsored by federal and state governments and organizations such as the National Trust for Historic Preservation, the Advisory Council on Historic Preservation, and the Society for American Archaeology. The articles address four areas: finding common ground among archaeologists, academia, and the public; assessing the benefits of archaeology to a diverse public; absorbing lessons learned about ownership of the past; and using archaeology to encourage tourism and garner support for the future of this discipline.

The underlying message throughout the book relates to a radical rethinking of the archaeological profession's goals and intentions. Today's archaeologist faces a variety of new challenges requiring new skills and sensitivities. Aside from the continuous search for funding for research and museum exhibits, it takes a great deal of time to develop opportunities for the growing number bitten by the archaeology bug. Likewise, a significant effort is being devoted to public education and interpretive activities—as exemplified by the canoeing trail through a historic river district near Charleston, South Carolina (Harris, chapter 6), and self-guided walking tours through the African-American quarters at Mount Vernon and Monticello (White, chapter 12). The reason for this change of attitude is clear. Today's public, more actively involved and better educated than ever before, is interested in our history and cultural community, be it a nineteenth-century black railroad workers' neighborhood in Oakland or an 1850 Chinese settlement in old Sacramento (Praetzellis, chapter 5); others seek a better sense of their own cultural identities. As several authors note, most of our archaeological and historical resources are of local or regional value—monumental discoveries such as Tutankhamun's tomb are few and far between. Finding common ground with a diverse public means that we consider local perspectives, and solicit public involvement in preserving archaeological sites and historic landmarks.

Finding common ground requires the help of professionals in the academic community, who have been slower to get on board. Those professionals who

retain notions of exclusive ownership of the past are slowly adjusting to the growing consensus that all people and cultures own the past. As Brian Fagan states (epilogue), academics must overcome the fear of writing to a popular audience. The days are gone when this practice might hurt a serious scholar's credibility. The editors of *Archaeology* magazine, written for professional and amateur audiences alike, continually seek contributions from the scholarly community as public interest in archaeology keeps growing (Young, chapter 22). Unfortunately, the fascination with the past and the sharing of scientific data remain sensitive issues for some Native-American groups, who see no reason to share aspects of their cultural and religious heritage with the general public. Citing a history of insensitivity and abuses of human remains, contributors Thomas Crist and David Hurst Thomas are optimistic that these tensions will diminish as archaeologists and Native Americans build mutual trust and work together (chapters 9 and 11). The Hopi's position on archaeological research is helpful in this regard (Kuwanwisiwma, chapter 4).

The interdisciplinary nature of archaeology makes it of interest to other disciplines, such as history. James Whittenburg acknowledges that historic archaeological data, often available thanks to government compliance studies, have altered many traditional interpretations, including those of early Chesapeake society (chapter 7). In chapter 8, W. L. Rathje shares how his "garbology" studies have contributed to our knowledge of contemporary patterns of consumption. His findings have benefited government waste-management agencies and sociological studies.

As discussed in part IV, the benefits of archaeology are wide ranging and can have political elements. Around the country, promoting archaeology and cultural attractions is an increasingly popular way to involve the public while helping the economic status of communities. Tourism in cities like Phoenix (Ragins, chapter 18) and Santa Fe (Goddard, chapter 19) aids commerce, educates visitors, and instills a sense of community pride. However, for some archaeologists and residents, sharing irreplaceable archaeological sites and historical treasures with an endless stream of visitors is a double-edged sword, requiring a public-private balancing act. Still, most concede that growing populations and urban sprawl threaten our cultural heritage and that laws alone have done little to protect the past. Archaeologists feel helpless as they watch artifacts disappear from important sites and see rock art being stolen or defaced. From experience, land managers have realized that they cannot solve the problem alone. Most authors agree that only by seeking public involvement and teaching respect for the past in our schools—read about the Bureau of Land Management's "Project Archaeology" (Moe, chapter 15) and the ZiNj program (Jones and Longstreth, chapter16)—will our archaeological resources and national treasures be around for generations to come.

Renee Corona Kolvet
Bureau of Reclamation

Water and American Government: The Reclamation Bureau, National Water Policy, and the West, 1902-1935. By Donald J. Pisani (Berkeley and Los Angeles: University of California Press, 2002)

Rarely does a historian have an opportunity to remodel completely the field in which he sets out to write. Water historians have long known that the historiography of federal reclamation was in a scandalous condition, in need of a thorough housecleaning. After his 1992 book *To Reclaim a Divided West* brought order to the chaos of water law and conflict during the run-up to the Newlands Reclamation Act of 1902, Donald J. Pisani let it be known that he was going to undertake a history of reclamation. *Water and American Government*, therefore, came to us as one of the most eagerly anticipated books of recent years. It was worth the wait. There remains much to be done, of course, but at long last we have a clear, independent, critical assessment of the ideas and practices of the men who built federal reclamation, and of the conditions under which they worked. It can now be said, for the first time, that reclamation has a history, at least up to 1935.

The history of these thirty-three years is more or less a tragedy. Begun with the highest hopes for regeneration of American society and democracy, reclamation succumbed to politics, confusion, and mismanagement. Pisani gives a foretaste of his conclusion when he ends his preface, "the grandeur of Boulder Dam masked a failed dream" (p. xvii). But that is not really news. What is new and impressive is the carefully researched and compellingly argued treatment of the constituent elements of the tragedy. Pisani's chapter on the ideology of homemaking reveals the essential confusion of policy and politics in this core idea, and his analysis of the perils of public works makes clear just how difficult it was to construct a large and complex program within the federal system, and with the tools of a government just learning its way. Before 1920, the government had produced what he terms an administrative morass (p. 96). Moreover, he shows that capitalism in the 1920s and 1930s changed the very character of farm life itself; by that time, no one wanted what reclamation was offering.

Several elements of this book deserve particular note. As it is about national water policy, it ranges beyond the Bureau of Reclamation to consider other agencies, e.g., the Department of Agriculture and the Army Corps of Engineers, for which water was central to their missions. Second, although Pisani is studying national policies, he includes a chapter on local experience on the Minidoka Project in Idaho. He also writes of the relationship between the Bureau of Reclamation and irrigation on Indian reservations. These chapters appear in service to one of the main tenets of his work in resource history over the last two decades, that "studied from the top down or bottom up, government is a series of interlocking institutions and a process of negotiation, not just a set of formal policies" (p. 292). In these ways, Pisani raises the bar for future historians of reclamation.

In his conclusion Pisani situates his own work relative to major books in the field by Marc Reisner, Donald Worster, and Samuel P. Hays. He offers short shrift to Reisner, and more extensive and considered dissent from the conclusions of Worster and Hays. And he finds himself at the end in conversation with an impressive range of political scientists and other students of government, in pursuit of the relationship of the reclamation story to the shape of twentieth-century government generally. His concluding chapter will surely attract and hold the attention of scholars interested in more than water history.

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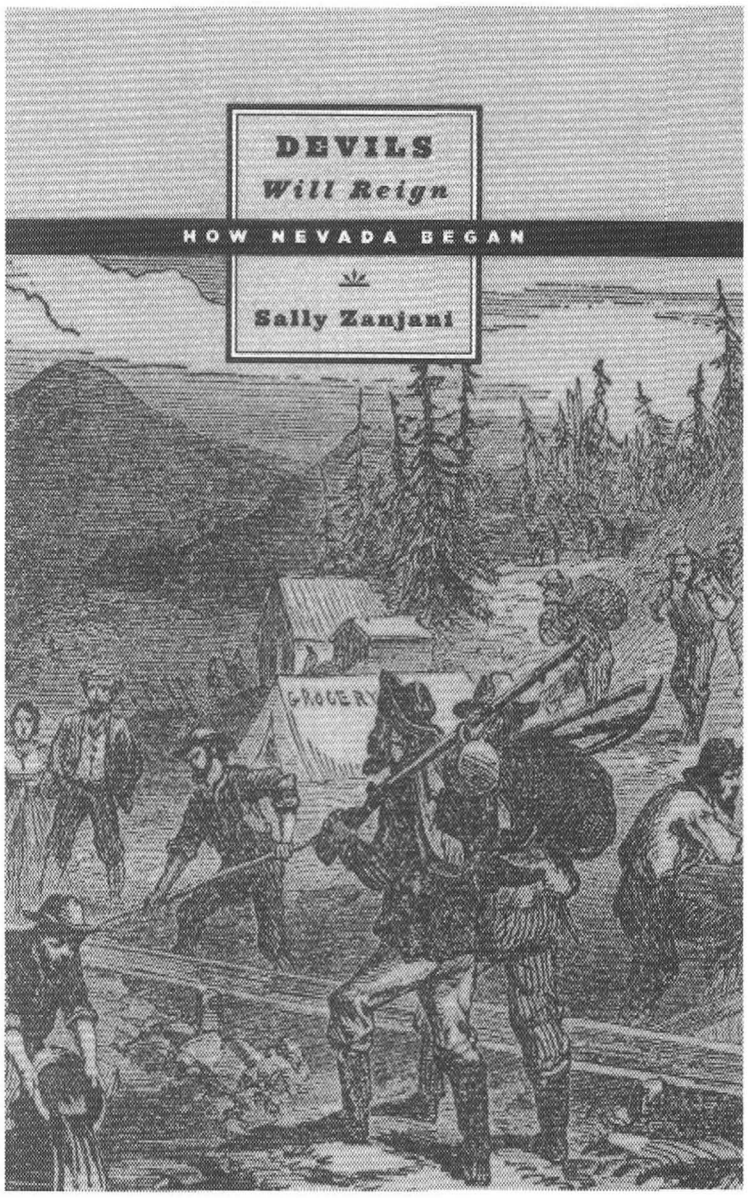

University of Nevada Press, ISBN: 0-87417-663-8, May 2006

In *Devils Will Reign*, acclaimed historian Sally Zanjani recounts the momentous early history of the territory that is now known as Nevada. Dr. Zanjani is a faculty member of the Department of Political Science at the University of Nevada, Reno, and the author of eight books on the history of Nevada and the West.

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